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The effectiveness of motivational interviewing on resilience, sense of purpose, and social interest among adolescent girls in middle school

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Abstract

Objective. The present study aims to investigate the effectiveness of motivational interviewing in enhancing resilience, sense of purpose, and social interest among adolescent girls in middle school (ages 13–14). **Methods.** This study employed a quasi-experimental design with a pre-test/post-test and a control group. The tools used in this study included the Connor-Davidson Resilience Scale, Crumbaugh and Maholick's Purpose in Life Test, and Crandell's Social Interest Scale. Data analysis was performed using multivariate analysis of covariance (MANCOVA). **Results.** The findings suggest that motivational interviewing significantly enhances adolescent girls' sense of purpose during the intervention phase ($\eta^2 = 0,473$) and follow-up phase ($\eta^2 = 0,378$). It also improves their resilience during the intervention phase ($\eta^2 = 0,247$) and follow-up phase ($\eta^2 = 0,205$). Furthermore, motivational interviewing is effective in increasing adolescent girls' social interest during the intervention phase ($\eta^2 = 0,203$) and follow-up phase ($\eta^2 = 0,109$). **Conclusions.** Overall, motivational interviewing can strengthen adolescents' resilience against challenges, foster a sense of purpose, and serve as a foundation for social interest, increased empathy, and greater social participation.

Keywords: motivational interviewing, resilience, sense of purpose, social interest, adolescent girls

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Эффективность мотивационного интервью в развитии устойчивости, целеустремленности и социального интереса у девочек-подростков в средней школе

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Резюме

Цель. Настоящее исследование направлено на изучение эффективности мотивационного интервью в повышении устойчивости, чувства целеустремленности и социального интереса у девочек-подростков средней школы (13–14 лет). **Методы.** В исследовании использовался квазиэкспериментальный дизайн с предтестом, посттестом и контрольной группой. В качестве инструментов применялись шкала устойчивости Коннора-Дэвидсона, тест смысла жизни Крамбо и Махолика, а также шкала социального интереса Кранделла. Анализ данных проводился с использованием многомерного ковариационного анализа (MANCOVA). **Результаты.** Полученные данные свидетельствуют о том, что мотивационное интервью значительно повышает чувство целеустремленности у девочек-подростков как на этапе интервенции ($\eta^2 = 0,473$), так и на этапе последующего наблюдения ($\eta^2 = 0,378$). Оно также способствует повышению их устойчивости на этапе интервенции ($\eta^2 = 0,247$) и последующего наблюдения ($\eta^2 = 0,205$). Кроме того, мотивационное интервью эффективно увеличивает социальный интерес подростков в период интервенции ($\eta^2 = 0,203$) и на этапе последующего наблюдения ($\eta^2 = 0,109$). **Выводы.** В целом мотивационное интервью может способствовать укреплению устойчивости подростков перед жизненными трудностями, формированию чувства целеустремленности, а также служить основой для развития социального интереса, повышения эмпатии и вовлеченности в социальное взаимодействие.

Ключевые слова: мотивационное интервью, устойчивость, целеустремленность, социальный интерес, девочки-подростки

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Introduction

Adolescence is a pivotal period of transformation. During this time, teenagers are influenced by various internal and external emotions, which can sometimes be contradictory and may contribute to the challenges and issues faced during this stage. Thus, one of the essential skills during adolescence is the ability to master these emotions and enhance resilience against them (Mahmoud Alilou, Khanjani, Bayat, 2017). Resilience is defined as the capacity to withstand stress and return to a natural state of equilibrium after experiencing stressors (Karimi et al., 2016). Resilience is a dynamic process that reflects an individual's positive adaptation to significant life hardships, facilitated by protective processes that exist alongside risk factors and side effects, making it a crucial component in reducing negative emotions and solving problems during adolescence (Southwick et al., 2014). Research indicates that increasing resilience is a necessary element for psychological adjustment, personal satisfaction, a sense of competence, social efficacy, academic success, and overall physical and mental health, and can be effective in regulating and balancing the contradictory and negative emotions of adolescents (Ghaempour, Esmailian, Sarafraz, 2019; Ong, Edwards, Bergeman, 2006).

