



Comparison of the Effectiveness of Problem-Solving Skills Training and Cognitive-Behavioral Group Play Therapy on Cognitive Emotion Regulation in Children with Generalized Anxiety Disorder

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ABSTRACT

The aim of this study was to compare the effectiveness of problem-solving skills training and cognitive-behavioral group play therapy on cognitive emotion regulation in children with generalized anxiety disorder. The present study employed a quasi-experimental pretest-posttest design with a one-month follow-up and a control group. The statistical population consisted of children with generalized anxiety disorder who were referred to counseling and welfare centers in Kermanshah. A total of 75 eligible participants were selected through purposive sampling and randomly assigned to three groups of 25 participants each: problem-solving skills training, cognitive-behavioral group play therapy, and control. The Cognitive Emotion Regulation Questionnaire developed by Garnefski (2001) was used in this study. The intervention for the first experimental group (problem-solving skills training) was conducted in 10 sessions of 120 minutes each, whereas the intervention for the second experimental group (cognitive-behavioral group play therapy) consisted of eight 90-minute sessions. The collected data were analyzed using SPSS version 24 and repeated-measures analysis of variance, following examination of the relevant statistical assumptions. The results indicated significant differences across the pretest, posttest, and follow-up stages in cognitive emotion regulation and its components ($p < .05$ to $p < .001$), and these significant differences were maintained at the follow-up stage ($p < .05$). Moreover, a significant difference was observed between problem-solving skills training and cognitive-behavioral group play therapy among children with generalized anxiety disorder. Problem-solving skills training produced greater changes in cognitive emotion regulation among children with generalized anxiety disorder than cognitive-behavioral group play therapy. Problem-solving skills training enhances cognitive emotion regulation strategies in children with generalized anxiety disorder. Through problem-solving skills training, children can develop the belief that they are genuinely capable of influencing the events and situations they encounter.

Keywords: problem-solving skills training, cognitive-behavioral group play therapy, cognitive emotion regulation, children, generalized anxiety disorder.

1. Introduction

Generalized anxiety disorder (GAD) is a clinically significant anxiety disorder characterized by persistent and excessive worry that is difficult to control and may extend across multiple areas of everyday life. In childhood, persistent anxiety can interfere with emotional development, learning, interpersonal relationships, family functioning, and children's ability to respond adaptively to ordinary developmental challenges. Because childhood is a period during which cognitive, emotional, and social capacities are still developing, chronic anxiety may become intertwined with maladaptive patterns of thinking and coping if it is not appropriately addressed. The manifestations of GAD may involve recurrent apprehensive thoughts, heightened sensitivity to possible threats, physiological arousal, difficulty concentrating, and persistent anticipation of negative outcomes, all of which may undermine children's psychological adjustment and daily functioning (1). Evidence also suggests that anxiety is not merely an isolated emotional experience but can have broader relational and interpersonal consequences, with generalized anxiety being associated with difficulties in the quality and stability of close relationships across the life course (2). Long-term stress and trait anxiety may additionally influence the balance and functioning of neural networks involved in dynamic cognitive processing, illustrating how persistent anxiety can affect cognitive systems underlying adaptive responses to environmental demands (3). Accordingly, early psychological intervention is particularly important for preventing the consolidation of maladaptive cognitive-emotional patterns and supporting children's healthy psychological development. From a broader public mental health perspective, preventive and early-intervention policies are also essential components of systems designed to reduce the burden of mental disorders (4), although the accessibility, sustainability, and implementation of such services may be influenced by wider health-service financing and resource-allocation structures (5).

One of the central psychological processes implicated in anxiety is emotion regulation. Emotion regulation refers to the processes through which individuals influence which emotions they experience, when those emotions occur, and how emotional experiences are interpreted, expressed, and modified. Gross emphasized that the timing and nature of

regulatory processes are crucial because different regulatory strategies may have different consequences depending on when they are implemented in the unfolding emotional response (6). In children, the development of effective emotion regulation is closely intertwined with advances in cognition, language, social understanding, and interpersonal experience. Interactions with adults and other significant figures may contribute to the development of both cognitive and social competencies that children subsequently use to understand and regulate their emotional reactions (7). When emotion regulation is ineffective, children may experience greater difficulty disengaging from threatening thoughts, reconsidering negative interpretations, or developing alternative responses to stressful situations. Such difficulties are especially relevant to GAD because excessive worry involves repetitive cognitive processing and a tendency to anticipate unfavorable outcomes. Contemporary evidence further indicates that beliefs about emotions themselves can shape regulatory behavior. Individuals who believe that emotions are uncontrollable may be less likely to employ adaptive strategies such as cognitive reappraisal and may instead rely more strongly on maladaptive forms of emotional suppression, which can contribute to symptoms of anxiety and depression (8). Thus, the regulation of emotion, particularly at the cognitive level, constitutes an important therapeutic target in children experiencing generalized anxiety.

Cognitive emotion regulation refers specifically to the conscious or cognitively mediated ways through which individuals manage the emotional consequences of stressful, threatening, or negative experiences. Garnefski and Kraaij conceptualized cognitive emotion regulation in terms of multiple strategies that individuals use after encountering adverse events, including self-blame, acceptance, rumination, positive refocusing, refocus on planning, positive reappraisal, putting into perspective, catastrophizing, and other-blame (9). These strategies differ considerably in their adaptive implications. Strategies such as positive reappraisal, positive refocusing, and planning can enable individuals to interpret stressful situations more flexibly and identify constructive responses, whereas repetitive rumination, catastrophizing, and maladaptive attributional patterns may intensify negative affect. The psychometric applicability of the Cognitive Emotion

Regulation Questionnaire has also been supported in Iranian samples, including evidence regarding the validity and reliability of its short form (10). Research conducted among children with specific learning disorders has further demonstrated meaningful associations between cognitive emotion regulation and behavioral difficulties, indicating that children's characteristic ways of cognitively managing emotional experiences are closely related to broader behavioral functioning (11). Similar relationships have been observed in clinical populations; for example, cognitive emotion regulation strategies have been associated with anxiety and depressive symptoms in individuals with autism spectrum disorder (12). These findings reinforce the importance of examining cognitive regulation processes not only as correlates of psychological symptoms but also as potentially modifiable mechanisms through which therapeutic interventions can promote adjustment.

