

# The Effectiveness of Painting Therapy on Emotional-Behavioral Problems of Children with Cancer

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## Abstract

**Objective:** This study aimed to determine the effectiveness of painting therapy in reducing emotional- behavioral problems of children with cancer (internalized problems: anxious-depressed, withdrawn-depressed, somatic complaints; externalized problems: aggressive behavior and rule-breaking behavior).

**Method:** The research method was quasi-experimental with a pretest-posttest design and control group with follow-up. Using targeted sampling, 40 children (6-12 years old) with cancer, whose score on the Child Behavior Check List (CBCL) was one standard deviation above the mean, was selected and randomly divided into two experiment (n = 20) and control (n = 20) groups, but due to drop in the number of participants, it decreased to 31 (16 experimental group and 15 control group). The painting program was performed on the experimental group in the form of 8 two-hour sessions. To analyze the data, the mixed variance analysis method was used.

**Results:** The results showed that although the overall score of the internalized and externalized problems was significantly reduced, painting therapy did not affect the somatic complaints (of internalized problems) and the rule-breaking behavior (of externalized problems).

The results showed that painting therapy can be an effective way to reduce the emotional-behavioral problems of children with cancer. Therefore the findings of this study can have preventive clinical applications.

**Keywords:** Cancer, Emotional-Behavioral Problems, Externalized Problems, Internalized Problems, Painting Therapy.

## Introduction

Cancer is a bitter reality and causes stress in the lives of millions of people (Nash, Day, Hiratsuka, Zimpelman, & Koller, 2019). This chronic disease is especially important in childhood because it has a high prevalence and a great impact on the lives of children and their families (Loeffen, Knops, Boerhof, Feijen, Merks, Reedijk, & Tissing, 2019).

The process of diagnosis and treatment of cancer disrupts sleep and activity patterns, physical and psychological symptoms, cognitive dysfunction, social participation, and personal activities

(Greenzang, Fasciano, Block, & Mack, 2020). In addition, the psychological problems of cancer patients affect their quality of life and even their longevity (Puhr, Ruud, Anderson, Due-Tønnesen, Skarbo, & Andersson, 2019). Also, since childhood cancers are considered life-threatening diseases (Logan, Perz, Ussher, Peate, & Anazodo, 2019; Mehdipour, Rafiepoor, & Haji Alizadeh, 2019), stress is one of the common consequences after diagnosing cancer in children (Puhr et al, 2019).

Chronic diseases such as cancer are associated with stress, and when a person is more exposed to stress-related illnesses, the negative psychological and physiological side effects are greater, which in turn reduces the functioning of the person's immune system (Ross, Boesen, Dalton, & Johansen, 2002). Besides, dealing with unfamiliar hospital conditions

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and unpleasant treatments is a major source of stress for these children (Leibring, & Anderzén-Carlsson, 2019). Children are sensitive to crises caused by illness and hospitalization, because they have limited adaptive mechanisms to resolve stressors (Leibring et al, 2019). A child with cancer first suffers from symptoms of the disease for a long time, and this can affect the quality of learning and his or her educational status. Depending on the complications of the disease and the type of treatment the child receives, as well as being away from peers, there may be physical, cognitive, and emotional problems for the child with cancer (Zarani, Panaghi, Mirzaei, & Helmi, 2019, Shafiee, Shariatmadar, & Farahbakhsh, 2019).

Since anger and aggression are among the complications of chronic diseases, including cancer in the children (Granek, Ben-David, Bar-Sela, Shapira, & Ariad, 2019), and the evidence confirms the experience of depression and anxiety in these children, the findings lead the researcher to the point that various emotional-behavioral problems in these children will be important and must be studied and cured.

Frick and Silverthorn (2001) stated that many studies have concluded that childhood emotional-behavioral problems can be classified into two broad dimensions. Some syndromes, such as anxiety, depression, and somatic complaints, are classified as internalized, while others, such as aggression and delinquency, are classified as externalized disorders (Ruttle, Shirliff, Serbin, Fisher, Stack, & Schwartzman, 2011).

