

Research Paper

Effectiveness of Group Training Based on Choice Theory on Internalizing Problems, Empathy, and Identity Transformations Among Male Adolescents



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ABSTRACT

Background: Choice theory stems from psychological concepts like self-concept, successful identity, and quality of the world. The theory encourages adolescents to accept the responsibility for their choices on the one hand and predict the effect of such decisions on their lives on the other hand. The present study aimed to investigate the effectiveness of choice theory-based group training in internalizing problems, empathy, and identity transformation among male adolescents.

Methods: This quasi-experimental study has a pre-test-post-test and 1.5 months follow-up design with a control group. The statistical population included all male adolescents studying in Qazvin City, Iran, in the 2020-2021 academic year. The sample included 28 male adolescents selected through convenience sampling and randomly assigned to the experimental and control groups (n=14). The experimental group received 8 sessions of 90-minute group training based on choice theory, while the control group did not receive any intervention. We gathered data using the empathy scale, Achenbach system of empirically based assessment (ASEBA), and aspects of identity questionnaire. Mixed repeated analyses of variance, the independent t test, and the Chi-square test were used for data analysis in SPSS software, version 24.

Results: The findings indicated that the group training based on choice theory was effective in promoting internalizing problems ($F=30.61$, $P<0.001$), empathy ($F=21.35$, $P<0.001$), and identity transformation ($F=50.2$, $P<0.001$). In addition, these effects were sustainable until the follow-up period.

Conclusion: This research indicated that group training based on choice theory was effective in internalizing problems, empathy, and identity transformation among male adolescents. It is recommended that school counselors consider the principles and concepts of this intervention as an educational mission and executive task for male adolescents.

Keywords: Male, Empathy, Identity, Adolescent

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1. Introduction

Adolescence is one of the most critical life periods as teenagers encounter various stimuli in this time whose inappropriate response endangers their proper performance in society. Conflicting and sometimes concurrent feelings cause temporary or permanent instability in adolescents, and these unpredictable feelings affect all aspects of their lives [1]. Adolescents experience various biological, psychological, and social changes (e.g. puberty, increased time spent with peers, novel school environments, and new social hierarchies) associated with adolescents' increased susceptibility to internalizing problems [2]. Recent research suggests that internalizing problems (i.e. depression and anxiety) frequently occur in adolescents aged 15 to 18 years [3, 4]. A large-scale study of adolescents' health and mental health (aged 11–16 years) showed that almost one in five adolescents experiences internalizing problems [5].

Internalizing problems include depression, anxiety, social withdrawal, and somatic or physical problems (e.g. fears, concerns, headaches, and stomachaches) [6, 7]. Internalizing problems, such as mood and anxiety disorders, refer to turning distressed inwards. Many empirical studies have shown that adolescents' internalizing problems are associated with decreased levels of well-being, as these problems negatively affect how adolescents feel about themselves and their way of living [8].

During adolescence, empathy is one factor that buffers against internalizing problems. It is defined as the cognitive and affective substrates of "sharing" others' negative experiences [9]. Therefore, empathy is essential in promoting psychological and social change in youth. Conversely, low empathy is associated with more internalizing problems, conflicts, and high-risk behaviors [10].

Empathy results in adaptive characteristics, especially when both cognitive and affective dimensions are moderate and well-regulated. This type of empathy has the most significant social benefits because it allows one to understand others' emotions and get effectively involved without becoming overwhelmed [11]. Individuals with low empathy cannot imagine the consequences of their behavior and the potential harm they might cause. Recent research has also highlighted the critical role of high levels of empathy among adolescents and adults. Some studies found that extreme sympathy and compassion, as a response to other people's suffering, may lead to prolonged and exhausting empathic reactions [12]. This

situation of personal distress is related to withdrawal and avoidance of empathy-inducing situations [13]. In addition, adolescents' empathic abilities have been negatively associated with relational peer victimization, social problems, and identity transformation [14].

The adolescent seeks to shape the identity of the "I" in himself or herself: The feeling that tells "who I am" and "where I stand" in the social system [15]. Erikson considers identity transformation a typical issue. However, it becomes abnormal when the person cannot handle it. This inability deprives a person of having a solid identity. Not resolving it will lead to delinquency, role confusion, running away from home, and severe mental illnesses [16]. The identity transformation that leads the adolescent to ambiguity and confusion will have complications such as a disturbance in time and time, a strong feeling towards oneself, and a negative identity.