Several cognitive mechanisms are particularly relevant to understanding how deficient cognitive emotion regulation may sustain anxiety. Rumination, for instance, involves repetitive and persistent attention to distressing thoughts and emotional experiences and may prevent flexible engagement with alternative interpretations or problem-focused responses. Recent findings suggest that cognitive fusion, or becoming excessively entangled with the literal content of one's thoughts, may help account for the relationship between anxiety sensitivity and rumination (13). Similarly, the believability attached to anxious thoughts may intensify emotional distress, as demonstrated in research examining the association between thought believability and anxiety-related feelings (14). From a metacognitive perspective, emotional disorders may be maintained not merely by the content of negative cognitions but also by maladaptive beliefs about thinking, worry, threat monitoring, and the controllability of cognitive processes (15). These perspectives are highly relevant to childhood GAD, in which persistent worry can restrict cognitive flexibility and increase reliance on repetitive, threat-focused mental activity. Consequently, interventions that help children or their caregivers recognize problems accurately, generate alternative interpretations, evaluate possible consequences, and select effective responses may indirectly modify the cognitive processes involved in emotion regulation. This theoretical relationship provides an important basis for

considering problem-solving interventions as a means of improving cognitive emotion regulation in anxious children.

Problem solving is a complex cognitive-behavioral capacity that involves identifying a problem, defining it clearly, generating possible solutions, considering their consequences, selecting an appropriate response, implementing that response, and evaluating its effectiveness. During childhood, problem-solving abilities develop progressively and can be strengthened through guided practice and supportive interpersonal interactions. Children's curiosity and exploratory behavior are related to their development of problem-solving abilities, underscoring the importance of encouraging flexible and active engagement with challenges from an early age (16). Practical approaches to children's problem-solving development similarly emphasize helping children recognize choices, anticipate consequences, and make increasingly independent decisions (17). Structured programs have shown that problem-solving skills can be taught successfully to young children. The "I Can Problem Solve" program, for example, has been found to enhance problem-solving and social skills among preschool and first-grade children (18). Problem-solving interventions may also influence emotional and behavioral outcomes; group problem-solving skills training has been associated with improved anger control among students (19), reductions in aggression and anger among children with hyperactivity-related difficulties (20), and reductions in test anxiety (21). These findings suggest that problem-solving training has applications extending beyond cognitive performance and may contribute to the regulation of emotional responses in stressful or challenging situations.

For children, problem-solving skills are rarely developed in isolation from their social environment. Parents, teachers, and other adults play important roles in modeling how difficulties are interpreted, discussed, and managed. Family- and school-based interventions therefore provide an opportunity to modify the interpersonal context in which children learn to cope with problems. Family-oriented problem-solving training delivered to parents has been shown to influence children's perceptions of their parents, highlighting the potential of parent-focused interventions to alter the relational processes through which children experience guidance and support (22). A family-/school-based problem-solving program has likewise been shown to

improve problem-solving styles among elementary school students (23). Moreover, problem-solving training has demonstrated beneficial effects on the social skills of preschool children (24). More recent evidence has directly connected this intervention approach to cognitive emotion regulation. Problem-solving skills training has been reported to improve cognitive emotion regulation strategies and students' well-being (25), while another study found beneficial effects on both cognitive emotion regulation strategies and self-regulation (26). Taken together, these findings suggest that strengthening problem-solving skills may provide children with a more organized cognitive framework for managing stressful experiences, thereby reducing automatic or maladaptive responses and increasing the use of deliberate, constructive regulatory strategies.

Although problem-solving training represents a cognitively structured intervention, children—particularly younger children—may not always respond optimally to interventions that depend heavily on verbal explanation or abstract reasoning. Play therapy offers a developmentally appropriate alternative because play constitutes a natural medium through which children communicate, express emotions, rehearse social experiences, and explore difficult situations. Play therapy enables therapeutic processes to be translated into activities that are more compatible with children's developmental capacities and modes of communication (27). Cognitive-behavioral play therapy combines this developmentally appropriate medium with the principles of cognitive-behavioral therapy, using structured play activities to help children recognize thoughts and emotions, identify relationships among thoughts, feelings, and behavior, practice alternative responses, and acquire coping skills (28). Rather than requiring children to discuss cognitive distortions exclusively through abstract verbal dialogue, cognitive-behavioral play therapy can employ stories, drawings, role-play, games, modeling, and other symbolic activities to make emotional and cognitive concepts tangible. This approach may be especially useful for anxious children because it creates opportunities to experience difficult emotions in a controlled setting while simultaneously learning new ways to interpret and respond to those emotions.

Empirical findings support the usefulness of play-based interventions for emotional and behavioral problems in

children. Cognitive-behavioral group play therapy has been reported to reduce anxiety and improve social skills in children with specific developmental or communication challenges, including deaf students (29). Evidence from other forms of structured play therapy also suggests that play-based interventions can improve emotion-related outcomes; for example, Adlerian play therapy has demonstrated beneficial effects on emotion regulation and aggression among children with oppositional defiant disorder (30). These findings are relevant because emotion regulation deficits cut across diagnostic categories and may contribute to both internalizing and externalizing symptoms. Cognitive-behavioral interventions targeting emotional processes have similarly shown promise among adolescents with GAD. Comparative evidence indicates that cognitive-behavioral therapy and unified transdiagnostic treatment can improve emotional regulation among adolescents with generalized anxiety disorder (31). Furthermore, interventions explicitly targeting cognitive-behavioral coping have improved distress tolerance and cognitive emotion regulation in other psychologically distressed populations (32). Although these populations and intervention formats differ from those of children with GAD, together they support the broader proposition that structured cognitive-behavioral methods can modify regulatory processes that contribute to emotional distress.

