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Research Article

THE EFFECT OF THE COMPUTER ASSISTED LEARNING IN CONTROLLED ENVIRONMENT ON SUSTAIN ATTENTION OF CHILDREN WITH ATTENTION DEFICIT / HYPERACTIVITY DISORDER

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ABSTRACT
Attention deficit in attention deficit / hyperactivity disorder can cause significant educational and learning problem for children. The computer is a useful learning tool because provide the themes and concepts in an inviting, fun, flexible manner. The aim of this study was investigation of the effect of the in controlled environment on sustain attention of children with attention deficit / hyperactivity disorder. This clinical trial was conducted without control group. Sampling study was performed in 10 children with regard to the inclusion and exclusion criteria. After recording demographic information, continuous performance test used in pre-test and post-test. Children participated in 10 session computer assisted learning Intervention. In this study, 5 boys and 5 girls with an age range of 7-4 years participated. T-test results indicate the significance of the changes after the intervention (P <0/05). The results suggest that computer assisted learning may have a positive impact on improving children's attention, but despite the lack of information more research is needed in this area.

Keywords: *Attention Deficit / Hyperactivity Disorder, Computer Assisted Learning, Sustain Attention*

INTRODUCTION
Attention Deficit / Hyperactivity one of the most common psychiatric disorders in children (Riccio *et al.*, 2004; Biederman, 2005) and 3 to 5 percent of the population, including school-age children (Simon *et al.*, 2009). Children with ADHD have problems in social, academic, behavioral, and cognitive (Sarli *et al.*, 2014). About 50 to 80 percent of children with attention deficit / hyperactivity symptoms in teens Exert (Wodushek and Neumann, 2003; Fischer *et al.*, 2005) and 30 to 70 per cent of the children Symptoms continue into adulthood (Halmøy *et al.*, 2009; Wilens *et al.*, 2002). Almost half of children with ADHD Attention deficit / hyperactivity at age 5 show signs of the behavioral problems are often the first years of school (Barkley, 2002) because Expectations of their child goes to school entry, expectations because: Follow the instructions, obey the law, sitting on their desks, Keeping the focus on the tasks at long periods (Biederman, 2005) Many of these tasks requires a level of attention. One of the most striking features of this disorder, attention deficit homework almost long lasting, uniform. Children with ADHD act without thinking and hard to focus. Might expect that they will not understand because they cannot be silent, cannot concentrate or pay attention to detail (Barkley, 2002; Alizadeh *et al.*, 1392).
Negligence in the conduct and completion of assignments is seen as not listening So that the short attention span of rapid change from one activity to another All that can be done before (Mohamad, 2005). Note Before you can begin to focus on the movements of the head and eyes from a driver's perspective to be drawn around the area (Posner, 1980). In general, children with this Disorder than other children are more likely to distraction (Ross and Randolph, 2014) and leading environmental irritants Most of them to distraction (Pamplona *et al.*, 2009). Auditory stimuli significant effect in reducing the scope the children

are given a combination of auditory and visual stimuli leads to The poor performance of the children in the control group than in the continuous performance test (Berger and Cassuto, 2014).
Computers for educational purposes and in particular in the field of education can Topics and material that is easier to remember and look more attractive book or media offer. Learning with computers is expected to be more active learners. PC Surround motivation for learning increases. More flexible and fun Strong computer amazes attractions learners (Alizadeh *et al.,* 1392; Steiner *et al.,* 2011).
Use of computers is essential that this issue has become a specialty many experts for optimal use of this tool in teaching children how to Investigation are involved (Bender and Bender, 1996). Computer technology for people with specific problems another big part of the world's population will forget that provides adequate protection. Enabling them to participate in the education system and the labor market (Strömberg *et al.,* 2006). Use of computer-based systems are very attractive. Color images, graphics and Sounds interesting, motivation to work and multiply interactively at any time feedback and are working with the students enjoy learning resources. Flexibility, Self-scrutiny, rich content, interactivity, countless experiences, Capacity to respond to the needs of individuals, learning steps and control features of work with computers (Alizadeh *et al.,* 1392; Timuri and Hassani, 2004). The aim of this study was the effect of computer-controlled environment Sustained attention in children with attention deficit disorder / hyperactivity.

MATERIALS AND METHODS

Methods

This study is a randomized clinical trial is a study population of children with attention deficit / hyperactivity rehabilitation clinics was possible. Examples of the range of 4 to 7 years. The sample size of 10 subjects (5 males and 5 females) who were selected on the basis of case-existing psychiatric referral. The following tools were used in this study.
A. Attention Test (continuous performance test)
B. Self-made media
Continuous Performance Test: Continuous Performance Test was created by Roseweld *et al.,* (1956) was used to measure brain lesion initially but gradually expanded its application. The purpose of this test is to assess the maintenance due care and attention was focused on listening to the bell. Has a variety of therapeutic purposes or for research is provided. In all forms of the test subjects must for your attention to a stimulus Attract relatively simple audio or visual stimuli during emergence aims to provide an answer key. This software (CPT) consists of two sets of numbers, driving Persian or images that Each of which is composed of 150 drivers, 30 drivers (20% of the stimuli) Target stimulus can be observed that the participants are expected to respond (Key has pressed) provide any stimulus interval of 500 mms and Each stimulus was presented for 150 mms (Hadyanfar *et al.,* 2000).
Self-made media: The media according to the three circles, squares and triangles is designed After the introduction, the desired shapes and patterns on the objects and Means the baby in different positions are shown and the child is asked to These forms are applied to home appliances. A maze of visual pursuit of Forms is designed and children should use the centralized light (pointer) to move the maze path.

