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Effectiveness of Social Problem-Solving Training on Adjustment and Assertiveness in Female Elementary School Students as Victims of Bullying

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ABSTRACT

Objective: The current study sought to assess the efficacy of social problem-solving training on the adjustment and assertiveness of female elementary school students who have experienced bullying in Zanjan.

Methods: The research employed a quasi-experimental design characterized by a pre-test-post-test design alongside a control group. The statistical population comprised female elementary school students from the Angouran district in 2023. A total of 32 students who achieved the highest scores (exceeding 9) on the Illinois Bully Scale were randomly allocated into experimental (16 students) and control group (16 students). The experimental group participated in a structured social problem-solving skill training intervention encompassing 10 sessions, each lasting 90 minutes; conversely, the control group did not receive any form of intervention throughout this duration. The data collection was facilitated through the utilization of the Illinois Bully Scale, Gambril and Richey's assertiveness questionnaire and Sinha and Singh Adjustment Inventory for School Students. To analyze the data and evaluate the research hypotheses, the analysis of covariance was employed using SPSS-26 software.

Results: The findings of the research indicated that social problem-solving training exerts a positive and statistically significant influence on the adjustment (encompassing social, academic, and emotional dimensions) and assertiveness of female elementary students subjected to bullying.

Conclusions: Consequently, it can be concluded that the instruction of social problem-solving skills through the implementation of interactive activities and diverse exercises within the educational framework contributes to enhanced academic performance and mitigates emotional and behavioral issues.

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Introduction

Bullying represents one of the most salient subjects within the realm of educational research, constituting a significant public health issue affecting children and adolescents, and posing a considerable concern within educational institutions and broader communities (Chester et al., 2015). Maslow (1943) delineated the necessity for safety and security as one of the fundamental human needs, subsequent to the primary physiological needs. It is imperative that all students are afforded a secure educational environment to preclude the emergence of psychological distress, academic underachievement, and social banishment. Bullying manifests as a grave form of peer conflict that can detrimentally influence children's overall well-being, mental and physical health, and scholastic performance (Arseneault, 2018). This aggressive behavior is characterized by a power disparity between the perpetrator and the victim, typically materializing through recurrent, systematic, and deliberate physical, verbal, or psychological coercion exerted by more dominant individuals upon those who are comparatively weaker (Coffin, 2010; Monks & Coyne, 2011). Bullying is recognized as a substantial barrier to the provision of inclusive and high-quality education for all individuals (Wang & Florian, 2019).

Participants within the bullying dynamic may encompass bullies, victims, bystanders, or those who may embody both roles (Swearer et al., 2012). Both aggressors and victims are susceptible to experiencing a range of adverse short-term and long-term consequences (Huitsing et al., 2019). Empirical studies indicate that involvement in bullying is correlated with diminished academic self-esteem, lower academic performance, and reduced academic engagement (Hellfeldt et al., 2018; Lin et al., 2018). Victimized students are predisposed to a spectrum of issues, including absenteeism, social difficulties such as peer rejection (De Bruyn et al., 2010), and internalized challenges such as social anxiety and depression. Additionally, these individuals frequently encounter feelings of frustration and diminished self-efficacy in executing their daily or academic responsibilities, which correlates with their physical and mental health, overall happiness, and life satisfaction (Huang, 2021; Lin et al., 2018). Victimized students exhibit a heightened propensity for suicidal ideation (Baiden & Tadeo, 2020; Charak et al., 2016; Claes et al., 2015; Minkkinen et al., 2017), as well as experiences of depression and engagement in high-risk behaviors such as smoking (Lin & Lin, 2018). Furthermore, they often grapple with issues related to low self-esteem

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and inadequate social competence (Williford et al., 2012). The manifestation of bullying varies significantly across different national contexts. Consequently, while some
regions have observed a decline in the prevalence of bullying or negligible changes, others have witnessed an escalation in its occurrence (Unicef, 2019).