An important consideration is that problem-solving training and cognitive-behavioral group play therapy may influence cognitive emotion regulation through partially different mechanisms. Problem-solving training emphasizes deliberate cognitive organization, identification of alternatives, perspective taking, anticipation of consequences, and sequential planning. These skills may be particularly relevant to adaptive CERQ dimensions such as refocus on planning, positive reappraisal, and putting into perspective. By contrast, cognitive-behavioral play therapy integrates cognitive restructuring and emotional learning within play, potentially facilitating emotional awareness, recognition of anxiety-provoking thoughts, physiological awareness, behavioral rehearsal, and regulation through experiential activities. Both approaches may therefore reduce maladaptive cognitive responses to stressful situations, but their comparative effectiveness cannot be inferred solely from evidence demonstrating that each is

effective independently. This distinction is clinically important because intervention selection for children with GAD should ideally be guided not only by whether a treatment works but also by which intervention produces greater and more durable changes in the specific psychological processes targeted by treatment.

The need for such comparative investigation is further strengthened by the developmental and contextual complexity of childhood anxiety. Children vary in cognitive maturity, verbal ability, family involvement, learning style, and responsiveness to structured therapeutic tasks. A family-/school-based problem-solving intervention may have the advantage of extending therapeutic principles into children's everyday environments through caregivers and educators, whereas cognitive-behavioral group play therapy may offer a more immediate, child-centered route to emotional learning through direct therapeutic experiences. At the same time, counseling remains an important component of the treatment of generalized anxiety disorder and can provide structured support for identifying the cognitive, emotional, and behavioral processes involved in persistent anxiety (1). Evidence concerning cognitive emotion regulation further suggests that interventions should not focus only on symptom reduction but also on the mechanisms children use to interpret and manage emotionally challenging events. The development of adaptive regulatory strategies may contribute to resilience across a range of stressful experiences, whereas continued reliance on rumination, catastrophizing, or maladaptive blame can preserve emotional distress even when external circumstances change. Because children are still developing their regulatory repertoires, interventions provided during this period may have particularly meaningful implications for subsequent psychological functioning.

Despite increasing research on problem-solving training, cognitive-behavioral interventions, play therapy, and cognitive emotion regulation, relatively limited evidence has directly compared a structured family-/school-based problem-solving intervention with cognitive-behavioral group play therapy in children diagnosed with GAD. Existing studies have shown beneficial effects of problem-solving training on social skills, anger, anxiety, self-regulation, and cognitive emotion regulation (20, 21, 24-26), while play-based and cognitive-behavioral approaches have

demonstrated improvements in anxiety, social functioning, aggression, and emotion regulation (29-31). Nevertheless, evidence regarding which of these developmentally relevant interventions produces stronger improvements in cognitive emotion regulation among children with GAD remains insufficient. Direct comparison can therefore provide clinically meaningful information for psychologists, counselors, parents, and educational professionals seeking interventions that not only reduce anxiety-related difficulties but also strengthen children's capacity to cognitively manage stressful experiences.

Accordingly, the aim of the present study was to compare the effectiveness of problem-solving skills training and cognitive-behavioral group play therapy on cognitive emotion regulation in children with generalized anxiety disorder.

2. Methods and Materials

2.1. Study Design and Participants

The present study employed a quasi-experimental design with three parallel groups and assessments at pretest, posttest, and one-month follow-up. The study population consisted of children diagnosed with generalized anxiety disorder (GAD) who had either presented to or been referred to counseling and welfare centers in Kermanshah, Iran, including the Imam Reza Clinic Counseling Center, Zafar Clinic Counseling Center, and Shamim Yas Counseling Center. Using purposive sampling, 75 eligible children with GAD were recruited from counseling and psychological service centers. After determining eligibility according to the predefined inclusion and exclusion criteria, the participants were randomly assigned using a simple randomization procedure to one of three groups, with 25 participants in each group: a family-/school-based problem-solving skills training group, a cognitive-behavioral group play therapy group, and a control group. The inclusion criteria consisted of a diagnosis of generalized anxiety disorder and an age range of 6 to 11 years. The exclusion criteria included insufficient cooperation by the child or family in actively participating in the intervention sessions and receiving other counseling or psychotherapeutic services during the intervention period. After random allocation, all participants completed the pretest assessment. The two experimental

groups subsequently received their respective interventions, whereas the control group did not receive either of the study interventions during the intervention period. The cognitive-behavioral group play therapy program was administered directly to the children in eight 90-minute sessions held twice weekly, whereas the family-/school-based problem-solving intervention, based on the Thoughtful Child/Adolescent program described by Kakabaraei (2019), was delivered in ten 120-minute sessions held twice weekly. Following completion of the interventions, participants in all three groups completed the posttest assessment, and the same outcome measure was administered again one month later to evaluate the maintenance of treatment effects. The intervention sessions followed predetermined and systematically organized protocols to ensure consistency in implementation across participants.

2.2. Data Collection Tools

Cognitive Emotion Regulation Questionnaire. Cognitive emotion regulation was assessed using the Cognitive Emotion Regulation Questionnaire (CERQ), a multidimensional self-report instrument developed to identify the cognitive coping strategies that individuals employ following negative, stressful, or unpleasant events and situations (Garnefski et al., 2006). The instrument can be administered in both nonclinical and clinical populations. The version used in the present study consisted of 18 items assessing nine cognitive emotion regulation strategies: self-blame, acceptance, rumination, positive refocusing, refocus on planning, positive reappraisal, putting into perspective, catastrophizing, and other-blame. Each subscale contains two items. Responses are scored on a five-point Likert scale ranging from 1 (almost never) to 5 (almost always). Scores for each subscale are obtained by summing the corresponding item scores, resulting in a possible range of 2 to 10 for each strategy. Higher scores indicate more frequent use of the respective cognitive emotion regulation strategy when confronting stressful or negative experiences. Previous psychometric investigations have demonstrated acceptable internal consistency for the CERQ. Garnefski et al. (2007) reported Cronbach's alpha coefficients ranging from .62 to .80 across the nine subscales. In an Iranian psychometric evaluation, Hasani (2011) reported intercorrelations among the subscales ranging from .73 to .88 and Cronbach's alpha

coefficients ranging from .68 to .86, supporting the validity and reliability of the instrument in an Iranian population. More recently, Ghobadi et al. (2023) reported a Cronbach's alpha coefficient of .85. In the present study, the internal consistency coefficient calculated using Cronbach's alpha was also .85 for cognitive emotion regulation, indicating satisfactory reliability.