Evidence indicates that adolescents face some problems, including their evaluations by teachers, their efforts to reach academic goals and get higher scores and do great homework [17], some stressful relationships with their friends and school members, change to the school climate, future career prospects, sleep duration [18], obesity [19], bullying victimization, social problems governing schools, and so on. These problems decrease students' internal control and mental health [20].

Various therapeutic approaches have been tried to improve adolescents' mental health. However, adolescents are one of society's most sensitive communities concerned with mental health problems [21]. One of the principal methods to reduce and solve identity crises is group therapy based on choice theory. This method tries to solve problems by paying attention to the concepts of choice, responsibility, and right and wrong things in a person's life.

Choice theory helps counselors understand adolescents before they even meet in sessions. Knowing that adolescents' behaviors are started to get their needs met leads counselors to hypothesize about how the behavior is helping adolescents. Counselors can help adolescents meet their needs by identifying more socially acceptable behaviors with the same or similar need satisfaction and building more positive relationships with others. Adolescents fail when they attempt to change their identities without providing alternative ways to meet their needs [22]. For example, forcing youth to forsake membership in a gang without considering how the adolescent will find belonging and power elsewhere is likely to result in resistance and further disconnection from authority [23].

This study applies the choice theory approach, which is more appropriate and understandable for adolescents. Glasser founded the choice theory in 1998 (by developing his preliminary work on control therapy) [24]. This theory highlights the 5 basic needs of man (survival, love, belonging, power, freedom, and fun), which motivate all human behaviors. These needs are internal, universal, and consistent with one another. The choice theory believes that we are provoked to satisfy our needs by establishing our specific “quality world”. The “quality world” involves our beloved ones, ideas, and desires [25]. Accomplishment means all behaviors we perform, and these performances are usually purposeful. However, suppose there is a perceived difference between what we have gained and what we desire. In that case, we attempt to minimize or eliminate this “failure” by approaching the satisfaction of our needs and reaching our desires [26]. Choice theory trains individuals to set goals to satisfy their personal needs in reality. The design and execution of conscious planning to reach long-term and short-term goals lead to developing self-regulation and emotion management strategies [27]. Studies show that the choice theory approach has effects on students’ mental health [28], self-esteem [29], concentration [30], development and perception [31], treatment of bullying behaviors [32], decreasing internet addiction [33], and improving the motor coordination of adolescents [34].

Given the documented influence of gender on social, cognitive, and emotional development, gender differences in aggressive behaviors and empathy should be considered. Previous research suggests that boys express internalizing problems and display more direct high-risk behaviors (e.g. physical fighting). Regarding empathy, adolescent girls appear to possess more of empathy’s cognitive and emotional components than boys. In addition, recent evidence has shown that male adolescents engage in more bullying behaviors because they are less empathic than girls [35].

The implementation of choice theory in an educational setting is recommended because of its effectiveness. In choice theory, many maladaptive behaviors are considered to satisfy unmet needs and save time spent on the diagnosis. The counselors help students evaluate their practices based on their need for satisfaction and find appropriate options to meet inner motivations. Studies indicate that the choice theory approach has effects on adolescents’ mental health [36], self-esteem [37], concentration [38], development and perception [39], bullying behaviors [40], internet addiction [41], and motor coordination [42]. However, shortfalls such as nonrandomized selection, small sample size, and different cul-

tural contexts in similar studies conducted earlier in Iran motivated researchers to replicate this research in male adolescents. Based on documented gender differences, the benefits of group training based on choice theory are expected to vary depending on students’ characteristics. Thus, these interventions’ benefits for students may depend on gender vulnerability to specific outcomes.

Considering the importance of the current research variables and a lack of investigation in male adolescents regarding choice theory, the present study aimed to investigate the effectiveness of group training based on choice theory on internalizing problems, empathy, and identity transformation among male adolescents.

2. Methods

This research was quasi-experimental with a pre-test-post-test and follow-up design with a control group. We recruited two study groups (experimental and control). The study population comprised all male adolescents in Qazvin City, Iran, studying in the 2020-2021 academic year. The sample included 28 male adolescents selected through convenience sampling. They were randomly assigned to the experimental (group metacognitive therapy) and control groups. The sample size was estimated at 14 for each group using Cohen’s table with an effect size of 0.5 and a test power of 0.75.