It appears that one of the primary challenges confronted by students who are bullied pertains to difficulties in social, academic, and emotional adjustment. Broadly, adjustment is conceptualized as the capacity to adapt, integrate, collaborate, and navigate oneself, the environment, and interpersonal relationships (Fouladi, 2004). Social adjustment is characterized as the process through which an individual acclimatizes to their social milieu, achieved by modifying either oneself or the surrounding environment (Human et al., 2016). Emotional adjustment encompasses the mechanisms through which an individual attains emotional stability, incorporating elements of mental health, personal life satisfaction, and congruence among emotions, activities, and cognitive processes (Pourafkari, 2008). Academic adjustment has been conceptualized as the capacity of students to acclimate to the multifaceted conditions and exigencies of the educational sphere, which encompasses the acceptance of prescribed roles and the provision of suitable responses to the array of circumstances that the educational milieu, as a social construct, presents to them (Pourbafarani, 2012).

An additional obstacle confronted by children subjected to bullying is their deficiency in assertiveness skills. Both aggressors and victims exhibit a diminished propensity to employ assertive strategies when provoked, which underscores their comparatively lower social competence relative to individuals who are not embroiled in bullying dynamics. Assertiveness, or assertive conduct, is delineated as a competency that empowers an individual to authentically articulate their genuine thoughts and emotions, devoid of anxiety and tension, while simultaneously safeguarding their personal rights and interests, all the while honoring the rights of others (Speed et al., 2018). Victimized students exhibit minimal regard for their relational status with peers, frequently finding themselves unable to assert themselves either physically or verbally (Felipe et al., 2011). Furthermore, children who are bullied often harbor negative self-perceptions and experience a sense of disorientation and lethargy concerning their capacity to exert control over their own lives. Such factors contribute to a diminished boldness and courage in their interpersonal engagements. In a broader context, individuals with diminished self-esteem

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frequently manifest inadequate assertiveness skills, tending to evade conflict and prioritize the needs of others over their own (Rezapour Mirsaleh et al., 2013). The responses exhibited by bullied children in reaction to bullying represent a significant predictor of the likelihood of future victimization (Sokol et al., 2015).

Empirical evidence indicates that students who are bullied harbor the belief that reporting incidents of bullying not only fails to ameliorate their circumstances but may, in certain instances, exacerbate the bullying phenomena. A subset of bullied children may respond passively to such aggression, thereby inadvertently reinforcing the bullying process and the conduct of the aggressors through the internalization of behaviors characterized by anxiety, depression, and crying. Consequently, bullies are more inclined to target these individuals, as they appear incapable of self-defense. Conversely, another cohort of bullied students may resort to externalized behaviors, such as aggression and impulsivity, in response to bullying. This group is more susceptible to being censured by educators and peers, with their aggressive actions being evaluated in isolation, without due consideration of the antecedent factors influencing their behavior (Sokol et al., 2015). Victimized students frequently lack the requisite skills to foster positive interactions with their peers and do not respond adeptly to a variety of social challenges. Moreover, it is often the case that students who witness bullying are perceived as facilitators and reinforcers of such behavior (Espelage & Low, 2013). Given the potential risks inherent in both passive and defensive responses, which may inadvertently bolster the bully's behavior in the future, it is imperative to equip these children with the skills necessary to adopt appropriate responses to incidents of bullying. Denham et al. (2014) identify the principal elements of social-emotional competencies as comprising self-regulation, social awareness, communication abilities, and social problem-solving.

Social problem-solving constitutes a fundamental skill that is both recognized and applied in managing the challenging issues encountered in daily life (Leutner et al., 2012). This process of social problem-solving can be understood as a cognitive-behavioral mechanism utilized by an individual to address a social dilemma (Yilmaz & Tras, 2019), enabling the individual to select the most efficacious response among various alternatives to ameliorate a distressing circumstance. According to the D'Zurilla and Nezu (2010) model, the efficacy of problem-solving is influenced by two relatively autonomous components, namely problem orientation and problem-solving