2.3. Interventions

Cognitive-Behavioral Group Play Therapy. Cognitive-behavioral group play therapy was administered to participants in the second experimental group by the researcher without the involvement of the counseling center instructors. The intervention consisted of eight 90-minute sessions conducted twice weekly. The protocol integrated developmentally appropriate play activities with cognitive-behavioral principles to increase children's awareness, identification, differentiation, and regulation of emotions and to address anxiety-provoking cognitions and behaviors. The first session focused on rapport building and becoming familiar with the children's interests through activities such as ball games and cup-based games. The second session introduced basic emotions through developmentally appropriate activities, including viewing selected material from the animated film *Inside Out* and drawing exercises. The third session provided opportunities for children to experience, identify, and describe both positive and negative emotions through activities such as ball-targeting games. The fourth session emphasized recognition and differentiation of emotional states through role-play, storytelling, and facial-expression games. The fifth session focused on identifying facial and bodily changes associated with emotional arousal through emotion-button activities and drawing. The sixth session addressed the identification of anxiety-provoking thoughts, particularly those occurring in social situations, using a "thought clouds" storytelling activity. The seventh session was designed to increase children's awareness of their behavioral responses during different emotional states and their recognition of associated physiological changes; children completed emotion-monitoring records, and feedback was provided on previous assignments. The eighth session focused on reducing stress and anxiety in the presence of others through structured self-introduction activities performed in front of group members.

Across sessions, cognitive-behavioral techniques were embedded in play-based exercises so that children could identify links among situations, thoughts, emotions, physiological reactions, and behavioral responses in a developmentally accessible format.

Family-/School-Based Problem-Solving Skills Training. The problem-solving intervention was based on the family-/school-oriented Thoughtful Child/Adolescent training program described by Kakabaraci (2019), which was designed to strengthen children's and adolescents' ability to deal effectively with problems encountered at home and in other social environments. The program primarily emphasizes training parents and teachers to use effective interactive strategies that guide children toward systematic problem solving in situations involving family members, peers, and other interpersonal contexts. In the present study, the intervention was delivered by the researcher to the parents of children assigned to the problem-solving experimental group, without the involvement of counseling center instructors, in ten 120-minute sessions conducted twice weekly. The first session was devoted to introductions, rapport building, explaining the objectives of the program, discussing the developmental importance of childhood, and identifying problems relevant to children with generalized anxiety disorder; participants were provided with practice sheets and asked to prepare a list of problems. The second session introduced problem-solving skills and relevant educational approaches, including five core problem-solving skills, accompanied by audiovisual exercises concerning worry about hypothetical future events. The third session addressed emotions and emphasized the importance of recognizing and expressing feelings in everyday interpersonal situations; activities included emotion-recognition cards and stories concerning the feelings of others. The fourth session focused on active listening as a fundamental component of effective problem solving and its application in interpersonal interactions, together with structured listening exercises. The fifth session addressed understanding motives by encouraging consideration of multiple possible explanations for behavior and distinguishing hostile or intentional acts from accidental or unintentional behaviors; exercises included motive-identification worksheets and positive-thinking practice. The sixth session focused on generating alternative solutions

without prematurely evaluating them, using hypothetical situations, incomplete stories, drawing activities, and brainstorming exercises. The seventh session addressed consequences and encouraged participants to evaluate the potential positive and negative outcomes of alternative solutions and to engage in outcome-based thinking when solving both hypothetical and real-life problems. The eighth session taught sequential planning, including specifying steps toward a goal, anticipating possible obstacles, scheduling activities, and integrating individual steps into an organized plan. The ninth session integrated the previously learned problem-solving skills and reviewed the core questions and strategies through structured question-and-answer exercises, combined exercises, small-group activities, and completion of unfinished stories. The tenth session consisted of a comprehensive review, consolidation of the problem-solving dialogue process, and evaluation of acquired skills; participants worked in small groups to analyze problem-solving examples and identify the specific strategies employed. Throughout the intervention, parents were encouraged to apply the skills between sessions and to guide their children toward structured, reflective, and adaptive approaches to everyday problems.

2.4. Data Analysis

Data were analyzed using IBM SPSS Statistics version 24. Descriptive statistics, including means and standard deviations, were calculated to summarize participants' scores on cognitive emotion regulation and its components across the pretest, posttest, and one-month follow-up assessments. Before conducting the primary inferential analyses, the statistical assumptions required for repeated-measures analysis were examined. The Shapiro-Wilk test was used to evaluate the normality of score distributions, and the relevant assumptions underlying the repeated-measures model were assessed before hypothesis testing. To examine changes in cognitive emotion regulation over time and to compare the patterns of change among the problem-solving skills training, cognitive-behavioral group play therapy, and control groups, a mixed repeated-measures analysis of variance was conducted, with assessment time as the within-subject factor and group as the between-subject factor. This analysis enabled evaluation of the main effect of time, the main effect of group, and the time-by-group interaction, with

the interaction effect indicating whether changes across the three assessment occasions differed according to treatment condition. When statistically significant effects were identified, appropriate post hoc pairwise comparisons were conducted to determine the specific assessment occasions and groups between which significant differences occurred. Statistical significance was evaluated at the conventional alpha level of $p < .05$.

3. Findings and Results

In this quasi-experimental study, 75 participants were enrolled, including 25 participants in the control group, 25 participants in the problem-solving skills training intervention group, and 25 participants in the cognitive-behavioral group play therapy intervention group. Of the participants, 38 (50.66%) were boys, with a mean age of 10.2 years, and 37 (49.33%) were girls, with a mean age of 9.6 years.

