

The Comparison of Cognitive Emotion Regulation of Children with Attention Deficit- hyperactivity Disorder and Normal Children

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ABSTRACT

This study aimed to compare the cognitive emotion regulation of children with attention deficit- hyperactivity disorder and normal children. This was a ex-post facto research. The population consisted of all elementary and middle school students in Zanjan in 2011- 2012. The sample were selected using convenience sampling method (n=60). They were divided into four groups each with 15 subjects: attention deficit, hyperactive, combined, and normal children. The Conners Rating Scale- teacher form, Akhenbakh questionnaire- parent form, and CHILD SYMPTOM INVENTORY-4 (CSI-4) were used for selecting the subjects. The Cognitive Emotion Regulation test was conducted on each of the four groups to compare the cognitive emotion regulation between normal children and children with attention deficit- hyperactivity disorder. The one way ANOVA and Tukey test were used for analyzing the data. The results showed that there was significant difference between attention deficit, hyperactive, combined, and normal students in terms of cognitive emotion regulation. Also the results showed that there was a significant difference between the means of attention deficit, hyperactive, combined, and normal students in terms of adaptive and maladaptive strategies of cognitive emotion regulation. It was concluded that in terms of cognitive emotion regulation that the children with attention deficit- hyperactivity disorder had poorer cognitive styles than normal children.

Keywords: Cognitive emotion regulation strategies, children with attention deficit- hyperactivity disorder, normal children

METHODOLOGY

This was a ex-post facto applied research. The population consisted of all elementary and middle school students in Zanjan in 2011- 2012 academic year. The sample were selected using convenience sampling method (n=60). They were divided into four groups each with 15 subjects: attention deficit, hyperactive, combined, and normal children. The Conners Rating Scale- teacher form, Akhenbakh questionnaire- parent form, and CHILD SYMPTOM INVENTORY-4 (CSI-4) were used for selecting the subjects by referring to counseling center in training and education system. The Cognitive Emotion Regulation test was conducted on each of the four groups to compare the cognitive emotion regulation between normal children and children with attention deficit- hyperactivity disorder. The one way ANOVA and Tukey test were used for analyzing the data. The descriptive statistics including frequency, graphs, percentages, means, and descriptive standard deviation were used for analyzing the data. The Tukey test and one way ANOVA test were used to examinetheresearch hypotheses.

RESEARCH TOOLS

- Cognitive Emotion Regulation Questionnaire for Children: The questionnaire was developed by Garnfsky et al. (2002) to identify cognitive coping strategies of children after experiencing adverse events. It consists of 36 items and 9 subscales including self-blame, acceptance, rumination, positive refocusing, refocusing on planning, positive refocusing, perspective-taking, tragedy-making, and blame others. The scale scores range from 1 (almost never) to 5 (almost always). Each subscale consists of 4 items. The total score for each subscale is obtained by adding the scores of

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items. Thus, the range of scores for each subscale will be between 4 and 20. High scores on each subscale reflect the greater use of the strategy in coping with stressful or negative events. The reliability and validity of Cognitive Emotion Regulation questionnaire’s Persian version were evaluated by Mashhadi and colleagues (2012) in Iran. The Cronbach's alpha coefficients obtained for all subscales of both sexes and all the participants were desirable. The range of all items correlations is greater than 0.4.

