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The Effectiveness of Positive Thinking Training in Physical Education Classes on Psychological Flexibility and Social Adjustment among Female Secondary School Students in Neyshabur

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Purpose: The present study aimed to investigate the effectiveness of positive thinking training in physical education classes on psychological flexibility and social adjustment among female upper secondary school students in Neyshabur.

Methods and Materials: In terms of purpose, this study was applied research, and in terms of methodology, it was a quasi-experimental study with a pretest-posttest design and a nonequivalent control group. The statistical population consisted of all female upper secondary school students in Neyshabur (N = 4,800). From this population, 60 students were selected through convenience sampling and were randomly assigned into two groups of 30 participants each, including an experimental group and a control group. Data collection instruments included the Psychological Flexibility Questionnaire developed by Izjak (2014) and the Student Adjustment Questionnaire developed by Sinha and Singh (1993). These instruments were initially administered to the students as a pretest. Subsequently, the participants in the experimental group received positive thinking training for 8 weeks, with one session per week. After the intervention, the aforementioned questionnaires were administered again as a posttest. For data analysis, mean and standard deviation were used in the descriptive statistics section, while one-way analysis of variance and multivariate analysis of variance were employed in the inferential statistics section. Levene's test was used to examine the assumption of homogeneity of variances, and the Shapiro-Wilk test was applied to assess the normality of data distribution.

Findings: The results of data analysis indicated that positive thinking training in physical education classes had a significant effect on the psychological flexibility of upper secondary school students ($p \leq .05$). Furthermore, positive thinking training in physical education classes had a significant effect on the social adjustment of female upper secondary school students in Neyshabur ($p \leq .05$).

Conclusion: Based on the findings of the present study, it appears that the implementation of positive thinking training in physical education classes can be recommended as an effective approach for improving psychological flexibility and social adjustment among secondary school students.

Keywords: Positive Thinking Training, Physical Education, Psychological Flexibility, Social Adjustment

1. Introduction

Adolescence is considered one of the most critical developmental stages in human life, characterized by extensive physical, emotional, cognitive, and social changes that substantially influence psychological functioning and social adaptation. During this developmental period, students encounter numerous educational, interpersonal, and emotional challenges that require effective coping strategies, adaptive cognitive patterns, and psychological resilience. Female high school students, in particular, often experience increased academic pressure, emotional sensitivity, social expectations, and identity-related concerns, which may negatively influence their psychological adjustment and social functioning if appropriate psychological resources are not available. In this regard, educational interventions designed to strengthen positive psychological characteristics and adaptive thinking patterns have received increasing attention in educational psychology and mental health research. Positive thinking training has emerged as one of the most effective approaches for enhancing adaptive psychological functioning and improving students' capacity to cope with environmental stressors and interpersonal challenges (Jahan, 2025; Lotfi & Ashouri, 2023).

Positive thinking refers to a constructive cognitive orientation characterized by optimism, hopeful expectations, adaptive interpretations of life events, and an emphasis on personal strengths and opportunities rather than limitations and failures. Positive thinking does not imply unrealistic denial of difficulties; rather, it reflects an adaptive cognitive style that enables individuals to interpret stressful experiences more constructively and regulate negative emotions more effectively. Previous studies have demonstrated that optimism and positive cognitive orientations are significantly associated with psychological well-being, social adaptation, resilience, academic engagement, and emotional stability among students and adolescents (Alhamad et al., 2022; Circir & Tagay, 2024). In educational settings, positive thinking contributes to increased motivation, enhanced academic identity, improved interpersonal relationships, and greater emotional regulation, all of which are essential for healthy adolescent development (Emami Khotbesara et al., 2024; Lotfi & Ashouri, 2023).

One of the major psychological constructs associated with adaptive functioning during adolescence is psychological flexibility. Psychological flexibility refers to the ability to remain in contact with present experiences

while adapting thoughts, emotions, and behaviors according to situational demands and personal values. Individuals with high psychological flexibility are capable of tolerating unpleasant emotions, modifying maladaptive cognitive patterns, and responding adaptively to stressful circumstances. Psychological flexibility has been recognized as a central component of psychological health because it enables individuals to manage distress effectively and maintain goal-directed behavior despite emotional challenges (Akman, 2024; Umucu et al., 2022). Students with greater psychological flexibility demonstrate higher emotional regulation, increased resilience, stronger problem-solving abilities, and better academic adjustment compared to students with rigid cognitive and behavioral patterns (T. Golestanibakht et al., 2022; Malayi et al., 2020).

