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The Effectiveness of Emotion Regulation Training on Psychological Symptoms and Risky Behaviors in Child Laborers: A Quasi-experimental Study

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Abstract

Introduction: This study has aimed to determine the effectiveness of emotion regulation training on psychological symptoms and risky behaviors in child laborers.
Method: In this prospective quasi-experimental study, 30 child laborers aged between 12 and 17 in Ahvaz city, Khuzestan Province, southwest of Iran were randomly assigned to the experimental group (receiving emotion regulation training) (n=15) and the control group (n=15).
At first, the participants of both groups completed the Depression Anxiety Stress Scales and the Iranian Adolescents Risk-taking Scale. The participants in experimental group received the eight 90-minute session of emotion regulation training based on predetermined protocol per week, while the subjects of the control group did not receive any intervention. After the intervention, and 45 days after the training program, both groups completed the research questionnaires. Repeated measurement analysis and independent t test were used to analyze the data.
Results: Findings showed that the mean of depression, anxiety, stress, and risky behavior in the emotion regulation training group were decreased drastically immediately after the intervention in the experimental group but a small reduction was observed in the control group. The mean of the psychological factors and the risky behaviors were also lower in the experimental group. Findings revealed that intervention can reduce psychological symptoms and risky behavior in child laborers ($p<0.05$).
Conclusion: Emotion regulation training can be used as a preventive program for child laborers or it can be used in the form of an intervention program to reduce vulnerability in children and youths prone to risky behaviors.

Keywords: Child Labor, Emotion Regulation Training, Psychological Symptoms, Risky Behavior

Introduction

Today, child labor is considered as a widespread socio-economic event. It refers to forcing a child to work at childhood [1]. Statistics show millions of children in the world especially in developing and underdeveloped countries who have to work instead of going to school which causes them to lose their childhood [2]. The statistics of international labor organization reveal that 73 million child laborers are working now and it is also increasing [3]. In another definition, child laborers are children aged between 5 and 11 who participate in any economic activity, 12 to 14 years old children, who engage in hazardous work, and 15 to 18-year-old children, who participate in the worst forms of child labor [4].
Difficult conditions and working in an unsafe and tense environment undermine the mental

health of child laborers and can influence their mental health in adulthood. Previous studies have shown that child workers suffer different physical and psychological problems which eventually decreased their health and also increased their risk of illness [5,6].

Due to lack of emotional and psychological support from the family or being in a bad family, child laborers usually do not have a normal growth period, not fulfilling their basic needs and are forced to work in difficult and hazardous conditions, and as a result always have a potential intend to do violent and criminal actions. This situation is influenced by puberty issues and lead to risky behaviors such as alcohol and cigarette consumptions, uncontrolled and age-inappropriate sexual behavior and risky driving [7,8].

The child laborers are exposed to the tensions of the social environment such as experiencing feelings of inferiority and failure, all of which lead to the formation of psychological symptoms such as depression, anxiety, and stress in them. In etiology, it can be said that the experience of failure and feeling of inferiority is a constant companion of child laborers and increases their anger towards society and individuals, so child laborers are more prone to stress symptoms than other children. Previous studies have shown that experience of anxiety can harm children's performance and also causes them to experience negative results such as low acceptance, increased aggression, and depression [9,10].

Considering the importance of the mentioned physical and psychological harms, it is necessary to use efficient and favorable methods to intervene and solve their problems. Emotion regulation training is one of the psychological treatments that are commonly used for children and adolescents [11,12].

Previous studies that consider the effect of emotion regulation on health related problems such as depression and anxiety indicate that having emotion regulation skills can have a significant help to improve people's mental health and decrease psychological symptoms [13,14]. Due to decreasing the level of nervous pressure and psychological problems by taking emotion regulation skills, risky behavior could also be reduced [15,16].

Emotion Regulation Therapy is a person-centered approach to deal with affective regulation. It uses parts of mindfulness, and other humanistic approaches to achieve the following goals: helping individuals identify, acknowledge, and describe their emotions, allowing unconditional self-acceptance that ultimately results in emotional regulation, preventing them from avoiding feelings and choosing actions that have an impact on their wellbeing, helping them learn better decision-making, constructive critical thinking, and problem-solving skills [17,18].

