

The effect of emotion regulation training in decreasing emotion failures and self-injurious behaviors among students suffering from specific learning disorder (SLD)

Abbas Habibzadeh¹, Saeed Pourabdol^{*2}, Shahzad Saravani³

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Abstract

Background: A great deal of attention has been given to the study of learning disorders. Hence, the aim of this research was to study the effect of emotion regulation training in decreasing emotion failures and self-injurious behaviors among students suffering from specific learning disorder.

Methods: This was an experimental study with the pre-test, post-test and a control group. Research population included all 5th grade male students suffering from specific learning disorder (case study: 5th grade students in Ardabil in 2015). Research sample included 40 male students suffering from specific learning disorder (SLD) who were selected through multi-step cluster sampling and classified into two groups: Experimental group (n= 20) and control group (n= 20). The following tools were used for data collection: Kay Math mathematic Test, Raven Intelligence Test, Reading Test of Shafiei et al, Falahchay Writing Expression, Emotion Failures Scale, Self-Injurious Behavior Questionnaire and Diagnostic Interview based on DSM-5. Data were analyzed by multivariate of variance analysis (MANOVA) model in the SPSS software version 22.

Results: The results of MANOVA revealed that emotion regulation training was effective in decreasing emotion failures in all parameters (difficulty in describing feelings, difficulty in identifying feelings, and externally oriented thinking style) and self-injurious behaviors in students suffering from specific learning disorder ($p < 0.001$).

Conclusion: In this study, it was found that since emotion regulation training can have a remarkable effect on reducing negative emotions and increasing the positive ones; this treatment can play an eminent role in decreasing emotion failures and self-injurious behaviors in such students.

Keywords: Specific Learning Disorder, Self-Injurious Behaviors, Emotion Failures, Emotion Regulation.

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Introduction

Learning disorder is one of the issues that attract a great deal of attention. The term was primarily suggested by Samuel Kerck in 1963 to describe a group of children who had problems in developing language, speech, reading, and communicative skills. Students suffering from these disorders, without some special helps, have weak performance in such skills; their friends and families consider them as incapable; and as

a result, they have a low self-esteem and motivation. On the other hand, children suffering from learning disorders form a group of exceptional children with a normal appearance and normal or even higher IQ. Most of the time we cannot identify them before school age, but with entering into school, particularly at their 1st and 2nd grade, their problems will gradually appear in reading, writing, calculating, and spelling. These children may have prob-

¹. Assistant Professor of Educational Psychology, University of Qom, Qom, Iran. Habibzade2008@yahoo.com

². **(Corresponding author)** MA in Psychology, University of Mohaghegh Ardabili, Ardabil, Iran. Saeed.pourabdol@yahoo.com

³. PhD Students of Educational Psychology, Islamic Azad University of Qom, Qom, Iran. shahzad_saravani@yahoo.com

lems in learning one or several academic skills, but merely poor educational performance in one area or even in several areas is not enough to identify children suffering from learning disorder, because poor educational performance may result from factors other than learning disorders (1). In DSM-5 (Diagnostic and Statistic Manual of Mental Disorder) learning disorder is renamed as specific learning disorder; and reading, writing and mathematical disorders that were considered as independent disorders are now considered as specifier of specific learning disorder, meaning that after this psychiatrists or clinical psychologists will never say that a child suffers from reading disorder, but instead they will suggest that the child suffers from specific learning disorder with the specifier of reading (2).

One of the factors that students may be involved with and has not been given enough attention is emotion failures or alexithymia. Inability in cognitive processing of emotional information and regulation of emotions is called alexithymia (3). This concept was primarily suggested by Sifneos (4). Sifneos defines people suffering from alexithymia as people with physical-mental symptoms who cannot identify and express emotions. Emotion failures have three characteristics: Difficulty in identifying feelings, difficulty in describing feelings and externally-oriented thinking styles; difficulty in identifying feelings occurs when an individual is in distress trying to make a distinction among his/her feelings; difficulty in describing feelings occurs when an individual cannot express what he/she has felt emotionally; and externally oriented thinking occurs when an individual tends to think about affairs externally, which is in direct contradiction with internally oriented thinking. People suffering from alexithymia or emotion failures exaggerate normal bodily incitements, misinterpret bodily signs of emotional provocation, show their emotional distress through bodily complaints and in measures taken for treatment try to find physical

signs (3). Recent researches indicate that emotion failures have a negative impact on psychological and emotional welfare and a dangerous factor in causing emotional distress, psychological problems and lack of mental health. There is a relationship between emotion failures and pain, arthritis, overweighting, blood pressure, irritable bowel syndrome, depression (5), self-injurious behaviors (6), nervous lack of appetite, overeating, and job exhaustion (7).

