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Preparing an Educational program using mini-Games To Improve Some Mental Abilities (Attention And Sensory Perception) In Hyperactive Children.

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Abstract:

The present study aimed to examine the effectiveness of a proposed educational program based on mini-games in enhancing attention and sensory perception among primary school pupils diagnosed with Attention-Deficit/Hyperactivity Disorder (ADHD). The study emphasized the significant role of physical education in promoting the cognitive, psychological, and physical development of this population, while highlighting the adverse effects of hyperactivity on attention and academic performance. An experimental research design was employed, involving a sample of 16 primary school pupils diagnosed with ADHD. The intervention consisted of a three-month educational program comprising 12 instructional sessions based on mini-games. Statistical analysis revealed significant differences between the pre-test and post-test scores in favor of the post-test, demonstrating the effectiveness of the proposed program in improving attention and sensory perception, reducing hyperactivity symptoms, and enhancing academic achievement. The findings support the integration of mini-game-based educational activities into physical education curricula as an effective strategy for improving cognitive and educational outcomes among pupils with ADHD.

Keywords:; Educational program; Mini-games; Attention-Deficit/Hyperactivity Disorder (ADHD); Cognitive abilities; Attention; Sensory perception.

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Research Problem

Behavioral disorders among school pupils are diverse, with Attention-Deficit/Hyperactivity Disorder (ADHD) being one of the most prevalent. This disorder negatively affects pupils' academic achievement, as hyperactivity is a behavioral characteristic that distinguishes many children, albeit to varying degrees.

This issue has been the subject of scientific debate since the eighteenth century. Bruce, Chapiro, and Gallico reported that the prevalence of hyperactivity disorders among children with learning disabilities ranges from 10% to 43%, whereas other studies have estimated prevalence rates ranging from 25% to 80%. One of the greatest challenges facing researchers in this field is identifying effective strategies to reduce hyperactivity among primary school children, given its detrimental effects on both the individual learner and society.

Effective learning requires learners to accurately perceive the stimuli they receive, assign meaning and value to them, and retrieve them efficiently when needed. Consequently, perception has attracted considerable attention from psychologists because of its direct relationship with everyday human functioning, where individuals continuously encounter numerous environmental stimuli that require understanding, analysis, and immediate responses ***(Yousef, 2004, p. 113).***

The perceptual process begins with sensory perception, which constitutes the primary foundation of human knowledge. The senses serve as channels through which environmental stimuli are received, while sensation represents the psychological effect resulting from the stimulation of the sensory organs ***(Khalil, 2003, p. 271).*** Sensory perception is considered the first step toward interacting with and adapting to the environment and, therefore, forms the basis upon which higher cognitive processes are built. Individuals respond to environmental stimuli according to how they perceive them. Furthermore, sensory perception underlies skill acquisition and performance selection and depends on a series of complex physiological processes involving the neuromuscular system.

During the early stages of life, children strive to explore and comprehend the external world in order to develop cognitive frameworks that guide their thinking and behavior. Sensory organs receive environmental stimuli, process and interpret them, and store them in memory as experiences upon which future learning depends. Consequently, sensory perception is regarded as an essential prerequisite for children's understanding of their environment and their ability to respond appropriately to its stimuli ***(Allen, 1994, p. 150).***

Hyperactivity also adversely affects attention, which is considered one of the fundamental prerequisites for effective learning. Attention refers to the selective allocation of mental resources, involving the direction and concentration of consciousness toward a particular stimulus in preparation for observing, processing, or thinking about it. It requires suppressing irrelevant thoughts and maintaining complete cognitive and physical control to interpret information accurately and produce appropriate responses ***(Rajeh, 1979, p. 179).***

Despite the established association between Attention-Deficit/Hyperactivity Disorder (ADHD), impaired attention, and deficits in sensory perception, this topic remains insufficiently explored in the Arab world. Children whose learning difficulties stem from hyperactivity are often classified simply as pupils with academic learning disabilities. Teachers frequently describe these children as being unable to concentrate on classroom tasks, easily distracted, possessing a limited attention span, and exhibiting deficits in perception. However, such characteristics are not exclusive to children with learning disabilities but are also commonly observed among children diagnosed with ADHD ***(Al-Hadidi, 1997, pp. 87–88).***

Kottman et al. (1995) emphasized that parents and teachers play a fundamental role in children's behavioral growth and development because they interact with them more frequently and more intensively than others. Through these interactions, they face numerous challenges, particularly in managing children with attention deficits and impaired sensory perception accompanied by hyperactivity. Such children typically display excessive and compulsive motor activity that disturbs those around them due to their inability to sustain attention and adequately perceive environmental stimuli. They are often impulsive, emotionally reactive, and restless, which may

provoke negative reactions from others. Furthermore, they frequently experience psychological and social difficulties that may hinder their acquisition of academic knowledge and compromise the effectiveness of educational efforts aimed at preparing them for future life. Based on these considerations, the present study addresses the following research problem:

-Does the proposed educational program based on mini-games improve selected cognitive abilities among children with Attention-Deficit/Hyperactivity Disorder (ADHD)?

-To address this problem, the following research questions were formulated:

-Are there statistically significant differences between the pre-test and post-test scores of the experimental group in attention?

-Are there statistically significant differences between the pre-test and post-test scores of the experimental group in sensory perception?

-Is there a significant relationship between hyperactivity and attention among the experimental group?

-Is there a significant relationship between hyperactivity and sensory perception among the experimental group?

Research Objectives

The present study aims to examine the effectiveness of the proposed educational program in identifying the impact of hyperactivity on selected cognitive abilities. Specifically, the study seeks to:

-Investigate the effect of the proposed educational program on selected cognitive abilities among children with ADHD.

-Identify the difficulties encountered by hyperactive pupils during physical education classes.