Research findings indicate that optimism and positive psychological characteristics are closely associated with psychological flexibility. Akman (2024) reported that cognitive flexibility significantly predicts optimism among university students, suggesting that adaptive cognitive processing contributes to positive emotional expectations and healthier psychological functioning (Akman, 2024). Similarly, Circir and Tagay (2024) found that cognitive flexibility, optimism, self-compassion, and psychological well-being are strongly interrelated, highlighting the importance of flexible cognitive functioning in maintaining emotional health and adaptive coping mechanisms (Circir & Tagay, 2024). Alhamad et al. (2022) also demonstrated that optimism significantly predicts psychological flexibility among students, particularly during stressful conditions such as the COVID-19 pandemic, indicating that positive cognitive orientations can strengthen adaptive psychological responses under challenging circumstances (Alhamad et al., 2022).

Another important variable influencing adolescents' mental health and educational functioning is social adjustment. Social adjustment refers to the ability to establish satisfying interpersonal relationships, comply with social expectations, adapt effectively to social environments, and maintain emotional balance in social interactions. Successful social adjustment contributes substantially to psychological well-being, academic achievement, self-esteem, and social competence, whereas poor social adjustment is associated with social anxiety, emotional distress, academic difficulties, and interpersonal conflicts (Nazarzadeh et al., 2024; Ofem, 2023). Adolescents who possess stronger social adjustment skills are generally more capable of coping with peer pressure, communicating

effectively, and participating constructively in educational and social activities.

Previous investigations have highlighted the role of positive psychological interventions and social competence training in improving students' social adjustment. Weisani (2024) demonstrated that group social competence training significantly improved social adjustment and reduced anxiety among female students with social anxiety disorder (Weisani, 2024). Likewise, Jahan (2025) reported that social skills training enhanced self-esteem and adjustment among university students, emphasizing the importance of educational interventions in promoting social functioning during adolescence and early adulthood (Jahan, 2025). Nazarzadeh et al. (2024) further identified communication skills as a mediating factor between social identity and social adjustment among high school students, suggesting that adaptive interpersonal competencies contribute significantly to successful social functioning (Nazarzadeh et al., 2024).

Positive thinking and optimism have also been directly associated with social adjustment in several empirical studies. Falavarjani and Yeh (2019) reported that optimism and distress tolerance significantly predicted nurses' social adjustment, while resilience mediated this relationship (Falavarjani & Yeh, 2019). Ebrahimpour (2017) similarly found meaningful relationships among life satisfaction, optimism, and social adjustment, indicating that positive cognitive and emotional orientations facilitate successful interpersonal adaptation (Ebrahimpour, 2017). Furthermore, Golestanibakht et al. (2022) demonstrated that self-compassion and optimism are positively related to students' social adjustment, highlighting the importance of positive emotional and cognitive processes in social functioning (Tahereh Golestanibakht et al., 2022).

The increasing prevalence of psychological distress, emotional instability, social anxiety, and maladaptive coping behaviors among adolescents has intensified the need for preventive and developmental interventions within educational environments. Schools represent one of the most influential social institutions in adolescent development because they provide opportunities for social interaction, emotional learning, and behavioral regulation. Among school-based educational contexts, physical education classes provide a particularly appropriate environment for implementing positive psychological interventions because they involve active participation, social interaction, group cooperation, emotional expression, and experiential learning. Physical education activities can facilitate emotional engagement, increase self-confidence, promote

social cooperation, and reduce psychological tension, thereby creating favorable conditions for positive thinking interventions and psychological development (T. Golestanibakht et al., 2022; Naderi & Farah, 2017).

Positive psychology interventions implemented in educational settings have shown promising outcomes in promoting resilience, wisdom, emotional regulation, and adaptive cognitive functioning. Golestanibakht et al. (2022) found that positive psychology training significantly enhanced resilience, wisdom, and cognitive flexibility among students, suggesting that structured psychological interventions can improve students' adaptive capacities and emotional functioning (T. Golestanibakht et al., 2022). Similarly, Naderi and Farah (2017) demonstrated that flexibility training improved psychological well-being and optimism among depressed female students, indicating the effectiveness of cognitive and emotional interventions in reducing vulnerability and enhancing positive functioning (Naderi & Farah, 2017). These findings support the notion that positive cognitive interventions may contribute meaningfully to adolescents' emotional adjustment and psychological health.