- **Conners Teacher Rating Scale (CTRS):** This scale evaluates 6 factors including attention deficit / hyperactivity, behavior, emotional extremes, being unsociable, being fantastic, inattention, and anxiety-passivity. It has 4 options and is scored from 0 to 3. It has 39 items which measure three domains of classroom behavior, participation in group, and attitudes to authority.
- **The Child Symptom Inventory-4 (CSI-4):** This questionnaire was designed for the first time in 1984 by Sprafkin and Gadv according to Third Diagnostic and Statistical Manual of Mental Disorders to screen 18 behavioral and emotional disorders in children 5 to 12 years old. In 1994, the Diagnostic and Statistical Manual of Mental Disorders was revised with minor changes in fourth edition and published with the name. This questionnaire has two parent and teacher forms. The Parent Form has 12 questions which are regulated for 11 major groups and an extra group of behavioral disorders. The Teacher Form with 77 questions covers 9 major groups of behavioral disorders. These disorders include: Attention deficit- hyperactivity disorder, Defiant Disorder - disobedience - conduct disorder, generalized anxiety disorder, social phobia, separation anxiety disorder, thinking- practical obsession, specific phobia, major depressive disorder, dysthymic disorder, schizophrenia, pervasive developmental disorder, Asperger's disorder, motor and vocal tics, posttraumatic stress disorder, and disposal disorder. In a study by Gadv and Sprafkin (1944, quoted by Mohammed Ismail, 2004), the retest reliability over a six-week for the four diagnostic categories was obtained from 70 to 89%.

FINDINGS

Hypothesis1: there is significant difference between cognitive emotion regulation of children with Attention deficit- hyperactivity disorder and normal children.

Table1. The results of one way ANOVA for comparison of groups in terms of cognitive emotion regulation components

Variable	Source changes	Variance ¹	Degrees of freedom	Mean square ²	F	Significance level
Self-blame	Between groups	98.66	3	32.22	95.5	001.0
	Within groups	210	56	75.3		
Blaming others	Between groups	24.17	3	24.17	80.3	015.0
	Within groups	86.253	56	53.4		
Tragedy making	Between groups	38.57	3	12.19	92.6	0.000
	Within groups	80.154	56	76.2		
Rumination	Between groups	73.101	3	91.33	98.5	001.0
	Within groups	20.317	56	66.5		
Acceptance	Between groups	40.132	3	13.44	22.19	0.000
	Within groups	53.128	56	2.29		
Positive refocusing	Between groups	93.34	3	64.11	57.1	207.0
	Within groups	46.415	56	41.7		
Refocusing on planning	Between groups	73.138	3	24.64	42.11	0.000
	Within groups	66.226	56	04.4		
Positive refocusing	Between groups	06.120	3	02.40	57.10	0.000
	Within groups	86.211	56	78.3		
Perspective-taking	Between groups	18.154	3	39.51	58.12	0.000
	Within groups	66.228	56	08.4		

* $P \leq 0.05$

According to Table 1, there is a significant difference between the means of hyperactive, attention deficit, combined, and normal students in terms of self-blame, blame others, tragedy- making,

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rumination, acceptance, positive refocusing, refocusing on planning, and perspective-taking ($p < 0.05$). However, there is no significant difference between hyperactive, attention deficit, combined, and normal students in terms of positive refocusing factor ($p > 0.05$).

The Tukey test was used to verify which of the groups has the observed difference.

Table2. Tukey test to check the significance of maladaptive strategies and adaptive strategies of Cognitive Emotion Regulation

Variable	Group	1	2	3	4
		Mean	Mean	Mean	Mean
Self-blame	1-hyperactive	-	40.0	667.0	* 73.2
	2. Combined	-	-	266.0	* 33.2
	3. Attention Deficit	-	-	-	* 066.2
	4. Normal	-	-	-	-
Blaming others	1-hyperactive	-	266.0	133.0	* 26.2
	2. Combined	-	-	133 . 0-	2
	3. Attention Deficit	-	-	-	* 13.2
	4. Normal	-	-	-	-
Tragedy making	1-hyperactive	-	* 93.1	60 . 0-	733.0
	2. Combined	-	-	33.1	* 66.2
	3. Attention Deficit	-	-	-	33.1
	4. Normal	-	-	-	-
Rumination	1. hyperactive	-	066.1	066 . 0-	* 46.2
	2. Combined	-	-	1	* 53.3
	3. Attention Deficit	-	-	-	* 53.2
	4. Normal	-	-	-	-

* $P \leq 0.05$

The Tukey test results in Table 2 show that in terms of self-blame component, the hyperactive, attention deficit, and combined groups are at a higher level than the normal group. In terms of blaming others component, the hyperactive and attention deficit groups are at a higher level than the normal group. In terms of tragedy- making component, the combined group is at a higher level than the normal group. In terms of rumination component, the hyperactive, attention deficit, and combined groups are at higher levels than normal group.