According to the statistics of labor children in Iran and the prevalence of psychological symptoms and consequently risky behavior in them, the present study aimed to investigate the effectiveness of emotion regulation training on psychological symptoms and risky behavior in child labor in Ahvaz city, the capital of Khuzestan province, south west of Iran.

Method

In our prospective quasi-experimental design study, child laborers of Ahvaz city in 2021 that were under the supervision of both child and family centers (Golshan Al Taha and Mehr Afarinan) were participated. Thirty of these children (between the ages of 12 and 17) based on sample size formula according to the result of previous studies [19] who were applicants and volunteers to participate in the study, were selected.

$$n = 2 \times \frac{\left(z_{1-\alpha/2} + z_{1-\beta}\right)^2 \times (SD_1^2 + SD_2^2)}{(\mu_1 - \mu_2)\text{^}2} = 2 \times \frac{(1.96 + 1.645)^2 \times 2(2.3)^2}{(4.59 - 1.57)^2} \cong 30$$

The participants were randomly assigned to experimental or intervention groups with emotion regulation training (n=15) and a control group (n=15). They were screened by using diagnostic and oral interviews. The score of psychological symptoms and risky behaviors of participants were recorded in three times (pre (before intervention), post (immediately after intervention) and follow-up (45 days after intervention)).

The SPSS software version 22 was used to analyze the data. Descriptive statistics (i.e., mean, standard deviation, frequency, and percentage) were used to describe the characteristics of the study groups. The Shapiro–Wilk and Kolmogrov-smirnov test was used to examine the normality of the research variables. Then, Fisher's exact or chi-square tests were used to compare the demographic variables between both groups. The independent samples *t*-test was used to compare the mean of the research quantitative variables between both groups. Repeated measurement analysis was also used to consider the changes of variables in three measurement times between both groups. The level of significance was selected at less than 0.05.

The inclusion criteria included, being child laborers, being at the ages of 12 and 17 years old, the ability to read, write and complete the informed consent form and lack of neurological deficits and not being hospitalized due to psychological problems in the last six months. The exclusion criteria consisted of having an acute psychotic disorder, such as schizophrenia, major depressive disorder, bipolar disorder, etc. The participants should not have had any other treatment simultaneously, and they should have had no chronic physical disorders. All of them should not have been absent more than three sessions during the training.

All necessary permissions were obtained from the relevant authorities before beginning the study. It should be noted that an informed consent was given to participants before gathering data. Information of the participants was kept confidential and they could have withdrawn voluntary from the study at any stage.

The tools used in this study were as follows:

Depression Anxiety Stress Scales (DASS-21): In the present study, in order to measure psychological symptoms, the scale of depression, anxiety, and stress developed by Lovibond and Lovibond was used [20]. This scale has 21 items that measures the three components of depression, anxiety, and stress. Each of the components of this scale consists of seven items that are scored on a four-point Likert scale from 0 to 3, and the total score

varies from 0 to 21. The test-retest method was used to consider the reliability with two months' time interval. The correlation coefficient for the components of depression, anxiety and stress were 0.85, 0.84 and 0.87 respectively. Also, to check the validity of this scale, they calculated the correlations between each of the components of this scale with the total score of the scale and the results showed that the components of this scale have a significant correlation with the total score of the scale (0.54 to 0.88). The cronbach's alpha coefficient for the present study was equal to 0.74.

In Iran, Asghari et al. investigated this scale among a non-clinical Iranian sample. The validity checks of this scale by the factor analysis showed that in the exploratory factor analysis, three factors (depression, anxiety, and stress) could be extracted for the scale of psychological symptoms, which explained about 47% of the total variance. The test-retest method to consider the reliability for this study showed correlation coefficient for the components of depression, anxiety and stress which were 0.77, 0.89 and 0.85 respectively [21].