-Develop a remedial educational program targeting selected cognitive deficits in order to enhance the academic achievement of fourth-grade primary school pupils during physical education lessons.

Research Hypotheses

General Hypothesis

The proposed educational program based on mini-games has a positive effect on selected cognitive abilities among children with Attention-Deficit/Hyperactivity Disorder (ADHD).

Specific Hypotheses

-There are statistically significant differences between the pre-test and post-test scores of the experimental group on the attention measure.

-There are statistically significant differences between the pre-test and post-test scores of the experimental group on the sensory perception measure.
-There is a statistically significant relationship between hyperactivity and attention among the experimental group.
-There is a statistically significant relationship between hyperactivity and sensory perception among the experimental group.

Significance of the Study

Scientific Significance

This study extends previous research examining hyperactivity and its effects on cognitive abilities. It contributes to the existing body of knowledge by providing additional empirical evidence on this topic and may serve as a valuable reference for future studies addressing related issues and research questions.

Practical Significance

The practical importance of this study lies in its potential to:
-Identify effective strategies for reducing symptoms of hyperactivity.
-Assist teachers in managing and supporting hyperactive pupils more effectively.
-Help parents develop appropriate approaches for dealing with children diagnosed with ADHD, thereby contributing to improved academic achievement.
-Promote greater attention to this population within Algerian schools through the implementation of evidence-based educational interventions.

Pilot Study

A pilot study was conducted at Chibane Boumezrag Primary School on 17 December 2019 to identify the potential obstacles and challenges that might arise during the implementation of the main experiment. A group of six pupils diagnosed with Attention-Deficit/Hyperactivity Disorder (ADHD) was selected to participate in the pilot study. An experimental instructional unit was implemented to evaluate the suitability of the proposed mini games for the target sample and to determine the appropriate timing for each activity.

The pilot study enabled the researcher to control all relevant variables and refine the research procedures, thereby ensuring the validity and reliability of the main experiment and increasing the credibility of the findings. It also facilitated the identification of the nature and magnitude of the variables

associated with the experiment, both quantitatively and qualitatively, as well as the assessment of their potential positive or negative effects. Furthermore, it allowed the researcher to determine the measurability of these variables, evaluate the participants' responsiveness to the educational program, and establish appropriate data recording procedures.

In addition, the pilot study made it possible to standardize the learning conditions by considering factors that could influence the participants' learning process, including the type of equipment used, the nature and pace of the presented stimuli, individual differences among learners, and the instructional approach adopted. These variables were carefully controlled to ensure consistency across the experiment. The research sample was also isolated from external factors that might influence the results, resulting in a sample characterized by physical, social, psychological, and health-related homogeneity ***(Aissa, 2011, pp. 70–71).***

Psychometric Properties of the Attention and Sensory Perception Tests

A. Content Validity

To ensure the content validity of the tests, the researcher relied on the method of reviewing and analyzing previous studies. The literature review of studies that employed these tests, whether in foreign or Arab contexts, confirmed the availability of the required scientific standards. Furthermore, the tests were presented to a panel of experts and specialists through evaluation forms. Based on their assessments, the validity of the tests was established, and they were subsequently adopted for the purposes of the present study.

B. Reliability

The reliability coefficient was calculated using the test–retest method on a sample consisting of six participants (n = 6). The same tests were re-administered to the same sample under identical conditions after a period of seven days. The obtained results were as follows:

Table (01): Reliability Coefficients of the Attention Concentration and Sensory Perception Tests

Statistical Paramètres / Tests	Coefficient	t-value
Attention	0.85	2.97
Sensory Perception	0.89	11.60

Research Methodology

The researcher adopted the experimental method using a one-group experimental design, consisting of an experimental group subjected to pre-test and post-test measurements for the study variables. This design was considered appropriate due to its suitability to the nature and objectives of the present study.

Research Population and Sample

The research sample consisted of 16 fourth-grade primary school pupils, including 10 males and 6 females, enrolled at Yahyaoui Mokhtar Primary School in Ksar El Boukhari, Médéa Province. The sample was selected purposively and included pupils exhibiting high levels of motor hyperactivity, resulting in difficulties related to attention concentration and deficits in sensory perception.

Research Domains

A. Human Domain:

The study was conducted among pupils of Yahyaoui Mokhtar Primary School, with a total sample of 16 pupils (10 males and 6 females) from the fourth-grade primary school level.

B. Spatial Domain:

The two tests (pre-test and post-test) were conducted in the playground of Yahyaoui Mokhtar Primary School, located in the municipality of Ksar El Boukhari.

C. Temporal Domain:

The theoretical phase of the study began on 08/09/2019, during which the relevant research documents were collected and organized. The field study

started with the administration of the pre-test to the children on 08/01/2020, while the post-test measurements were conducted on 12/03/2020.

Research Variables

A. Independent Variable:

The independent variable, also referred to as the experimental variable, is the variable that influences the dependent variable. It represents the factor that the researcher assumes to be the cause of a specific outcome, and the study aims to determine its effect on another variable. In the present study, the independent variable is represented by the proposed educational program.

B. Dependent Variables:

Dependent variables are the variables for which the researcher seeks to determine the effect of the independent variable. They refer to the outcomes that change as a result of the influence of the independent variable. In this study, the dependent variables include motor hyperactivity and selected cognitive abilities represented by attention and sensory perception.

C. Extraneous Variables:

Extraneous variables are numerous and difficult for the researcher to control completely, particularly because human behavior varies from one individual to another and changes over time. Therefore, these variables must be controlled as much as possible to minimize their potential influence on the research outcomes. They include:

C-A. Variables related to participants' characteristics:

These include factors associated with specific characteristics of the participants, such as social status, age, academic achievement level, gender, physical condition, and other individual-related factors.

