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The Effectiveness of Painting Therapy with an Emphasis on Color on Social Skills and Empathy in Children

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ABSTRACT

Objective: Children represent the architects of the future for any given society. However, akin to adults, children often face challenges in developing verbal communication skills; consequently, this research was undertaken with the objective of assessing the impact of painting therapy, with a particular focus on color, on the enhancement of social skills and empathy in children.

Methods: The methodology employed in this study was semi-experimental, incorporating both experimental and control groups. The statistical population encompassed all children residing in the city of Shiraz. A total of thirty individuals were selected through a cluster random sampling technique and allocated into two groups: experimental and control. The experimental group participated in ten therapeutic sessions. Data were gathered utilizing questionnaires designed to measure social skills and empathy. The research hypotheses were subjected to analysis through the statistical method of multivariate analysis of covariance.

Results: The findings indicated that painting therapy, with a focus on color, positively influences the levels of social skills and empathy among children ($p < 0.05$).

Conclusions: The overall results lend support to the effectiveness of art-based educational methodologies in enhancing the social and emotional outcomes for children.

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Introduction

Children exist at a formative stage in their development, as they tend to emulate the behaviors they observe, with their primary role models being their parents. The behaviors acquired during childhood are crucial, as they represent fundamental aspects of social skills acquisition. Social skills encompass learned adaptive behaviors that empower individuals to engage in reciprocal relationships with diverse individuals, exhibit positive responses, and avoid behaviors that may yield adverse repercussions (Sadeghi et al., 2016). An individual possessing the requisite social skills is capable of interacting with others in a manner that allows them to attain their rights, needs, and satisfaction while fulfilling their obligations to a reasonable degree, all the while respecting the rights, needs, and satisfaction of others, thereby facilitating unimpeded exchanges with them (Soto-Icaza et al., 2015). The possession of social skills and effective communication is imperative for achieving success throughout one's life. Social skills are significantly influenced by the cultural and social networks to which an individual belongs, and the proficiency in these skills substantially impacts one's behavioral and social well-being (Ye et al., 2018). Should education and training be directed towards the cultivation of well-rounded individuals, as is indeed the case, it is imperative that social development be regarded as a critical domain of focus. Consequently, alongside the advancement of various academic competencies, addressing the social dimensions of life and equipping individuals with the requisite tools for establishing healthy interpersonal relationships represents a fundamental obligation for educators and those involved in the educational process, particularly in the context of children in foster care (Jolani et al., 2022). Social skills are, in essence, learned constructs that encompass both verbal and non-verbal behaviors; they are characterized by intention, emotional responses, and suitable reactions, necessitating the appropriate timing and regulation of specific behaviors, while remaining susceptible to environmental influences and social reinforcement, ultimately reaching their full potential (Karimi & Gharibi, 2022). Conversely, the capacity for empathy and the demonstration of empathetic behavior in children is of paramount importance. Empathy is defined as the intrinsic drive and capability to comprehend the emotional states, feelings, and thoughts of others and to react with appropriate and congruent emotions, or, in other terms, to share in the emotional experiences of others and to vicariously engage with their feelings (Van Lissa et al., 2017). The ability to empathize is instrumental in differentiating individuals who engage in altruistic behaviors from those who do not. When a child endowed with

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empathy discerns that another individual is in distress, they vicariously experience that discomfort as a direct consequence of their empathetic nature. Individuals exhibiting a high degree of empathy tend to respond emotionally to those around them facing difficulties and subsequently endeavor to ameliorate such issues (Kiarostami et al., 2022; Samavi et al., 2022). In essence, an empathetic child exemplifies altruism and fosters cooperation concerning the lives and emotions of those in their vicinity.

The treatment of children presents its own unique challenges. One of the therapeutic approaches employed to enhance empathy and social skills is art therapy (Abbing et al., 2018). The fundamental principles of art therapy for children and adolescents revolve around visual imagery, which constitutes a critical element of the natural learning process. In the presence of a qualified art therapist, children and adolescents are afforded the opportunity to articulate their feelings and emotions that they may find difficult to convey verbally, through non-verbal means such as painting. According to Dupaul et al. (1992), the capacity to express oneself through artistic mediums engenders a sense of witnessing and self-efficacy within the individual, thereby fostering self-awareness. Consequently, art therapy serves as a viable avenue for children to address their mental health challenges (Daly et al., 2007).