In addition to psychological flexibility and social adjustment, recent studies have increasingly emphasized the importance of psychological capital, self-esteem, academic engagement, and emotional resilience in students' academic and social functioning. Almurumudhe et al. (2024) identified self-esteem as a mediating variable between psychological capital, academic engagement, procrastination, and academic performance among students, highlighting the interconnectedness of positive psychological characteristics and educational functioning (Almurumudhe et al., 2024). Likewise, Emami Khotbesara et al. (2024) demonstrated the effectiveness of academic buoyancy and psychological capital training in reducing academic procrastination among female high school students, further emphasizing the importance of positive psychological interventions in educational settings (Emami Khotbesara et al., 2024). These findings suggest that strengthening positive cognitive and emotional resources may improve multiple dimensions of adolescent functioning simultaneously.

Although previous research has extensively examined optimism, resilience, cognitive flexibility, and social adjustment separately, relatively limited research has investigated the effectiveness of positive thinking training implemented specifically within physical education classes on psychological flexibility and social adjustment among female high school students. Furthermore, most prior studies

have focused on university students, clinical populations, or general educational interventions rather than integrating positive thinking approaches into physical education contexts. Considering the developmental sensitivity of adolescence and the importance of school-based preventive interventions, examining the effectiveness of positive thinking training within physical education classes may provide valuable evidence regarding practical and accessible approaches for promoting students' mental health and social functioning.

Given the importance of psychological flexibility and social adjustment in adolescent development, and considering the potential role of positive thinking interventions in enhancing adaptive cognitive, emotional, and interpersonal functioning, the present study aimed to investigate the effectiveness of positive thinking training in physical education classes on psychological flexibility and social adjustment among female upper secondary school students in Neyshabur.

2. Methods and Materials

2.1. Study Design and Participants

The present study was applied in terms of purpose and employed a quasi-experimental design with a pretest–posttest structure and a nonequivalent control group in terms of data collection method. The statistical population consisted of all female upper secondary school students in Neyshabur County. The total number of female upper secondary school students in Neyshabur was 4,800. The research sample consisted of 60 participants selected through convenience sampling. The assignment of students to the experimental and control groups was conducted using simple random assignment, and the participants were placed into two groups of 30 students each, including an experimental group and a control group.

Inclusion Criteria

1. Students were required to be between 14 and 17 years of age.
2. Participants were not simultaneously enrolled in similar educational intervention programs during the implementation of the study.
3. Participants were required to have no physical disabilities or learning disorders.

Exclusion Criteria

1. Absence from more than two educational sessions.
2. Being outside the age range of 14 to 17 years.
3. Lack of enrollment in educational centers.

Data collection in the present study was conducted using both library-based and field methods. In the library-based method, the required information was gathered through books, scientific articles, theses, and valid online databases. In the field method, questionnaires were administered to the statistical sample.

2.2. Measures

The Psychological Flexibility Questionnaire developed by Izjak (2014) was used to assess psychological flexibility. The reliability of the instrument was reported using Cronbach's alpha coefficient, which was .918. To examine convergent validity, a positive correlation was found between the Psychological Flexibility Questionnaire and the Self-Efficacy Scale as well as the Openness Scale, while a negative correlation was observed with the Dogmatism Questionnaire (Safarzi et al., 2020). This questionnaire consists of 20 items and 5 factors. Scoring was based on a 6-point Likert scale ranging from "never" (1) to "very high" (6). Responses were scored from 1 to 6, and the total score ranged from 20 to 120. Higher scores on this questionnaire indicate greater psychological flexibility. The dimensions of the Psychological Flexibility Questionnaire include positive interpretation of change (Items 15, 2, 3, 10, and 14), perceiving oneself as a flexible individual (Items 16, 19, 17, 20, and 18), perceiving oneself as an open and creative individual (Items 13, 11, and 8), interpreting reality as dynamic and changeable (Items 13, 7, 9, and 1), and interpreting reality as multidimensional (Items 6, 5, and 4).