C-B. Variables related to the experimental procedures:

These include maintaining the homogeneity and equivalence of the sample in terms of skill level, standardizing the duration of each session (60 minutes), conducting one session per week, controlling the timing of measurements and tests, ensuring clarity and understanding among all

participants regarding performance procedures, and providing appropriate feedback.

C-C. The COVID-19 pandemic:

The global health crisis caused by the spread of the COVID-19 virus, which affected Algeria as well as other countries worldwide, and resulted in the suspension of classes in educational institutions and universities, was considered an external variable that may have influenced the implementation of the study procedures.

Research Tools and Instruments

The research tools and instruments refer to the means used by the researcher to collect the required data. They included the following:

-Arabic and foreign references and sources.

-International information networks.

-The physical education and sports curriculum.

-The tests used to assess attention and sensory perception.

-The scale used for identifying children with motor hyperactivity.

-Personal interviews conducted with specialized university professors, psychologists, primary school principals, and teachers.

-Pupils' medical records, which were consulted to determine the health status of each participant in the research sample.

Questionnaire:

Questionnaires represent one of the fundamental tools used by researchers in various scientific fields, as they provide a means of collecting the opinions and judgments of experts and specialists regarding specific research-related issues. In the present study, expert opinions were sought on the following aspects:

-The validity of the tests used to measure attention and sensory perception.

-The validity and suitability of the proposed educational program and the selected mini-games.

-A questionnaire administered to primary school teachers in order to assist in the selection of the research sample and to determine the status and importance of physical education classes within primary education.

Tests Applied in the Study

First: Attention Concentration Grid Test

The Attention Concentration Grid Test was developed by Dorothy Harris (1984) and later adapted into Arabic by Mohamed Hassan Allawi. This test is designed to assist in identifying pupils who are able to maintain a higher level of attentional concentration.

The duration of the test is one minute. Pupils are instructed to place a mark (/) on the greatest possible number of consecutive numbers following a specific starting number determined by the teacher or psychologist. It is recommended that the selected starting number be lower than 65, while ensuring that the numbers are marked in a sequential order.

For example, if the starting number is 17, the pupil should mark number 18, followed by 19, then 20, and so on. The pupil should not mark number 19 first and then return to number 18. Undoubtedly, the pupil who records a greater number of correctly identified numbers compared with peers demonstrates a higher level of attention concentration.

The test can be administered several times by changing the initially selected number. The concentration grid can also be modified by creating multiple versions with different arrangements of numbers to prevent pupils from memorizing the locations of the numbers. It is recommended that all numbers consist of two digits, such as (01) and (02).

Furthermore, the test can be conducted under various experimental conditions, such as performing in front of peers or introducing distracting variables to assess resistance to attentional distraction ***(Allaoui, 1998, pp. 530–531).***

Table 2: Form Illustrating the Attention Concentration Grid Test

84	27	51	78	59	52	13	85	61	55
28	60	92	04	97	90	31	57	29	**33**
32	96	65	39	80	77	49	86	18	**07**
76	87	71	95	98	81	01	46	88	**00**
48	82	89	47	35	17	10	42	62	**34**
44	67	93	11	07	43	72	94	69	**56**

53	79	05	22	54	74	58	14	91	**02**
06	68	99	75	26	15	41	66	20	**40**
50	09	64	08	38	30	36	45	83	**24**
03	**73**	**21**	**23**	**16**	**37**	**25**	**19**	**12**	**63**

Second: Standing Long Jump Test (Distance Perception Scale for Children)

This test is designed to assess an individual's ability to estimate distance by focusing on the effort exerted to achieve the target performance. It is suitable for measuring sensory perception among the selected age group (fourth-grade primary school pupils) while controlling the jumping distance, which ranges from 30 cm to 60 cm. The test is applicable to both genders.To ensure the validity of the test, participants are required to perform the task with their eyes closed. Furthermore, the reliability of the test can be improved by increasing the number of attempts performed by each participant.

Equipment Used and Test Procedure

Equipment Used: The equipment required for administering the test includes a measuring tape, an eye-covering device, and chalk.

For example, the child is asked to perceive and estimate the predetermined distance between the two lines without attempting the performance, while vision is occluded. The child is then instructed to perform the jump in such a way that the heels land as close as possible to the drawn target line in order to achieve the best possible performance level. After each attempt, the child is allowed to open their eyes and observe the landing position. Each child is given three attempts. The child may also be allowed to perform an initial trial without vision occlusion ***(Johnson, Nelson, J., & K., 1979).***

Scoring:

The distance between the actual landing point and the target line is calculated as an estimation error, which indicates a deficiency in motor perception ability. The total score is determined by summing the results of the three attempts.



Figure 1: Illustration of Distance Perception in the Standing Long Jump Test

Equipment and Pedagogical Materials

The following equipment and pedagogical materials were used during the implementation of the study:

*Video camera.
*Metric tape for measuring length.
*Eye-covering device.
*Stopwatch.
*Whistle.
*Balls of different colors and sizes.
*Eight cones.
*Eight flat markers.
*Fourteen bibs of different colors.

Educational Program

Several principles were taken into consideration when developing the proposed educational program for pupils with Attention-Deficit/Hyperactivity Disorder (ADHD). Based on the review of scientific literature and previous studies that addressed the foundations of educational program design, particularly those based on mini-games, the researcher focused on the characteristics of cognitive development in children at this developmental stage (middle childhood). These characteristics include:

-Attention.

-Sensory perception, through the use of games designed to develop the sensorimotor aspect, particularly activities that rely on auditory and visual perception.

*Perception of time and space.

*Recognition of similarities and differences.

-Memory.

-Thinking.

In addition, the characteristics of social development were taken into consideration, including the desire for competition, emotional regulation, increased social interaction, and the development of positive relationships with others.