Indeed, art therapy is characterized as a non-verbal, experience-oriented intervention that employs a variety of approaches, including exposure, design, sculpting, and other methods. It may be utilized as a standalone treatment or in conjunction with other therapeutic modalities such as pharmacotherapy and cognitive-behavioral therapy to address issues including anxiety, cognitive deficits, and various other mental health disorders (Lowe, 2016). In the context of painting therapy, it imparts a novel perceptual skill that enhances students' awareness of their surroundings and their observational capabilities, while simultaneously improving their motor skills (Attard & Larkin, 2016). Drawing therapy is predicated on the belief that it enhances cognitive and sensory-motor functions, bolsters self-esteem and self-awareness, cultivates emotional flexibility, augments insight, fortifies social skills, alleviates and resolves conflicts and distress, and fosters social and environmental transformations (Abbing et al., 2018). Therefore, this research seeks to address the inquiry: does painting therapy, with a focus on color, exert an influence on the levels of social skills and empathy among children?

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Material and Methods

In the present study, the employed research methodology was semi-experimental, encompassing both control and experimental groups. The population under investigation comprises all primary school students residing in the city of Shiraz. The sample size for this study was comprised of 30 primary school students from Shiraz, and the sampling technique utilized herein involved random cluster sampling, which was executed across 6 public educational institutions and 6 private educational institutions for females, as well as 6 public educational institutions and 6 private educational institutions for males. The aggregate number of female students amounted to 7869, while the male student population totaled 6970; from this cohort, 30 students exhibiting challenges in communication skills and empathy were identified by educators and school administrators and subsequently referred to the researcher, from which 30 children were ultimately selected, distributed into control group (15 individuals each) and experimental group (15 individuals).

Instruments

Basic Empathy Scale (BES): The Basic Empathy Scale was established by Jolliffe and Farrington (2006). The psychometric characteristics of this scale were assessed by Aliber et al. among Italian students. The conclusive version of BES comprises 20 inquiries and includes 2 subscales. The affective subscale is composed of 11 inquiries (1, 2, 4, 5, 7, 8, 11, 13, 15, 17, 18), while the cognitive subscale consists of 9 inquiries (3, 6, 9, 10, 12, 14, 16, 19, 20). This questionnaire functions as a 5-point Likert-type attitude assessment tool, with responses to each statement ranging from 1 (completely disagree) to 5 (completely agree). The minimum attainable score on this assessment is 20, whereas the maximum score is 100. A score between 20 and 40 indicates the lowest level of empathy, a score from 41 to 60 indicates average empathy, a score from 61 to 80 signifies good empathy, and a score of 81 and above represents very high empathy. In the investigation conducted by Aliber et al. Cronbach's alpha coefficient was reported as 0.87 for the entire scale, 0.86 for the affective subscale, and 0.74 for the cognitive subscale.

Queendom Communication Skills Test: The communication skills test consists of 34 items that delineate various communication skills (Tapak et al., 2022). In order to complete the questionnaire, the respondent is required to peruse each item and subsequently indicate the extent to which their

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current circumstances align with its content on a five-point Likert scale ranging from "never" to "always." The secondary communication skills assessed within this scale encompass five listening abilities, the capacity to receive and transmit messages, comprehension of the communication process, emotional regulation, and assertive communication. 1- The capacity to receive and transmit messages: (9) Questions: 4-5-6-12-21-22-23-24-29 2- Emotional regulation: (9 questions): 7-8-9-11-13-16-28-30-32. 3- Listening abilities (6 questions): 3-25-26-27-31-34. 4- Comprehension of the communication process (5 questions): 1-2-17-18-20. 5- Assertive communication (5 questions): 10-14-15-19-33. To finalize the assessment, the respondent must scrutinize each item and subsequently denote the degree of conformity of their current situation with its content on a five-point Likert scale from 1 (never) to 5 (always), whereby the responses are categorized as always (5), most of the time (4), sometimes (3), rarely (2), and never (1). Questions 2-4-6 are scored in a reverse manner. A distinct score is computed for each respondent pertaining to each of the aforementioned skills, which are represented in the form of sub-tests encompassing varying quantities of items. Furthermore, the aggregate score of each of the 34 statements also culminates in a total score that signifies the individual's communication skills. Consequently, the potential score range for each individual will be between 34 and 170. It is imperative to note that due to their intrinsic nature and content, certain expressions are graded in reverse during the scoring process. This implies that while selecting the option or response "always" for other items results in the maximum score, i.e., 5, opting for the same answer in the reverse items will yield the minimum score, i.e., 1, and these items are identified in the questionnaires with an asterisk. Based on this analytical methodology, the accrued scores are aggregated. The number of questions in the questionnaire multiplied by 1 equals the lower limit of the score. The upper limit of the score is established at 170, with the average score being 102, and the lower limit at 34. A score within the range of 34 to 68 indicates deficient communication skills. A score between 68 and 102 signifies average communication skills. A score exceeding 102 denotes proficient communication skills. In the research conducted by Mahmoudi and Najafi (2012), the reliability of this assessment was established at 0.85 utilizing the Cronbach's alpha methodology.