Table 1. Summary of the Emotional Regulation Training based on the Gross Model (2002)

Sessions	Purposes
First session	Purpose: Familiarity Agenda: 1-Getting to know the members of the group, and the start of a mutual relationship between the leader of the consulting group and the members 2- Explaining the main and secondary goals of the group and discussing the personal and collective goals of the members 3- Explanation of the logic and steps of intervention 4- Statement of the framework and rules of participation in the group
Second session	Purpose: Providing emotional training Agenda: Recognizing emotions and arousing situations through teaching the difference in function of different emotions and providing information about different dimensions of emotions and short-term and long-term effects of emotions
Third session	Purpose: Evaluating the level of vulnerability and emotional skills of the members Agenda: 1- Self-evaluation to understand one's emotional experiences 2- Self-assessment to identify the level of emotional vulnerability in a person 3- Self-evaluation to identify regulatory strategies
Fourth session	Purpose: change the situation that provokes excitement Agenda: 1- Prevent social isolation and avoidance 2- Problem-solving strategy training 3-Interpersonal skills training (conversation, expression, and conflict resolution)
Fifth session	Purpose: Change of attention Agenda: 1- Stop ruminating and worrying 2- Training to strengthen attention
Sixth session	Purpose: Change cognitive evaluations Agenda: 1- Identifying improper assessments and their effects on emotional states 2- Marketing strategy training In-session assignment: Completing the list of improper assessments, identifying these assessments and their emotional consequences, and practicing evaluation strategies.
Seventh session	Purpose: Changing the behavioral and physiological consequences of emotion Agenda: 1- Identifying the extent and manner of using the inhibition strategy and examining its emotional consequences 2- Exposure 3- Training to express emotions 4- Modifying behavior through changing environmental stimuli 5- training to release emotion, relax and reverse action
Eighth session	Purpose: Re-evaluate and remove the things that prevent the application of these skills Agenda: 1- Assessing the level of achievement of individual and group goals 2- Application of learned skills in environments outside the session 3- Examining and removing obstacles to completing assignments

Iranian Adolescent Risk-Taking Scale (IARS): In the present study, to measure risk-taking behavior, the Iranian Adolescent Risk-Taking Scale (IARS) developed by Zade Mohammadi et al. was used. This scale consists of 38 questions, which are answered on a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree), (minimum score = 38, maximum score = 190) . The purpose of this scale is to assess the vulnerability to high-risk behaviors such as: drug abuse, alcohol consumption, smoking, violence, sexual behavior, tendency to have relationship with the opposite sex and dangerous driving. Cronbach's alpha coefficient was used to check the reliability of each of the subscales, and the alpha coefficients for the total score of this scale were 84% and for its subscales were in the range of 0.93 to 0.74. The exploratory factor analysis confirmed the correctness of the extracted factors and the results showed that this tool is a 7-dimensional scale that explains 64.84% of the risk-taking variance in the youth [22].

In addition, in this research, according to the reports of Ramzanzadeh et al. (2013), the reliability coefficient of this scale was 0.78. [23]. In the present study, Cronbach's alpha method was used to check the reliability of the total score of this scale, and according to the obtained coefficient (0.75), it can be concluded that this scale has good reliability.

The participants in the experimental group received eight sessions of emotion regulation training (based on the steps provided by Gross in the form of 90-minute session per week) which have been presented in Table1 [23].

Results

Demographic characteristics such as age, education level, father's job and birth order of participants are represented in Table 2. The distribution of these variables are homogeneous in both groups, the chi-square test show no significant differences between two groups.

The descriptive findings of research variables, depression, anxiety, stress and risky behavior in emotion regulation training group and control group have been presented in Table 3.

The mean and standard deviation of the research variables in the emotion regulation training group and the control group in the pre-test and post-test stages are listed in Table 2.

We used the independent sample t test to compare the groups in three measurement times in terms of the mentioned variables (depression, anxiety, stress and risky behavior). Before using the t-test, the normality of all variables in both groups was checked by kolmogorov-smirnov and shapiro-wilk test. The results show that all variables have normal distribution. The represented results in table 3 show no significant differences between groups at baseline. At the post time and follow-up, all items decreased in the emotion regulation training group and are significantly less than the control group. All P values were less than 0.001.