The characteristics of cognitive development were also considered, particularly the ability to control impulsive behaviors and emotional responses, among other related aspects.

Furthermore, the following factors were taken into account:

-01Attention deficits.

-02Deficits in sensory perception.

This was intended to ensure that the proposed mini-games included educational situations designed to develop and improve these cognitive difficulties.

During the development of the educational program, the researcher also considered the following:

The researcher also took into consideration the following aspects:

-Ensuring safety and security factors by selecting physical activities that use stable equipment made of non-rigid materials.

-Using auditory and visual stimuli to teach fundamental motor skills.

-Considering the child's social and emotional characteristics.

-Taking into account the psychological principles related to children with Attention-Deficit/Hyperactivity Disorder (ADHD).

-Selecting motor skills progressively, moving from easy to difficult and from simple to complex.

-Using various pedagogical materials that differ in shape and color to enhance children's engagement and motivation.

-Developing moral values and positive behaviors, particularly cleanliness, cooperation, self-confidence, and competitive spirit, in accordance with the physical education and sports curriculum.

-Stimulating children's interest and motivation toward sports participation.

Enhancing attention and sensory perception, which contributes to developing the connection between children's cognitive abilities and their behavioral responses.

-Including a variety of games within the program aimed at improving attention concentration and sensory perception.

Table 3. Expected General Objectives of the Educational Program.

No.	*Date*	*Session Type*	*Psychomotor Domain*	*Affective (Social-Emotional) Domain*	*Cognitive Domain*
1	*30-01-2020*	*Pre-test (Sample Selection)*	*Selection of the study sample.*	*Students become acquainted with the instructor and adapt to him.*	*Individual differences and variations among students.*
2	*05-02-2020*	*Pre-tests*	*Administration of pre-tests to assess sensory perception and attention.*	*Students develop cooperation, organization, readiness, cleanliness, and participation in play.*	*Students recognize physical differences (height and weight) and variations in sensory perception and attention.*
3	*12-02-2020*	*Instructional Session 1*	*General physical preparation.*	*Students experience freedom of movement in space and learn to communicate with others.*	*Students identify the different parts of their bodies.*
4	*19-02-2020*	*Instructional Session 2*	*Perform simple natural movements in various positions.*	*Students communicate effectively with the instructor and peers and become accustomed to group organization.*	*Control impulsive behaviors and emotional reactions.*

5	26-02-2020	Instructional Session 3	Develop sensory perception and attention.	Coordinate movements with others and increase social interaction with peers.	Understand abstract concepts and select knowledge appropriately.
6	04-03-2020	Instructional Session 4	Maintain proper body posture during movement.	Develop self-awareness in different situations and demonstrate confidence in facing challenges.	Develop habits of personal, clothing, and environmental hygiene.
7	11-03-2020	Instructional Session 5	Enhance sensory perception and attention.	Control emotional reactions when experiencing failure.	Understand the importance of coordination between the arms and legs.
8	08-04-2020	Instructional Session 6	Respond appropriately to different auditory and visual stimuli.	Develop communication behaviors that promote positive relationships with others.	Recognize different auditory and visual stimuli and acquire cognitive, motor, and moral experiences.
9	15-04-2020	Integrative Session	Control body movements and make decisions confidently.	Develop self-awareness, self-regulation, adaptation to the social environment, and sportsmanship.	Develop responsibility, role-playing skills, and respect for rules.
10	22-04-2020	Instructional Session 7	Perform sustained physical effort while maintaining respiratory balance.	Control body movements and develop self-confidence.	Understand the importance of coordination between body alignment and limb movements.

11	*29-04-2020*	*Instructional Session 8*	*Perform fundamental movements related to sensory perception and attention.*	*Acquire cognitive, motor, and moral experiences.*	*Understand action commands requiring decision-making (e.g., stop, walk, move).*
12	*06-05-2020*	*Instructional Session 9*	*Perform coordinated movements using equipment in different situations and rhythms.*	*Identify and use features of the practice environment and adapt to different situations.*	*Facilitate motor development and accept defeat positively.*
13	*13-05-2020*	*Instructional Session 10*	*Complete tasks quickly within a specified time.*	*Appreciate teamwork, assist peers, and progressively develop creativity.*	*Apply safety and security regulations.*
14	*20-05-2020*	*Instructional Session 11*	*Express oneself through movement and perform coordinated group activities.*	*Develop motivation for individual and group challenges and the desire to succeed.*	*Perform individual and group roles effectively.*
15	*27-05-2020*	*Post-tests*	*Conduct post-tests for both groups and develop selected comp*	*Assumes responsibility. Takes the initiative in organizing the group. Competes with peers.*	*Knows how to use some equipment. Applies safety and security rules.*

Statistical Methods Used

To verify the validity of the hypotheses, and after conducting the pre-test and post-test measurements, the researcher used Student's t-test to examine the differences between the pre-test and post-test results of the experimental sample for the first and second hypotheses. In addition, Pearson's correlation coefficient was used to determine the correlation relationships related to the third and fourth hypotheses.

Research Difficulties

-Like any scientific research, this study encountered several difficulties due to the complexity of controlling external variables, intervening factors, surrounding conditions, and various obstacles that are difficult to manage. The main difficulties included:

-The difficulty of selecting the research sample (children with hyperactivity), as identifying and selecting this group required considerable time and effort.

-The difficulty of controlling the research sample due to the limited awareness among some parents, who refused their children's participation in physical activities and in the research process, which resulted in a reduction in the sample size.

-The lack of a properly equipped facility or field within the school for conducting physical education and sports activities.