Various treatments of cancer, such as chemotherapy, unfortunately, in addition to long-term benefits, can provide significant short-term side effects in the form of diarrhea, abdominal pain, and muscle weakness (Oun, Moussa, & Wheate, 2018). Therefore, the treatment of a cancer patient cannot be summed up in clinical terms alone. Cancer and its treatment have different dimensions, so it is necessary to pay attention to such issues

along with clinical matters. It seems that the psychological assessment of these patients, the discovery of common reactions, and psychological effects are important for faster prevention and treatment (Zimmermann, Burrell, & Jordan, 2018).

Today, the positive effect of psychological interventions in the process of improving chronic physical illnesses has been confirmed, and with the increasing development of health psychology, psychologists have played a more active role in the treatment process of these diseases. In this regard, paying attention to non-pharmacological methods and performing psychological interventions in children with the disease is of particular importance (Zimmermann et al, 2018).

Among the psychological interventions, art therapy is one of the types of psychological interventions that are known by Margaret Naumburg. When she was teaching painting to children, she realized that art makes free association very fluent and makes the unconscious symbolic communication easy as uncensored and objective (Hogan, 2001). Numerous studies have confirmed the effectiveness of storytelling (Soundy & Reid, 2019) and play therapy (Ibrahim & Amal, 2020) on variables such as anxiety and depression in cancer patients.

Among the types of art, painting therapy, which is a self-portrait, provides opportunities for non-verbal communication and expression (Katz & Hamama, 2013), and because children with cancer need a situation where they can speak about doubts and fears and what they have in mind about the experience of hospitalization, as well as expressing their emotions and perceptions about the disease, it seems that painting can be a useful way for patients who are experiencing this difficult situation. (Bazmi & Nersi, 2012). Demehri, Saeedmanesh, and Razban (2019) examined the effectiveness of therapeutic painting on children's eating and adaptive problems. The results showed that eating disorders decreased and children's adjustment increased. The effectiveness of therapeutic

painting on the treatment of children's externalized behaviors with a mental disability was investigated by Behpajoo, Abdollahi, and Hosseinian (2018). The results showed that after this intervention, destructive behaviors were reduced. Khodabakhshi Koolae, Vazifehdar, Bahari, and Akbari (2016) examined the effect of painting therapy on the aggression and anxiety of children with cancer. The results showed a reduction in these symptoms through painting therapy in children.

Despite the numerous methods used to treat the psychological problems of cancer patients, according to the researcher knowledge, despite its importance in art therapy and its effectiveness on a variety of variables and its ease of application in internal research, the number of studies about painting therapy was very few. As a result, this research has been conducted to determine the effectiveness of painting therapy in reducing the emotional-behavioral problems of children with cancer, so the main purpose of the present study was answering the fundamental question of whether painting therapy can reduce the emotional-behavioral problems of children with cancer.

### **Method**

**Participants:** The present study was quasi-experimental research with a pretest-posttest and control group. The statistical population consisted of 6 to 12 years old children with cancer in Afzalipour Hospital of Kerman. To determine the sample group, 60 mothers of patients were asked to complete the Child Behavior Check List (CBCL) questionnaire, and among the children, 40 of them whose total score was one standard deviation above average were selected using available and purposeful sampling method, and randomly assigned to two experimental and control groups (20 people per group). During the intervention, this number was reduced to 31 people (16 people in the experimental group and 15 people in the control group) due to the drop in the number of subjects.

### **Ethical considerations**

To take into account the ethical considerations, the participants were informed that they have full authority to participate in the research. In addition, control group were included in the waiting list for psychological intervention.

### **Research instruments**

The CBCL was used as a measurement tool. This system includes a set of forms to measure competence, adaptive function, and emotional-behavioral problems (Achenbach & Rescorla, 2001). The emotional-behavioral Problems section of this questionnaire was used in this study that must be completed by parents, caregivers, or anyone living with the child and knows him/her, based on the condition of the child in the last 6 months. The test-retest reliability among the interviewees in this instrument were between 0.93 and 1 for the scores obtained from different interviewers and the parents' reports with an interval of 7 days. This reliability for competency scales, adaptive function, and emotional-behavioral markers was 0.90.