One of the influential factors in enhancing resilience is having a purpose in life. Purposefulness can significantly increase resilience against various problems and issues (Ostafin, Proulx, 2020). Purposefulness is a predictive concept regarding the fulfillment of goals that are meaningful to the individual and also impact the world around them (Malin, Liauw, Damon, 2017). Healthy and purpose-driven adolescents are characterized by their ability to establish positive interpersonal connections and possess a social interest. Social interest is not a singular concept but rather an amalgamation of feelings and behaviors. Essentially, social interest signifies a propensity for collaboration, which can be fostered through community and social life via cooperation, participation, understanding, and compassion (Sergazi, Hoseini, 2021). Individu-

als with social interests set positive life goals and lifestyles based on empathy, responsibility, cooperation, and sharing, enabling them to successfully resolve their issues (Poorseyed et al., 2016). Overall, the World Health Organization (2022) identifies four dimensions of mental health: functioning, adaptability, perfection, and connection (Organization WH, 2022).

Given the significance of resilience, purposefulness, and social interest in shaping mental health and the special importance of adolescence as a period where personality structure and demeanor are established, and individuals attain a definition of their identity, employing methods to create and enhance these variables is essential. One of the relevant and effective methods, due to its short-term sessions suitable for implementation in schools and interaction with adolescents, is therapy through motivational interview. Motivational interview enhances counseling effectiveness by increasing intrinsic motivation and guiding individuals through higher stages of psychological readiness for change and acceptance of health recommendations (Hosseini et al., 2020). This client-centered and directive therapeutic approach aims to strengthen and increase internal motivation for change by identifying, recognizing, and resolving doubts, ambivalence, and inconsistencies in behavior, using an interactive and empathetic listening style to boost motivation (Panahi et al., 2022).

Regarding the impact of motivational interview on the variables of the current research in Iran, no study has been conducted, and the existing studies involving motivational interview are implicitly related to the discussed variables. For instance, In a study, It was found that motivational interview impacts procrastination (intentional procrastination, fatigue-induced procrastination, and disorganization-induced procrastination), which can implicitly relate to the discussion of adolescents' purposefulness in education (Hosseini et al., 2020). Similarly, Researchers in a study, have identified motivational interview as an effective intervention in reducing academic procrastination and enhancing students' motivation and effort (Garavand et al., 2022). Re-

searchers in a study, have deemed motivational interview effective in enhancing self-efficacy and the power of tolerance and resilience against distress in patients (Bourojeni et al., 2021). In a study it was found that motivational interview effective in reducing academic procrastination and increasing academic resilience and motivation for educational purposefulness (Bagheri Hosein Abadi, Yoosefi, 2023). Researchers have considered a therapeutic package based on motivational interview (Rezaei et al, 2023), acceptance and commitment therapy, and compassion-focused therapy effective in increasing resilience against imperfection and health-related anxiety in female patients with MS. It was found that motivational interview effective in resilience and tolerance towards distress (Kashefzadeh, 2022).

In international research, the effectiveness of motivational interview has been examined in various dimensions, and regarding the variables of the current research, a few studies can be mentioned; motivational interview has been effective in increasing resilience and toughness in students with low academic scores (Roy, 2017). Motivational interview as effective in increasing resilience and self-esteem in students (Moss, 2010). Motivational interview effective in increasing tolerance and resilience in students against sexual violence (Muturi, 2022). In a study, it was found that motivational interview can be impactful in increasing meaning and purposefulness in life (Hwang et al., 2023). Motivational interview effective in increasing hope, meaning, empowerment, and effective participation (Glassman, 2013). It was found that social motivational interview to be effective in enhancing the desire, interest, and social participation of autism patients (Elias, White, 2020). Motivational interview to be effective in increasing the participation of patients diagnosed with acute psychosis in occupational, educational, and social dimensions (Hampson, Hicks, Watt, 2015).