-The crisis experienced by Algeria, as well as the rest of the world, due to the spread of the COVID-19 virus, which resulted in the suspension of studies in educational institutions, universities, and libraries

Presentation and Discussion of the Research Results

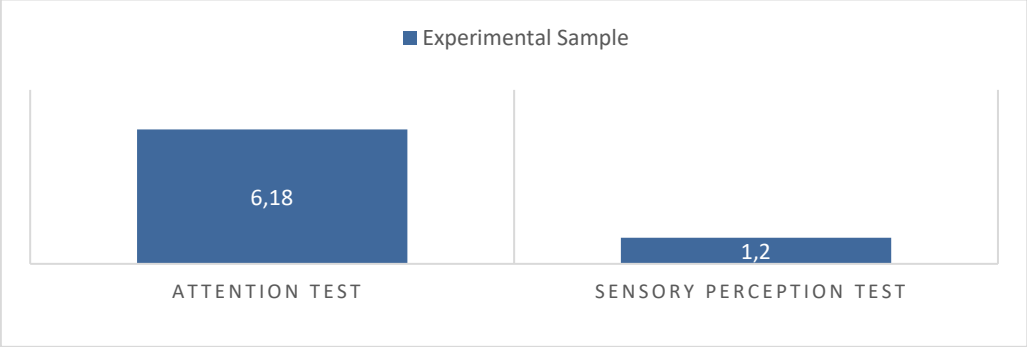
Presentation and Discussion of the Pre-test Results of the Research Sample

Table 4: Calculated t-values of the Experimental Group in the Pre-test Measurements

Tests	Experimental Group		Calculated t-value	Critical t-value	Level of Significance
	Mean (M)	**Standard Deviation (SD)**			
Attention Test	6.18	2.07	5.68	1.75	Statistically Significant
Sensory Perception Test	1.20	0.22	21.00		

Table 4 demonstrates the presence of statistically significant differences between the pre-test and post-test means for both tests. The calculated t-value for the attention test was 5.68, while the calculated t-value for the sensory perception test was 21. These values are higher than the critical t-value at 15 degrees of freedom (df = 15) and a significance level of 0.05.

Figure 2: Mean Scores of the Pre-test Measurements



Presentation and Discussion of the Attention Test Results

Table 5. Pre-test and Post-test Results of the Research Sample on the Attention Test

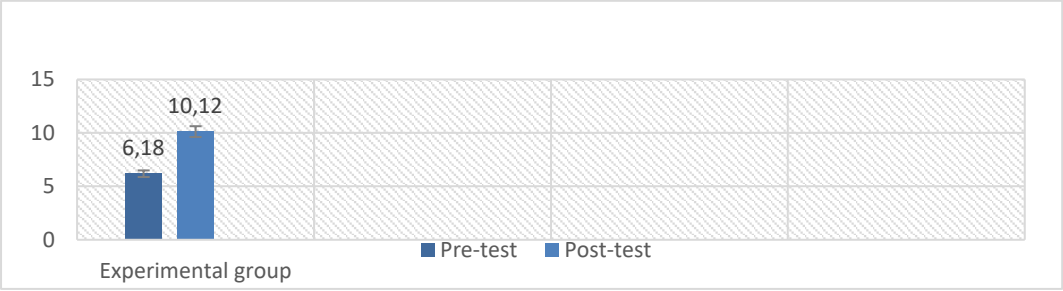
Statistical Measures	Pre-test		Post-test		t-value		Significance
Test	Mean (M)	SD	Mean (M)	SD	Calculated	Critical	
Attention (n = 16)	6.18	2.07	10.12	3.26	5.68	1.75	Statistically Significant

Significance level (α): 0.05 Degrees of freedom (df): 15

Table (5) presents the mean and standard deviation values of the research sample in the attention test. The results indicate that the pre-test mean score of the sample was 6.18 with a standard deviation of 2.07, whereas the post-test mean score increased to 10.12 with a standard deviation of 3.26.

Following the calculation of the t-value, the obtained value was 5.68, which exceeded the critical (tabulated) t-value of 1.75 at 15 degrees of freedom and a significance level of 0.05. This indicates that the difference between the pre-test and post-test means is statistically significant, demonstrating a significant improvement in favor of the post-test. Figure (3) illustrates these findings.

Figure (3). Comparison of the Pre-test and Post-test Mean Scores of the Experimental Group on the Attention Test.



As shown in Figure (3), there is a significant difference between the pre-test and post-test mean scores of the experimental group in the attention test. This confirms the effectiveness of the proposed educational units based on games, such as "Ball Acquisition Game, Handkerchief Game, Signal Game, Ball Avoidance Game," and others.

These activities had a positive impact on enhancing attention abilities among this group of children, contributing to improved attention levels and reducing hyperactive motor behavior.

Presentation and Discussion of the Sensory Perception Test

Table (6): Presents the results of the pre-test and post-test of the research sample in the sensory perception test.

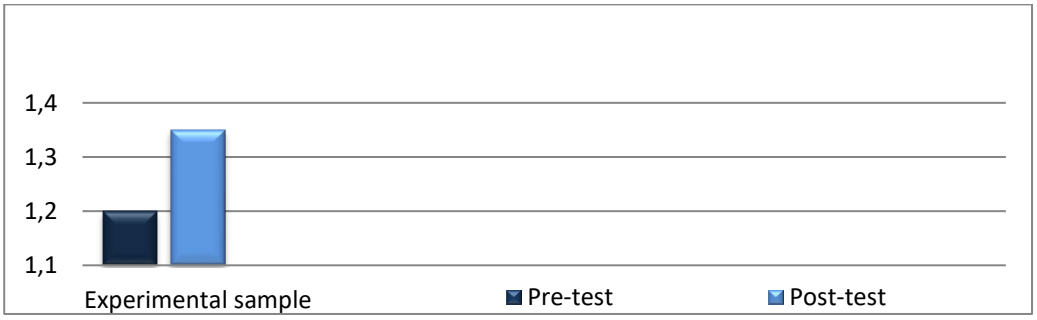
Statistical Measures	Pre-test		Post-test		t-value		Significance
Test	Mean (M)	SD	Mean (M)	SD	Calculated	Critical	
Sensory perception (n = 16)	1,2	0,22	1,35	0,12	21	1.75	Statistically Significant

Significance level (α): 0.05 Degrees of freedom (df): 15

Table (6) presents the mean and standard deviation values of the research sample in the sensory perception test. The results show that the pre-test mean score of the sample was 1.20, with a standard deviation of 0.22, whereas the post-test mean score reached 1.35, with a standard deviation of 0.12.