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styles. Problem orientation serves as the motivational dimension of problem-solving, encompassing the individual's beliefs, convictions, emotions, and assessments regarding everyday stressors and their capacity to manage them. This construct is characterized by both positive and negative dimensions. When an individual perceives a problem as an opportunity for resolution, possesses confidence in their problem-solving competencies, and employs cognitive frameworks pertinent to problem-solving, a positive problem orientation is established. Conversely, should an individual regard problem as threats or exhibit a deficiency in self-efficacy, resulting in confusion and distress when confronted with challenges, a negative orientation towards the problem becomes applicable (D'zurilla & Chang, 1995). Problem-solving styles pertain to the array of cognitive and behavioral strategies that an individual deploys during the problem-solving process, which include the definition of the problem, the generation of potential solutions, the decision-making process, and the implementation of the most appropriate solution (Saint-Jean et al., 2019). Within the framework of social problem-solving theory, it is posited that a reciprocal relationship exists between social problem-solving and adaptation; specifically, ineffective problem-solving can culminate in maladaptive outcomes such as depression and anxiety, which in turn may hinder future problem-solving endeavors. Moreover, effective problem-solving fosters positive adaptations such as enhanced emotional well-being, self-esteem, and a sense of mastery, which not only facilitate the resolution of subsequent issues and their efficacy but also serve as a protective factor against the adverse effects of negative life circumstances and contribute to improved psychological and health outcomes. Consequently, cognitive-behavioral interventions, including social problem-solving training within educational contexts, are shown to enhance social competencies and mitigate emotional and behavioral difficulties (Merrill et al., 2017).

Upon reviewing the empirical literature pertinent to the variables of the current investigation, it was discerned that research has primarily focused on high school students, the elderly, and adult populations. The findings from these studies suggest that social problem-solving training is effective in enhancing academic performance and in diminishing behavioral issues; however, there exists a paucity of research specifically addressing elementary school children. Therefore, in the present study, the researcher aims to investigate the question: is social problem-solving training effective in fostering adaptation and assertiveness among female elementary school students who have experienced bullying?

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Material and Methods

The method of this study is a semi-experimental design with a pre-test, post-test and control group. After selecting the sample group through the Illinois Bully Scale, social problem-solving skill training sessions were held for the experimental group in the school and the scores of the adaptability and assertiveness test were considered as pre-test scores. Then, the training sessions began in experimental group. The duration of the social problem-solving skill training course was 10 sessions of 90 minutes, held twice a week. During this period, the control group did not receive any training. Immediately after the training sessions, the post-test was conducted and the students in both groups completed the adjustment and assertiveness questionnaire. The content of the social problem-solving skill training sessions for students was based on the book "Social Problem Solving: A Review of Research and Education Theory" by Edward Chang.

Research Population and Sample

The statistical population included all female elementary school students in the Angouran district in 2023 academic year. Since the minimum sample size for each research group is recommended to be 15, the final sample size for each group was 16 subjects. Among the students who met the inclusion criteria for the study, 32 students who scored the highest (scores higher than 9) on the Illinois Bully Scale (2001) were randomly assigned to experimental group (16 students) and control group (16 students). Criteria for inclusion included scoring less than 13 on the Illinois Bully Scale, being physically healthy (self-reported), living with both parents, not having learning disabilities, having normal intelligence, and not experiencing grief in the past 40 days, and criteria for exclusion included the student's absence from a maximum of two educational sessions.

Instruments

Illinois Bully Scale (2001): Espelage and Holt (2013) designed the Illinois Bullying Scale to measure three subscales of bullying, victimization, and fighting in students aged 8 to 18. This scale has 18 items based on a 5-point Likert scale ranging from never to 7 times or more. Espelage and Holt (2013) reported the validity of this scale as 0.88 using Cronbach's alpha and its concurrent validity as satisfactory by correlating it with the Achenbach Aggression Questionnaire. In Iran, Chalemeh (2013) also obtained the validity of the total score of the bullying scale as 0.62 to 0.90 using Cronbach's alpha, split-half, and test-retest. This researcher reported the concurrent validity of this scale as satisfactory and significant by correlating its items with the Aggression

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Questionnaire. In the present study, 4 items related to victimization were used. The reliability of this questionnaire in the present study was obtained by Cronbach's alpha method of 0.78.

Gambrill and Ritchie Assertiveness Questionnaire (1975): This questionnaire was developed by Gambrill and Ritchie (1975) and has forty questions. Each question expresses a situation for which the subject must specify the degree of concern and the probability of his/her response to each question. The degree of mental distress refers to the degree and intensity of the subject's anxiety and distress when faced with these situations, and the rate of occurrence of behavior refers to the possibility of such behaviors. Each question has 5 options that are scored as very high = 5, high = 4, medium = 3, low = 2, very low = 1, respectively. Unlike other assertiveness questionnaires, Gambril and Richey's assertiveness questionnaire: This scale is not designed for specific individuals and its questions cover a wide range of different situations. Gambrill and Richey (1975) believe that there is a high correlation between the items of this test in terms of validity. The factor validity of the different items of the main test was reported by them to be between 0.39 and 0.70, and the reliability coefficient of this test was 0.81. The validity of this test was examined by experts from Allameh Tabatabaei University of Educational Sciences and Psychology and Isfahan University in 2015-2016, and its content validity was confirmed. The validity of this questionnaire in the present study was obtained by Cronbach's alpha method at 0.81.