Table 1

Descriptive Statistics for Cognitive Emotion Regulation by Group and Assessment Stage

Variable	Group	Pretest Mean	Pretest SD	Posttest Mean	Posttest SD	Follow-up Mean	Follow-up SD
Cognitive emotion regulation	Problem-solving skills training	35.48	2.87	56.00	3.188	54.32	3.184
	Cognitive-behavioral group play therapy	38.52	3.305	44.44	3.379	42.96	3.207
	Control	36.24	4.99	38.72	4.68	39.12	3.689
Self-blame	Problem-solving skills training	3.16	0.85	6.36	0.81	6.08	0.996
	Cognitive-behavioral group play therapy	3.40	1.44	5.64	1.43	5.24	1.128
	Control	3.60	1.55	4.04	1.61	4.24	1.81
Acceptance	Problem-solving skills training	2.84	0.74	7.04	0.934	6.56	0.96
	Cognitive-behavioral group play therapy	3.28	0.79	6.72	0.97	6.28	0.98
	Control	3.64	1.15	3.28	1.06	3.32	1.02
Rumination	Problem-solving skills training	7.80	1.01	2.88	0.725	2.96	0.734
	Cognitive-behavioral group play therapy	7.68	0.953	4.04	0.888	4.56	0.96
	Control	5.84	1.54	5.64	1.46	5.88	1.363
Positive refocusing	Problem-solving skills training	4.36	0.907	7.44	0.916	7.32	0.945
	Cognitive-behavioral group play therapy	4.44	0.768	6.36	1.49	6.12	1.30
	Control	4.32	0.802	4.40	0.707	4.64	0.700
Refocus on planning	Problem-solving skills training	3.40	0.957	7.60	1.00	7.28	0.890
	Cognitive-behavioral group play therapy	3.76	0.879	4.88	1.615	4.56	1.356
	Control	5.24	1.23	5.32	1.249	5.32	1.314
Positive reappraisal	Problem-solving skills training	3.44	0.583	7.92	0.702	7.48	0.822
	Cognitive-behavioral group play therapy	3.40	0.763	6.48	1.005	6.16	1.106
	Control	3.92	0.759	4.12	0.97	3.88	0.927
Putting into perspective	Problem-solving skills training	3.08	0.812	6.84	0.898	6.56	0.916
	Cognitive-behavioral group play therapy	3.72	0.842	5.06	1.35	4.72	1.173
	Control	3.36	0.907	5.40	1.44	5.40	1.53
Catastrophizing	Problem-solving skills training	3.12	1.053	6.64	1.113	6.32	1.069
	Cognitive-behavioral group play therapy	3.56	1.08	5.44	1.227	5.12	1.22
	Control	3.32	1.069	3.36	1.15	1.56	1.003
Other-blame	Problem-solving skills training	5.28	1.208	3.28	0.936	3.76	0.969
	Cognitive-behavioral group play therapy	5.88	1.166	3.88	1.013	4.32	1.107
	Control	3.018	1.29	3.18	1.106	2.92	0.812

As shown in Table 1, at the beginning of the study, that is, at the pretest stage, the mean scores of the variables under investigation among children with generalized anxiety disorder were below the average level. Following implementation of the interventions in the experimental groups, cognitive emotion regulation and its components improved at the posttest stage. The scores of these variables remained relatively stable from the posttest to the follow-up assessment in almost all groups, with no substantial changes observed.

A mixed analysis of variance was used to analyze the data. Prior to conducting the mixed ANOVA, the assumptions of the analysis, including normality of the data, homogeneity of variances, and equality of covariance matrices for the study variables, were examined.

The normality of the cognitive emotion regulation variable was examined using the Kolmogorov-Smirnov test,

and the findings supported the assumption of normality because the significance level of the test was greater than .05. Regarding the assumption of homogeneity of variances, Levene's test was nonsignificant at the pretest, posttest, and follow-up stages; therefore, the null hypothesis of equal variances across the groups at the three assessment stages was not rejected. Accordingly, with a 95% confidence level, the relevant data could be considered to have homogeneous variances. The third assumption, equality of covariance matrices, was examined using Box's M test. The value of Box's M for cognitive emotion regulation was 11.89, and the significance level was greater than .05. Therefore, the observed covariance matrices of the dependent variable were equal across the control, first intervention, and second intervention groups. Thus, the assumption of equality of covariance matrices required for mixed ANOVA was satisfied.

Table 2

Results of the Mixed Analysis of Variance for Cognitive Emotion Regulation

Variable	Source of Variation	Sum of Squares	df	Mean Square	F	p	Effect Size
Cognitive emotion regulation	Within-subjects (Time)	4245.36	2	2122.68	81.039	.001	.624
	Between-subjects (Group)	4282.107	2	2141.053	81.74	.001	.526
	Error	5762.533	220	26.193	—	—	—
Self-blame	Within-subjects (Time)	120.569	2	60.284	29.561	.001	.512
	Between-subjects (Group)	69.502	2	34.751	17.04	.001	.534
	Error	448.658	220	2.039	—	—	—
Acceptance	Within-subjects (Time)	132.596	2	66.298	40.239	.001	.568
	Between-subjects (Group)	168.249	2	84.124	51.059	.001	.517
	Error	—	220	—	—	—	—
Rumination	Within-subjects (Time)	335.76	2	167.88	80.193	.001	.586
	Between-subjects (Group)	57.84	2	28.92	13.814	.001	.612
	Error	460.56	220	2.093	—	—	—
Positive refocusing	Within-subjects (Time)	84.89	2	44.92	34.768	.001	.240
	Between-subjects (Group)	147.92	2	73.96	57.245	.001	.342
	Error	284.24	220	1.292	—	—	—
Refocus on planning	Within-subjects (Time)	145.076	2	72.538	35.399	.001	.543
	Between-subjects (Group)	107.636	2	53.818	26.263	.001	.393
	Error	450.818	220	2.049	—	—	—
Positive reappraisal	Within-subjects (Time)	383.209	2	191.604	109.343	.001	.499
	Between-subjects (Group)	153.502	2	76.751	43.8	.001	.485
	Error	385.511	220	1.752	—	—	—
Putting into perspective	Within-subjects (Time)	258.196	2	129.098	92.096	.001	.556
	Between-subjects (Group)	42.062	2	21.031	15.003	.001	.320
	Error	308.391	220	1.402	—	—	—
Catastrophizing	Within-subjects (Time)	149.227	2	74.613	45.992	.001	.395
	Between-subjects (Group)	146.027	2	73.013	45.006	.001	.390
	Error	356.907	220	1.622	—	—	—
Other-blame	Within-subjects (Time)	69.982	2	34.991	26.449	.001	.394
	Between-subjects (Group)	107.209	2	53.604	40.518	.001	.369
	Error	291.058	220	1.323	—	—	—

According to the data presented in Table 2, the mixed ANOVA results indicated that the main effect of the within-subject factor, namely time corresponding to the pretest, posttest, and follow-up stages, was statistically significant for cognitive emotion regulation and its components. The effect size for the within-subject effect on cognitive emotion regulation was reported as .626, indicating a substantial effect. Accordingly, the mean scores of cognitive emotion regulation differed between at least two assessment stages.