The experimental group received 8 sessions of 90-minute group training based on choice theory, while the control group did not receive any intervention. The adolescents were in three educational levels (the tenth, eleventh, and twelfth grades).

Study measures

Achenbach system of empirically based assessment (ASEBA)

This study used a self-report Achenbach system of empirically based assessment (ASEBA) questionnaire to describe internalizing problems, including anxiety-depression symptoms and physical complaints. This tool includes a set of forms to measure competence, adaptive activity, and emotional-behavioral issues. This tool is intended for adolescents aged 14 to 18 years old. This system contains several forms for easy and cost-effective measurement of competencies (abilities), adaptive behavior, and emotional-behavioral problems. Using these forms, standard data can be obtained about a wide range of competencies, adaptive functioning, and emotional-behavioral issues. The system is scored on a Likert scale

from completely=2 to usually=1 and not at all=0. The reliability of the test-retest with a time interval of one week, as well as the reliability between the interviewers in the child's behavior list scores, was between 0.93 and 0.96. This reliability was equal to 0.82 for the scales of competence, activation, and emotional-behavioral symptoms and in the self-report list of adolescents [43]. The internal consistency of the competence scale of the measurement system is high based on calculating Cronbach α . In the self-report inventory of adolescents, its range was between 0.75 and 0.84.

Empathy quotient (EQ)

The empathy quotient (EQ) measures overall empathy [44, 45]. Total EQ score ranges from 0 to 80, with higher scores reflecting greater empathy. It comprises 60 items, including 40 items measuring empathy and 20 filler items [45]. Each item is scored on a 4-point Likert scale from 1 (strongly agree) to 4 (strongly disagree) [44]. They scored the 40 empathy items according to the standard instructions [45]. An example of an empathy item is "I can tell if someone is masking their true emotion" (i.e. EQ 55). The 20 filler items were not scored because the authors of the EQ designed them to prevent participants from repeatedly answering empathy questions. In this study, the Cronbach α for the EQ scale was 0.86 for Iranian people, like those reported in previous studies (0.84) [46].

The personal identity questionnaire

The personal identity questionnaire is a 10-item questionnaire (four parts) that Ahmadi developed in 1999. The maximum score on the test, which is a sign of the highest level of an identity crisis, is 30, and the minimum is 10. A score lower than 10 indicate no identity crisis. To determine the validity and validity of the test, Ahmadi (1999) conducted it on 60 middle school students in Isfahan City, Iran, and confirmed its clarity and face validity.

Research implementation process

Thirty-three male adolescents were accessible in the 2020-2021 academic year after checking the inclusion and exclusion criteria. Finally, 28 men were selected and randomly assigned to either the intervention or the control groups.

The inclusion criteria were as follows: Conscious and voluntary consent to participate in the study, lacking any severe psychiatric disorder at the researcher's discretion,

and lacking any physical disability and psychiatric medication use.

The exclusion criteria were as follows: Absence for over two sessions, failure to do the homework, unwillingness to participate in the sessions, reported physical illnesses such as heart disease or multiple sclerosis, drug dependence, history of psychoactive drugs usage, psychotic conditions such as anxiety or related disorders, experiences of grief in the last 6 months such as divorce and close relatives' death.

Participants responded to the study questionnaires three times during the study period: Pre-test, post-test, and follow-up. The pre-test was conducted when the intervention had started. The post-test was completed 10 weeks after the pre-test, and the follow-up was conducted 1.5 months after.

Adolescents received 8 sessions of group therapy based on the choice theory of 90-minute duration as follows weekly.

First session: Introducing the group members to each other, explaining the group rules, introducing the members to themselves, introducing the schedule and structure of the meetings, introducing the members to themselves, providing information about the behavioral problems of adolescents and their prevalence, symptoms, causes, available treatment methods, reviewing the influential factors in the behavioral problems of adolescents and the role of empathy and identity.

Second session: Introducing choice theory and discussing its main concepts and principles: Education of the five basic needs (survival, fun, freedom, power, and development of belonging).

Third session: Introducing the ideal world (qualitative) and helping people discover and identify the images of the ideal world and its values and principles, then changing and replacing the pictures if they are inconsistent with reality and ineffective.