Table3. Tukey test to check the significance of adaptive strategies of Cognitive Emotion Regulation

Variable	Group	1	2	3	4
		Mean	Mean	Mean	Mean
Acceptance	1-hyperactive	-	733 . 0-	333. 0-	* 73.3
	2. Combined	-	-	4	* 3
	3. Attention Deficit	-	-	-	* 40.3
	4. Normal	-	-	-	-
Refocus on planning	1-hyperactive	-	866.0	80.0	* 86.2
	2. Combined	-	-	066.0	* 73.3
	3. Attention Deficit	-	-	-	* 66.3
	4. Normal	-	-	-	-
Positive refocusing	1. hyperactive	-	266 . 0-	2	* 26.3
	2. Combined	-	-	466.0	* 46.3
	3. Attention Deficit	-	-	-	* 66.3
	4. Normal	-	-	-	-
Perspective taking	1. hyperactive	-	40 . 0-	533 . 0-	* 66.3
	2. Combined	-	-	933. 0-	* 06.4
	3. Attention Deficit	-	-	-	* 13.3
	4. Normal	-	-	-	-

* $P \leq 0.05$

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The Tukey test results in Table 3 show that in terms of acceptance component, the normal group is at a higher level than the hyperactive, attention deficit, and combined groups. In terms of refocusing on planning component, the normal group is at a higher level than the hyperactive, attention deficit, and combined groups. In terms of positive re-evaluation component, the normal group is at a higher level than the hyperactive, attention deficit, and combined groups. In terms of perspective taking component, the normal group is at a higher level than the hyperactive, attention deficit, and combined groups.

Hypothesis2: Compared with children with attention deficit- hyperactivity disorder, the normal children use adaptive strategies of Cognitive Emotion Regulation.

Table4. The results of one way ANOVA for comparison of four groups in terms of adaptive strategies of Cognitive Emotion Regulation

Variable	Source changes	Sum of squares	Degrees of freedom	Mean square	F	Sig.
Adaptive strategies	Between groups	58.2604	3	19.868	29.23	0.000
	Within groups	19.868	56	26.37		

According to Table 4, there is significant difference between the means of hyperactive, attention deficit, combined, and normal students in terms of adaptive strategies of Cognitive Emotion Regulation ($p < 0.05$).

The Tukey test was used to verify which of the groups has the observed difference.

Table5. Tukey test to check the significance of adaptive strategies of Cognitive Emotion Regulation in four groups

Variable	Group	1	2	3	4
		Mean	Mean	Mean	Mean
Adaptive strategies	1-hyperactive	-	066.1	133.0-	* 86.14
	2. Combined	-	-	20.1	* 93.15
	3. Attention Deficit	-	-	-	* 73.14
	4. Normal	-	-	-	-

* $P \leq 0.05$

The Tukey test results in Table 5 show that in terms of adaptive strategies of Cognitive Emotion Regulation, the normal group is at a higher level than the hyperactive, attention deficit, and combined groups.

Hypothesis3: Compared with normal children, the children with attention deficit- hyperactivity disorder use maladaptive strategies of Cognitive Emotion Regulation.

Table6. The results of one way ANOVA for comparison of four groups in terms of maladaptive strategies of Cognitive Emotion Regulation

Variable	Source changes	Sum of squares	Degrees of freedom	Mean square	F	Significance level
Mal-adaptive Strategies	Between groups	53.955	3	51.318	79.20	0.000
	Within groups	86.857	56	31.15		

According to Table 6, there is significant difference between the means of hyperactive, attention deficit, combined, and normal students in terms of maladaptive strategies of Cognitive Emotion Regulation ($p < 0.05$).