The effect of the between-subject factor, which consisted of three levels—the control group, the first intervention group, and the second intervention group—on cognitive emotion regulation was also statistically significant. The effect size of .526 indicated a moderate effect of group on cognitive emotion regulation. Accordingly, cognitive emotion regulation scores differed between at least two levels of the between-subject factor. To identify the specific group differences, a post hoc test was required, the results of which are presented below.

Table 3

Results of the Bonferroni Post Hoc Test

Group 1	Group 2	Mean Difference	Standard Error	p
Problem-solving skills training	Cognitive-behavioral group play therapy	6.626	0.835	.001
Problem-solving skills training	Control	10.573	0.835	.001
Cognitive-behavioral group play therapy	Problem-solving skills training	-6.626	0.835	.001
Cognitive-behavioral group play therapy	Control	3.946	0.835	.001
Control	Problem-solving skills training	-10.573	0.835	.001
Control	Cognitive-behavioral group play therapy	-3.946	0.835	.001

The results of the Bonferroni post hoc test indicated a statistically significant difference between problem-solving skills training and cognitive-behavioral group play therapy among children with generalized anxiety disorder. The levels of cognitive emotion regulation and its dimensions among the participants were reported to be below the average level. The findings further indicated that both educational interventions produced changes in cognitive emotion regulation and its dimensions among children with generalized anxiety disorder. Participants who received these educational interventions were reported to experience lower levels of cognitive emotion regulation. The results also demonstrated a statistically significant difference between problem-solving skills training and cognitive-behavioral group play therapy, with problem-solving skills training exerting a greater effect on changes in cognitive emotion regulation among children with generalized anxiety disorder.

4. Discussion and Conclusion

The present study aimed to compare the effectiveness of problem-solving skills training and cognitive-behavioral group play therapy in improving cognitive emotion

regulation among children with generalized anxiety disorder (GAD). The findings indicated that cognitive emotion regulation changed significantly across the pretest, posttest, and one-month follow-up assessments, and that the magnitude and pattern of these changes differed significantly among the problem-solving skills training, cognitive-behavioral group play therapy, and control groups. The significant within-subject effect of time showed that participants' cognitive emotion regulation scores changed over the course of the study, while the significant between-group effect demonstrated that these changes were not equivalent across the three conditions. The findings further showed that both intervention approaches were effective relative to the control condition, with the improvements generally remaining stable at the one-month follow-up. More importantly, the Bonferroni post hoc comparisons indicated that problem-solving skills training produced a significantly greater change in cognitive emotion regulation than cognitive-behavioral group play therapy. Thus, although both interventions were beneficial, the family-/school-based problem-solving program appeared to have a stronger overall effect on the cognitive processes through which children with GAD manage emotional experiences.

The effectiveness of problem-solving skills training observed in the present study is consistent with previous findings showing that systematic instruction in problem solving can enhance adaptive cognitive emotion regulation. Vahedi and colleagues found that problem-solving skills training improved cognitive emotion regulation strategies and psychological well-being among students, suggesting that the acquisition of organized approaches to understanding and managing problems may generalize to the regulation of emotional experiences (25). Similarly, Yekanizad and Soleiman Nejad reported that problem-solving skills training was effective in improving both cognitive emotion regulation strategies and self-regulation (26). These findings closely align with the present results because cognitive emotion regulation requires individuals to move beyond automatic emotional responding and cognitively reorganize the meaning of stressful situations. Children who learn how to define a problem, generate alternative responses, consider consequences, and select an appropriate course of action may become less cognitively overwhelmed by threatening experiences and more capable of responding to anxiety-provoking circumstances in a structured and purposeful manner.

The present findings can also be explained through the theoretical overlap between problem-solving processes and adaptive cognitive emotion regulation strategies. Cognitive emotion regulation involves the thoughts and interpretations through which individuals manage emotional responses following stressful or negative events. Garnefski and Kraaij described several cognitive strategies, including positive reappraisal, refocus on planning, putting into perspective, rumination, catastrophizing, and forms of blame (9). A problem-solving intervention directly exercises several cognitive processes that correspond with these regulatory mechanisms. For example, generating multiple solutions may reduce rigid threat interpretations, examining possible consequences may promote perspective taking, and developing sequential action plans may strengthen refocus on planning. Likewise, examining alternative explanations for other people's behavior may reduce automatic hostile interpretations or maladaptive attributional patterns. Therefore, the improvement in cognitive emotion regulation following problem-solving training can be understood as a consequence of repeatedly practicing a more flexible,

deliberative, and goal-directed mode of responding to difficult experiences.

This interpretation is further supported by research showing broader emotional and behavioral benefits of problem-solving programs among children and adolescents. Family-/school-based problem-solving training has been shown to improve problem-solving styles among elementary school students (23), while family-oriented problem-solving training provided to parents has demonstrated favorable effects on children's perceptions of parental interactions (22). Problem-solving training has also been associated with improved social skills in preschool children (24), improved problem-solving and social competence among preschool and early elementary school children (18), reduced aggression and anger among children with hyperactivity-related difficulties (20), and improved anger control among students (19). In addition, problem-solving skills training has been found to reduce test anxiety (21). Although these studies have examined different populations and outcomes, collectively they indicate that problem-solving instruction is not restricted to the acquisition of cognitive techniques; rather, it can influence emotional control, interpersonal functioning, anxiety, and behavioral adjustment. The present findings extend this literature by suggesting that cognitive emotion regulation may be one of the mechanisms through which such broader benefits emerge in children with GAD.