Self-harms or self-injurious behavior has previously been used in the field of education services related to learning disability, and the term self-injury had been used a lot in the case of mental health (8). Self-harm behavior is defined as a deliberate act to destroy or change body tissues that damage tissues (9,10). This term includes behaviors like self-injury (self-beating) and many other indirect forms of body injury (11,12). Whatever their culture is, youths (teenagers) show self-harm behaviors (13). Moreover, self-harm behavior is defined as behaviors resulting from an individual's damage, bodily or psychic harm and violent behavior towards himself. Evidences show that people suffering from learning disorder damage themselves directly (14). Some researchers have reported that a high percent of students with learning disability have had self-harm behavior. The degree of self-injury in students suffering from learning disability varies from 1.7% to 24% (15), but it is reported 41% in some official studies (16). Fifty two systematic researches on self-harm behaviors were published from 2005 to 2011 worldwide; in these studies, the frequency of self-harm behavior among students was 16.1, whereas that of clinical samples varied from 40% to 80% (17).

Emotion regulation training is one of the effective factors in decreasing emotion failures and self-harm behaviors in students suffering from specific learning disorder. Regulation of emotion includes all conscious and unconscious strategies used to increase, preserve and decrease emotional, behavioral and cognitive parameters of an emotional response and it is referred to the

ability to regulate experience, and understanding and expressing emotions (18). The study of psychological texts and studies show that regulation of emotion is a very important factor in assessing the health status and having successful social interactions (19,20); and deficiency in regulating emotion is related to some internal disorders such as depression, anxiety and social isolation, and external disorders such as criminality and aggressive behaviors. Emotion regulation training decreases and controls negative emotions and use them in a positive manner. Studying the role of emotion regulation in temperament, affection and self-injurious behaviors indicate that negative emotion regulation strategies predict negative temperament, low satisfaction, low positive affection, and high self-injurious behaviors; and positive emotion regulation strategies predict low negative affection (21). Moreover, there is a relationship between emotion regulation strategies and the decrease in negative emotions and affective events. Furthermore, concentrating on positive strategies of emotion regulation promotes understanding of emotion management (22). With respect to the interventions based on regulation of emotions, previous studies have found the efficacy of such a treatment. In one study, it was revealed that cognitive-emotion interventions are effective in perceiving emotional-social behaviors and in modifying complicated behaviors of children suffering from learning disability; they believed that such interventions increase students' thinking ability with regards to hypothesizing and understanding witty remarks in social relations (23,24). In another study, it was found that recognition and regulation of emotions and training the manner of solving social problems with cognitive method had a significant effect in improving the performance of students suffering from learning disability in the case of solving social problems, decreasing unsuitable behaviors of aggression, seclusion and emotion failures. Moreover, the results showed an improvement in students' judgment and

an increase in their social self-efficacy in compatibility and increasing friendly behaviors (25-27).

With respect to the role of emotion regulation problems in retention of emotional disorders and self-harm behaviors, it seems that training and applying emotion regulation skills can help improve this area of treatment. Hence, the aim of this study was to answer this question: Is emotion regulation training effective in decreasing emotion failures and self-injurious behaviors of students suffering from specific learning disorder (SLD)?

Methods

This research was conducted experimentally through pre-test, post-test and a control group. Research population included all 5th grade male students suffering from specific learning disorder (case study: 5th grade male students in Ardabil in 2015). For sample selection, first we selected 294 students from five schools (2 classes from each school) through multi-step cluster sampling; all students of the selected classes were evaluated through Academic Achievement test, Kay Math mathematic Test, Diagnostic Test of Reading Disorder and Test of Writing Disorder. Then cases who were suspicious of having specific learning disorder underwent a clinical interview. Finally, Revan intelligence test was used to identify the lack of any mental disability in the selected students; and those students with IQ score of lower than 90 were omitted from the sample. At the end, 42 students suffering from specific learning disorder were identified through the aforementioned tools. Then 40 students were selected through simple random sampling. Although the minimum number of the sample in experimental studies must be 15 (28), in this research we selected 40 individuals (suffering from specific learning disorder) to increase external validity.

