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Original Article

Investigating the Impact of Life Skills Training through Educational Games on Emotion Regulation and Social Skills in Primary School Female Students

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Abstract

Background: Effective social skills are crucial for social interactions and relationships at every stage of life. The present study aimed to investigate the impact of life skills training through educational games on emotion regulation and social skills in primary school female students in Shiraz, Iran**.**

Methods: This study used a semi-experimental research design with a pre-test-post-test design along with a control group and a two-month follow-up. The study focused on all primary school female students in District Two of Shiraz, Iran in 2023. A total number of 72 primary school female students from the First, Second, and Third grades were conveniently selected. The study participants were randomly divided into two groups through a coin toss. In total, 36 students were included in the experimental group and 36 were placed in the control group. The experimental group took part in 12 weekly sessions, each lasting 45 minutes, in which they were taught using an educational game-based life skills training program. In contrast, the control group did not receive any form of training. Both groups completed the Emotion Regulation Checklist (ERC) and Gresham and Elliott Social and Behavioral Skills Questionnaire-Teacher Form during the pre-test, post-test, and follow-up stages. Finally, the data was examined using the paired T-test through SPSS version 28.

Results: In the intervention group, the mean and standard deviation of adaptive emotional regulation was 22.08±3.22 in the pre-test and 23.14±3.47 in the post-test. The instability/negativity score was 30.72±3.95 in the pre-test and 28.28±3.75 in the post-test. Social skills were measured at 67.86±10.34 in the pre-test and 75.47±6.71 in the post-test, while behavioral skills were 26.89±6.95 in the pre-test and 27.67±7.55 in the post-test. The results of the covariance analysis test indicated that the effectiveness of life skills training intervention on adaptive emotional regulation was not statistically significant (F=2.52, P=0.117). However, the intervention did show significant effects on the instability/negativity variables (F=6.66, P=0.012), social skill dimension (P=0.002, F=10.55), and behavioral skill dimension (P>0.001, F=19.26).

Conclusions: Teaching life skills based on educational games has led to improved emotion regulation and enhanced social skills of primary school female students in Shiraz, Iran. Therefore, it is recommended that education officials and school administrators use this approach to enhance emotion regulation and social skills in primary school female students.

***Keywords*:** Life, Emotion regulation, Social skills, School, Female, Students

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1. Introduction

A deficiency in social skills can have detrimental effects on children's development. It can impede their ability to form relationships, affect their adjustment in school, lead to feelings of isolation and withdrawal, and contribute to behavioral issues later on (1). Social skills are crucial for achieving success in academic settings and group activities (2). According to Winfrey, educating children on social skills can aid them in forming healthy relationships, collaborating with others, expressing their thoughts and beliefs, and engaging in enjoyable activities together (1). Primary school female students who lack social skills face various challenges such as difficulty in following instructions, working independently and in groups, and lacking academic skills. As a result, developing social skills enables effective interaction with their environment, enhances interpersonal relationships with peers, and fosters adaptability to children in the classroom (3).

Additionally, not having these skills may result in negative behaviors like violence, behavioral problems, substance abuse, and behavioral disorders. Ultimately, the lack of social skills can make it difficult to handle life's challenges, whereas having strong social skills can assist an individual in successfully overcoming obstacles in life (4). Emotion

regulation is a key factor in mental health, well-being, social development, adaptation, and overall growth of children (5). The influence of emotions on primary school female students' relationships with each other and their learning outcomes is undeniable. Acquiring emotion regulation skills enables children to effectively handle and regulate their emotions (6). Thus, research commonly suggested that boys and girls exhibit variances in how they convey emotions and feelings; boys typically externalize their emotions, whereas girls often internalize them. Discrepancies in emotion expression and regulation between genders stem from a mix of biological and temperamental tendencies, along with societal expectations influencing how boys and girls express emotions (7). It is crucial to understand that primary school female students who learn how to regulate their emotions from a young age, before adolescence, are better equipped to manage difficult emotions and overcome challenges later in life. Those who develop social skills and emotion regulation abilities can positively engage with others, handle stress and anxiety more effectively, and stay motivated to pursue higher education and future careers (7).