Table 2. Demographic Characteristics in Both Groups

		Emotion regulation training N (%)	Control N (%)	Total N (%)	χ^2 (P-value)
Age	10-12	2 (13.3)	1 (6.7)	3 (10)	3.43 (0.180)
	13-15	12 (80.0)	9 (60.0)	21 (70.0)	
	16-18	1 (6.7)	5 (33.3)	6 (20)	
Education level	Primary	2 (13.3)	3 (20.0)	5 (16.7)	1.63 (0.443)
	First	12 (80.0)	9 (60.0)	21 (70.0)	
	Second	1 (6.7)	3 (20.0)	4 (13.3)	
Father's Job	Unemployed	7 (46.7)	7 (46.7)	14 (46.7)	1.07 (0.587)
	Employed	7 (46.7)	8 (53.3)	15 (50.0)	
	Died	1 (6.7)	0 (0.0)	1 (3.3)	
Birth order	First	6 (40.0)	5 (33.3)	11 (36.7)	2.92 (0.403)
	Second	2 (13.3)	6 (40.0)	8 (26.7)	
	Third	2 (13.3)	1 (6.7)	3 (10.0)	
	Fourth or more	5 (33.3)	3 (20.0)	8 (26.7)	

Table 3. Descriptive Findings of Research Variables

		Emotion regulation training (N=15)	Control (N=15)	T (P-value)
		Mean ± Standard deviation		
Depression	Pre	17.38±2.02	17.15±2.12	0.28 (0.779)
	Post	11.62±1.98	16±2.38	-5.11 (< 0.001)
	Follow-up	13.85±2.03	16.54±2.22	-3.22 (0.004)
Anxiety	Pre	16.85±1.95	16.46±1.66	0.54 (0.594)
	Post	12±1.58	15.38±1.8	-5.09 (< 0.001)
	Follow-up	13.77±1.24	15.92±1.61	-3.83 (0.001)
Stress	Pre	16.23±1.96	15.92±1.55	0.44 (0.662)
	Post	10.69±1.49	14.54±1.9	-5.74 (< 0.001)
	Follow-up	12.69±1.49	15.15±1.63	-4.02 (< 0.001)
Risky behavior	Pre	130.92±6.37	128.62±4.63	1.06 (0.301)
	Post	113±5.64	127.23±5.99	-6.24 (< 0.001)
	Follow-up	116.15±6.26	127.46±5.21	-5.01 (< 0.001)

The results of the repeated measurement analysis to consider the changes of the research variables (depression, anxiety, stress and risky behavior) in the emotion regulation training and control groups have been presented in Table 4. In order to have a correct interpretation of the results, at first, the group*time effect needed to be checked. If the results revealed a significant effect for interaction between group and time, it means that the changes of the research variable in three measurement times depend on groups. As a result, we should consider these changes for each group separately. All these results have been shown in Table 4.

Table 4. Results of Repeated Measurement Analysis

			Mean square	DF	Sum of squares	F (P-value)	Effect size (Eta Square)
Depression	Overall	Within-Subjects Effects	157.85	2	78.92	99.83 (< 0.001)	0.80
		Group * Time Effect	70.87	2	35.44	44.82 (< 0.001)	0.65
		Between-Subjects Effects	101.55	1	101.55	8.44 (0.008)	0.26
	Emotion regulation training		220.05	2	110.03	362.62 (< 0.001)	0.96
	Control		8.67	2	4.33	3.39 (0.052)	0.22
Anxiety	Overall	Within-Subjects Effects	115.87	2	57.94	92.38 (< 0.001)	0.79
		Group * Time Effect	48.03	2	24.01	38.29 (< 0.001)	0.61
		Between-Subjects Effects	57.55	1	57.55	8.26 (0.008)	0.25
	Emotion regulation training		156.36	2	78.18	102.49 (< 0.001)	0.89
	Control		7.54	2	3.77	7.67 (0.003)	0.39
Stress	Overall	Within-Subjects Effects	158.87	2	79.44	125.81 (< 0.001)	0.84
		Group * Time Effect	58.15	2	29.08	46.05 (< 0.001)	0.65
		Between-Subjects Effects	78.00	1	78.00	10.80 (0.003)	0.31
	Emotion regulation training		204.51	2	102.26	117.87 (< 0.001)	0.90
	Control		12.51	2	6.26	15.83 (< 0.001)	0.56
Risky Behavior	Overall	Within-Subjects Effects	1381.87	2	690.94	109.82 (< 0.001)	0.82
		Group * Time Effect	1012.79	2	506.40	80.49 (< 0.001)	0.77
		Between-Subjects Effects	1169.28	1	1169.28	13.69 (0.001)	0.36
	Emotion regulation training		2380.36	2	1190.18	108.07 (< 0.001)	0.90
	Control		14.31	2	7.15	3.26 (0.061)	0.27