The Tukey test was used to verify which of the groups has the observed difference.

Table7. Tukey test to check the significance of maladaptive strategies of Cognitive Emotion Regulation in four groups

Variable	Group	1	2	3	4
		Mean	Mean	Mean	Mean
Mal-adaptive strategies	1-hyperactive	-	33.2-	133.0	* 20.8
	2. Combined	-	-	46.2	* 53.10
	3. Attention Deficit	-	-	-	* 066.8
	4. Normal	-	-	-	-

The Tukey test results in Table 7 show that in terms of maladaptive strategies of Cognitive Emotion Regulation, there is significant difference between the means of hyperactive, attention deficit, combined, and normal groups. However, in terms of maladaptive strategies of Cognitive Emotion Regulation, the hyperactive, attention deficit, and combined groups are at a higher level than the normal group.

DISCUSSION AND CONCLUSION

Hypothesis1: there is a significant difference between cognitive emotion regulation of children with Attention deficit- hyperactivity disorder and normal children.

The results of evaluating the first hypothesis indicated that compared with normal students, the students with attention deficit- hyperactivity disorder use Cognitive Emotion Regulation maladaptive strategies including self-blame, blaming others, disaster making, and rumination. Also, compared with students with attention deficit- hyperactivity disorder, the normal students use Cognitive Emotion Regulation adaptive strategies. The results of this hypothesis are consistent with the findings of Schmidt, Ravch, Gould (2005), Khoshabi and colleagues (2007); Salehi et al. (2008); Hassani et al (2009), Kothari and Ali-Zadeh (2010), Ghamari Givi, Nrimani, and Rabie (2010); Nosratabad Hashemi (2010); Mashhadi et al (2011), Bakhshi (2011), and Behrouz et al (2012).

Hypothesis 2: Compared with children with attention deficit- hyperactivity disorder, the normal children use adaptive strategies of Cognitive Emotion Regulation.

The results of evaluating the second hypothesis indicated that compared with students with attention deficit, hyperactive, and combined groups, the normal students use Cognitive Emotion Regulation adaptive strategies. The results of this hypothesis are consistent with the findings of Schmidt, Ravch, Gould (2005), Khoshabi and colleagues (2007); Salehi et al. (2008); Hassani et al (2009), Kothari and Ali-Zadeh (2010), Ghamari Givi, Nrimani, and Rabie (2010); Nosratabad Hashemi (2010); Mashhadi et al (2011), Bakhshi (2011), and Behrouz et al (2012).

Hypothesis 3: Compared with normal children, the children with attention deficit- hyperactivity disorder use maladaptive strategies of Cognitive Emotion Regulation.

The results of evaluating the third hypothesis indicated that compared with normal children, the children with attention deficit- hyperactivity disorder use maladaptive strategies of Cognitive Emotion Regulation. The results of this hypothesis are consistent with the findings of Schmidt, Ravch, Gould (2005), Khoshabi and colleagues (2007); Salehi et al. (2008); Hassani et al (2009), Kothari and Ali-Zadeh (2010), Ghamari Givi, Nrimani, and Rabie (2010); Nosratabad Hashemi (2010); Mashhadi et al (2011), Bakhshi (2011), and Behrouz et al (2012).

This study is important, because it only compares the Cognitive Emotion Regulation in Children with Attention deficit- hyperactivity disorder and normal children. Given that this study showed that compared with normal students, the students with attention deficit- hyperactivity disorder use Cognitive Emotion Regulation maladaptive strategies, it is suggested that in the treatment programs, special attention will be paid to maladaptive strategies such as self-blame, blaming others, tragedy making, and rumination.

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