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The effectiveness of Supportive Parenting for Childhood Anxious Emotions (SPACE) in adaptive and maladaptive cognitive emotion regulation strategies

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Abstract

Abstract

This study aimed to investigate the effectiveness of supportive parenting for childhood anxious emotions intervention in adaptive and maladaptive cognitive emotion regulation strategies. The research method was a quasi-experimental pretest-posttest design with a 30-day follow-up stage with a control group. The statistical population included mothers of students aged 7 to 12 from Agha Mostafa Khomeini and Khalij Fars primary schools in Mashhad; they had anxiety problemswith the score of 68. From among them, 54 students were randomly assigned to the experimental group (29 students) and the control group (25 students) after an interview and evaluation of the inclusion criteria. The experimental group received six sessions of 60-minute supportive parenting for childhood anxious emotions intervention once a week. Participants were evaluated using the Cognitive Emotion Regulation Questionnaire - Children's Form (Garnefski et al., 2002) in the three stages of pretest, posttest, and follow-up. Data were analyzed using SPSS software (version 24) and MANOVA with repeated measures test. The results indicated the effectiveness of the supportive parenting for childhood anxious emotions intervention in reducing maladaptive cognitive emotion regulation strategies ($p<0.01$), increasing adaptive cognitive emotion regulation strategies ($p<0.01$), and maintaining its effectiveness in the follow-up stage ($p<0.01$). According to the findings of the study, therapists and clinical specialists should consider supportive parenting for childhood anxious emotions intervention as a therapeutic approach to improve cognitive emotion regulation.

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Introduction

Anxiety disorders are among the most common psychological disorders in childhood, characterized by excessive fear, worry, and avoidance; they are associated with adverse outcomes in academic, social, and emotional domains (Walter et al., 2020). Evidence suggests that a considerable proportion of children and adolescents experience some level of anxiety during development. If these problems persist, they may contribute to the emergence of psychological disorders in adulthood (Gleason & Thompson, 2022). Therefore, identifying factors involved in the development and maintenance of anxiety and designing effective interventions to reduce it are of critical importance.One of the key factors associated with childhood anxiety is difficulty in emotion regulation. Research has shown that children with anxiety-related problems, compared to their peers, face greater challenges in managing and modulating negative emotions. In addition, they are more likely to use maladaptive strategies in coping with stressful situations (Daros et al., 2021). In this regard, cognitive emotion regulation refers to conscious cognitive processes used to interpret and manage emotional events and includes both adaptive and maladaptive strategies (Garnefski & Kraaij, 2007). Studies have also highlighted the crucial role of parents in shaping children's emotion regulation abilities, showing that supportive parental responses to children's negative emotions are associated with better emotional adjustment and fewer anxiety problems (Hurrell et al., 2015).

In recent years, researchers' attention has increasingly focused on parent-based interventions for treating childhood anxiety. Supportive Parenting for Anxious Childhood Emotions (SPACE) is a novel approach in this field that aims to improve children's emotional functioning by reducing parental accommodation behaviors and increasing supportive responses (Lebowitz et al., 2020). Research findings have supported the effectiveness of this program in reducing childhood anxiety and improving family interactions (Lebowitz et al., 2021; Rozenblat et al., 2025). However, there is limited evidence regarding the impact of SPACE on cognitive emotion regulation strategies, particularly in the Iranian context. Therefore, the present study aimed to examine the effectiveness of SPACE on adaptive and maladaptive cognitive emotion regulation strategies in children with anxiety symptoms.

Method

This study used a quasi-experimental method with a pretest–posttest design and 30-day follow-up with a control group. The statistical population consisted of mothers of 7- to 12-year-old students with anxiety symptoms in elementary schools (Agha Mostafa Khomeini and Khalij Fars) in Mashhad, Iran. After initial screening using the Spence Children's Anxiety Scale (parent form) and clinical interviews, 54 eligible participants were randomly assigned to an experimental group (n = 29) and a control group (n = 25). The data collection instrument was the Cognitive Emotion Regulation Questionnaire for Children (Garnefski et al., 2002), which assesses adaptive and maladaptive cognitive emotion regulation strategies.

The experimental group participated in six weekly 60-minute group sessions of SPACE (Lebowitz et al., 2021), while the control group received no intervention. Data were collected at three time points: pretest, posttest, and follow-up. To examine the effectiveness of the intervention, total scores of adaptive and maladaptive cognitive emotion regulation strategies were analyzed first, followed by analyses of subscales. Data were analyzed using SPSS software (version 24) through MANOVA with repeated measures test.

Findings

A total of 54 children with anxiety symptoms were included in the study and assigned to experimental and control groups. The two groups did not differ significantly in demographic features, including age and gender. Descriptive statistics for the study variables are presented in Table 1.