After calculating the t-value, the obtained value was 21, which is higher than the critical (tabulated) t-value of 1.75 at 15 degrees of freedom and a significance level of 0.05. This indicates that the difference between the two mean scores is statistically significant and in favor of the post-test. Figure (4) illustrates these results.

Figure (4). Illustrates the difference between the pre-test and post-test mean scores of the sample in the sensory perception test.



As shown in Figure (4), there is a significant difference between the pre-test and post-test mean scores of the experimental group in the sensory perception test. This confirms the effectiveness of the proposed educational units based on games, such as "Day and Night Game, Tracing Game, Number Game, Run and Collect Game," and others.

These activities had a positive effect on improving sensory perception abilities among this group of children, contributing to the enhancement of sensory perception and the reduction of hyperactive motor behavior.

Presentation of the Results of the Correlation Relationship Between Hyperactivity, Attention Ability, and Sensory Perception Among Members of the Experimental Group

Table (7): Results of Pearson Correlation Coefficient Test Between Hyperactivity, Attention, and Sensory Perception (n = 16).

Variables	*Hyperactivity*	*Attention*	*Sensory Perception*
Motor Hyperactivity	*1*	*-0.71 ** *	*-0.64 ** *
Attention	*-0.71 ** *	*1*	*0.58 ** *
Sensory Perception	*-0.64 ** *	*0.58 ** *	*1*

** Significant at the 0.05 level.* *** Significant at the 0.01 level.*

Discussion of the Hypotheses

Discussion of the First Hypothesis:

The first hypothesis states that: There are statistically significant differences between the pre-test and post-test measurements of the experimental group in attention assessment.

The statistical results obtained from Table (5) revealed the presence of statistically significant differences between the pre-test and post-test scores of the experimental group in attention assessment.

This improvement can be attributed to the effectiveness of the proposed educational program based on small-sided games, as the researcher focused on a set of games designed to attract children's attention toward the activity while minimizing the influence of external stimuli. This contributed to enhancing children's attention concentration.

In this regard, ***El-Sayed (2007, p. 164)*** indicated that children with attention deficit require educational strategies based on attracting and maintaining attention through interaction between the teacher and the learner. Furthermore, previous studies related to attention have shown that play attracts children's attention and increases their motivation for learning. Learning through play provides a flexible environment in which children engage in activities voluntarily and spontaneously. It also gives children opportunities to use their senses and cognitive abilities, thereby improving their understanding and learning capacity ***(Mousleh, 1995, p. 4).***Therefore, the validity of the first hypothesis can be confirmed.

Discussion of the Second Hypothesis:

The second hypothesis states that:

There are statistically significant differences between the pre-test and post-test measurements of the experimental group in sensory perception assessment.

The statistical results obtained from Table (6) revealed the existence of statistically significant differences between the pre-test and post-test scores of the experimental group in sensory perception assessment.

This improvement can be attributed to the effectiveness of small-sided games, which are among the most widely used educational methods in childhood and represent a distinctive feature of motor activity. These games contribute to the development of sensory perception and enhance children's ability to control and master the skills and movements performed during participation. Sensory perception is considered one of the essential aspects of a child's life, as it reflects

the relationship between cognitive, motor, and psychological dimensions. Therefore, improving these aspects is necessary to enable children to interact effectively with their surrounding environment while performing various required activities ***(Sarab, 2014, p. 166).***

Furthermore, the implemented program considered the inclusion of exercises and games such as "Day and Night Game, Tracing Game, Number Game, Run and Collect Game," and others. Consequently, learners acquired motor and cognitive programs simultaneously. In addition, the method adopted in delivering the educational units allowed children to participate without feeling that they were performing imposed motor tasks.

The gradual and well-structured learning process, based on feedback and error correction, contributed to the development of children's cognitive abilities. Moreover, the high level of trust between the learner and the teacher enhanced the occurrence of coordination and adaptation, which encouraged learners to perform better. This was observed by the researcher during the field experiment through the gradual improvement of pupils in reaction speed, perception speed, and response speed.

These findings confirm the effectiveness of the applied program, which can be considered a therapeutic educational strategy that uses play as a means of intervention on one hand and as a method for enhancing sensory perception abilities on the other hand. This perspective was also supported by researchers and theorists in the field, including Le Boulch, Huizinga, Dutrey, and Louis, among others.

Therefore, the validity of the second hypothesis can be confirmed.

Discussion of the Third Hypothesis:

The third hypothesis states that: There is a correlation relationship between motor hyperactivity and attention ability among the experimental group.

The results obtained from Table (7) indicate the existence of a strong negative correlation between motor hyperactivity and attention ($r = -0.71$, $p < 0.05$). The relationship is negative because a decrease in the level of motor hyperactivity represents an improvement, while an increase in attention scores also represents an improvement; therefore, the relationship is inverse.

This indicates that as the levels of motor hyperactivity decrease, children's attention abilities increase. This finding is consistent with the scientific literature related to Attention Deficit Hyperactivity Disorder (ADHD). The researcher confirmed this relationship through the practical application of small-sided games,

supported by previous studies demonstrating that implementing educational units through small-sided games contributes to the psychological preparation of learners and enhances their attention abilities. Therefore, the validity of the third hypothesis can be confirmed.