The Student Adjustment Questionnaire was developed by Sinha and Singh (1993, as cited in Karami, 2001) and evaluates students in terms of overall adjustment as well as emotional, educational, and social adjustment. In the present study, the 47-item version was used. For scoring, responses consistent with adjustment were assigned a score of 0, whereas responses inconsistent with adjustment received a score of 1. The total score represents the individual's overall adjustment, and the sum of scores in each domain indicates adjustment within that specific domain. Lower scores indicate higher levels of adjustment, whereas higher scores indicate lower adjustment. To examine validity, the questionnaire was reviewed by five faculty members in the field of educational sciences. The instrument demonstrated appropriate validity and reliability across the social, emotional, and educational dimensions. Using the split-half method, the authors reported reliability coefficients of .95, .94, .93, and .96 for total adjustment, emotional adjustment,

social adjustment, and educational adjustment, respectively. Using the test–retest method, the reported coefficients were .93, .96, .90, and .93, respectively. Navidi (2008), through administration of the questionnaire among 164 high school students, reported Cronbach’s alpha coefficients of .82 for overall adjustment and .70, .68, and .65 for educational, emotional, and social adjustment, respectively.

2.3. *Intervention*

The intervention protocol consisted of eight weekly sessions of positive thinking training implemented in physical education classes and adapted from Saeedi (2012). The first session served as an orientation session and focused on introducing the concept of optimism and positive thinking, explaining the structure and objectives of the program, and preparing participants psychologically for the development of healthy and constructive thinking patterns. During this session, students introduced themselves, became familiar with the counselor, and discussed the characteristics of positive and negative thinking styles, including how optimistic and pessimistic individuals perceive life events, interpret situations, and behave in social and academic contexts. Participants were encouraged to observe and interview an optimistic individual and report their observations in the following session. The second session focused on self-awareness and self-knowledge with the aim of helping participants recognize their personal characteristics, interests, abilities, and aspirations. Discussions emphasized awareness of both physical and psychological dimensions of the self, and students were encouraged to identify their positive traits and reflect on their personal identity through written self-descriptions and reflective exercises. The third and fourth sessions addressed self-awareness and self-esteem enhancement. These sessions emphasized the importance of self-worth, self-respect, and recognition of personal competence, uniqueness, and capability. Students were taught that positive self-evaluation contributes to academic achievement and psychological well-being, while also learning to realistically acknowledge personal limitations without shame or self-devaluation. Reflective assignments encouraged students to identify newly discovered strengths and evaluate their feelings regarding these abilities. The fifth session focused on the detrimental effects of pessimism and negative thinking on emotions, behaviors, interpersonal relationships, and overall quality of life. Through group discussion and examples, participants explored how

negative thinking patterns contribute to hopelessness, social withdrawal, reduced problem-solving ability, and decreased enjoyment of life. Students were instructed to identify additional examples of the behavioral, emotional, and social consequences of negative thinking. The sixth session addressed the influence of positive and negative self-talk on emotions and behaviors. Participants were trained to recognize automatic negative thoughts and understand their role in generating maladaptive emotions and self-defeating behaviors. The session emphasized cognitive restructuring through replacing negative automatic thoughts with positive alternatives. Students were asked to identify at least three personal negative thoughts and generate corresponding positive replacement thoughts. The seventh session introduced irrational beliefs and distorted cognitions associated with pessimism and negative thinking, such as beliefs related to inevitable failure, distrust of others, hopelessness regarding the future, and fixed personal inadequacy. Group discussions focused on how such irrational beliefs contribute to maladaptive cognitive and emotional patterns. Participants were instructed to identify additional irrational thoughts and explain their relationship with pessimistic thinking. The eighth and final session emphasized positive thinking and strengths identification through group discussion and experiential activities designed to foster positive attitudes toward oneself and others. Participants identified personal strengths, positive experiences, successful accomplishments, and valued characteristics recognized by themselves and others. Group members provided constructive feedback regarding each other’s strengths and capabilities, and students prioritized their most reliable and meaningful strengths. The final stage involved encouraging participants to provide evidence supporting the authenticity and value of their identified strengths and to continue practicing strengths-focused reflection at home through written exercises and collaborative discussions with family members or peers.

2.4. *Data Analysis*

In the present study, both descriptive and inferential statistical methods were employed. The collected data were analyzed using IBM SPSS Statistics Version 24. In the descriptive statistics section, mean and standard deviation were used, while in the inferential statistics section, one-way analysis of covariance (ANCOVA) and multivariate analysis of variance were conducted. Levene’s test was used to examine the assumption of homogeneity of variances, and

the Shapiro–Wilk test was applied to assess the normality of data distribution.