The results of the repeated measurement analysis presented in table 4 show that the group*time effects are significant for depression, anxiety, stress and risky behavior (all p-values are less than 0.001). According to the mentioned explanation, the within-subject effects are considered for each variable by groups. The results show that depression in the emotion regulation training group has significant changes (P-value < 0.001, effect size = 0.986) but this change is not significant in the control group (P-value = 0.052). The changes of anxiety and stress are respectively significant in both emotion regulation training group (P-value < 0.001, effect size = 0.895; P-value < 0.001, effect size = 0.908) and the control group (P-value = 0.003, effect size = 0.390; P-value < 0.003, effect size = 0.569). However, the intensity of the changes in the emotion regulation training group was much higher. The risky behavior in the emotion regulation training group had significant changes (P-value < 0.001, effect size = 0.900) but this change was not significant in the control group (P-value = 0.061). All research variables decreased in the emotion regulation training drastically and had a small increase in the follow-up. This is while in the control group, these variables had a fixed trend or had small decreases. Figure 1 shows the changes of psychological symptoms (depression, anxiety and stress) and risk-taking behavior in both groups.

Discussion

The present study was conducted to determine the effectiveness of emotion regulation training on psychological symptoms and risky behaviors in child laborers of Ahvaz city.

The findings show that the psychological symptoms (depression, anxiety and depression) and the score of risky behavior at the baseline in both groups were not significantly different. Furthermore, immediately after intervention these symptoms and risky behavior drastically decreased in the experimental group. It is worth mentioning that at this point, all research variables were significantly different between groups and were lower in the control group.

To explain these findings, emotion regulation training plays an important role in making a person aware of positive and negative emotions, accepting emotions, expressing them promptly, positive re-evaluation, judgment, and positive perception of oneself and the situation, in reducing physical and emotional symptoms and also in reducing social functioning disorders that are related to psychological symptoms such as depression [24]. Garnefski et al. revealed significant relationships between cognitive emotion regulation strategies and depressive symptomatology across different types of life events. People with psychological symptoms often use strategies such as self-blame, rumination, and catastrophizing that are mostly related to emotional problems [25].

Also, one of the most important skills taught in this approach is that the person is encouraged to focus on improving past behavioral activities and to learn the proper way of dealing with behavioral and emotional problems [26]. Domaradzka et al. revealed the effectiveness of emotion regulation training on reducing

anxiety (as one of the most important psychological symptoms) but it has a small effect on depression [27].

Farhangian et al. and Asgari et al. showed that the differences between the adjusted mean of the emotion regulation training group and the control group is significant in terms of risky behavior, and in other words, emotion regulation training has reduced psychological symptoms in child laborers [11, 28].

Forty-five days (Follow-up) after receiving the emotion regulation training, the psychological symptoms and risky behavior were significantly lower in the experimental group but they have increased compared to previous times. It means that the emotion regulation training for child labor should be a long-term and continuous program.