Painting therapy sessions

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The painting therapy intervention program based on Silver's painting therapy protocol (Silvers, 2008). Painting therapy sessions were held in the form of ten weekly sessions of one 90-minute session in one of the clinics in Shiraz.

The first session: Taking the pre-test and familiarization. Telling the rules

Second session: Drawing different emotions through different colors

Third session: Drawing the members of the class, family and peers with the color of the feelings he has towards them

Session 4: Show what makes me sad with color.

Session 5: Draw an animal that you would like to be and draw it in colors that show your feelings.

Sixth session: Group wall painting with finger paint (with children's favorite theme) with blue and green colors

Seventh session: Painting what they like in nature with white, blue and yellow colors.

Eighth session: Painting of the body (eyes, ears, hands, fingers, head, feet, hands) using colors that feel and then using blue, green and white colors.

Ninth session: Painting with music with slow, fast rhythm and children's favorite theme with black colors and then the same painting using blue and green colors and comparing both paintings.

Session 10: Draw and paint how you imagine yourself - paint good behaviors with calming colors.

The data obtained by the questionnaires were analyzed by the statistical method of analysis of covariance.

Results

Therefore, these statistical methods have been used for the preliminary investigations of this issue to ensure that the assumptions are not violated, and the results of these investigations are as follows.

The assumption of normality

One of the presuppositions related to the parametric tests used in the research is the assumption of the normality of the distribution of the scores of the groups in the studied society. Kolmogorov Smirnov test was used to check and analyze this assumption. Table 1 shows the results obtained from this test. Non-significant results (significance value greater than 0.05) indicate the normality of the distribution of scores in the groups.

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Table 1. Kolmogorov Smirnov test results

Variable	Group	K-S	
		Statistic	P
Social skills	Pretest	1.21	0.06
	Posttest	1.13	0.15
Empathy	Pretest	0.58	0.88
	Posttest	0.56	0.91

As the results obtained from Table 1 have shown, all significance levels are higher than the assumed value (0.05), so the obtained result shows that the assumption of normality of the distribution of the groups' scores is not violated.

The assumption of homogeneity of regression slopes

In scholarly investigations, it is posited that the presumption regarding the variables in the covariance analysis across the entirety of the data ought to reflect the linearity of said data; furthermore, it is imperative that the presumption be taken into account during the data analysis whereby the regression lines corresponding to each subject group within the research are identical; should the regression be uncoordinated, it follows that the covariance analysis would be rendered unsuitable for the hypotheses in question. The assumption of regression homogeneity represents a critical consideration in the domain of covariance analysis. This particular assumption is demonstrated through the application of uniform slopes within the regression line applicable to each group of subjects. Disparate slopes serve to indicate the presence of an interaction between the pretests and the interventionists involved in the research. This hypothesis is subjected to statistical scrutiny via the significance test concerning the interaction and the correlation between the intervention and the pre-tests. The focal point of consideration herein is a non-significant correlation between the intervention and the pre-tests. As illustrated in Table 2, the interaction F value for all variables under investigation is found to be insignificant. Consequently, assumptions pertaining to the regression slope are likewise substantiated.

Table 2. The results of the test of the assumption of homogeneity of the regression slopes

Variable	Source of changes	F value	P
Social skills	Group * Pretest	0.104	0.74
Empathy	Group * Pretest	2.37	0.105

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The assumption of homogeneity of variances

The homogeneity of variances is evaluated under the premise that the variances derived from the scores of both cohorts within the population are commensurate and devoid of any statistical discrepancies. Consequently, to substantiate this premise, the outcomes yielded by Levene's test have been referenced. In accordance with the significance threshold, which exceeds 0.05, this signifies the absence of any infringement of this premise. As delineated in Table 3, a significance value surpassing 0.05 has been acquired; thus, this level of significance, as subsequently indicated, confirms that the premise of equal variances has not been contravened.