3. Findings and Results

As presented in Table 1, the mean score of psychological flexibility in the control group increased slightly from the pretest ($M = 2.89$, $SD = 0.46$) to the posttest ($M = 3.01$, $SD = 0.73$). In contrast, the experimental group demonstrated a substantial increase in psychological flexibility scores from the pretest ($M = 2.73$, $SD = 0.56$) to the posttest ($M = 4.48$,

$SD = 0.67$). Regarding social adjustment, the control group showed only a minor increase from the pretest ($M = 2.78$, $SD = 0.59$) to the posttest ($M = 2.88$, $SD = 0.68$), whereas the experimental group exhibited a marked increase in mean scores from the pretest ($M = 2.61$, $SD = 0.69$) to the posttest ($M = 4.88$, $SD = 0.74$). Overall, the descriptive findings indicate that positive thinking training in physical education classes was associated with notable improvements in both psychological flexibility and social adjustment among participants in the experimental group compared to the control group.

Table 1

Descriptive Statistics of Pretest and Posttest Scores for Psychological Flexibility and Social Adjustment in the Experimental and Control Groups

Variable	Group	Stage	n	Minimum	Maximum	Mean	SD
Psychological Flexibility	Control	Pretest	30	2.00	2.80	2.89	0.46
Psychological Flexibility	Control	Posttest	30	2.00	2.91	3.01	0.73
Psychological Flexibility	Experimental	Pretest	30	2.03	2.80	2.73	0.56
Psychological Flexibility	Experimental	Posttest	30	4.05	4.91	4.48	0.67
Social Adjustment	Control	Pretest	30	2.13	2.63	2.78	0.59
Social Adjustment	Control	Posttest	30	2.09	2.73	2.88	0.68
Social Adjustment	Experimental	Pretest	30	2.12	2.63	2.61	0.69
Social Adjustment	Experimental	Posttest	30	4.36	4.73	4.88	0.74

Before conducting the analysis of covariance (ANCOVA), the underlying assumptions of normality, homogeneity of variances, and homogeneity of regression slopes were examined. The normality of data distribution for psychological flexibility and social adjustment in both the pretest and posttest stages was assessed using the Kolmogorov–Smirnov and Shapiro–Wilk tests. The results indicated that all significance values were greater than .05, including psychological flexibility in the pretest (Kolmogorov–Smirnov = 0.212, $p = .068$; Shapiro–Wilk = 0.953, $p = .579$), psychological flexibility in the posttest (Kolmogorov–Smirnov = 0.196, $p = .125$; Shapiro–Wilk = 0.919, $p = .187$), social adjustment in the pretest (Kolmogorov–Smirnov = 0.132, $p = .200$; Shapiro–Wilk = 0.965, $p = .779$), and social adjustment in the posttest (Kolmogorov–Smirnov = 0.140, $p = .200$; Shapiro–Wilk = 0.952, $p = .550$), confirming that the data were normally

distributed. Homogeneity of variances was evaluated using Levene’s test, and the findings demonstrated nonsignificant results for psychological flexibility ($F = 5.784$, $p = .754$) and social adjustment ($F = 41.141$, $p = .613$), indicating equality of variances across groups. Furthermore, the homogeneity of regression slopes assumption was examined through analysis of variance by testing the interaction between group membership and pretest scores. The interaction effect for psychological flexibility was not statistically significant ($F = 0.574$, $p = .455$), and similarly, the interaction effect for social adjustment was nonsignificant ($F = 1.559$, $p = .223$). These findings confirmed that the assumption of homogeneity of regression slopes was satisfied for both dependent variables. Overall, the results indicated that all assumptions required for conducting ANCOVA were adequately met, and therefore the data were suitable for covariance analysis.

Table 2

Results of Analysis of Covariance (ANCOVA) for the Effects of Positive Thinking Training in Physical Education Classes on Psychological Flexibility, Social Adjustment, and Their Components