Methods

A pre-test according (CPT) were performed on children of ten 45-minute sessions in 6 consecutive weeks; the subjects were exposed to training. Training sessions and computer screen in a dark room with background sound stimuli were controlled. Environmental conditions were the same for all samples. At the end of the sessions, they were also given the post-test.

RESULTS AND DISCUSSION

Results

To learn more about the nature of the variables is required before data analysis and they should be described as the statistical description of the data prior to statistical inference and Helps to identify patterns among the data. As we have noted in this section Due to the demographic characteristics of the

sample and Using descriptive indices, Such as frequency, frequency and diagrams, to describe and The property's classification (Tables 1 and 2).

Table 1: Frequency distribution of the sample according to the study groups

Frequency percent	Frequency	Statistical Indicators Group
50/00	5	Boys
50/00	5	Girls
100	10	Total

As can be inferred from Table 1, the total sample, 10 were boys and 50% girls and 50% are also included.

Table 2: Table of descriptive indicators (central tendency and dispersion) was applied to the study variables

Maximum	Minimum	Variance	SD	Mean	Number	Statistical Indicators Variable	
141	114	102/55	9/37	119/5	5	Boys	Attention
117	110	5/87	2/87	116/75	5	Girls	(Pre-test)
141	110	70/46	7/97	118/12	10	Total	
150	128	116/03	10/23	136/75	5	Boys	Attention
143	136	13/50	3/36	134/5	5	Girls	(Post-test)
150	128	58/24	6/85	135/6	10	Total	

Results Table 2 shows the descriptive indicators (central tendency and dispersion). The index is calculated from the mean, standard deviation and the trend indicator, index scores tend to be scattered.

Other Results

Before performing the steps of the research hypotheses what needs to be considered issues relating to observe and study the statistical assumptions. The default is that the parametric t-test and t is given, assuming normal distribution (using the Kolmogorov - Smirnov) is. The regression results are shown in Table 3.

Table 3: Test the assumption of normal distribution of variables

Kolmogorov -Smirnov Z		Statistical Indicators Variable of interest
Sig.		
0/84	0/72	Increased attention

Table 4: Results of the t-test mean scores increase varies according to sex

Differences in the level of confidence with confidence 0/95		Mean difference	Significance (p)level	Degree of freedom	t dependent	Index
High	Low					Variable
3/37	-33/37	-17/25	0/038	3	-3/59	Increasing attention (boys)
-15/83	-26/66	-17/75	0/001	3	-12/48	Increasing attention (Girls)
-10/96	-25/28	-17/48	0/001	7	-5/98	Increasing attention (total)

To answer this hypothesis, both the pretest and posttest in shifting attention in children with attention deficit / hyperactivity; using the t-test compare our sex (Table 4).
As the results of Table 2 shows the average grades given variable increases in both boys and girls from pre-test scores are higher. However, more in the analytical part of this difference is discussed.
As the t-test results show that the variable increases in boys, since the t-test P (0/048) with 3 degrees of freedom less than significant level. Criterion (0/05) is calculated, it can be concluded that Due to rising test scores (119/5) and Posttest scores (136/75) in the variables, there was no significant difference, it has been concluded that computer education Increased attention in children with attention deficit / hyperactivity be boys.
The results of the t-test, the variable increase in girls, show, since the t-test P (001/0) with 3 degrees of freedom less than significant level. Criterion (0/01), therefore, concluded that the Due to rising test scores (116/75) and post-test scores (134/5) there were no significant differences in the variables and concluded that computer education has increased attention in children with attention deficit / hyperactivity among the girls.
The results of the t-test show the variable increase in the total sample (total), since the t-test P (0/001) with 7 degrees of freedom less than significant level. Criterion (0/01) is, therefore, concluded that the Due to rising test scores (118/12) and post-test scores (135/6) There were no significant differences in the variables and concluded that Computer training has increased in children with attention deficit total / hyperactivity be ..

Discussion

The aim of this study was to investigate the effect of the Computer controlled environment of sustained attention in children with Attention deficit disorder / hyperactivity was. Statistical analysis of data shows that both groups Significant differences between boys and girls grades the pre-test is. Part, in 2009 a study was conducted to assess the efficacy of selective attention tasks Attention deficit hyperactivity pay sustained attention performance in children Concluded that due to the strengthening of the computer, Can be sustained attention in children with attention deficit-hyperactivity in Improve (Bakhshi, 2009). Givi in lunar research (2012) Effectiveness of software called advance cognitive functions in children with attention deficit / hyperactivity, results showed that this software will work on increasing attention and memory in children with attention deficit disorder / hyperactivity had a positive effect (Ghomri *et al.*, 2012).
The results of this study indicate the usefulness of using computers in the rehabilitation of children with attention deficit disorder / hyperactivity which is consistent with our results. In a large study, Ghomri *et al.*, (2012) called mental stimulus on the effectiveness of rehabilitation computer assistant executive functions and attention deficit disorder / hyperactivity Sustained improvement in operating results, the hypothesis Computer and Cognitive Rehabilitation Assistant confirmed The participants at posttest and follow-up to Base on experimental animals showed significantly improved; The results suggest that changes in the subjects' After completion of treatment and at follow-up remains significant differences were found (Azami, 2012).

Conclusion

According to the results of the studies mentioned above it can be concluded using computer training in a controlled environment may have positive effect on sustained attention in children with attention deficit / hyperactivity.

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