Fourth session: Introducing all kinds of effective or inadequate behaviors, repetitive and habitual or new and reconstructed.

Fifth session: Expressing the ten principles of choice theory, informing members to accept responsibility for their actions.

Sixth session: Introducing 7 destructive habits and 7 constructive habits to replace them; being familiar with the needs conflict and its effect on interpersonal relationships, and choosing effective or ineffective behaviors.

Seventh session: Getting to know types of identity (success and failure) and the characteristics of each person with different identities and teaching how members can achieve their desires.

Eighth session: In conclusion, training techniques and methods to facilitate behavior change were conducted through WDEP (wants, doing, evaluation, and planning).

SPSS 24 was performed to analyze the data as mean, standard deviation, independent t-test, and repeated measures analysis of variance (ANOVA) for comparing the mean values of internalizing problems, empathy, and identity transformation in both groups. The outliers were checked through z-scores and box plots. A visual check showed that the data were normally distributed.

3. Results

Participants included 28 male adolescents in the control (n=14) and experimental group (n=14). The Mean±SD age of all participants was 16.05±2.3 years, range: 12-18 years). The Chi-square and independent t-tests were performed to identify potential differences in demographic variables between the group therapy based on the choice theory and the control groups. There were no significant group differences for demographic variables, including age, education, and father's job status ($P<0.001$). We presented the demographic variables in [Table 1](#).

Preliminary analysis and statistical strategy

Comparisons of pairedness based on demographic characteristics across groups had confirmed based on age, academic rank status, and father's job status. Repeated measures of analysis of variance (ANOVA) were conducted to test differences between the experiment and control groups on empathy, identity, and internalized/externalized problems. Group (experimental vs control) as between-subject and assessment time (pre-test, post-test, follow-up) as within-subject were tested. We found similarities between the two groups in the pre-test ([Table 2](#) and [Figures 1-3](#)). A significant between subject by within-subject interaction effect (time*group) was found. A within-subject effect (time) repeated measures ANOVA was run in both experiment and control groups, with post-hoc pairwise comparisons of pre-test, post-test, and follow-up scores ([Table 2](#)). The independent t-tests were

then done for pre-test, post-test, and follow-up comparisons between experiment and control groups to assess group differences in empathy, identity, and internalized/externalized problems before and after the intervention.

Group means of empathy, identity, and internalized problem for group therapy based on choice theory and control groups were compared by independent t-test at three assessment times.

Following the significant interaction effect (time×group), the result of within-subject effect (time) in repeated measures ANOVA confirmed the decreasing trend from pre-test to follow-up assessment point in internalized problem for intervention ($F_{(2, 26)}=30.61$, $P<0.001$, partial $\eta^2=0.25$), and control ($F_{(2, 26)}=0.281$, $P=0.75$, partial $\eta^2=0.021$) groups. The independent t-test of intervention and control groups at baseline ($t_{26}=0.44$, $P=0.77$) (two-tailed), post-intervention ($t_{26}=4.70$, $P<0.001$, two-tailed), follow-up ($t_{26}=4.75$, $P<0.001$, two-tailed), yielded a significant decreasing in identity in the intervention group with a large magnitude of effect size ([Figure 3](#)).

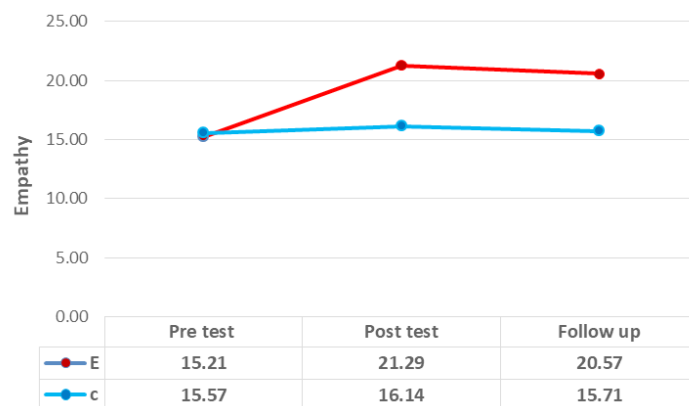
Following the significant interaction effect (time*group), the result of the within-subject effect (time) in repeated measures ANOVA confirmed the increasing trend from time-1 to time-3 assessment point in empathy for group therapy based on choice theory ($F_{(2, 26)}=21.35$, $P<0.001$, partial $\eta^2=0.62$), and control ($F_{(2, 26)}=0.158$, $P=0.158$, partial $\eta^2=0.012$) groups. The independent t-test of intervention and control groups at baseline ($t_{26}=-0.36$, $P<0.71$, two-tailed), post-test ($t_{26}=-4.93$, $P<0.001$, two-tailed), follow-up ($t_{26}=3.23$, $P<0.001$, two-tailed), yielded a significant increase in empathy in the intervention group with a large magnitude of effect size ([Figure 1](#)).