In Iran, the internal coefficients of this questionnaire was between 0.63 and 0.95. The reliability of the scale was also evaluated using the test-retest method with a time interval of 5-8 weeks and the reliability coefficients ranged from 0.32 to 0.67. The agreement between the respondents was also examined and ranged from 0.09 to 0.67. Internal correlation of the scales of each form, and factor analysis also showed the appropriate validity of this scale (Minaei, 2006). The painting therapy program, in which the children of the experimental group received 8 two-hour sessions was implemented. The meeting procedure was as follows:

1. Introduction and familiarity: First, the therapist introduced himself, and then explained the goals of the sessions, the method, and the group rules for the children.
2. Warmingup: The therapist introduced body

painting to break the ice and create a sense of teamwork.

3. Projection through free line writing: In this session, to projection, reduce aggression, breaking the rule and being hyperactive, the subjects were asked to do the line activity.

4. Free painting: In this session, to expose and reduce aggression, breaking the rule and being hyperactive, the subjects were asked to do free-themed painting activities.

5. Angry wall painting: In this session, to reduce aggression, subjects were asked to do anger murals. The wall painting activity is such that we stick a large piece of paper to the wall of the room. The subjects paint on the wall whatever makes them angry; at the end, the subjects throw the balls against the wall.

6. Painting a safe place: In this session, to reduce anxiety, symptoms of psychosis, feelings of inner turmoil, hesitant, insecurity, rumination, worrying thoughts and increasing the sense of worth, it is necessary to ask the subjects to paint a real or imaginary place where they would like to go.

7. Concerned bag painting: In this session, to reduce anxiety and emotional relief, the subjects

were asked to paint their biggest concern. Then the paintings were collected in a bag and at the end of the session, they throw the painted worries into the garbage.

8. Painting Wishes: In this session, to finalize the treatment sessions, to create a sense of cooperation and group interaction, and to increase self-understanding, the subjects were first told that the final session has arrived and they are going to say goodbye to each other and a party to finish. These meetings were held, and then the subjects were asked to draw their biggest wish on a large piece of paper.

Immediately after the meetings, and two months later, the questionnaire was administered to two groups, and the data were analyzed using the mixed variance analysis method in SPSS22 software.

### Results

In the descriptive section of the data, the age, duration of the disease and the economic status of the subjects were first examined as demographic variables. Descriptive values of the main variables of the research i.e. emotional-behavioral problems (internalized and externalized), were also presented.

**Table 1.** Average and standard deviation of age, duration of disease and economic status of subjects in each group

	Group	Mean	SD
Experimental	age	7.75	1.29
	duration of disease	1.87	0.95
	economic status	2.87	1.31
Control	age	2	8
	duration of disease	2.4	1.18
	economic status	2.33	1.11

As shown in Table 1, there is not much difference between the age mean, disease duration and economic status of the experimental and control groups, and there is no significant difference between the two groups in terms of these variables ( $p=0.7$ ,  $t=0.4$ ;  $p=0.18$ ,  $t=-1.36$  and  $p=0.2$ ,  $t=1.2$  respectively).

According to the values given in table 2, it seems that

the scores of the experimental group in the posttest and follow-up phase in internalized problems, and subscales, except somatic complaints, are lower than the scores of the pretest. But there is no such reduction in the control group.

According to the values presented in table 3, it seems that the scores of the experimental group

in the posttest and follow-up phases of aggressive behaviors and the total scores have decreased compared to the pretest. But there does not seem to be such a trend in the control group.

To answer the research questions about internalized and externalized problems, two separate analyses

analyze data.

Before performing the analysis, the Sphericity assumption of data was evaluated using the Mauchly's test, which was significant, so the corrected Greenhouse-Geisser values were used.

