

# The effectiveness of theory of mind training on impulsivity in normal children and hyperactive (ADHD)

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**Abstract:** Objective according the study was to the effectiveness of theory of mind training on impulsivity in normal children and hyperactive (ADHD).

Method this study, a quasi-experimental design (pre-test, post-test with control groups). This study, 20 person preschool level in kindergartens under supervision office well-being city of Sanandaj according to criteria diagnostic Conner's questionnaire and CSI4 test as trainee's children hyper active Identified by the use of sampling, selecting and randomly divided into two groups (10 students) experiments, groups 1 and 2, respectively). Theory of mind for 9 sessions were taught the beginners group, the control group received no training and only during the regular kindergarten program were.

Results The results of this study shows that teaching the theory of mind (impulsivity, attention and vigilance stable) hyperactive children affected and the impact on high ( $P \geq 0/005$ ) is significant

Conclusion Training program theory of mind, hyperactive children has an impact on the amount of attention, according to the program's theory of mind can focus on the treatment of hyperactive children is an effective approach.

**Keyword:** Hyperactive, Theory of mind, impulsive

## Introduction:

Attention deficit and overacting disorder is one the most prevalent disorders in childhood which involves some school children. At the first period of childhood, this disorder appears through symptoms of overacting and impulsivity and also attention deficits will appear by entering in to the process of official education (Berkeley, 2003). In Berkeley's viewpoint children who suffers from overacting/ attention deficit disorder, have great deficits in behavioral inhibition and implementation functions and not having a developed neural brain structure has fundamental role in outbreak of this disorder. Formerly, it was thought that by increasing children age, they can release from this disorder but studies show meaningful signs of these disorders up to the adulthood (Harpy, 2005).

Children who suffer from overacting disorder with attention deficit, make a heterogeneous population and other disorders differ from each other from symptoms severity, problem collectivity and the level of companionship. This disorder is of the most important reasons for children for referring to mental sanitary experts (Herbert, 1994).

Those who have this disorder do not have the ability to pay attention to details or make mistakes when they are doing their school homework or other activities which are caused carelessly. What these people do, are usually unsorted and are doing carelessly and without the required thought. Usually, preserving attention upon homework or games is difficult for these people and sufferers can hardly resist until finishing their homework. Distraction, disability in strong concentration on special motive and discovering complicated motives through an effective and designed method, are other problems which are seen in

children with attention deficit disorder. It is thought that, these problems are related to problems in the field of stable attention. Since, children ability for attention preserving and selected attention is greatly increasing between the ages of 4 to 6, increasing attention span causes children to be able to concentrate on their homework for a longer period of time. But, this ability is not gained easily in children with lack of attention. Little consideration span leads to not completing homework, games or plans and cause their attention to be constantly paid from on activity to the other activity. Also, these children do not act organized in problem solving and can not work with complicated motives or do their homework in an effective and planned way. Also, these problems tend to be more stable by increasing child's age and are shown in form of disruption, failing in completing homework, short attention span for special activities, frequent movement from one activity to another activity (Jokar, 2010).

Evolutionary psychologists emphasis on mind theory phenomenon and believe that, from mind theory viewpoint, overacting children suffer from basic defects. According to Premack and Woodruff (1978), this theory contains the concept of the ability of humans' understanding cognition; cognition objects separately and have different assumption of outside world. Somehow, an individual can inform about his tendencies and mental situations and also other individuals and interfere that purpose in predicting others' behavior (Kobayashi and et al, 2007). The issue of mind theory has caused a lot of researches in recent years and has changed it to one of the most popular research contexts these days. This theory contains the ability which causes easiness in social cooperation and also keeping force on others, for reaching to the goal (Pal and Barzaki, 2007).