Discussion of the Fourth Hypothesis:

The fourth hypothesis states that: There is a correlation relationship between motor hyperactivity and sensory perception among the experimental group.

The statistical results obtained from Table (7), following the analysis of the relationship between the motor hyperactivity variable and the sensory perception variable, revealed the existence of a moderate to strong negative correlation between motor hyperactivity and sensory perception.

This indicates that reducing motor hyperactivity among pupils facilitates their sensory perception processes. Consequently, this helps children discover the characteristics of objects, distinguish between them, and easily retrieve the features associated with them.

In this regard, Abdel-Khalek (2002) stated that: "Sensory perception is one of the types of perception and represents an active process involving multiple activities, such as attention, sensation, awareness, and memory. Attention is considered the key to perception" ***(Abdel-Khalek, 2002, p. 206).*** Therefore, the validity of the fourth hypothesis can be confirmed.

Future Research Issues Raised by the Study:

The current study represents a starting point for future researchers to conduct further investigations in this field, particularly concerning children with motor hyperactivity and its relationship with physical and sports activities. Future research may include:

-Developing an educational program based on small-sided games to improve imagination abilities among children with motor hyperactivity.

-Investigating the relationship between attention deficit hyperactivity disorder (ADHD) and learning difficulties.

Conclusions and Recommendations

Conclusions:

Based on the implementation of the educational program, the following conclusions were reached:

The effectiveness of the designed program in improving certain cognitive abilities, such as sensory perception and attention, among hyperactive children aged (9–11 years).

The presence of statistically significant differences between the pre-test and post-test results of the experimental sample, in favor of the post-test.

The improvement in cognitive abilities, including attention concentration and sensory perception, among children with motor hyperactivity contributed to enhancing their academic achievement.

Recommendations:

Based on the findings of this study and after reviewing the most important scientific research related to motor hyperactivity problems among children, the researcher proposes the following recommendations:

-The necessity of conducting in-depth studies in various local environments to diagnose the problem of motor hyperactivity among primary school pupils.

-The necessity of training teachers and all school staff on how to deal with these children through organizing training courses and providing them with teaching strategies appropriate for this group.

-The necessity of using small-sided games in physical and sports education classes due to their positive impact on children.

-The importance of giving attention to children with motor hyperactivity, particularly during the stages of middle and late childhood, by working on developing their cognitive abilities.

-The necessity of providing specialized physical education teachers at the primary school level, due to the limited training and experience of Arabic or French language teachers in this field.

-The importance of acquiring sufficient and necessary information about motor hyperactivity associated with attention deficit and sensory perception difficulties.

-Raising family awareness by emphasizing their important role in addressing and managing this problem.

References

The Holy Quran

Scientific Journals and Periodicals

-Ahmed, A. M. (2004). Designing Educational Activities to Address Learning Difficulties in Mathematics Among Normal Pupils in the First Three Grades of Primary School. Journal of Culture and Development, Vol. 2, No. 8.

-Attia Mahmoud. (1949). Journal of Psychology.Journal of Education, No. 66. (1984).Arabic Books

-Ibrahim, S. A. Y. (2010). Reference in Developmental, Academic, Social, and Emotional Learning Difficulties. Egypt: Anglo-Egyptian Library.

-Ahmed Sayed Mostafa. (2005). Organizational Behavior Management: A Contemporary View of Human Behavior at Work. Cairo.

-Alou Blineskaya. (1980). Introduction to Psychology. Translated by Badr Al-Din Amer. Damascus: Publications of the Ministry of Culture and National Guidance.

-Amin Anouar Al-Khouli. (1994). School Physical Education. Cairo: Dar Al-Fikr Al-Arabi.

-Rihab Ahmed Ragheb. (2009). Cognitive Processes and Hearing-Impaired Individuals (1st ed.). Alexandria: Dar Al-Wafaa for Printing and Publishing.

-Saad Moursi Ahmed & Kawthar Kouhak. (1983). Child Education Before School. Cairo: Alam Al-Kutub.

-Susanna Miller. (1987). The Psychology of Play. Translated by Hassan Issa. Kuwait: Alam Al-Maarifa.

-Abdel Hamid Sharaf. (2001). Physical and Motor Education for Normal Children and Children with Disabilities. Cairo: Center for Book Publishing.

-Abdel Hamid Sharaf. (2005). Physical and Motor Education for Normal Children and Children with Disabilities: Between Theory and Practice (2nd ed.). Cairo: Center for Book Publishing.

-Abdel Rahman Al-Eisawi. General Psychology. Beirut, Lebanon: Dar Al-Nahda Al-Arabiya for Printing and Publishing.

-Adnan Youssef Al-Atoum. (2004). Cognitive Psychology: Theory and Application. Amman: Dar Al-Masira for Publishing, Distribution and Printing.

-Atiyat Mohammed Al-Khattab. (1990). Leisure Time and Recreation. Cairo: Dar Al-Fikr Al-Arabi.

-Firas Taleb Hammadi. (2006). The Locus of Control and Its Relationship with Some Perceptual-Motor Abilities Among Fencing Players. Iraq: University of Diyala.

-Fouad Abu Hatab. (1996). Human Development from the Fetal Stage to Old Age. Egypt: Anglo-Egyptian Library.

-Faisal Abbas. (1997). Child Psychology. Beirut: Dar Al-Fikr Al-Arabi.

-Mohamed Hassan Allaoui. (1983). Sports Psychology (5th ed.). Cairo: Dar Al-Maarif.

-Mohamed Hassan Allaoui. (1986). Sports Psychology (6th ed.). Cairo: Dar Al-Maarif.

-Moustafa Al-Sayeh & Mohammed Hussein Abdel Moneim. (2006). Small Games and Their Applications (1st ed.). Egypt: Dar Al-Wafaa.