Variable	Source	Sum of Squares	df	Mean Square	F	Effect Size	p
Psychological Flexibility	Group	50.494	1	17.036	69.066	0.793	.001
	Error	2.853	57	0.247			
Social Adjustment	Group	11.472	1	4.369	115.424	0.634	.001
	Error	8.766	57	0.038			
Positive Interpretation of Change	Group	11.472	1	23.127	25.326	0.704	.001
	Error	0.766	57	0.412			
Flexible Individual	Group	67.454	1	14.715	12.101	0.651	.021
	Error	5.265	57	0.185			
Open and Creative Individual	Group	47.731	1	16.612	18.341	0.714	.007
	Error	3.205	57	0.275			
Dynamic Reality	Group	23.624	1	46.251	32.136	0.621	.036
	Error	0.923	57	0.618			
Multidimensional Reality	Group	51.391	1	28.191	24.411	0.548	.011
	Error	3.234	57	0.289			
Educational Adjustment	Group	545.687	1	14.730	14.196	0.655	.002
	Error	130.014	57	0.751			
Social Adjustment Component	Group	163.819	1	16.204	16.632	0.721	.001
	Error	651.624	57	1.365			
Emotional Adjustment	Group	407.010	1	19.814	23.913	0.713	.001
	Error	1094.074	57	0.809			

As shown in Table 2, the results of the analysis of covariance indicated that positive thinking training in physical education classes had a significant effect on psychological flexibility, $F(1, 57) = 69.066$, $p = .001$, $\eta^2 = .793$, and social adjustment, $F(1, 57) = 115.424$, $p = .001$, $\eta^2 = .634$. The findings also demonstrated significant effects of the intervention on all components of psychological flexibility, including positive interpretation of change, $F(1, 57) = 25.326$, $p = .001$, $\eta^2 = .704$; perceiving oneself as a flexible individual, $F(1, 57) = 12.101$, $p = .021$, $\eta^2 = .651$; perceiving oneself as an open and creative individual, $F(1, 57) = 18.341$, $p = .007$, $\eta^2 = .714$; interpreting reality as dynamic, $F(1, 57) = 32.136$, $p = .036$, $\eta^2 = .621$; and interpreting reality as multidimensional, $F(1, 57) = 24.411$, $p = .011$, $\eta^2 = .548$. Furthermore, positive thinking training significantly improved all dimensions of social adjustment, including educational adjustment, $F(1, 57) = 14.196$, $p = .002$, $\eta^2 = .655$; social adjustment component, $F(1, 57) = 16.632$, $p = .001$, $\eta^2 = .721$; and emotional adjustment, $F(1, 57) = 23.913$, $p = .001$, $\eta^2 = .713$. Overall, the findings indicate that positive thinking training implemented within physical education classes produced significant improvements in both psychological flexibility and social adjustment among female upper secondary school students.

4. Discussion and Conclusion

The present study aimed to investigate the effectiveness of positive thinking training in physical education classes on psychological flexibility and social adjustment among female upper secondary school students in Neyshabur. The findings demonstrated that positive thinking training significantly improved psychological flexibility and social adjustment among students in the experimental group compared to the control group. Furthermore, the intervention significantly enhanced all components of psychological flexibility, including positive interpretation of change, perceiving oneself as a flexible individual, perceiving oneself as an open and creative individual, interpreting reality as dynamic, and interpreting reality as multidimensional. The results also indicated significant improvements in all dimensions of social adjustment, including educational adjustment, emotional adjustment, and social adjustment. Overall, these findings suggest that positive thinking training implemented within physical education classes can play a meaningful role in strengthening adolescents' adaptive psychological and social functioning.

The significant increase in psychological flexibility among participants in the experimental group may be explained by the cognitive and emotional mechanisms underlying positive thinking training. Psychological flexibility refers to an individual's ability to adapt thoughts, emotions, and behaviors according to situational demands while maintaining psychological balance and goal-directed functioning. Positive thinking training encourages individuals to reinterpret stressful situations constructively, challenge irrational beliefs, identify personal strengths, and replace maladaptive cognitive patterns with adaptive alternatives. These processes enhance cognitive adaptability and reduce rigid thinking patterns, thereby contributing to greater psychological flexibility. During the intervention sessions, students were trained to recognize negative automatic thoughts, challenge pessimistic beliefs, and develop constructive self-talk patterns. Such activities likely increased their capacity to tolerate emotional discomfort, reinterpret experiences positively, and respond more flexibly to social and academic challenges.