Adjustment Inventory for School Students: This inventory was developed by Sinha and Singh (1971) in order to determine the social, emotional and academic adjustment of students. In Iran, Akbari et al. (2016) reported the validity and reliability of this questionnaire at a satisfactory level. The questionnaire has 55 items and is scored as zero and one. This questionnaire has three components: social adjustment, academic adjustment, and emotional adjustment. The test creators have obtained the reliability coefficient of this test using split-half, test-retest, and Coder-Richardson methods as 95%, 93%, and 94%, respectively. Also, the content validity of this test has been confirmed by 20 psychology experts. In the study by Khan Khanizadeh and Bagheri (2012), the reliability of the social adjustment subscale was 75% using the Cronbach's alpha method. The validity of this questionnaire in the present study was 0.77 using the Cronbach's alpha method.

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Results

The analysis of data was conducted utilizing both descriptive and inferential statistical methods. Within the realm of descriptive statistics, the characteristics of the variables within the research sample were assessed through indicators such as the mean and standard deviation. In the context of inferential statistics, the evaluation of statistical assumptions was carried out employing multivariate analysis of covariance to examine the proposed hypotheses. The ancillary or covariate variable in this investigation was represented by the total score of adjustment obtained from the pre-test. Table 1 delineates the lowest score, highest score, mean, and standard deviation for the individual components as well as the aggregate score of adjustment in both the pre-test and post-test, reported distinctly for the control and experimental groups.

Table 1. Descriptive information of the components and the total score of adjustment in the pre-test and post-test in the control and experimental groups

Variable	Group	Phase	N	Min.	Max.	Mean	SD
Emotional adjustment	Control	Pretest	16	8	14	10.56	1.82
		Posttest	16	8	15	11	1.89
	Experimental	Pretest	16	8	13	10.25	1.61
		Posttest	16	8	17	13.12	2.70
Social adjustment	Control	Pretest	16	7	16	12	3.01
		Posttest	16	7	16	12.06	2.51
	Experimental	Pretest	16	5	16	11.62	3.07
		Posttest	16	9	17	13.87	2.33
Academic adjustment	Control	Pretest	16	8	13	11.06	1.48
		Posttest	16	8	14	11.25	1.69
	Experimental	Pretest	16	6	13	10.56	1.71
		Posttest	16	6	17	12.87	2.87
Total adjustment	Control	Pretest	16	25	40	33.62	5.32
		Posttest	16	28	44	34.31	4.86
	Experimental	Pretest	16	19	39	32.43	4.99
		Posttest	16	29	50	39.87	5.70
Assertiveness	Control	Pretest	16	67	107	87.37	12.69
		Posttest	16	63	102	87	10.95
	Experimental	Pretest	16	72	106	88.62	11.60
		Posttest	16	73	115	97.43	12.19

The data presented in Table 1 indicates that within the control group and in the initial assessment phase, the mean scores of students' adjustment were recorded at 33.62 and 34.31 during the subsequent assessment phase. Similarly, within the experimental group and in the pre-test

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condition, the mean scores of students' adjustment was determined to be 32.43 and 39.87 during the post-test phase. Furthermore, in the control group and in the pre-test condition, the mean scores of students' assertiveness was assessed to be 87.37 and 87.00 during the post-test phase. Likewise, in the experimental group and in the initial assessment phase, the mean scores of students' assertiveness was assessed to be 88.62 and 97.43 during the post-test phase.

Examining the assumptions of multivariate analysis of covariance

Before analyzing the findings, it is evaluated to what extent the research data estimate the basic assumptions of the analysis of covariance.

Examining the normality of data distribution

Before testing the research hypotheses, it is first necessary to ensure that the data distribution is normal. The Kolmogorov-Smirnov test was used to examine normality. The results of this test are presented in Table 2.