Table 1. *Descriptive statistics of adaptive and maladaptive cognitive emotion regulation strategies by study groups and assessment stages*

Variable	Group	Pretest		Posttest		Follow-up	
		Mean	SD	Mean	SD	Mean	SD
Adaptive cognitive emotion regulation strategies	Experimental	12.93	1.33	26.46	2.47	23.73	2.12
	Control	13.46	1.35	13.66	1.54	15.33	1.44
Maladaptive cognitive emotion regulation strategies	Experimental	28.93	2.84	17.73	2.4	18.2	2.04
	Control	29.13	2.19	27.46	1.35	27.93	1.48

Descriptive findings indicated that the two groups were comparable at pretest in terms of adaptive and maladaptive cognitive emotion regulation strategies. However, at posttest and follow-up stages, the experimental group showed an increase in adaptive strategies and a decrease in maladaptive strategies, whereas no substantial changes were observed in the control group. The significance of these differences was examined using MANOVA with repeated measures test.

Prior to conducting the MANOVA with repeated measures test, statistical assumptions, including normality, homogeneity of variances, and homogeneity of covariance matrices, were examined. The results indicated that all required assumptions for the analysis were met.

Table 2. *Within-group and between-group effects for the comparison of adaptive and maladaptive cognitive emotion regulation strategies*

Variable	Source of Effect		Sum of Squares	df	Mean Square	F	Sig	Eta squared
Adaptive cognitive emotion regulation strategies	Within-group	Time	601.66	1	601.66	494.52	0.001	0.946
		Time × Group	299.26	1	299.26	245.97	0.001	0.898
		Error	34.06	28	1.21			
	Between-group	Group	1067.77	1	1067.77	186.29	0.001	0.869
		Error	160.48	28	5.73			
Maladaptive cognitive emotion regulation strategies	Within-group	Time	534.01	1	534.01	289.4	0.001	0.912
		Time × Group	340.81	1	340.81	184.7	0.001	0.868
		Error	51.66	28	1.84			
	Between-group	Group	966.94	1	966.94	98.84	0.001	0.779
		Error	237.82	28	9.77			

The results showed that at pretest, the two groups were comparable in terms of adaptive and maladaptive cognitive emotion regulation strategies. However, at posttest and follow-up, the experimental group demonstrated a significant increase in adaptive strategies and a significant decrease in maladaptive strategies compared to the control group, while changes in the control group were negligible. Repeated-measures analysis of variance confirmed significant effects of time, group, and the time × group interaction ($p < 0.001$), indicating the effectiveness of the SPACE intervention and the maintenance of its effects at follow-up. Overall, the SPACE intervention improved the overall pattern of cognitive emotion regulation in children with anxiety symptoms.

Table 3. *Bonferroni post-hoc test results comparing the experimental and control groups in adaptive and maladaptive cognitive emotion regulation strategies.*

Variable	Phase	Mean Difference	SD	Sig
Adaptive cognitive emotion regulation strategies	Pretest–Posttest	-6.86	0.391	0.001
	Posttest–Follow-up	0.533	0.359	0.446
	Pretest–Follow-up	-6.33	0.285	0.001
Maladaptive cognitive emotion regulation strategies	Pretest–Posttest	6.43	0.371	0.001
	Posttest–Follow-up	-0.467	0.326	0.491
	Pretest–Follow-up	5.96	0.351	0.001

The Bonferroni post-hoc test results indicated that at posttest, there were significant differences between the experimental and control groups in both adaptive and maladaptive cognitive emotion regulation strategies ($p < 0.001$). Specifically, the experimental group showed a significant increase in adaptive strategies and a significant decrease in maladaptive strategies compared to the control group. At the 30-day follow-up stage, these changes remained stable, and significant differences between the two groups were still observed in terms of both main variables, indicating the sustained effects of the SPACE intervention over time.

Conclusion

This study aimed to examine the effectiveness of SPACE on adaptive and maladaptive cognitive emotion regulation strategies. The results showed that the intervention significantly increased adaptive strategies and reduced maladaptive cognitive emotion regulation strategies in children with anxiety symptoms; these effects were maintained at the 30-day follow-up. These findings are consistent with previous research (Hurrell et al., 2015; Lebowitz et al., 2020;2021; Morelen et al., 2016).

The findings can be explained by the fact that the SPACE program, through training parents to reduce accommodative behaviors and increase supportive responses, creates a safe and predictable environment for the child. In this framework, parents learn to avoid facilitating avoidance or providing excessive reassurance and instead convey acceptance of the child's emotions and confidence in the child's ability to tolerate anxiety. This shift in the parent–child interaction pattern gradually strengthens adaptive cognitive strategies, such as acceptance, positive refocusing, and perspective-taking, while reducing maladaptive strategies, such as rumination, catastrophizing, and self-blame. From a theoretical perspective, the effectiveness of SPACE can be explained through the reduction of parental accommodation and the enhancement of emotional support, which leads to improved emotion regulation and reduced emotional dependence in the child. Overall, this intervention promotes cognitive emotion regulation by modifying parent–child interactions. Study limitations include the short follow-up period, reliance on self-report measures, and sample attrition. Future research is recommended to include longer follow-up periods, multi-informant assessment methods, and the involvement of both parents in the intervention. It is suggested that clinicians use SPACE as an effective approach to reduce anxiety problems in children.

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Conflict of interest

This article is derived from a Master's thesis in Clinical Psychology at Ferdowsi University of Mashhad, and the authors declare that there is no conflict of interest.

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