The findings of the present study are consistent with previous research emphasizing the relationship between optimism, cognitive flexibility, and adaptive psychological functioning. Akman (2024) reported that cognitive flexibility significantly predicts optimism among university students, suggesting that adaptive cognitive processing facilitates positive emotional expectations and psychological adjustment (Akman, 2024). Similarly, Circir and Tagay (2024) found significant relationships among cognitive flexibility, optimism, self-compassion, and psychological well-being, indicating that flexible cognitive functioning is closely associated with positive emotional experiences and adaptive psychological outcomes (Circir & Tagay, 2024). The present findings also align with the study conducted by Alhamad et al. (2022), who demonstrated that optimism significantly predicts psychological flexibility among students during stressful conditions such as the COVID-19 pandemic (Alhamad et al., 2022). These studies collectively support the notion that positive cognitive orientations and optimistic thinking patterns strengthen individuals' ability to adapt psychologically to environmental stressors and emotional challenges.

The findings are also consistent with the study conducted by Golestanibakht et al. (2022), who reported that positive psychology training significantly enhanced resilience, wisdom, and cognitive flexibility among students (T. Golestanibakht et al., 2022). Positive thinking training appears to strengthen students' awareness of their strengths,

increase emotional self-regulation, and facilitate constructive interpretations of experiences, all of which contribute to enhanced cognitive flexibility. Furthermore, the findings correspond with the results reported by Naderi and Farah (2017), who found that flexibility training improved optimism and psychological well-being among depressed female students (Naderi & Farah, 2017). Since optimism and positive cognitive evaluations are closely associated with psychological flexibility, interventions targeting positive thinking may naturally improve adaptive cognitive functioning and emotional resilience.

Another important finding of the present study was the significant improvement in students' social adjustment following positive thinking training. Social adjustment refers to the ability to establish effective interpersonal relationships, adapt to social expectations, manage social interactions successfully, and maintain emotional balance within social contexts. Positive thinking training may improve social adjustment by enhancing students' self-esteem, emotional regulation, communication patterns, and interpersonal confidence. During the intervention sessions, students were encouraged to identify personal strengths, recognize positive experiences, communicate constructively with peers, and reinterpret negative social experiences more adaptively. Such cognitive and emotional modifications likely reduced social withdrawal, increased social confidence, and improved interpersonal functioning.

The findings regarding social adjustment are consistent with previous empirical investigations. Weisani (2024) demonstrated that group social competence training significantly improved social adjustment and reduced anxiety among female students with social anxiety disorder (Weisani, 2024). Likewise, Jahan (2025) found that social skills training improved self-esteem and adjustment among university students, emphasizing the effectiveness of structured educational interventions in promoting social functioning (Jahan, 2025). Positive thinking training shares several characteristics with social competence interventions because both approaches strengthen self-awareness, emotional regulation, interpersonal confidence, and constructive communication patterns. Consequently, positive thinking interventions may facilitate better social adaptation by improving students' perceptions of themselves and others.

The present findings are also consistent with the study conducted by Falavarjani and Yeh (2019), who reported that optimism and distress tolerance significantly contributed to social adjustment, with resilience serving as a mediating

factor (Falavarjani & Yeh, 2019). Optimistic individuals generally interpret social experiences more positively, demonstrate greater persistence in interpersonal interactions, and experience lower emotional distress in challenging situations. Therefore, positive thinking training may enhance social adjustment through increasing resilience, emotional tolerance, and constructive social interpretations. Similarly, Ebrahimpour (2017) reported significant relationships among life satisfaction, optimism, and social adjustment, indicating that positive emotional and cognitive orientations facilitate successful interpersonal adaptation (Ebrahimpour, 2017). The findings of the present study further support the importance of optimism and positive cognition in adolescents' social functioning.

The significant effects observed in educational adjustment may also be explained by the influence of positive thinking on students' academic motivation and emotional engagement. Students who develop optimistic perspectives and constructive cognitive patterns are more likely to perceive academic challenges as manageable and meaningful rather than threatening or discouraging. Positive thinking interventions may reduce feelings of helplessness, increase academic self-efficacy, and improve persistence in educational activities. These interpretations correspond with the findings reported by Lotfi and Ashouri (2023), who identified significant relationships among academic optimism, academic engagement, goal orientation, and academic identity among female secondary school students (Lotfi & Ashouri, 2023). Similarly, Emami Khotbesara et al. (2024) demonstrated that psychological capital and academic buoyancy training effectively reduced academic procrastination among female high school students (Emami Khotbesara et al., 2024). These findings collectively indicate that strengthening positive psychological resources can substantially improve students' educational functioning and adaptation.