Table 2. Results of the normality of the distribution of variables

variable	Group	K-S		Result
		Statistic	P	
Adjustment	Control	0.13	0.20	Normal
	Experimental	0.19	0.13	Normal
Assertiveness	Control	0.12	0.20	Normal
	Experimental	0.11	0.20	Normal

The p-value associated with the Kolmogorov-Smirnov test was consistently observed to exceed 0.05 across all scenarios, suggesting that the variability between the two variables, namely adjustment and assertiveness, within both the control and experimental cohorts is comparatively uniform, thereby substantiating the premise of variance homogeneity.

Examination of the assumption of homogeneity of regression coefficients

One of the principal postulations in the examination of covariance is the homogeneity of regression coefficients. This postulation denotes that the association between the auxiliary variable (covariate) and the dependent variable within the research cohorts remains comparatively consistent. To assess this postulation, the interactive influence of the pre-test and the independent variable upon the dependent variable is investigated. What is sought is a statistically non-significant interaction between the dependent variables and the covariates (pre-test).

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Table 3. Results of the test for homogeneity of regression slopes

variable	SS	DF	MS	F	p
Social adjustment	27.34	1	27.34	1.23	0.28
Assertiveness	31.11	1	31.11	1.17	0.29

Based on the table 3, the interaction of auxiliary variables (pre-tests) and dependent variables (post-tests) at factor levels is not significant, because the significance levels are higher than 0.05. Therefore, the assumption of homogeneity of regression coefficients in the pre-test and post-test of variables in the control and experimental groups is confirmed.

Examination of the assumption of homogeneity of variance (equality of variances)

The Levene's test was used to examine the assumption of homogeneity of variances. This test was examined for the variables of adjustment and assertiveness in the post-test data.

Table 4. Results of Levene's test for homogeneity of variance of adaptation and assertiveness

Variable	F value	P	Result
Adjustment	0.54	0.47	Homogeneous
Assertiveness	3.81	0.06	Homogeneous

As can be seen in the table 4, the significance levels of the adjustment and assertiveness variables are 0.47 and 0.06, respectively. Therefore, since the significance levels obtained are greater than 0.05, the assumption of homogeneity of variance of the variables is confirmed.

Statistical analysis and testing of hypotheses

Upon scrutinizing and validating the assumptions underlying the analysis of covariance, this segment delves into the research hypotheses and assesses the efficacy of social problem-solving strategies on the adjustment and assertiveness of female elementary school students who have experienced bullying. In light of the presence of dependent variables (adjustment and assertiveness) and an independent variable (social problem solving), along with the organization of control and experimental groups utilizing a pre-test and post-test framework, a multivariate analysis of covariance was employed to evaluate the hypotheses. The findings from the multivariate analysis of covariance are delineated in Table 5. The Wilks Lambda statistic, which yielded a value of 0.61 and an F statistic of 4.11, achieved a significance level of 0.01, thereby substantiating that the independent variable exerted a significant influence on at least one of the dependent variables.

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Table 5. Results of between group tests to determine the effectiveness of the independent variable on the dependent variables

Source	Dependent variable	SS	DF	MS	F	P
Pretest	Emotional adjustment	11.80	1	11.80	2.25	0.14
	Social adjustment	46.70	1	46.70	10.42	0.003
	Academic adjustment	13.11	1	13.11	2.47	0.13
	Overall adjustment	192.89	1	192.89	8.60	0.006
	Assertiveness	47.58	1	47.58	0.35	0.56
Independent variable	Emotional adjustment	40.62	1	40.62	7.75	0.009
	Social adjustment	34.77	1	34.77	7.75	0.009
	Academic adjustment	24.91	1	24.91	4.70	0.038
	Overall adjustment	297.95	1	297.95	13.29	0.001
	Assertiveness	812.37	1	812.37	5.91	0.021
Error	Emotional adjustment	151.95	29	5.24		
	Social adjustment	129.99	29	4.48		
	Academic adjustment	153.64	29	5.30		
	Overall adjustment	650.30	29	22.42		
	Assertiveness	3984.36	29	137.39		
Total	Emotional adjustment	4856	32			
	Social adjustment	5585	32			
	Academic adjustment	4844	32			
	Overall adjustment	45121	32			
	Assertiveness	277041	32			

According to the results reported in Table 5, the independent variable of social problem solving training had a significant effect on all dependent variables, including adjustment and assertiveness. Therefore, the research hypotheses are confirmed.