As shown in table 4, the result of the Mauchly's test

**Table 2.** The mean and standard deviation of the scores of internalized problems in pretest, posttest and follow up by group

group	value	Anxious-depressed			Withdrawn-depressed			Somatic complaints			Internalized problems		
		pre-test	post-test	Follow-up	pre-test	post-test	Follow-up	pre-test	post-test	Follow-up	pretest	post-test	Follow-up
experimental	M	9	5.7	5.3	5.5	2.5	2.1	3.5	2.1	2.6	17.5	11.5	10.5
	SD	4	3.5	2.8	2.6	1.2	1.1	2	2.5	2	6.5	5.7	5.3
control	M	9.7	9.2	10.2	8	7.9	8.4	4.5	3.6	4.2	22.3	20.8	22
	SD	3.9	3.8	3.7	4.2	4.3	4.2	3.8	3.1	3.2	8.9	9.2	9
total	M	9.3	7.4	7.7	6.7	5.1	5.2	4	2.8	3.4	19.8	16	16
	SD	3.9	4	4	3.7	4.1	3.4	3	2.9	2.8	8	8.8	9.3

were performed. There was a between group, independent variable (experimental and control groups) and a within group, independent variable (evaluation in pretest and in posttest) in this study, which had stratified scales. The level of measurement of dependent variable (internalized

for all variables is significant, indicating that the Sphericity assumption of data is not established. Therefore, in the results of mixed variance analysis, the corrected Greenhouse-Geisser values were used.

Based on the results of the mixed variance analysis

**Table 3.** The mean and standard deviation of the scores of externalized problems in pretest, posttest and follow up by group

group	value	Rule-breaking behavior			Aggressive behavior			externalized problems		
		pre-test	post-test	Follow-up	pretest	posttest	Follow-up	pretest	posttest	Follow-up
experimental	M	4.6	3.6	4.2	12.1	9.3	8.5	16.8	13	12
	SD	3.9	3.8	3.7	7.6	7.3	6.7	10.1	11	9.8
control	M	4.2	3.6	3.9	10.7	10	10.4	15	13.6	14.8
	SD	2.5	2.6	2.3	7.2	7.1	6.7	8.7	8.8	8.5
total	M	4.4	3.6	4.1	11.4	9.6	9.4	16	13.3	13.3
	SD	3.3	3.2	3.1	7.3	7.1	6.7	9.8	9.8	9.2

problems- externalized problems), however, was interval. Therefore, mixed ANOVA was used to

presented in table 5, it is observed that the main and interactive effect of the evaluation stage and the

group on the subscales of internalized problems except somatic complaints is significant. This means that painting therapy is effective in improving internalized problems except somatic problems. Eta squares also showed that 25, 33, and 33 percent of variance in total internalized problems, anxious-depressed, and withdrawn-depressed was caused by therapeutic intervention, respectively. The interactive effect of

**Table 4.** The results of the Mauchly's test to investigate the Sphericity assumption of data on externalized and internalized scales and subscales

	Variables	Mauchly's test	chi-square	df	Sig.
internalized problems	Anxious-depressed	0.33	30.51	2	0.001
	withdrawn-depressed	0.65	11.75	2	0.005
	somatic complaints	0.29	34.1	2	0.001
	total	0.09	64.7	2	0.001
Externalized problems	Law-breaking	0.74	8.46	2	0.01
	Aggressive behavior	0.35	28.73	2	0.001
	total	0.34	30	2	0.001