-Ibrahim, S. A. (2001). Psychological Disorders Among Children. Dar Al-Masira.

-Abdel Hamid, K. A. (1989). Attention Concentration Before Performing the Volleyball Serve. Mosul: College of Physical Education.
-Al-Zaraa, N. B. (2007). Therapeutic Approaches to Attention Deficit Hyperactivity Disorder. Amman: Dar Al-Fikr.
-Al-Sayed, M. A. (2002). Learned Helplessness and Its Explanatory Theories.
-Al-Shakraoui, M. A. (2003). Contemporary Cognitive Psychology. Cairo: Anglo-Egyptian Library.
-Al-Qamsh, M. N. (2011). Multiple Disabilities (1st ed.). Amman: Dar Al-Masira.
-Badr, A. A. (1999). Attention Disorder in Children: Causes, Diagnosis, and Treatment. Egypt: Nahda Library.
-Boutrus, B. H. (2008). Psychological Problems and Their Treatment. Amman, Jordan: Dar Al-Masira.
-Al-Marsoumi, L. Y. (2011). The Effectiveness of a Behavioral Program in Modifying the Behavior of Kindergarten Children with Attention Deficit and Hyperactivity Disorder. Modern University Office.
-Al-Maaytah, M. A. (2007). Behavioral and Emotional Disorders (1st ed.). Amman: Dar Al-Masira.
-Salem, S. K. (2001). Attention Deficit Hyperactivity Disorder: Causes, Characteristics, and Treatment Methods. Al Ain: University Book House.
-Moriyama, A. J. (2009). Attention Deficit Hyperactivity Disorder. Brazil: National Institute of Developmental Psychiatry for Children and Adolescents, University of São Paulo.
-Najati, M. A. (1995). Psychology and Life (12th ed.). Kuwait: Dar Al-Qalam.
-Hammad, N. A. (2008). Intelligence Tests and Personality Scales. Jordan: Modern World of Books.
-Khudair, M. A. (2012). The Relationship Between Sensory-Motor Perception and Accuracy of Performing Some Offensive Movements with the Foil Weapon Among Students of the College of Physical Education. Al-Qadisiyah Journal of Physical Education Sciences.
-Zarouati, R. (2007). Scientific Research Methods and Tools in Social Sciences (1st ed.). Algeria.
-Allaoui, H. M. (1998). Encyclopedia of Psychological Tests for Athletes. Cairo: Center for Book Publishing.
Issa, A. Q. (2011). Scientific Research Methods.
-Ahmed, A. A. (2013). Hyperactivity. Alexandria: New University House.
-Al-Atoum, A. Y. (2004). Theory and Application. Amman: Dar Al-Masira for Publishing and Distribution.
-Al-Anani, H. A. (2014). Play Among Children (9th ed.). Amman: Dar Al-Fikr.
-B.R.AL bermons. (1981). Manuel de psychologie de sport. Viegot.
-Decvoly Et Monchamp. (1978). Intiation à l'activité intellectuelle Et Motrice Par Les Joux éducatifs. Paris: Delachause Niestle 7 éme Edit .
-Jean Didier Bagot. (1999). Information sensation et perception. France: Armand colin.
-Jean Piegt. (1972). La Formation Du Sumba le chez l'enfant de la chausse 6éme edit.
-Oliver camulle. (1973). Votre enfant et ses loisirs . Paris.

-al, L. S. (2008). Predictive validity of DSM-IV and ICD_10 criteria for ADHD and hyperkinetic. Journal of Child psychology and psychiatry.
-Biderman, e. a. (2004). Impact of Executive Function Deficit and Attention deficit Hyper Activity disorder on Academic Outcomes in Children . Journal of Council and Clinical psychology.
-Bloch, A. Q. (2011). Omega-3 fatty acid supplementation for the treatment of children with attention-deficit/hyperactivity disorder symptomatology:systematic review and metaanalysis. journal of the American Academy of Child and Adolescent psychiatry.
-Frank, e. a. (2000). The Extent of teacher knowledge of ADHD. Journal of Attention Desorders.
-Halperin, J. D. (2011). The influences of environmental enrichment;cognitive enhancement; and physical exercise on brain devlopment. Neuroscience and Biobehavioral Reviews.
-Li S, Y. B. (2011). Acupuncture for Attention Deficit Hyperactivity Disorder in children and adolescent. Cochrane Database of Systematic Review.
-Pelsser, R. (2017). Diet and ADHD, Reviewing the Evidence.
-Rabiner. (2005). A New way of looking at ADHD. Barkly's Theory www.helpforadd.com.
-S, C., & JE, P. (1962). Minimal brain dysfunctions in the scool-age child. Archives of General psychiatry.
-(2000). Special Consideration at school and in the health center. Health Center.
-Jonson, Nelson, B. .., j, & K. (1979). Practical Measurements For Evaluation in Physical Education 3rd ed. Burgess Co: Menneapolis books.

Theses and Dissertations

-Sabri, F. A. (2005). Developmental Dyslexia and Its Relationship with Some Other Variables. Ouargla: Master's Thesis in School Psychology.
-Abdelkader Boumesjed. (2005). Enhancing the Development of Perceptual-Motor Abilities Using a Proposed Program for Psychomotor Education Activities. Algeria: University of Algiers.
-Al-Obaidi, Hazem Mohammed Badri. (2004). The Effect of Two Cognitive Styles: Preference for Sensory Modeling and Preference for Brain Dominance on Sensory Memory Among Workers in the Field of Standardization and Quality Control. Baghdad: University of Baghdad, College of Arts (Unpublished Doctoral Dissertation).
-Faleh, A. (2009). Color Preference Among Individuals with Attention Deficit Hyperactivity Disorder. Medina: King Saud University.