Discussion

The objective of the current investigation was to examine the influence of social problem-solving training on the adjustment and assertiveness of female elementary school students who have experienced being bullied in Dandi city, situated in Zanjan province. The results were delineated in the findings section. Within this section, the outcomes are analyzed, and the limitations alongside recommendations of the research are articulated subsequently.

Based on the findings derived, it was established that social problem-solving training exerts a positive and statistically significant impact on enhancing the academic adjustment of elementary school students. The findings of this study align with the results reported in the works of Dashti et al. (2021), Niknam et al. (2020), Farisabadi et al. (2015), as well as Ahadi et al. (2009). In elucidating this research hypothesis, it is imperative to note that the training in social problem-solving skills contributed to the enhancement of academic performance among the students within the experimental cohort. Problem-solving represents a critical educational objective that has been

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empirically demonstrated to yield improvements in academic performance, creativity, and innovation, thereby facilitating individuals in resolving challenges innovatively when confronted with them (Jalilian et al., 2016). Consequently, the instruction of social problem-solving skills is conducive to the augmentation of academic performance among elementary school students. Social problem-solving constitutes a vital general coping mechanism that not only bolsters academic competence and personal as well as social development but also mitigates psychological stress.

Within the paradigm of social problem-solving theory, the concept of problem-solving denotes the cognitive-behavioral process by which an individual endeavors to identify, discover, or formulate effective or adaptive strategies to navigate everyday life challenges. Various behavioral difficulties may adversely influence children's academic performance; for instance, children exhibiting shyness may experience heightened fear, sadness, anxiety, and physiological arousal within the classroom environment, which could impede learning by disrupting attention and information processing. They may also partake less in interactions with educators and peers, consequently limiting their opportunities to acquire essential social and academic competencies. Children who are embraced by their peers or exhibit socially responsible behaviors within the educational context demonstrate superior academic success, in contrast to those who are rejected or display aggressive behaviors, who are at an elevated risk of academic underachievement.

In accordance with the findings obtained, social problem-solving education significantly and positively influences the social adjustment of elementary school students. The results of this investigation are congruent with the findings of prior studies conducted by Dashti et al. (2021), Niknam et al. (2020), Shokoohi-Yekta et al. (2015), Bakhshaish and Dehghan Zardini (2013), and Beyrami and Moradi (2007).

In elucidating this research, it can be articulated that the training in problem-solving skills encompasses a systematic approach that equips individuals with the means to engage in social situations with adaptive responses towards their peers. The components deemed essential for the provision of a solution encompass a meticulous articulation of the problem, an elucidation of the constraining or adverse factors associated with the issue, a delineation of the constructive and advantageous elements relevant to the problem, a thorough specification of the problem's scope, the duration for which the problem has persisted, its impact on other individuals, an accurate

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depiction of the repercussions should the problem remain unresolved, a compilation of proposed solutions to the problem, a systematic rating mechanism for each proposed solution, and ultimately, the integration of decision-making processes, problem-solving competencies, and self-organization which enable the individual to regulate and oversee their behaviors. In other words, this framework allows the individual to assess their actions, gauge them against their personal benchmarks, and implement reinforcement and punitive measures upon themselves. An individual whose self-assessment yields favorable results perceives themselves as effective and engages in their tasks with enthusiasm and tenacity, as they harbor the conviction that they possess the capacity for further advancement. In the context of problem-solving skills training, the provision of systematic instruction in cognitive and behavioral competencies facilitates the individual in discerning the most efficacious solution to the problem at hand, thereby equipping them to adeptly navigate quotidian challenges and prospective issues (Gharibi & Bahrizer, 2015). Consequently, it can be posited that problem-solving constitutes a vital coping strategy that enhances both personal and social capabilities, fosters progress, and mitigates the severity of psychological symptoms, while the employment of problem-solving methodologies engenders a belief in the individual's own competencies (Zahrakar et al., 2010).