Table 3. The results of Levene's test to check the homogeneity of variances

Variable	DF1	DF2	F	P
Social skills	1	34	0.57	0.45
Empathy	1	34	0.19	0.66

The results of analysis of hypotheses

After making sure of this problem of non-violation of the assumptions of the covariance analysis of the research, they were examined to analyze the research hypotheses using the statistical method of one-way covariance analysis (ANCOA).

Hypothesis 1: Painting therapy with emphasis on color has an effect on social skills in children.

To analyze this hypothesis, the statistical method of one-way covariance analysis was used, and the results of this study are presented in Table 4.

Table 4. Test of effects between subjects (social skill)

Source	SS	DF	MS	F	P	Effect size
Modified model	3475.072	8	434.84	7.013	0.001	0.728
Group	1086.967	1	1086.967	17.548	0.001	0.455
Error	1300.795	21	61.943			
Total	243832.00	30				
Total error	4775.867	29				

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The table 4 shows that there is a significant difference between the adjusted average of social skills in the experimental and control groups. As a result, it can be said that painting therapy training based on color had a significant effect on increasing the variable of social skills in the experimental group. Therefore, the null hypothesis was rejected with more than 99% confidence (F=548.17, P<0.05). Also, according to the eta square, it can be concluded that the effect of painting therapy education based on color on the dimension of children's social skills is 45%.

Hypothesis 2: Painting therapy with emphasis on color has an effect on empathy in children.

To analyze this hypothesis, one-way covariance analysis was used, and the results of this analysis are given in Table 5.

Table 5. The results of the one-way covariance analysis (empathy scores)

Variable	Source	SS	DF	MS	F	P	Effect size
Variable	Pretest	1121.04	1	1121.04	82.47	0.001	0.71
	Group	3485.04	1	3485.04	256.38	0.001	0.78
	Error	448.57	33	13.59			

As shown in Table 5, by controlling the effect of the covariate variable (pre-test) on the dependent variable, there is a significant difference between the scores between the two groups in terms of empathy (significant value less than 0.05). In another way, treatment with emphasis on color affects the level of empathy in children. This indicates that painting therapy with an emphasis on color has been able to improve the level of children's empathy. On the other hand, because the eta squared value for the group is equal to 0.78, it can be said that 78% of the total variance of the variable Empathy is explained by group effects.

Discussion

Based on the outcomes of the conducted research, it has been established that painting therapy, particularly with a focus on color, has effectively enhanced the empathetic capabilities of children. Furthermore, considering that the eta squared value for the group is quantified at 0.78, it can be asserted that 78% of the total variance of the empathy variable is elucidated by group effects. The implementation of color-based painting therapy training has yielded a notable impact on the augmentation of social skills within the experimental group. The results of this research are

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congruent with the findings presented by Mardani et al. (2020), Karimaei and Ferdousipour (2021), (Moula, 2020), and D'Amico and Lalonde (2017).

In elucidating these results, it may be posited that experimental art therapy is more systematically organized within a secure environment, facilitating various forms of sensory stimuli through the presentation of diverse artistic techniques and materials. Given that the macro examination of traumatic memories is beyond the capacity of children, methodologies such as art therapy, which place less emphasis on the verbal articulation of distressing events experienced by children, are regarded as beneficial therapeutic interventions (Lavric & Soponaru, 2023). Engaging in artistic activities influences the inhibition system, thereby enhancing children's ability to regulate their impulses and respond to situations with efficacy. Through artistic expression, children acquire the skills to react appropriately to circumstances and initiate automatic emotional and behavioral transformations (Ayaz, 2018).

It is also imperative to recognize that painting serves as the spontaneous creation of imagery, thereby offering avenues for non-verbal expression; indeed, painting acts as a potential catalyst for creativity and also serves as a significant therapeutic medium. In the context of painting therapy, the provision of non-judgmental and spontaneous expression enables the child to articulate freely their repressed thoughts and emotions without the apprehension of external reactions, thus fostering an increase in their empathy towards others, including family members, friends, and peers. In essence, this creative process facilitates the child's development of social skills and aids in the management of their behavior, ultimately influencing the dynamics of their personality.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

The studies involving human participants were reviewed and approved by the ethics committee of Islamic Azad University. The patients/participants provided their written informed consent to participate in this study.

Author contributions

All authors contributed to the study conception and design, material preparation, data collection, and analysis. All authors contributed to the article and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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