Research Tools

Structured Clinical Interview on the basis of Symptoms in DSM-5: In this research, to

identify symptoms of specific learning disorder and their specifiers, we used structured clinical interview on the basis of symptoms described for this disorder in DSM-5.

Test of Reading Disorder: This test was developed by Shafiei et al. (29) in a study titled "Designing and Constructing a Screening Test to Diagnose Reading Disorder among 1st to 5th grade primary school students in Isfahan." The main part of this test for every grade includes a 100-word reading comprehension text which has been confirmed by the experts and authorities of this field. This test was conducted on 200 male and female 1st to 5th grade primary school students who were selected randomly from among 1000 students from five different regions of Esfahan. The research was conducted on two groups: One group with reading disorder and a control group. Findings revealed a high correlation between scores of rate and accuracy of reading and the total test score. The reported test reliability on the basis of Cronbach's alpha was 0.77 and difference between the averages of the two groups was significant ($p < 0.01$). With respect to the obtained results, this test can be used as a useful screening test for rapid diagnosis of reading disorder among 1st to 5th grade primary schools students.

Kay-Math mathematic Test: Kay-Math mathematic test was normalized by Kenoli. It is used to identify advantages and disadvantages of students in different mathematical areas. On the basis of Cronbach's alpha, the coefficient of reliability in this test is 0.80 (30). We used this test to identify students with mathematical disorder.

Test of Writing Expression: In this research, we used dictation tests developed and validated by Falahchay. Validity of these tests was confirmed by experienced applicants and teachers; and on the basis of researchers method its reliability was estimated to be 0.91 to 0.95 (31).

Revan Intelligence Test: This test was developed by Revan (32) in England to measure intelligence among 9 to 18 age

groups; it contains 60 items (five 12-item series). In this test, the average of internal validity coefficient is 0.90 and the average of retest reliability coefficient is 0.82. The obtained test correlation through intelligence test of Wechsler, Stanford-Binet, Labyrinth Proteus and Goodenough ranged from 0.40 to 0.75.

Scale of Emotion Failures (TAS-20): Toronto emotion failures (alexithymia) scale of children and teenagers is taken from the original version of a questionnaire related to adult alexithymia (33). This 20-item questionnaire is graded on the basis of a 3-point scale (totally, somewhat and not at all), and three factors of difficulty in identifying feelings (7 items), difficulty in describing feelings (5 items) and objective thinking style (8 items) are measured on the basis of a 5-point Likert scale ranging from point one "totally disagree" to point five "totally agree" (34). In this scale, questions 4, 5, 10, 18, and 19 are graded inversely; questions 2, 4, 7, 12, and 17, questions 1, 3, 6, 9, 11, 13, and 14 and questions 5, 8, 10, 15, 16, 18, 19, and 20 evaluate difficulty in describing feelings, difficulty in identifying feelings and concentration on external experiences, respectively. The obtained reliability for dependent variable and independent variables has been proven to be high with Cronbach's alpha coefficients of well over 0.75. The reported correlation coefficients of micro-scales of this test with psychic symptom checklists range from 0.17 to 0.48 (34). In the Persian version of the scale of alexithymia, the coefficients of Cronbach's alpha for the total alexithymia, and the three sub-scales of difficulty in identifying feelings, difficulty in describing feelings and objective thinking are 0.85, 0.82, 0.75, and 0.72, respectively.

Questionnaire of Self-injurious Behaviors: This questionnaire is a self-report questionnaire, whose reliability and validity has obtained by Gratz (35). The items in this questionnaire are collected through clinical observations, self-reporting by people with self-injurious behaviors, and other self-injurious behaviors reported in

other texts. The finished form of this questionnaire was changed by Lundh, Karim and Quilisch from 17 to 16 items (36).