Theoretical and empirical reviews of this research regarding the effectiveness of motivational interview indicate that it has indirectly influenced the increase in resilience, purposefulness, and social interest. However, since previous domestic and international studies have not directly addressed the effectiveness of motivational inter-

view on these variables, especially in the adolescent group-acritical period for the formation of a purposeful and positive demeanor, socialization, and the foundation of cooperation, empathy, and social participation-the researchers in this study seek to answer whether motivational interview can influence resilience, purposefulness, and the creation of social interest in adolescent girls.

Method

Participants

The current research is a quasi-experimental study with a pre-test/post-test and control group. The statistical population consists of adolescent female students in the first grade of middle school in Khorramabad County during the academic year 2023–2024. Using random cluster sampling, initially, among Khorramabad's districts 1 and 2, district 2 was randomly selected. Then, using simple random sampling, 30 ninth-grade students were selected and randomly assigned into two groups of 15 each for the experimental and control groups. The demographic information of participating students, who were randomly assigned to two groups, experimental and control, was as follows: The father of 28 participating students was government-related or affiliated with governmental organizations, and the occupation of the fathers of two was independent. Twelve students' mothers were housewives, while 18 other students had working mothers, most of whom were employed in government-related professions. Nineteen of the students' fathers had a bachelor's degree, five had a master's degree, five had a doctoral degree, and one had a diploma. The literacy level of the mothers was also as follows: 21 had a bachelor's degree, seven had a master's degree, and two had a diploma. The economic status of 28 students was average, with two leaning toward the upper end. Thirteen students were only children, 11 had one sibling, and 6 had two siblings.

Ethical Considerations

Ethical principles adhered to in this research included obtaining informed verbal consent from students and their parents for participation, maintaining the confidentiality of members' infor-

mation and discussions, explaining the research objectives to students and their parents, and providing transportation for students to attend motivational interview training sessions. Additionally, upon the conclusion of the intervention and the follow-up phase, the students in the experimental group were informed that should they require counseling due to participation in motivational interview sessions, they could contact the researcher to facilitate access to a counselor.

Research Methodology

The instruction was conducted in eight three-hour sessions on Wednesday afternoons, from 3 to 6 PM, at the school. Before the motivational interview training sessions commenced, both the experimental and control groups completed the Connor-Davidson Resilience Scale, the Crumbaugh and Maholick's Purpose in Life Test, and Crandall's Social Interest Scale as a pre-test. Subsequently, the training sessions were conducted for the experimental group over two months, while no training was provided to the control group. At the end of the sessions, both groups completed the aforementioned questionnaires again. three months after the post-test phase, to assess the intervention's lasting effect, a follow-up phase was conducted with both groups completing the relevant questionnaires, and the results were compared with the pre-test and post-test scores of both groups. The data analysis was performed using Multivariate Analysis of Covariance (MANCOVA) with SPSS software version 28.

Research instruments:

Connor-Davidson Resilience Scale: This questionnaire, designed in 2003 with 25 items, is scored on a Likert scale. Connor and Davidson reported a Cronbach's alpha coefficient of 0,89 for the scale and a test-retest reliability coefficient of 0,87 over a four-week interval (Arkian, Jadidi, Mihandost, 2022). In The Iranian adaptation of this scale, Cronbach's alpha reliability coefficient of 0,89 and validated the scale through item-total correlations ranging from 0,41 to 0,64 (Farahani, Hamidi Poor, Heidari, 2021). In a study, Cronbach's alpha for the Connor-Davidson Resilience Scale among adolescents was 0,81. The average resilience score for this group was 67,51 with a standard deviation of 12,84 (Mehboodi, Amiri, Molavi, 2021).