The observed improvements in emotional adjustment may also be attributed to the emotional regulation processes facilitated through positive thinking training. Adolescents frequently experience emotional instability due to developmental changes, academic pressures, and social expectations. Positive thinking interventions provide individuals with strategies for recognizing maladaptive emotional responses, reframing negative interpretations, and developing healthier emotional coping patterns. Students who learn to replace irrational beliefs with adaptive thoughts may experience lower levels of anxiety, hopelessness, and emotional distress, thereby improving emotional adjustment

and psychological well-being. These interpretations are supported by the findings of Ofem (2023), who emphasized the role of psychological well-being indices in predicting adjustment tendencies among students (Ofem, 2023). Likewise, Umucu et al. (2022) identified optimism, resilience, coping flexibility, and psychological well-being as significant predictors of college adjustment among student veterans (Umucu et al., 2022). Such findings reinforce the importance of adaptive emotional and cognitive resources in successful adjustment processes.

The role of self-esteem and positive self-perception may also explain the effectiveness of the intervention. During the training sessions, students were encouraged to identify their strengths, recognize personal achievements, and accept personal limitations without excessive self-criticism. Such activities likely enhanced self-esteem and reduced negative self-evaluations, thereby improving both psychological flexibility and social adjustment. This interpretation is supported by Almurumudhe et al. (2024), who reported that self-esteem mediates the relationship between psychological capital and academic functioning among students (Almurumudhe et al., 2024). Similarly, Golestanibakht et al. (2022) found that self-compassion and optimism positively influence social adjustment among students (Tahereh Golestanibakht et al., 2022). Positive thinking interventions may therefore operate partly through strengthening students' positive self-concept and emotional self-acceptance.

Another notable aspect of the present findings is the effectiveness of implementing positive thinking training specifically within physical education classes. Physical education environments provide opportunities for active participation, social interaction, emotional expression, and cooperative learning, all of which may facilitate the effectiveness of psychological interventions. Physical activity itself has been associated with improved mood, reduced stress, and increased social engagement, which may enhance students' receptiveness to positive psychological training. Combining positive thinking exercises with physical education activities may therefore create a supportive and dynamic learning environment that promotes both psychological and social development simultaneously.

Overall, the findings of the present study indicate that positive thinking training can significantly enhance psychological flexibility and social adjustment among female high school students. By improving optimism, emotional regulation, adaptive cognition, self-awareness, and interpersonal functioning, positive thinking interventions appear capable of strengthening adolescents'

psychological resilience and social competence. Given the increasing prevalence of psychological distress, social anxiety, and adjustment difficulties among adolescents, implementing positive psychological interventions within educational settings may represent an effective and accessible approach for promoting students' mental health and adaptive functioning.

One of the limitations of the present study was the relatively small sample size and the restriction of participants to female upper secondary school students in Neyshabur, which may limit the generalizability of the findings to other populations, age groups, and educational contexts. Another limitation was the use of self-report questionnaires, which may be influenced by response bias, social desirability, and subjective interpretation. In addition, the absence of a long-term follow-up period prevented evaluation of the durability and stability of the intervention effects over time. Environmental, familial, and socioeconomic variables that may influence psychological flexibility and social adjustment were also not controlled in the present study.

Future studies are recommended to examine the long-term effectiveness of positive thinking interventions through follow-up assessments across extended periods. Researchers may also investigate the effectiveness of similar interventions among male students, university students, and clinical populations in different cultural and educational settings. Comparative studies examining positive thinking training alongside other psychological interventions such as mindfulness-based interventions, cognitive-behavioral training, and resilience training may provide additional insight into the relative effectiveness of these approaches. Furthermore, future research could explore mediating variables such as self-esteem, emotional intelligence, resilience, and academic motivation in order to better understand the mechanisms underlying the effectiveness of positive thinking training.

The findings of the present study suggest several practical implications for educational systems, school counselors, psychologists, and physical education teachers. Schools may benefit from incorporating positive thinking and positive psychology programs into physical education curricula in order to promote students' mental health, emotional resilience, and social competence. Counselors and educators can utilize structured positive thinking activities to help students identify strengths, challenge maladaptive beliefs, improve self-confidence, and develop healthier interpersonal relationships. Training workshops for teachers

and parents may also facilitate the creation of supportive educational and family environments that reinforce optimistic thinking patterns and adaptive coping strategies among adolescents.

Authors' Contributions

All authors significantly contributed to this study.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

In this study, to observe ethical considerations, participants were informed about the goals and importance of the research before the start of the interview and participated in the research with informed consent.

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