Method of Conducting Research: After acquiring permission and referring to schools and collecting samples, we randomly selected 20 students as the experimental group and 20 as control the group from all students identified with specific learning disorder. When briefing the participants about the aim of the study, we asked them to participate in a course to treat this disorder. Before starting the training methods, we tested both groups with a pretest and asked them to fill the questionnaires. Treatment sessions included eight 90-minute group sessions once a week, which was held in a place determined by Ardabil (A city in Northwest of Iran) Education Office. At the end of this course, we tested both groups through a posttest. The obtained data were analyzed using SPSS software and multivariate analysis of variance; $p < 0.05$ was considered as significant.

A summary of functional instructions of the of emotion regulation training is presented in Table 1.

Results

The mean $\pm$ SD age of the experimental group is 10.2 ± 0.44 yr, and those of control group are 10.3 ± 0.39 yr. (age ranges: 10-

11yr).

As demonstrated in Table 2, the mean (SD) of the pretest total score in the experiment group was 71.4 (7.39) for emotion failures and it was 40.6 (5) for the posttest in this group. Moreover, the mean (SD) of the pretest total score for emotion failures was 63.6 (6.63) in the control group and the posttest was 65.0 (7.79) in this group. According to this table, the mean (SD) of the pretest total score for self-injurious behaviors of the experiment group was 38.8 (2.32) and that of the posttest was 24.9 (2.82) for this group. Moreover, the mean (SD) of the pretest total score for self-injurious behaviors of the control group was 37.6 (2.30) and it was 38.1 (2.14) for that of the posttest this group.

Before using multivariate analysis of variance for observing the hypotheses, we used tests of Box and Leven. On the basis of Box's test, which was not significant for any variable, the equality condition of variance/covariance was observed correctly ($p = 0.152$). On the basis of Leven test, which was not significant for any variable, the equality condition of intergroup variances was observed.

The results of Wilkes' lambda test indicated that group effect was significant on the variables of emotion failures and self-injurious behaviors [$P \leq 0.001$]. The above

Table 1. Summary of Operating Instruction Sessions of Emotion Regulation Training

Emotion Regulation Training
1 st session: Pretest, familiarization and conceptualization
2 nd session: Review of the previous session, training students in positive emotion (happiness, fondness and love), and paying attention to positive emotions and showing the need to use positive emotions through giving examples in an imaginative way, assigning homework: writing major positive emotions on the required list.
3 rd session: Review of the last session; providing information and talking about negative emotions (anxiety, sadness, aversion and anger) and paying attention to negative emotions and showing the need to use (or not to use) negative emotions through giving examples in an imaginative way, assigning homework: writing major negative emotions on the required list.
4 th session: Review of the last sessions, training students in positive emotion acceptance, and teaching them how to accept positive and negative consequences of positive emotions without any pre-judgment; homework: they had to ask their parents and friends about the level of their positive emotions and write them on the list.
5 th session: It was the same as 4 th sessions but for negative emotions.
6 th session: Review of the last session; training reevaluation and expressing positive emotions, teaching how to experience positive emotions mentally (how to experience happiness, fondness and love), mental prohibition and teaching how to express these feelings suitably.
7 th session: Training re-evaluation and expressing negative emotions: review of last sessions, teaching how to experience negative emotions mentally (how to experience anxiety, sadness, aversion and anger), unsuitable expression and training how to prevent these feelings.
8 th session: Providing a conclusion from all sessions and administering the post-test.

Table 2. Descriptive Statistics of Emotion Failures and Self-Injurious Behaviors among Normal Students and those with Specific Learning Disorder

Dependent Variables	Experimental				Control			
	Pre-test		Post-test		Pre-test		Post-test	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Difficulty in Identifying Feelings	24.80	3.34	13.95	2.87	21.95	3.425	23.05	3.30
Difficulty in Describing Feelings	17.40	3.71	10.95	2.35	16.35	2.47	15.40	3.87
Externally-Oriented Thinking Styles	29.25	2.71	15.70	2.02	25.35	3.34	26.60	4.70
Total (Emotion Failure)	71.45	7.39	40.60	5.00	63.65	6.63	65.05	7.97
Self-Injurious Behaviors	38.85	2.32	24.90	2.82	37.65	2.30	38.10	2.14

Table 3. Results of Multivariate Analysis of Variance on Scores of Emotion Failures and Self-Injurious Behaviors in the Two Groups

Dependent Variable	SS	dF	MS	F	P
Emotion Failures	5978.02	1	5978.02	134.91	0.001
Self-Injurious Behaviors	1742.40	1	1742.40	276.34	0.001

SS= sum of squares, MS= Mean Square

test confirmed the capability of multivariate analysis of variance. The obtained results revealed a significant difference between one of the variables of the studied groups.