There are various methods for teaching life skills to children. Educational games offer a dynamic alternative to traditional textbook learning, allowing primary school female students to develop critical thinking, creativity, teamwork, and experimentation with new ideas. Additionally, skills such as problem-solving, critical thinking, creativity, flexibility, and resilience are naturally cultivated through these interactive activities (1). A review of various studies on life skills training indicated that childhood plays a significant role in the development and enhancement of life skills (8). In 1993, the World Health Organization (WHO), in collaboration with UNICEF, launched a comprehensive life skills training program aimed at primary prevention and enhancing the mental health of children and adolescents. By influencing attitudes, this set of skills has the potential to prevent psychological issues (9). Social skills empower individuals to engage effectively with others. These skills encompass giving and receiving praise, refusing unreasonable requests, asserting personal rights, seeking assistance, recommending changes in others' behavior, solving problems, interacting with friends of the opposite sex, and maintaining positive relationships (10).

Furthermore, social skills are interconnected with various factors that influence learning motivation, competence, and academic achievement in childhood. A deficiency in social skills can contribute to mental health issues such as depression, while social competence in childhood is strongly linked to well-being in adulthood (11). Educational games go beyond mere entertainment, serving as valuable tools for student learning and teacher instruction in the realm of education (12). The absence of life skills in the younger generations is a significant concern, as it can impact not only their personal lives but also their academic performance and future professional success. Teaching life skills enables primary school female students to enhance their self-confidence and communication abilities (13). It is clear that teaching concepts and skills solely through text-based methods does not always lead to the primary school girl students mastering the content. Some researchers highlighted that game-based learning often results in deeper understanding for most the primary school female students, while also helping those who learn more slowly to improve their focus (14). Play, as a form of social interaction, can significantly contribute to children's emotional development and adaptation, as well as help them acquire new social skills (15).

A life skills program was effective on emotion regulation and depression in primary school female students (16). The reduction of emotional and behavioral problems was achieved through the enhancement of children's life skills and self-esteem (17). Fernández Martínez and colleagues (18) demonstrated that the life skills training program significantly supported therapeutic outcomes, confirming its effectiveness in the immediate improvement of social skills among young children with anxiety symptoms. A review of literature revealed that while there are studies advocating the teaching of life skills to enhance the adaptability and positive behavior in primary school female students, many of these studies still highlighted a significant gap (12, 17, 18). Specifically, the primary school female students often lack the emotional, psychological, and social skills needed to effectively navigate life's challenges. Abbasi and co-workers revealed that the current state of life skills instruction in elementary schools is inadequate (9). Given that children and adolescents may not yet be fully capable of grasping abstract concepts,

it is worth exploring the potential effectiveness of teaching life skills through educational games. Consequently, this study aimed to examine how life skills training using educational games impacts emotion regulation and social skills among the primary school female students in Shiraz, Iran.

2. Methods

This study employed a semi-experimental design with pre-test and post-test measures, a two-month follow-up, and a control group. The research concentrated on the primary school female students in District Two of Shiraz, Iran in 2023. A total of 72 primary school female students from First, Second, and Third grades were selected using the convenient sampling method. G-Power analysis determined an adequate sample size (α=0.05, effect size=0.15, power=0.95) for two groups: experimental (22.08±3.22) and control (22.28±2.88) (19, 20). Based on this formula, the sample size was equal to 66, but due to the possibility of the sample size falling during the study, the researcher considered the number of 72 people (Figure 1).

The study participants were randomly assigned to two groups. To make sure the groups were fair, the participants were given a random assignment to either the control or intervention group. Unique identification numbers were created for each participant using a random number table. Participants with even numbers were placed in Group 1 (control group) while those with odd numbers were placed in Group 2 (intervention group): 36 were placed in the experimental group, and 36 were assigned to the control group. The criteria for inclusion in the study were as follows: participants must be enrolled in either First, Second, or Third grades of primary school, be between the ages of 7 and 10, possess average intelligence (as determined by first-grade academic standards), be willing to participate, and not be undergoing concurrent psychological interventions. The exclusion criteria were missing more than two sessions, irregular attendance at treatment sessions, and lack of cooperation with the researcher during either the pre-test or post-test phases.