The developmental characteristics of childhood may also explain why structured problem-solving training was particularly effective. Children are still acquiring the capacity to evaluate alternative courses of action, delay impulsive responses, anticipate consequences, and coordinate emotional reactions with goal-directed behavior. Problem-solving experiences during childhood can strengthen these developing competencies by creating opportunities for children to approach difficulties as manageable situations rather than uncontrollable threats. Research on childhood inquisitiveness has demonstrated that exploratory engagement and curiosity are related to problem-solving performance, suggesting that flexible exploration contributes to children's ability to deal with novel challenges (16). Likewise, educational approaches to problem-solving emphasize teaching children to recognize choices, anticipate consequences, and make more effective decisions (17). For a child with GAD, who may

characteristically interpret ambiguous events as threatening and engage in persistent worry, replacing an undifferentiated sense of danger with a structured sequence of “What is the problem?”, “What can I do?”, and “What may happen if I choose this response?” may reduce cognitive helplessness and facilitate greater perceived control.

The family- and school-oriented structure of the problem-solving intervention may have additionally strengthened its effects. Childhood emotional regulation develops within interpersonal contexts, and children frequently rely on parents, teachers, and other adults to help interpret difficult experiences. Adult responses can either intensify children's perceptions of threat or model adaptive coping, emotional labeling, and solution generation. Teacher-child interactions have been associated with the development of children's cognitive and social skills, highlighting the significance of relational environments for psychological development (7). In the present intervention, parents were trained to guide children toward systematic problem solving rather than immediately solving problems for them or responding primarily to anxiety. Such guidance may have provided repeated opportunities for the child to practice adaptive cognitive responses outside the formal intervention sessions. This transfer of skills to everyday family and school contexts may help explain why problem-solving training produced a stronger effect than an intervention that was primarily delivered directly to children within structured therapeutic sessions.

The finding that cognitive-behavioral group play therapy also improved cognitive emotion regulation is consistent with previous research supporting play-based and cognitive-behavioral interventions for children's emotional problems. Mahmoodi and colleagues reported that cognitive-behavioral group play therapy was effective in reducing anxiety and enhancing social skills among deaf students (29). Vahedi and Armun similarly found that Adlerian play therapy improved emotion regulation and reduced aggression among children with oppositional defiant disorder (30). Although the therapeutic orientations differ, these studies support the broader proposition that structured therapeutic play provides children with an effective medium for developing emotional and behavioral competencies. Play is developmentally congruent with children's modes of communication and learning, allowing psychological

concepts that might otherwise be too abstract to be experienced through stories, games, role-play, drawing, and behavioral rehearsal (27, 28). Thus, cognitive-behavioral group play therapy may improve cognitive emotion regulation by enabling children to recognize emotions, identify anxiety-provoking cognitions, distinguish between different emotional states, and practice more adaptive responses in a psychologically safe environment.

The cognitive-behavioral component of the play intervention is also important for interpreting its effectiveness. Cognitive-behavioral approaches conceptualize anxiety as being maintained partly through maladaptive interpretations, avoidance, attentional biases, and ineffective coping responses. In the present program, children were guided to identify anxiety-provoking thoughts, recognize emotional and physiological reactions, and experience emotionally evocative situations within structured play activities. Such processes may weaken the automatic association between anxious cognitions and avoidant or dysregulated responses. Previous evidence has shown that cognitive-behavioral therapy and unified transdiagnostic interventions can improve emotion regulation among adolescents with GAD (31). Likewise, cognitive-behavioral coping training has been found to enhance cognitive emotion regulation in individuals experiencing significant psychological stress (32). The present results therefore support the view that cognitive-behavioral principles can influence not only overt anxiety symptoms but also the underlying cognitive processes through which emotional experiences are interpreted and regulated.

The effectiveness of both interventions may also be understood in relation to the role of maladaptive repetitive thinking in GAD. Generalized anxiety is strongly characterized by persistent worry, repetitive cognitive processing, and difficulty disengaging from negatively valenced thoughts. Cognitive fusion has been found to account for part of the relationship between anxiety sensitivity-related cognitive concerns and rumination (13). Similarly, the degree to which individuals believe or become attached to distressing thoughts may be associated with stronger anxious feelings (14). Metacognitive models further propose that emotional distress is maintained by maladaptive beliefs regarding worry, threat monitoring, and the

controllability or usefulness of repetitive thinking (15). Both interventions used in the present study may disrupt this pattern, albeit through different routes. Problem-solving training encourages active cognitive engagement with solvable aspects of stressful situations, whereas cognitive-behavioral play therapy helps children identify and externalize anxious thoughts through play and guided therapeutic exercises. In both cases, the child is moved away from passive repetitive worry toward a more active relationship with thoughts and emotions.

The results can additionally be interpreted through beliefs about emotional controllability. Children with persistent anxiety may experience emotional states as unpredictable, overwhelming, or beyond personal control. Such beliefs may interfere with the use of adaptive regulatory strategies because children who perceive emotions as uncontrollable may see little reason to attempt reappraisal or active coping. Deplancke and colleagues found that beliefs regarding the uncontrollability of emotions were associated with anxiety and depressive symptoms through their relationships with cognitive reappraisal and expressive suppression (8). Problem-solving training may be especially effective in altering such perceptions because it repeatedly teaches the child and significant adults that difficult situations can be decomposed into manageable components and approached through identifiable steps. Successful completion of these steps can strengthen perceived competence and controllability. This may be particularly important in GAD, where chronic worry is frequently associated with uncertainty and anticipation of events perceived as difficult to manage.

The superiority of problem-solving skills training over cognitive-behavioral group play therapy constitutes one of the most important findings of the present study. One explanation is that the problem-solving intervention provided a more direct match to several components of cognitive emotion regulation. Skills such as generating alternatives, evaluating advantages and disadvantages, anticipating outcomes, perspective taking, and sequential planning closely correspond with adaptive forms of cognitive regulation. In contrast, cognitive-behavioral play therapy encompasses a broader range of emotional and behavioral objectives, including emotional identification, physiological awareness, social anxiety management,

emotional expression, and behavioral practice. Although these elements can improve emotion regulation, a larger proportion of the problem-solving program may have directly exercised the cognitive processes assessed by the cognitive emotion regulation measure. Consequently, the stronger effect of problem-solving training may partly reflect greater conceptual correspondence between the intervention content and the measured outcome.