The findings derived from the research indicate that social problem-solving training exerted a beneficial and statistically significant influence on augmenting the emotional adjustment of elementary school pupils. These findings align with the research conducted by Bakhshaish and Dehghan Zardini (2013), and Beyrami and Moradi (2007). In elucidating these results, it can be articulated that children who exhibit robust social problem-solving abilities tend to demonstrate reduced aggressive behaviors, enhanced impulse control, and increased social interactions. Furthermore, social problem-solving training contributes to the enhancement of emotional adjustment, as the process of resolving social dilemmas is correlated with heightened internal satisfaction, feelings of pride, happiness, and overall emotional well-being, thereby fostering an individual's confidence in their emotional capabilities. Consequently, it follows that the level of emotional adjustment is positively reinforced.

The results detailed in the findings section revealed that the mean assertiveness scores of elementary school students exhibited a notable increase subsequent to the implementation of social problem-solving training within the experimental cohort, and this increase reached statistical

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significance. These study results are congruent with those of Mohammadi et al. (2020), Mohammadi and Haji Alizadeh (2018), Beyrami and Moradi (2007), and Avşar and Alkaya (2017).

In elucidating these findings, it can be articulated that the foundation of the problem-solving methodology is predicated upon the notion that numerous psychological and sociological detriments are engendered by the absence of efficacious coping strategies or the implementation of maladaptive coping mechanisms. Deficiencies in coping strategies serve as the origin of maladjustment, hostility, and adverse emotional, behavioral, cognitive, and interpersonal repercussions. A plethora of empirical investigations has established that inadequacies in social problem-solving are correlated with psychological and sociological adversities across the developmental spectrum, encompassing childhood, adolescence, and adulthood. Indeed, one of the underlying factors contributing to aggression is that individuals exhibiting aggressive behavior tend to adopt a limited repertoire of solutions for challenging social contexts, and their proposed solutions are typically less effective and more aggressive in nature than those proffered by non-aggressive counterparts. Throughout the process of problem-solving training, the individual acquires the capability to meticulously define the problem, subsequently analyze various potential solutions, and select the most efficacious resolution. This competency enhances self-efficacy and a sense of self-worth while mitigating failures that arise from an inability to resolve quotidian dilemmas (Khadivi Zand, 2016). Assertiveness training, which constitutes a structured intervention, augments the efficacy of communicative methodologies, whereby individuals are instructed to articulate their suppressed emotions and, with appropriate guidance, to rectify information deficits, thereby formulating and delivering requisite directives. In an adaptive individual, the capacity for self-assertion is regarded as one of the paramount components contributing to the optimal evolution of personality. The presence of diverse psychological requirements compels individuals to articulate themselves in a myriad of contexts, serving as a catalyst that accelerates and facilitates adaptation within favorable circumstances, while simultaneously mitigating individual and societal detriments. Insufficient utilization of this competency has irrevocably curtailed appropriate avenues for development, and the acknowledgment of the advantages and psychological and sociological ramifications of assertiveness, as well as the determinants that inhibit assertiveness, is crucial in fostering adaptive

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capabilities and alleviating aggression. Research investigating the influence of assertiveness on adaptation levels and aggression substantiates those adolescents and young adults possessing adequate reasoning, problem-solving, and assertiveness skills experience favorable adaptation and enhanced mental health.

The constraints inherent in this investigation encompass several elements delineated below:

- In relation to the variables examined within the current inquiry (bullying, adjustment, and assertiveness), there exists a multitude of instruments for their assessment. This research employed the Illinois Bullying and Adjustment Scale developed by Sinha and Singh, alongside the Assertiveness Scale created by Gambrill and Richey, which may impose limitations on the extrapolation and interpretation of the findings.
- This investigation was carried out with fourth, fifth, and sixth grade pupils from an elementary school in Dandi, who share comparable educational, intellectual, and academic environments; thus, the extrapolation of its findings to other student populations should be approached with caution.
- The findings of this study pertain specifically to the locale of Zanjan, and any attempt to apply these outcomes to other cities characterized by divergent cultural contexts should be undertaken judiciously.
- The results of this investigation are specific to female elementary school students, rendering them inapplicable to their male counterparts.
- The implementation of a questionnaire in this study may have introduced a degree of bias in the responses, particularly given the limited proficiency of elementary school students and the potential influence of extraneous factors such as participant fatigue and diminished accuracy.

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Data availability statement

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

Ethics statement

The studies involving human participants were reviewed and approved by the ethics committee of University of Zanjan (IR.ZNU.REC.1402.001). The patients/participants provided their written informed consent to participate in this study.

Author contributions

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

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Conflict of interest

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

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