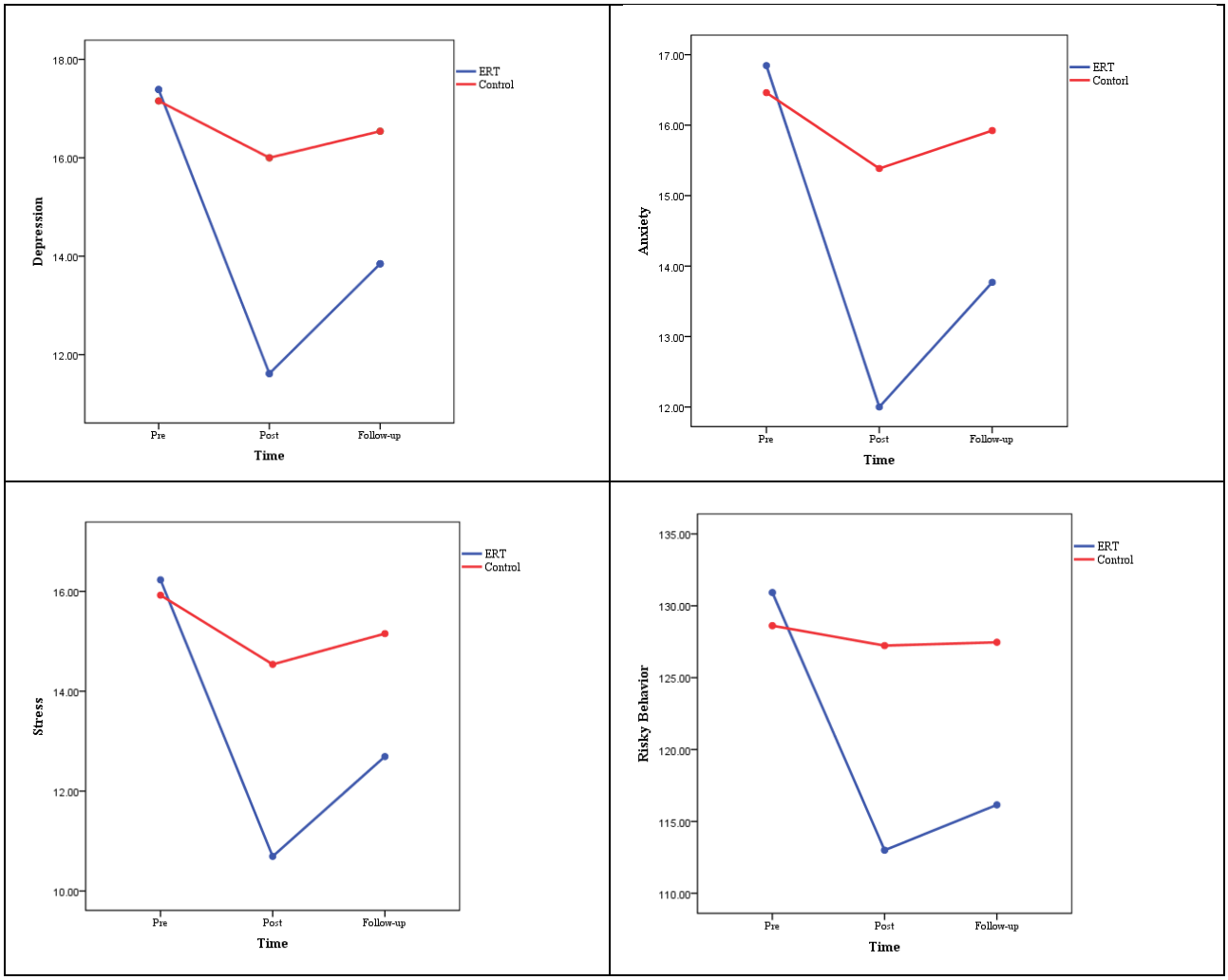

Figure 1. Changes of research variables in both groups at three measurement times.

Conclusion

Since emotion regulation training has been effective in reducing psychological symptoms and risky behaviors in child laborers, this intervention program can be employed as a preventive program for other child laborers or it can be used (especially by therapists or school counselors) in the form of an intervention program to reduce vulnerability in children and youths prone to risky behaviors. It is suggested to include the training of emotion regulation and management strategies among the goals and application programs that are related to younger children and youths (like many of their developed countries) and it is suggested to the planners of university courses to include the training of experts specialized in emotion management and regulation in determining the headings of some related courses. In addition, it is also suggested to implement the emotion regulation courses in welfare centers and homes for children and youths because of the greater need of these individuals to learn new skills in order to continue a healthy life.

Conflict of Interest

The authors declare no competing interests.

Ethical Approval

An ethical approval to perform this study was obtained by the Ethical Review Board of the Islamic Azad University, Ahvaz Branch.

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