**Table 5.** Results of the mixed variance analysis related to the scores of internalized problems and subscales

Source	variable	SS	df	MS	F	sig	Eta coefficient		
Within subjects	Assessment stage	Anxious-depressed	62.19	1.2	51.7	13.5	0.001	0.31	
		Withdrawn-depressed	47.35	1.4	31.79	11.84	0.001	0.29	
		Somatic complaints	20.63	1.17	17.58	7.18	0.01	0.19	
		total	۲۸۵/۳	1.05	271.2	16.1	0.001	0.35	
	Assessment stage*group	Anxious-depressed	67.61	1.2	56.24	14.67	0.001	0.33	
		Withdrawn-depressed	58.62	1.4	39.35	14.65	0.001	0.33	
		Somatic complaints	1.8	1.1	1.53	0.62	0.45	0.02	
		total	۱۷۸/۶۷	1.05	169.83	10.1	0.005	0.25	
	Error	Anxious-depressed	133.63	34.86	3.83				
		Withdrawn-depressed	115.98	43.19	2.68				
		Somatic complaints	83.27	34	2.44				
		total	۸۲/۵۱۳	30.5	16.84				
	Between subjects	Group	Anxious-depressed	212.53	1	212.53	5.91	0.05	0.17
			Withdrawn-depressed	526.18	1	526.18	18.93	0.001	0.39
Somatic complaints			41.8	1	41.8	1.9	0.17	0.06	
total			۱۶۹۵	1	1695	10.95	0.005	0.27	
Error		Anxious-depressed	1041	29	35.9				
		Withdrawn-depressed	806	29	27.79				
		Somatic complaints	637.1	29	21.9				
		total	۲۴۸۷	29	154.7				

the assessment phase and the group on the subscale of somatic problems is not significant. The scores of the experimental and control groups decreased in the posttest and increased in the follow-up, and these changes occurred exactly in parallel, indicating that the variables of the group and the assessment stage did not interact. Therefore, there is insufficient evidence to conclude that intervention in painting therapy reduces the scores this subscale. Also, the Eta score is equal to 0.02, which shows a very small percentage of variance in somatic problems resulting from this intervention.

on the subscales of externalized problems, except rule-breaking behavior, is significant. This means that painting therapy is effective in improving externalized problems, except rule-breaking behavior. Eta squares also showed that 32, and 24 percent of variance in total externalized problems and aggressive behavior was caused by therapeutic intervention, respectively. The interactive effect of the assessment phase and the group on the subscale of rule-breaking behavior is not significant. The scores of the experimental and control groups decreased in the posttest and increased in the follow-up, and these changes occurred exactly in

**Table 6.** The results of mixed variance analysis related to the scores of externalized problems and subscales

Source	variable	sum of squares	df	mean squares	F	sig	Eta coefficient	
Within subjects	Assessment stage	Rule-breaking behavior	9.9	1.58	6.2	8.8	0.001	0.23
		Aggressive behavior	72.33	1.2	59.37	15.71	0.001	0.35
		total	131.53	1.2	109	22.44	0.001	0.43
	Assessment stage*group	Rule-breaking behavior	0.66	1.58	0.42	0.59	0.51	0.02
		Aggressive behavior	42.65	1.2	35	9.26	0.005	0.24
		total	82.41	1.2	68.3	14.06	0.001	0.32
	Error	Rule-breaking behavior	32.58	46	0.7			
		Aggressive behavior	133.45	35.33	3.77			
		Total	169.94	34.99	4.85			
Between subjects	Group	Rule-breaking behavior	1.48	1	1.48	0.04	0.82	0.002
		Aggressive behavior	3.31	1	3.31	0.02	0.88	0.001
		total	6.53	1	6.53	0.02	0.88	0.001
	Error	Rule-breaking behavior	900	29	31.05			
		Aggressive behavior	4332	29	149.4			
		total	8075	29	278.45			

Based on the results of the mixed variance analysis presented in Table 6, it is observed that the main and interactive effect of the evaluation stage and the group

parallel, indicating that the variables of the group and the assessment stage did not interact. Therefore, there is insufficient evidence to conclude that intervention

in painting therapy reduces the scores of this subscale. Also, the Eta score is equal to 0.02, which shows a very small percentage of variance in rule-breaking behavior resulting from this intervention.

### Discussion and Conclusion

This study aimed to investigate the effectiveness of painting therapy on reducing emotional-behavioral problems in children with cancer. The results showed the effectiveness of this type of treatment on treating the emotional-behavioral problems of these children. The results of this study were consistent with the findings of Demehri et al.'s (2019), Behpajoooh et al. (2018) and Khodabakhshi Koolae et al. (2016).