Following the significant interaction effect (time*group), the result of the within-subject effect (time) in repeated measures ANOVA confirmed the decreasing trend from pre-test to follow-up assessment in identity transformation for group therapy based on choice theory ($F_{(2, 26)}=50.2$, $P<0.001$, partial $\eta^2=0.79$), and control ($F_{(2, 26)}=2.58$, $P=0.083$, partial $\eta^2=0.17$) groups. The independent t-test of group therapy based on choice theory and control groups at baseline ($t_{26}=0.143$, $P=0.88$, two-tailed), post-test ($t_{26}=10.04$, $P<0.001$, two-tailed), follow-up ($t_{26}=24.91$, $P<0.001$, two-tailed) yielded a significant decreasing in identity in the group therapy based on choice theory group with a large magnitude of effect size ([Figure 2](#)).

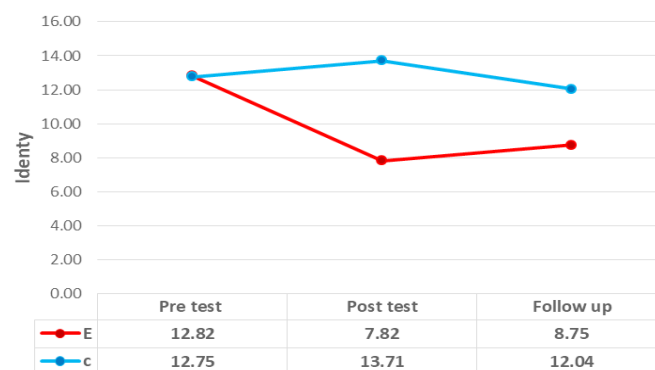
Table 1. Demographic characteristics of study groups

Variables	Value	No. (%) / Mean \pm SD		Statistical Analysis
		Experiment (n=14)	Control (n=14)	
Education rank	1	4(28.57)	5(35.71)	$\chi^2(3)=1.47$, P=0.53
	2	3(21.42)	5(35.71)	
	3	4(28.57)	2(14.28)	
	4	3(21.42)	2(14.28)	
Father's Job status	Unemployed	3(21.42)	5(35.71)	$\chi^2(2)=1.5$, P=0.54
	Part-time	8(57.14)	8(57.14)	
	Employed	3(21.42)	1(7.14)	
Age (y)		16.17 \pm 1.53	15.42 \pm 1.45	$t_{(26)}=1.33$, P=0.19

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**Figure 1.** Empathy

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**Figures 2.** Identity

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Table 2. Linear repeated measures analysis of variance for internalizing problems, empathy, and identity transformations after the intervention

Variables		Time	Time*Group	Within-subject [†]	Post Hoc ^{††}	
Empathy	PR	15.21				
	E	PO	21.29	$F_{(2, 26)}=21.35$, $P=0.001$, $\eta^2=0.62$	PR>PO** PR>FO**	PO=FO
	FO-mean	20.51	$F_{(2, 52)}=11.73$, $P=0.001$, $\eta^2=0.31$	$F_{(2, 52)}=8.92$, $P=0.001$, $\eta^2=0.26$		
	PR	15.27				
	C	PO	16.14	$F_{(2, 26)}=0.158$, $P=0.85$, $\eta^2=0.012$	PR=PO PR=FO	PO=FO
	FO-mean	15.71				
Identity	PR	12.83				
	E	PO	8.82	$F_{(2, 26)}=50.2$, $P=0.001$, $\eta^2=0.79$	PR>PO** PR>FO**	PO=FO
	FO-mean	8.75	$F_{(2, 52)}=16.85$, $P=0.001$, $\eta^2=0.39$	$F_{(2, 52)}=22.74$, $P=0.001$, $\eta^2=0.47$		
	PR	12.75				
	C	PO	13.71	$F_{(2, 26)}=2.81$, $P=0.083$, $\eta^2=0.17$	PR=PO PR=FO	PO=FO
	FO-mean	12.04				
Internalized Problem	PR	22.0				
	E	PO	17.93	$F_{(2, 26)}=30.61$, $P=0.001$, $\eta^2=0.70$	PR>PO** PR>FO**	PO=FO
	FO-mean	18.4	$F_{(2, 52)}=7.91$, $P=0.001$, $\eta^2=0.23$	$F_{(2, 52)}=8.49$, $P=0.001$, $\eta^2=0.25$		
	PR	22.71				
	C	PO	23.07	$F_{(2, 26)}=0.281$, $P=0.75$, $\eta^2=0.021$	PR=PO PR=FO	PO=FO
	FO-mean	22.36				