In the present study, obtaining the ethical approval from Islamic Azad University of Shiraz, Iran, the researcher selected 72 primary school female students from the District Two of Shiraz, Iran using a convenience sampling method. The participants were then randomly assigned to either the control group or the experimental group, with 36 students in each group. Initially, a pre-test was administered to both the control and experimental groups in the presence of their parents. Subsequently, the experimental group

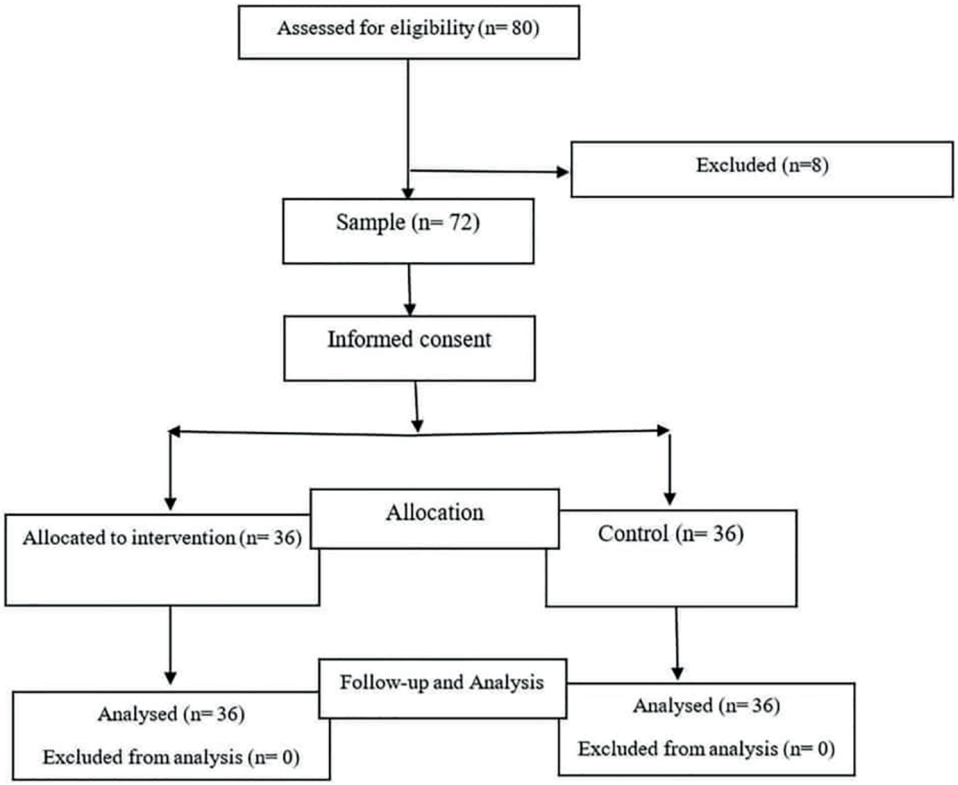

Figure 1: The figure shows the CONSORT flow chart of the study.