A second explanation for the greater effect of problem-solving training may relate to the involvement of parents and the extension of treatment beyond the therapeutic setting. The problem-solving intervention trained adults who interact regularly with children, thereby creating opportunities for repeated reinforcement in natural environments. In contrast, the play therapy intervention was conducted with children during formal sessions. Skills acquired within therapy may require additional time or environmental support to generalize to home, school, and peer situations. A family-oriented framework can potentially modify both the child's regulatory repertoire and the responses of caregivers to children's anxiety. Earlier work showing that parent-focused problem-solving training influences children's perceptions of parental behavior provides support for this interpretation (22). Repeated exposure to a consistent problem-solving language across everyday situations may gradually change how children interpret uncertainty and emotional difficulty, thereby producing stronger cognitive-regulatory changes.

The maintenance of improvements at the one-month follow-up is also clinically meaningful. The relative stability of posttest gains suggests that participants did not merely demonstrate temporary changes immediately after the intervention. Instead, at least some of the cognitive and emotional skills acquired during treatment appeared to remain available after formal training had ended. This is especially relevant to interventions targeting children with GAD because anxiety-provoking events and uncertainty continue to arise after treatment. Long-term stress and trait anxiety have been associated with differences in neural network organization underlying cognitive processing (3), emphasizing the value of interventions capable of producing stable changes in how children process and respond to stress. The persistence of improvements may reflect repeated practice, consolidation of skills, and, particularly in the

problem-solving condition, continued application of the intervention principles by parents or other significant adults.

More broadly, the present findings reinforce the importance of addressing regulatory mechanisms rather than focusing exclusively on overt anxiety symptoms. Cognitive emotion regulation has been associated with behavioral problems in children (11) and with anxiety and depressive symptoms in clinical populations (12). Thus, improvements in cognitive emotion regulation may potentially extend beyond reductions in immediate anxiety and contribute to wider psychological adjustment. GAD can affect children's emotional, interpersonal, educational, and developmental functioning, and early counseling interventions have an important role in preventing persistent or escalating difficulties (1). From this perspective, both problem-solving training and cognitive-behavioral group play therapy represent developmentally relevant approaches, but the current findings suggest that structured problem-solving training may be particularly useful when the principal therapeutic goal is to strengthen cognitive regulation of emotional responses.

The findings should nevertheless be interpreted in light of several limitations. The participants were recruited from counseling and welfare centers in a single city, Kermanshah, which limits the generalizability of the results to children from other geographical regions, cultural contexts, educational settings, or socioeconomic backgrounds. The sample size was relatively modest, with 25 participants in each group, and therefore may not adequately represent the heterogeneity of children with generalized anxiety disorder. The follow-up period was limited to one month, making it impossible to determine whether the observed intervention effects persist over several months or years. Cognitive emotion regulation was assessed primarily through a self-report questionnaire, which may be influenced by children's comprehension, response tendencies, and ability to evaluate their own cognitive processes. Furthermore, the study focused specifically on cognitive emotion regulation and did not simultaneously assess other potentially relevant outcomes such as severity of generalized anxiety symptoms, functional impairment, school adjustment, parent-reported behavior, physiological indices of anxiety, or quality of life. Finally, because the problem-solving and play therapy interventions differed in their delivery format and degree of

parent involvement, the stronger effect observed for problem-solving training cannot be attributed exclusively to the intervention content itself.

Future research should replicate the present study using larger and more diverse samples recruited from multiple cities, schools, community settings, and clinical services. Longer follow-up periods, such as three, six, or twelve months, would help determine the durability of therapeutic effects and whether booster sessions are required. Future studies could employ randomized controlled designs with more rigorous allocation and blinded outcome assessment where feasible. The use of multiple assessment methods, including child self-report, parent and teacher ratings, behavioral observations, diagnostic interviews, and physiological measures, would provide a more comprehensive evaluation of treatment effects. Researchers should also examine whether changes in specific cognitive emotion regulation strategies mediate reductions in GAD symptoms and whether factors such as age, sex, baseline anxiety severity, family functioning, parental anxiety, or cognitive development moderate treatment response. It would also be useful to compare child-only, parent-mediated, and combined versions of problem-solving training to clarify whether parental involvement is a key mechanism underlying the stronger effects observed in this study.

From a practical perspective, psychologists, school counselors, child therapists, and mental health professionals can consider incorporating structured problem-solving skills into interventions for children with generalized anxiety disorder. Training parents and teachers to use consistent problem-solving language may help children practice these skills across home and school environments and increase opportunities for generalization. Cognitive-behavioral group play therapy can also be used when children have difficulty engaging with verbally demanding interventions, particularly when emotional identification, expression, social practice, and anxiety management are primary treatment needs. Practitioners may benefit from combining the structured cognitive elements of problem-solving training with developmentally appropriate play-based techniques so that children can both understand and rehearse adaptive responses. Regular monitoring of cognitive emotion regulation throughout treatment can further help

clinicians identify which regulatory strategies are changing and tailor intervention components accordingly.

Authors' Contributions

All authors contributed substantially to the study and to manuscript development, and all approved the final version.

Declaration

The authors declare that artificial intelligence tools were used only to assist with language editing, translation, and improvement of the manuscript's readability. All conceptualization, study design, data collection, data analysis, interpretation of findings, and final approval of the manuscript were performed by the authors. The authors take full responsibility for the accuracy, integrity, and originality of the content.

Transparency Statement

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Declaration of Interest

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Ethics Considerations

The study placed a high emphasis on ethical considerations. Informed consent obtained from all participants, ensuring they are fully aware of the nature of the study and their role in it. Confidentiality strictly maintained, with data anonymized to protect individual privacy. The study adhered to the ethical guidelines for research with human subjects as outlined in the Declaration of Helsinki.

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