Abbreviations: C: Control; E: Experiment; PR: Pre-test; PO: Post-test; FO: Follow-up; Intervention (n=14); Control (n=14)

** $P \leq 0.001$

[†]Following the significant interaction effect (time*group), within-subject ANOVA reappeared measure as the simple effect, separately done in both groups.

^{††}Pairwise comparison for three assessment times, we used Bonferroni as the post-hoc test; significant pairwise showed by ">" and non-significant ones by "=".

4. Discussion

This study investigated the effectiveness of group training based on choice theory on internalizing problems, empathy, and identity transformation among male adolescents. We found that this intervention changed research variables significantly compared to the con-

trol group, and these effects were sustainable until the follow-up period.

The participant and the other group members received modeling from the therapist. It is crucial for treatment that participants imitate the properties and behavior of the participants. Social learning, or the development of essential

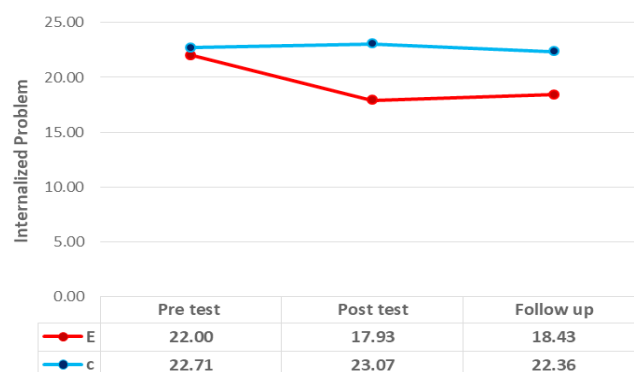


Figure 3. Internalized problems



Note: For comparing the experiment and control groups by independent t test, the significant level was considered $<0.01^{**}$.

skills community, is a vital factor in treatment. During group therapy, the therapist teaches the members how to transfer information about health issues, mental disorders, and suggestions to others about life. As most people think, only they have the problem. Group members felt connected due to the similar ideas they shared in group therapy. Some factors, such as generality, are essential because the group seeks to find members and community and continue group work during its first steps.

The results show that group training based on choice theory impacted identity transformations. In explaining the effectiveness of the therapeutic intervention, it can be said that group training based on choice theory in reducing identity transformations can be helpful with proper training and skills for responsibility. In the experimental group, this opportunity is created for the members to reflect and think about themselves and then share their opinions openly and openly in the form of words. Participating in group training sessions lead to self-awareness in adolescents [47]. This self-awareness becomes the basis for making more constructive decisions, having a more effective plan, changing one's feelings, thoughts, or behavior, and finally flourishing or realizing one's abilities. Also, it improves effective communication, promotes meaningful human encounters, and facilitates ways to satisfy psychosocial needs. In other words, they learn that they are essential to others; what a member says, everyone hears, and his or her opinions count. When a person experiences the pleasure of thinking and listening to others, he or she no longer fears having isolated thoughts, entering into discussions, and using his intellectual power to solve problems. Through problem-solving in a group, a person learns how to solve this problem at school or sometimes at home.

Previous research has not investigated group training based on choice theory on internalizing problems and empathy among male adolescents. As an intervention, choice theory increases internal control and accountability so that individuals can practically satisfy their needs without harming others. Since teaching the basic choice theory involves combining existential ideas with behavioral techniques, emphasizing responsibility, and control, it is not surprising that the students believed they were responsible for their behavior because the approach tried to understand and evaluate their motivations and reasons for their behavior. Through group therapy and interaction with other group members, adolescents in our study developed a new attitude toward their behavior and emotions, so their self-conception was affected by that attitude.