Table 1: Summary of life skills training sessions

Session	Session Title	Session Content	Teaching Techniques and Methods	Objectives
First	Introduction to Participants	Administering pre-test	Familiarizing the primary school female students with each other	Measuring participants' behavior before introducing the independent variable
Second	Anger Management Skills	Conducting anger spinner activity	Creating a spinner to practice deep abdominal breathing	Learning self-calming techniques during anger
Third	Understanding Emotions (Fear and Anxiety)	Providing an emotions board activity	Drawing a funny story and explaining it	Expressing unpleasant emotions and increasing emotional adaptability
Fourth	Anger Management Skills	Conducting a ball throwing activity	Introducing anger management techniques to the primary school female students	Replacing anger with alternative anger management strategies
Fifth	Continued Anger Management Skills	Conducting balloon anger activity	Describing the primary school female students' reactions to balloon popping sounds	Learning methods to manage emotional release, such as anger
Sixth	Anxiety Management	Conducting bubble play activity	Creating and blowing bubbles	Learning to manage worries
Seventh	Fear Management	Conducting scared drawing activity	Drawing personal fears	Learning creative methods to control fear
Eighth	Friendships Skills	Conducting "I want to be a mirror" activity	Seeing oneself in the mirror and describing one's personality	Understanding and accepting individual differences in friends
Ninth	Interpersonal Problem Solving	Conducting friendship circle activity	Placing friends with conflicts in a friendship circle	Resolving student conflicts through discussion
Tenth	Addressing Interpersonal Challenges	Conducting assertiveness signs activity	Describing behavior cards by the primary school female students	Learning examples of assertive behavior
Eleventh	Continued Addressing Interpersonal Challenges	Conducting "Find someone who..." activity	Finding someone who matches the description on the card	Reducing sensitivity and shyness
Twelfth	Review Sessions	Administering post-test	Reviewing an emotion regulation or social skills activity	Measuring participants' behavior after introducing the independent variable

participated in 12 weekly sessions, each lasting 45 minutes, where they received instruction based on an educational games-based life skills training program in Table 1 (20). In contrast, the control group did not receive any form of training. In the final training session, both the experimental and control groups, with their parents' presence, completed a post-test two months, tools were used to evaluate the effectiveness of the intervention on both groups in the long term. The ethical considerations for this study included obtaining an ethics code from the Islamic Azad University of Shiraz, Iran, securing informed consent from the parents of the participants, ensuring that the study did not impose any financial burden on the participants, and upholding privacy and confidentiality throughout the study.

2.1. Research Tools

2.1.1. Emotion Regulation Checklist (ERC):

The Emotional Regulation Inventory, developed by Shields and Cicchetti in 1995, is designed to assess emotional regulation in children aged 5 to 12 years (21). This inventory consists of 24 items divided into two subscales: 1. Adaptive Emotional Regulation (8 items): Questions 1, 3, 4, 5, 9, 11, 15, and 18; 2. Instability/Negativity (16 items): Questions 2, 6, 7, 8, 10, 12, 13, 14, 16, 17, 19, 20, 21, 22, 23, and 24. The subscale scores are independent of each other, and the inventory does not provide a total score. The questionnaire is scored using a 4-point Likert scale, where responses are categorized as follows: "never" receives a score of 1, "sometimes" is scored 2, "often" is scored 3, and "almost always" is scored 4. The total score ranges from a minimum of 24 to a maximum of 96. In this questionnaire, high scores on the emotion regulation subscale reflect a greater ability to manage and modulate emotional arousal. Conversely, high scores on the instability/negativity subscale indicate frequent extreme emotional reactions and mood changes unrelated

to external events or stimuli. Shields and Cicchetti reported that the internal consistency reliability of this questionnaire was 0.85 and 0.88 for the instability/negativity subscale, and 0.71 and 0.79 for the emotion regulation subscale, in preschool and elementary school children, respectively (21). In a study, the reliability of the questionnaire was established using the internal consistency method, yielding a high coefficient of 0.94 for the overall scale (22). The exploratory factor analysis identified two key factors—instability/negativity and adaptive emotional regulation—that accounted for 63.90% of the total variance in the scale. Additionally, confirmatory factor analysis demonstrated a strong fit for the proposed model. The adaptive emotion regulation subscale exhibited a significant negative correlation with the components of the Child Behavior Checklist (CBCL), while the instability/negativity subscale demonstrated a significant positive correlation with these components. According to previous studies, validation of the emotional regulation checklist tool, through exploratory and confirmatory factor analysis (based on classical theory) as well as multidimensional models (based on question-and-answer theory), confirmed the presence of two factors: instability/negativity and emotional regulation (22, 23).