According to these definitions, recent primary evidences have shown the effectiveness of mind theory teaching because of overacting activity, among these researches Maos and et al research in (2014) can be referred, which had paid attention to analysis of mind theory improvement motive in children who suffer from attention deficit disorder/ overacting which show that motives cause an improvement in mind theory and empathic functions in children with overacting disorder. Also Mary and et al (2015) in reported that implementation attention and function is related to mind theory in overacting children who have attention defect. Miranda and et al (2013) analyzed similarities and differences in implementation function and mind theory in overacting children and attention defect disorder, through considering similarities and also differences which exist in implementation function and mind theory, results showed that Autism children show more weakness in comparison with overacting children. It is good to say that most of done researches in Iran have paid attention to analyze Autism children (Heidari , 2012 , Mansori , 2011) , retarded children (Ansari Nejad and et al , 2012 ; Ghamrani , Alborzi and Khayyer , 2007 ; Mashhadi and Mohseni , 1385 ; Abdolalleh Zadeh , Rafi , Bahrami , Mir Zamani , Salehi and Hassan Zadeh avval (2011) and also Marzieh Malekan (2013) and compering mind theory and behavioral/brain systems in overacting non – clinical and normal children. Reviewing previous researches showed that, firstly research about variables of this research, specifically teaching mind theory and overacting disorder is very little and limited in the country and secondly, analyzing all of the previous texts show that analyzing mind theory and attention in overacting children has not been considered and paying attention to this issue can cause enough identification and cognition about the effect of mind theory on concentration increasing. therefore, the present research is done with the goal of analyzing the effectiveness of teaching mind theory on impulsivity of overacting normal children in order to determine the issue that whether teaching which is based on mind theory influence the level of impulsivity in overacting children?

**The research methodology**

This research is semi-experimental with pretest-posttest plan with control group.

Diagram layout is as follows:

Groups	Pretest	Experiment	posttest
G <sub>E</sub>	T <sub>1</sub>	X	T <sub>2</sub>
G <sub>C</sub>	T <sub>1</sub>	---	T <sub>2</sub>

**The statistical society:** Statistical society of this research includes all overacting children in kindergartens which are under the control of welfare organization of Sanandaj city in years 1393-194.

**Sampling method:** in this research, sampling method is done in clustered form and then accidental assignment method has used in order to substitute with triable subjects. Sample contains 20 individuals of children who are girls and boys whose age were between 6 to 7 and in preschool level triable subjects should necessarily attending their preschool level) of Sanandaj city in 93-94 educational year. In a way that, 7 kindergartens which have contract with welfare organization are chosen in clustered form from Sanandaj city and were put under analysis. In this case, diagnostic questioner is given to parents and handlers of 215 individuals of kindergarten kids. Then 40 children who have the criterions of overacting/attention defect disorder were identified. Then, 20 children who have the above conditions were chosen randomly were put in a 10 individuals experimental group (mind theory training implementation) and a control group with 10 individuals (without mind theory training) of overacting children.

### **Research tools**

#### **1: Conners new scale of teachers and parents form (2007): (CPRS -48)**

Conners new scale (2007) contains two short and long versions. This scale, evaluates more behavioral problems in comparison with previous scale. Its long version contains 80 questions and 15 to 20 minutes is required for completing it. Short version contains parents 26 questions and teachers 38 questions which requires 5 to 10 minutes. Short version has been used in this research which evaluates four sub- scales of overacting, carelessness, impulsivity and relation with peers. Each of these questions contains 4 options (never, little, average and a lot) which are ordinary scored from 0 to 3. Therefore scores span varies from 0 to 63. Test stability has been reported 0.97 for two scales. Also, its validity includes a domain of 0.64 to 0.88. In Iran, stability of both forms are stated through using Cronbakh alpha method which equals with 0.96 and its validation is done through analyzing the main components and matrix rotating factor, which reach to those factors that Conners has reached in his research (Abdi and Oryani Dana, 1393).

#### **2: Children sickness symptoms questioner csi 4:**

Asprafkyn and Gado (1984; quoted from Hatavi and Berkerly, 2003) designed for sieving children behavioral and emotional disorders and then was used in primary evaluation of attention defect-overacting disorder. This questioner contains 2 lists of parents and teachers which is answered based on Likert four points scale (teachers' form is used in this research). First 18 articles of this questioner is related to attention defect/overacting disorder and articles 1 to 9 contain nine symptoms of carelessness and articles 10 to 18 contain 9 symptoms of overacting and impulsivity and evaluate these eighteen symptoms. Two methods have been designed for scoring children disease questioner: sieving cut score method and score which is based on intensity of disease symptoms, because of more effectiveness and confidence, sieving score is used in many researches(3). Also, sieving score is used in this research. In this method, scoring method is gained through adding phrases which are answered with never, sometimes, often and most of the time options.