In the choice theory, individuals are trained to increase their accountability for their actions. From this perspective, a person's control over their behavior is a conscious choice; they select "general behaviors" and are responsible for them. Choosing one's desires, expectations, thoughts, ideas, and actions determines one's best and most pleasing state. Consequently, choice theory training increases internal control and accountability, so individuals take responsibility for their mental health. Accepting the basic principles of choice theory, we take responsibility for our behaviors. Choice theory achieves one goal by helping people handle behavior. Since a commitment increases responsibility, these students are expected to be more prepared and aware of a realistic understanding of their disorder through the choice theory and its complications [48]. Further, after that, judgments, choices, and logical goals can be made according to their strengths and weaknesses.

Because choice theory focuses on basic human needs, such as the exchange of love and kindness and feeling worthy, it can significantly affect mental health. Since a person feels worthy and significant, others love him or her, and this need is satisfied [49]. Moreover, the emphasis on the freedom and responsibility component in choice theory allows individuals to accept unpleasant internal experiences without attempting to control them. This condition causes the experiences to seem less threatening, have less effect on individuals' lives, and, thus, less harm to their mental health [50].

In this way, therapy emphasizes facing reality, accepting responsibility, recognizing basic needs, making moral judgments about the rightness or wrongness of behavior, focusing on the here and now, internal control, and ultimately achieving a successful identity. In teaching the basics of selection theory, we used the teaching process more than the treatment process. Therefore, rather than a therapeutic method, we should consider it a preventive approach in which personal involvement, responsibility, success, positive planning, and action are emphasized. This theory pays special attention to the movement of clients toward perfection and success. Regardless of the diagnosis, kindness, support, compassion, and empowerment are various choice theory tools. In teaching the basics of choice theory, a lot of personal involvement is needed, any denial of responsibility is rejected, and we provide the opportunity to learn better solutions for considering reality.

5. Conclusions

Group training based on choice theory can affect male adolescents' internalizing problems, empathy, and identity transformation by challenging beliefs and emphasizing the individual's control over feelings and actions. This goal can be accomplished by disregarding the past, not complaining excessively, and considering what they can do to reduce internalizing problems, identity transformations, and empathy conflicts and showing adolescents that they can manage their lives without conflict. Thus, it seems that choice theory training is a practical approach to increasing the mental health of male adolescents.

Like most studies in behavioral sciences, this study had some limitations to be addressed in future research. For example, because of the COVID-19 pandemic, we held group-counseling sessions online and in the Skyroom space, so we have faced some limitations. Another limitation of this research was the use of a self-reported tool. Adolescents' feedback or self-reports about themselves

may differ from what is observed in the person's actions and behavior. This research did not control environmental and family factors such as parents' and economic and social status, which was another limitation. The research design was quasi-experimental and lacked the advantages of true experimental designs. This research was conducted only on the population of students of Qazvin City, so caution should be observed in generalizing the results to other regions and towns. Because of a lack of literature in this field, we recommend that this treatment's efficacy be investigated further in different groups. Similar studies are suggested to include girls and other age groups and compare the findings with the present study's findings.

Further studies are also suggested to consider longer follow-ups, larger sample sizes, and longer research duration to evaluate the persistence of treatment effects. It is also recommended that school counseling centers enhance the impact of group training based on choice theory by holding counseling sessions for parents and adolescents. Using qualitative and in-depth studies consistent with the concerns of adolescence is another research suggestion. Also, further research should consider the possibility of measuring the changes made from the perspective of family members and parents in future research.

Ethical Considerations

Compliance with ethical guidelines

Ethical approval for this study was obtained from the [Kharazmi University](#) Ethics Committee (Code: IR.KHU.REC.2021.018). In addition, all study procedures conducted on humans were consistent with the National Research Committee's ethical standards, the 1964 Helsinki Declaration, and its subsequent revisions or equivalent ethical norms. All participants (and their parents/legal guardians) provided informed consent to participate in the study. All participants volunteered for the research and received individual psychometric measurement results.

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Authors' contributions

All authors equally contributed to preparing this article.

Conflict of interest

The authors declared no conflicts of interests.

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