2.1.2. B. Gresham and Elliott Social and Behavioral Skills Questionnaire-Teacher Form (1990): The Social Skills Scale, specifically the Special Student Form, is designed for two educational levels: grades 3 to 6 and grades 7 to 12 (24). This questionnaire, completed by teachers, consists of 48 items with a three-point response format—never, sometimes, and most of the time. Responses are scored on a 3-point Likert scale: "never" receives a score of 1, "sometimes" scores 2, and "most of the time" scores 3. A score ranging from 30 to 50 reflects weak social skills, while a score between 50 and 70 represents average social skills. Scores of 70 and above indicate strong social skills. For behavioral skills, a score between 18 and 30 denotes weak skills, a score from 30 to 42 signifies moderate skills, and a score of 42 or higher indicates strong behavioral skills. The internal reliability of the teachers' form of the scale ranges from 0.74 to 0.95 (24). However, the psychometric properties of this scale have been less explored in non-American cultures. In a study conducted in Iran, Shahim examined the social skills of children with intellectual disabilities using this scale (25). In his study, the reliability coefficients for the scale were as follows: 0.87 for reliability, 0.76 for cooperation, 0.72 for decisiveness, and 0.68 for self-control. Additionally, the scale demonstrated a high level of reliability, with a coefficient of 0.81 after a two-week interval for a sample of 10 participants. Eslami and colleagues, reported the internal reliability of the scale to range from 0.74 to 0.95 (26). The (CVI) and (CVR) for the Persian version of this scale were found to be 0.89 and 0.91, respectively (26). Cronbach's alpha exceeded 0.70 for all variables, ranging from 0.74 for external behavior to 0.92 for overall social skills. These results indicated that, as all Cronbach's alpha values were above the 0.70 threshold, the reliability of the questionnaires is confirmed by Cronbach's alpha method, demonstrating satisfactory internal consistency.

2.2. Data Analysis

The descriptive findings section included an overview of demographic variables and assesses homogeneity using the chi-square test. Additionally, key variables are summarized with statistical measures such as mean and standard deviation. In the inferential findings section, the paired T-test and ANCOVA, and chi-square test were used to make comparisons within the group. These assumptions include the absence of outliers, normality of variable distributions, homogeneity of variances, homogeneity of regression slopes, and

Table 2: Descriptive indices of contextual variables by two groups along with chi-square test

Variables	Levels	Experimental		Control		P
		N	%	N	%	
Age	7	12	33.3	10	27.8	0.784
	8	10	27.8	13	36.1	
	9	13	36.1	11	30.6	
	10	1	2.8	2	5.6	
Educational states	First	12	33.3	12	33.3	1.00
	Second	12	33.3	12	33.3	
	Third	12	33.3	12	33.3	

Table 3: Mean±SD of the research variables in experimental and control groups

Comparison type	Variables	Groups	Pre-test		Post-test		Within group P value	ANCOVA P value
			Mean	SD	Mean	SD		
Assessment of intervention effectiveness	Adaptive Emotional Regulation	Life Skills Training	22.08	3.22	23.14	3.47	0.045	0.054
		Control Group	22.28	2.88	22.33	2.83	0.912	
		Between- group test	0.788		0.284		-	
	Instability /Negativity	Life Skills Training	30.72	3.95	28.28	3.75	0. 005	0.002
		Control Group	29.86	4.91	29.42	4.10	0.442	
		Between -group test	0.415		0.223		-	
	Social Skills (Total)	Life Skills Training	67.86	10.34	75.47	6.71	0. 0001	0.014
		Control Group	76.53	6.93	77.31	6.83	0.121	
		Between- group test	<0.001		0.257		-	
	Behavioral Skills (Total)	Life Skills Training	26.89	6.95	27.67	7.55	0 004	0.004
		Control Group	26.89	5.08	27.67	5.69	0.141	
		Between- group test	0.234		<0.001		-	
	Variables	**Groups**	**Pre-test**		**Follow-up**		**Within group P value**	**ANCOVA P value**
			Mean	**SD**	**Mean**	**SD**		
Assessment of lasting impact	Adaptive Emotional Regulation	Life Skills Training	22.08	3.22	22.58	3.39	0.297	0.054
		Control Group	22.28	2.88	21.75	2.57	0.047	
		Between -group test	0.788		0.264		-	
	Instability /Negativity	Life Skills Training	30.72	3.95	28.33	4.44	0.003	0.002
		Control Group	29.86	4.91	30.11	4.34	0.450	
		Between- group test	0.415		0.090		-	
	Social Skills (Total)	Life Skills Training	67.86	10.34	75.42	6.59	0. 008	0.014
		Control Group	76.53	6.93	75.58	6.50	0.016	
		Between -group test	<0.001		0.914		-	
	Behavioral Skills (Total)	Life Skills Training	26.89	6.95	27.06	7.45	0. 001	0.004
		Control Group	26.89	5.08	27.06	5.89	0.745	
		Between -group test	0.234		0.002		-	