As indicated in Table 3, the results of multivariate analysis of variance showed a significant difference between the average scores of emotion failures with ($F = 134.91$) and self-injurious behaviors with ($F = 276.34$) between the experiment and the control groups ($P < 0.001$). Hence, it can be concluded that at the posttest level, emotion regulation training will decrease emotion failures and self-injurious behaviors among students suffering from specific learning disorder compared to the control group

Discussion

The aim of this study was to examine the effect of emotion regulation training in decreasing emotion failures and self-injurious behaviors among students suffering from specific learning disorder. The results indicated that emotion regulation training decreased emotion failures significantly in students suffering from specific learning disorder compared to the control group. Our finding is in line with previous findings (5,7,27) with regards to the efficacy of emotion regulation group intervention in decreasing symptoms of anxiety and stress, and regulation of emotions. Hence, it is obvious that emotions play an important role in one's life and there is a relationship be-

tween emotion regulation as a treatment in modifying emotions and self-esteem and positive social interactions. Emotion regulation will lead to an effective counteraction with stress-making situations (22) and will increase activity in response to social situations (23). Therefore, emotion regulation training can play an important role in improving psychological health and decreasing emotion failures among students suffering from specific learning disorder through making them aware of positive and negative emotions. In justifying this finding, it can be noted that positive strategies of emotion regulation have predicted the increase in positive temperament and consequently the decrease in emotion failures. Moreover, the finding supports that of Gross and Thompson (18,19), which revealed a positive relationship between psychological welfare and experiencing positive emotions, and a negative relationship between psychological welfare and experiencing negative emotions. Also, it can be stated that since emotion regulation will lead to modification and management of emotions, positive skills of emotion regulation will lead to positive compatibility; hence, emotion regulation can play an important role in one's life and increase their psychological welfare and positive emotions. Moreover, we may refer to the point that students suffering from specific learning disorder most likely cannot use positive emotions practically in different life situa-

tions; in contrast, they experience high levels of negative emotions which will cause other problems such as negative self-perception, worrying about interaction with other people and unsuitable social performance.

Furthermore, the results of multivariate of variance analysis indicated that emotion regulation training had been effective on decreasing self-injurious behaviors among students suffering from specific learning disorder. This supports (6,14,26) several studies which showed that emotion regulation training had been effective in prevention and treatment of mental disorders and decreasing self-injurious behaviors. Moreover, it can be noted that self-injurious behaviors of students suffering from specific learning disorder result from negative emotion regulation strategies, which is the outcome of the lack of emotional sufficiency, unsuitable emotional skills, and having a low ability to resolve contradictions. It seems that these students are not competent in managing their emotions, controlling theirs' and others' affections, and developing the necessary social skills to eliminate such obstacles and prevent self-injurious behaviors. Hence, insufficient affective growth, difficulty in organizing behaviors and emotions and having negative emotions are characteristics of those who commit self-injurious behaviors (21).

Emotion regulation may be another reason for justifying this finding, and in particular the positive strategy of emotion cognitive re-evaluation will decrease negative feelings and will increase positive feelings and adjustable behaviors (21). Therefore, emotion regulation training for students suffering from specific learning disorder will lead to a situation in which they can decrease negative feelings as well as self-injurious behaviors through the correct use of emotions, awareness of emotions and accepting them, and expressing emotions especially positive ones in real life situations. Moreover, emotion regulation training will lead to a condition in which the students in the experiment group be-

come aware of negative emotions and their negative effect, and try to keep their emotional life healthy through the re-evaluation of emotions in different situations; taking this approach, they may decrease their physical and psychological problems in particular self-injurious behaviors (24).

Conclusion

Based on the results of this study, we can infer that using emotion regulation training can be effective in decreasing emotion failures and self-injurious behaviors among students suffering from learning disorder through decreasing negative emotions and increasing the positive ones.

This study was conducted in Ardabil, and the studied sample included male elementary school students. Therefore, the generalizability of the results is limited. Lack of follow-up, and time restriction for providing education were among the other limitations of this study; and these issues should be taken into account in future studies.

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