One of the reasons for the effectiveness of therapeutic painting in reducing emotional-behavioral problems is the communication between the therapist and the client. Painting therapy creates a safe atmosphere, invigorating, and entertaining one's feelings and tensions. In fact, painting, which is a means of expression and privilege, helps the child to express emotions, conflicts, fears, and anger which cannot be expressed in any other forms, in a way that it is not socially abnormal. For this reason, the process of artistic creation is inherently capable of treatment and healing (Malchiodi, 2003). Clients, especially children with physical and emotional problems, often find it difficult to express their fears and hopes, and painting therapy helps them express their thoughts, feelings, and concerns about illness and problems in a non-verbal way (Katz & Hamama, 2013). Painting provides an opportunity for the child and those around him to become aware of and address the child's problems (Malchiodi, 2003). In fact, painting penetrates the pre-verbal level of the conscious and introduces the therapist and the client a tangible understanding of a problem that the client may not have been aware of or interested in paying attention to it (Bazmi & Nersi, 2012).

Another reason that explains the effectiveness of the present study is that, as presented in the definition of internalization problems, social withdrawal is

mentioned as one of the characteristics of people with internalized problems, so it can be concluded that the intervention of this study was able to take advantage of group therapy to reduce the withdrawal feature, and by providing a happy and safe atmosphere, facilitate communication between group members and also express emotions and the assertiveness of group members. In general, it has increased the sense of worth and achieved self-understanding and strengthened the integrity of group members. These results are inconsistent with Bazargan and Pakdaman's research (2016). In their study, the effectiveness of art therapy on reducing internalized and externalized problems of female adolescents was investigated. The results showed that art therapy reduces internalized problems but does not have a significant effect on externalized problems. To explain this ineffectiveness, researchers pointed to the low number of treatment sessions because it takes more time to connect with people who have externalized problems. Larger number of therapy sessions could improve relationship between the therapist and the participants' therefore, yield better results. However, individuals in their study attended the sessions reluctantly and hence the required therapeutic relationship between the therapist and clients was rarely and barely established. Indeed art therapy with samples with externalized problems has two major challenges: first, these people often present the therapist with several dilemmas, such as how to respond when faced with symbolic or direct expressions of aggression, and how to establish a treatment relationship when clients arouse strong emotions in the therapist. Second, when working in educational settings (like this study), art therapists often question whether they should strive to integrate themselves into the school and, if so, what the role of teachers and parents should be. In addition, it seems that the therapeutic package used in this study was more suitable for adolescents with internalized problems since its emphasis is mainly on the expression of emotions and impulses, which is the exact problem of these adolescents. But, the problem

of adolescents with externalized behavior is mostly about managing these emotions rather than their expression (Bazargan & Pakdaman, 2016).

To explain the lack of reduction of somatic complaints in present study, it can be said that treatment methods such as chemotherapy, radiation therapy, etc. in cancer have side effects such as nausea, heartburn, and headache, which are very similar to these somatic complaints. This makes it difficult for parents who fill out the questionnaire to distinguish the side effects of medications from somatic complaints, and this could have affected the results.

To explain the lack of rule-breaking behavior, it can be argued that because these behaviors are more severe than aggressive behaviors, the mere use of painting has not been able to reduce these problems, and resolving them requires the use of other therapies alongside painting therapy.

In summary, although, except the somatic complaints and the rule-breaking behavior, painting therapy has reduced other emotional-behavioral problems, it seems that painting can be a good means for training psychologist or nurse to deal with children with cancer who have emotional-behavioral problems. However, more advanced treatment measures should be considered for the two problems of somatic complaints, and rule-breaking behavior.

The present study also had some limitations, such as limited access to sample individuals, and the selection of homogeneous groups was not entirely possible. The questionnaires were filled in at all stages by only one parent, which may affect the accuracy of the information. Therefore, it is suggested that in future researches, individuals be homogenized in terms of the duration of the disease, parental education, and socioeconomic status. The use of other tools such as clinical interviews and the completion of questionnaires by both parents are of other suggestions.

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