SD: Standard Deviation

homogeneity of variance-covariance matrices. Data analysis was conducted using SPSS version 28.

3. Results

In this study, 72 female students participated, with each group comprising 36 individuals. The homogeneity of age and educational background in the two groups was tested using the Chi-square test. Findings revealed no notable variations in age and education level between the two groups, indicating homogeneity based on the chi-square test results with P values of 0.784 for age and 1 for education level (Table 2).

Table 3 shows that the life skills training intervention was effective in improving emotional regulation related to instability/negativity (P=0.012). The post-test results for instability/negativity were statistically significant, indicating the intervention's success in addressing this aspect. However, the intervention did not show a significant impact on adaptive emotional regulation (P=0.117). The effect size index (partial eta squared) suggested that the intervention had a moderate effect on instability/negativity, with a coefficient of 0.089. The significance levels for social behavior and behavioral skills were 0.002 and <0.001, respectively; illustrating the effectiveness of the life skills training intervention in these areas.

4. Discussion

This study aimed to evaluate the impact of life skills training, incorporating educational games, on emotion regulation and social skills among primary school female students in Shiraz, Iran. The results demonstrated that the life skills training significantly improved the instability/negativity component of emotion regulation in the post-test phase. However, its impact on the adaptive emotion regulation component was not substantiated.

The findings of several studies aligned with the first hypothesis (27-36). To explain this hypothesis, it is important to note that through life skills education, primary school female students can organize and integrate cognitive

and metacognitive processes, including their thoughts, and reveal a wide range of regulated thoughts, emotions, and behaviors (37). Through cognitive-behavioral therapy-based play activities, primary school female students become aware of their characteristics, strengths, thoughts, and emotions. They learn to consciously regulate and manage their feelings by focusing on their personal strengths and behavioral skills (37). Primary school female students develop problem-solving and decision-making skills by gathering the necessary information about the challenge at hand. As a result, they are better equipped to make sound decisions, regulate and control their intense emotions, and avoid being swayed by them (38). One of the most important emotion regulation skills, particularly in managing anger, involves using games and tangible, concrete visualizations. Through these methods, primary school female students can identify the physical, emotional, and behavioral signs associated with their anger, becoming more aware of them (39).

Furthermore, by fostering and developing creative thinking, primary school female students are encouraged to generate and construct new ideas. Through the cultivation of critical thinking and the ability to view topics from multiple perspectives, primary school female students can reduce the intensity and duration of their emotions, becoming less influenced by them (37).

The results further indicated that the life skills training intervention is effective in improving both social and behavioral skills at the post-test stage. This finding aligned with the secondary hypothesis and was consistent with previous study (37). Given this hypothesis, it can be stated that possessing social skills is one of the most critical challenges of life in primary school female students. These skills enable primary school female students to achieve their social goals (38). Key social skills include cooperation, responsibility, self-control, empathy, and effort (24). In this regard, life skills education can assist primary school female students in fostering positive interactions with their peers and friends, while also increasing their awareness and understanding of their own and others' emotions and feelings. As a result, this education promotes the development of skills and abilities, facilitates the creation of effective and constructive social relationships, and enhances primary school female students' social skills (3, 10, 11).