#### **3: Continuous Performance Test (CPT):**

Has a lot of usage in evaluating overacting/attention defect disorder and its main object is evaluating stable attention, consciousness and evaluation of momentum controlling or impulsivity. In this test, triable subject should pay its attention to a collection of a relatively simple visual or listening motive and offer his response by pressing a key when a target motive is appeared. Visual motives are presents on computer screen for a short time and triable subject should answer the targeted motive through pressing one of the keys of keyboard. Totally, 150 motives are offered in this test (figure or image). Among these, 30 motives (20%) are considered as target motive and the remained 80 % are considered as non - target motive. Presenting time for each motive is 200 thousandth of second and a time between 7 motives is one second. Considering an experimental level, the time of executing an experiment for more understanding of triable subjects before entering to the main level is 200 seconds. According to the results of Hadian fard, Najjarian, Shekar Shekan and Hamrabi Zadeh, Honar mand studies (1379) it was determined that the Persian form of continuous performance test has appropriate validity and stability. Stability factor of different parts of the test was between 7 to 96 % in their study. Test validity is done with the use of scale validation method through comparing normal group (30 boy school students) and overacting/ attention

defect group (25 boy school students). Comparing statistical average of these two groups in different parts of the test showed a meaningful difference between the function of these two groups and results of this research has been similar with previous researches in other countries. Eventually, last results are recorded in form of the following variables: 1) The number of times of failures which contains triable subjects answers to non-target motives (if shape or number is different and triable subject presses the button). This variable is impulsivity scale. 2) the number of limitation failure which contains the number of targets which variable subjects has lost and has not reacted well toward them. This variable will be a scale for analyzing attention. 3) Reaction time , is a time which is recorded between motive presentation and triable subject answer. 4) number of sorting items which triable subject distinguish them successfully. (Mashhadi and Mohesni , 1385).

**Execution method:**

This research is performed through using a half-experimental plan (pre - test – post - test with controlling group). After doing the necessary coordination with kindergartens which are supervised by welfare organization of Sanandaj city, samples are chosen in clustered form seven kindergartens of Sanandaj city in present research, the item is put under analysis. At first, Conner's questioners of overacting/ attention deficit disorder diagnosis ( parents and teacher form and children diseases questioner csi4) were given to parents and 6 to 7 age children handlers of preschool centers (including girls and boys) by kindergarten managers and were gathered and scored, after completing. Overacting children were recognized and then triable subjects were put in controlling and experiment group in a form of accidental assignment, children with overacting/attention defect disorder have been put in two groups, each of them have ten members and before starting group intervention, both groups were put under evaluation individually in a meeting and through using research tools (continuous performance test cpt). (Pre-test); Mind theory experimental group is trained individually in following and after finishing the intervention and passing the period both groups ( controlling and experimental) were evaluated individually by research tools ( continuous performance test cpt) (post-test). Gained data(s) from pre-test and post-test in each group were analyzed.

**The treatment method:**

Treatment protocol training sessions theory of mind.

Meetings	Issue
First	justify and implement pre-test
Second	Education emotions (sadness and joy)
Third	Education emotions (anger, fear)
Fourth	Education position emotions
Fifth	Education position emotions
Sixth	Education desire
seventh	Education desire
Eighth	Education believe (Desire fulfilled and unfulfilled)
ninth	Education believe (Desire fulfilled and unfulfilled)
Tenth	run pretest

**Data(s) analysis method:**

In this research, descriptive statistical methods (such as average and standard deviation) and also inferential statistical methods such as analysis of covariance (ANCOA) for analyzing pre-test and post-test and the level of mind theory teaching effect were used in order to data(s) analysis.