Furthermore, during the play therapy sessions, primary school female students acquire cognitive skills and awareness of their emotions, including managing negative feelings and stress, controlling anger, making friends, engaging in dialogue, and addressing interpersonal challenges. By developing awareness of their own and others' emotions, and practicing empathy, primary school female students learn to value the feelings, thoughts, and needs of those around them. Thus, through life skills training embedded in play, primary school female students enhance their intrapersonal and interpersonal competencies, leading to a better understanding and respect for their own and others' emotions and needs, ultimately improving and advancing their social skills (18, 25). In cognitive-behavioral play therapy, primary school female students learn to navigate life's challenges through communication and social interaction within a supportive group setting. In this environment, they develop essential social skills such as cooperation, self-control, and constructive behavior, which help them address interpersonal issues. Consequently, these skills enable primary school female students to tackle cognitive, emotional, and social challenges in their daily lives (26).

4.1. Limitations

The study had several limitations. Firstly, the study's statistical population was restricted to participants from a single city, Shiraz, Iran, which necessitates caution when generalizing the findings. Additionally, the sample consisted exclusively of primary school girls, limiting the applicability of the results to other demographic groups. Furthermore, the study relied solely on a questionnaire for data collection, which could introduce bias or lead to misinterpretation of responses. This study employed a semi-experimental design, which limited the ability to control all variables and intervention factors, such as personality, family background, socio-economic status, and cultural influences. Additionally, logistical constraints prevented the organization of meetings and long-term follow-up assessments, which would have required considerable time and resources. Furthermore, it was not feasible to ensure consistent and accurate supervision of the exercises and educational games for all the primary school female students. Future studies should allocate sufficient time and resources to conduct and implement long-term follow-up sessions to evaluate the effectiveness of educational games based on the cognitive-behavioral approach.

It is also recommended that future research focus more rigorously on the methods and accuracy of delivering instructions and exercises during training sessions. Additionally, while this study used samples from the general, non-clinical population, future research could benefit from including clinical samples to broaden the findings.

5. Conclusions

The findings of the present study suggested that teaching life skills through educational games grounded in the cognitive-behavioral approach can enhance the primary school female students' emotion regulation—such as adaptability and management of instability or negativity—and social skills, including cooperation, self-control, external and internal behavior, assertiveness, and hyperactivity. By acquiring and applying skills such as emotional awareness, empathy, anger management, anxiety and fear regulation, friendship building, problem-solving, and handling interpersonal challenges, the primary school female students can more effectively regulate their emotions. Consequently, through cognitive, emotional, behavioral, and social strategies within the context of social interactions, the primary school female students can significantly improve and broaden their communication and social skills. By incorporating life skills through engaging activities such as games, individuals can maximize life opportunities. This approach facilitates effective personal and social interactions, future planning, critical thinking, decision-making, and taking responsibility for one's life. Consequently, it helps prevent or mitigate life issues in the primary school female students while safeguarding their physical and mental health from the impacts of the events that are partially within their control.

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Authors' Contribution

Nazanin Fathi: Substantial contributions to the conception and design of the work; the acquisition, analysis, and interpretation of data for the work, drafting the work. Ali Naseri: Substantial contributions to the conception and design of the work; the acquisition, analysis, and interpretation of data for the work, drafting the work and reviewing it critically for important intellectual content. All authors have read and approved the final manuscript and agree to be accountable for all aspects of the work, such that the questions related to the accuracy or integrity of any part of the work.

Conflict of Interest: None declared.

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Ethical Approval

The Ethics Review Board of Islamic Azad University, Shiraz Branch in Iran, approved the present study with the code of IR.IAU.SHIRAZ.REC.1403.015. Also, written informed consent was obtained from the participants.

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