**Findings:**

Table 1: Mean and standard deviation of the pre-test and post-test in control and experimental groups

variable	group	Frequencies	Experimental		Contorol		
			mean	Std. Deviation	mean	Std. Deviation	
impulsivity	Pre-test	Wrong answer	10	59.20	29.758	37.30	12.979
	Post-test	Wrong answer	10	9.10	1.197	31.10	11.120

As Table 1 shows the results for each group of 10 participants and an average pre-test experimental and control groups, respectively, 59.20 and 37.30 and standard deviation impulsivity 29.758 and 12.979 ,respectively. But the average impulsivity in post-test experimental and control groups, respectively, 9.10 and 31.10 and standard deviation impulsivity was 1.197 and 11.20.

For statistical analysis of data in this theory was used analysis of covariance (ANCOVA). In this analysis, the mean post-test with an average of group, and comparing the control and expermental pre test as auxiliary variable .but is necessary to account the condition of homogeneity and declivity of regression and equally in variance . it's reported at table 2 and 3.

Table 2: Levene's Test

F	df1	Df2	Sig
2.741	1	18	0.115

The information indicates in the table 2, in which assumption of equality in error Diaspora/scattering have been achieved for impulsivity variable. F-value is obtained at a high level 0/05. so that an hypothesis of variance analyses have been achieved for impulsivity.

Tests 3: Between-Subjects Effects shib regression

variables	Sum of Squares	df	Mean Square	F	Sig
group	4.748	1	4.748	0.132	0.721
pretest	565.909	1	565.909	17.736	0.001
Group*pretest	488.473	1	488.473	13.583	0.112
Error	572.412	16	35.963		
Total	11215.000	20			

As can be seen in the table 3, and the interaction between the groups and pre test at impulsivity was not significant In other words, the data supports the hypothesis of homogeneity of regression slopes (F=13.583

and  $P < 0.112$ ). Therefore, the analysis of covariance was used to evaluate the hypothesis that the results, are presented in Table 4

Table 4: Results of the analysis of covariance on the average of the pre-test and post-test groups experimental and the control in variable of impulsivity

variables	Sum of Squares	df	Mean Square	F	Sig
pretest	142.615	1	142.615	2.279	0.150
group	3125.688	1	3125.688	49.946	0.000
Error	1063.885	17	62.581		

As can be seen in the table 4, after adjusting for pretest scores between the three groups experimental and control There was a significant difference Therefore, the null hypothesis of no difference between the two groups will be rejected. In other words, learning theory of mind is effective on impulsivity in normal children and hyperactive (ADHD) and this impact is great/ significant.

#### Discussion and conclusion:

In order to analyze mind theory teaching, mind theory teaching influences momentum control or overacting children impulsivity, ANCOVA covariance test was used. Results of this test showed that mind theory teaching has a positive effect on controlling momentum or impulsivity and the results of these researches were similar to (Mirenda, 2013, Gerazetti, 2012, Bouhler and et al, 2011).

To determine this theory, it can be said that mind theory is paid attention in overacting children and attention defect disorder and Autism and results showed that considering similarities, there also some differences in execution performance and mind theory (Miranda, 2013). Using mind theory inhibitory control, mind defect disorder showed that inhibitory control and mind theory performance is more popular in smaller children than older ones (Bouhler, 2011). In determining the gained results from this research it can be said that one of the reasons for impulsivity in children is mental-social reason which is caused by different reasons such as failure, learning an aggressive behavior from pattern, lack of attention and affection, training which is not consistent with intense discipline. It is possible to reduce impulsivity in children by making them to attend mind theory teaching classes, and they can learn required skills in these classes and by enriching their behavior treasury, they can show compatible behavior in different situations. Analyzing the relation between mind theory and functional exciting development with preschool children aggressiveness showed that mind theory weakness does not necessarily lead to aggressiveness, but aggressive children have delay in level of functional exciting development. It declared that, there is a mental defect which most of children who are unable to learn are faced it and that is the lack of ability in accuracy concentration and paying attention to desired subject and also, in children who are unable to learn, their developing process in gaining accuracy and natural attention has faced delay or pause.

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