Crumbaugh and Maholick's Purpose in Life Test: Crumbaugh and Maholick developed this 20-item scale to measure the meaning and purpose of life as conceptualized by Viktor Frankl (Crumbaugh, Maholick, 1964). They reported a split-half reliability of 0,81 and a correlation of 0,68 with Frankl's questionnaire. The Persian version of the scale has a Cronbach's alpha of 0,92 (Cheraghi, Arizi samani, Farahani, 2009). In this Persian study, raw scores of 121 and 71 were also determined as the 90th and 10th percentile cut-off points, respectively.

Crandall's Social Interest Scale (SIS): This instrument requires respondents to indicate which of the 15 pairs of characteristics they value most (Rahimi, Azadfallah, 2018). James Crandall reported the validity of his question-

Table 1

Summary of Motivational interview Training Session Content

Session	Educational Content
First	Introduction of members, expression expectations and rules, introduction to the concept of motivation.
Second	Training on the process and stages of change.
Third	Clarification of emotions using techniques such as empathy, reflective listening and acceptance.
Fourth	Working on members' ambivalence.
Fifth	Emphasizing members' self-efficacy in evaluating and measuring their ability to change.
Sixth	Emphasis on identifying values.
Seventh	Exploration and organization of members' values.
Eighth	Recognizing situations that cause demotivation and ways to counteract them.

naire as 0,77 (cheraghi, Arizi samani, Farahani, 2009), which, following research (Ghadamali, 2013), resulted in a Cronbach's alpha coefficient of 0,61 (Ghol mohammad, Mirhashemi, 2021; Esfahani et al., 2023). In another study by Iranian researchers, Cronbach's alpha for this scale was reported as 0,71, and the average score of Iranian university students on this scale was 6,86 with a standard deviation of 1,79 (Ghol mohammad, Mirhashemi, 2021). The reliability of the measurement tools in this research was examined using Cronbach's alpha method, yielding coefficients of 0,83 for the resilience scale, 0,85 for the purposefulness scale, and 0,76 for the social interest scale, confirming the reliability of the measurement instruments.

Results

The research findings were analyzed using SPSS software version 28, and the multivariate analysis of covariance (MANCOVA) test was employed to evaluate the effectiveness of motivational interview intervention. Controlling for pre-test scores, post-test scores of the groups were compared once, and follow-up scores were compared once, meaning two covariance analyses were conducted. Before performing the covariance analysis, the assumption of statistical homogeneity was examined. Initially, boxplot diagrams were used to identify outlier data,

which were then corrected and placed within the minimum and maximum range. The normality of the distribution of variables was assessed using skewness and kurtosis statistics and the Shapiro-Wilk test. Given that the skewness and kurtosis values fell within the -2 to +2 range the significance level of the Shapiro-Wilk test for all variables was greater than 0,05 ($p > 0,05$), the normality assumption was confirmed, and there was no severe or problematic deviation in the data distribution. The homogeneity of variances assumption was examined using Levene's test, which showed significance levels for pre-test resilience scores of 0,725, purposefulness of 0,871, and social interest of 0,943, indicating that the homogeneity of variances assumption was met ($p > 0,05$).

The results in Table 2 indicated that the average resilience score in the intervention group increased from 79,87 in the pre-test to 83,07 in the post-test and 82,04 in the follow-up. The average score for purposefulness in the intervention group rose from 87,93 in the pre-test to 93,20 in the post-test and 92,27 in the follow-up, while the average score for social interest increased from 6,73 in the pre-test to 7,93 in the post-test and 8,07 in the follow-up.

The results demonstrated the intervention's effectiveness on the post-test scores in Tables 2 and 3 and on the follow-up scores in Tables 4 and 5.

Table 2
Descriptive statistics of mean and standard deviation of variables by group and time

Variable	Stage or Time	Mean ± SD	
		Intervention Group	Control Group
Resilience	Pre-test	79,87a ±10,42b	79,53±9,98
	Post-test	83,07±9,98	80,33±9,88
	Follow up	82,40±9,64	79,67±7,98
Purposefulness	Pre-test	87,93±14,23	86,73±13,65
	Post-test	93,20±13,65	86,73±14,15
	Followup	92,27±13,36	85,93±13,60
Social Interest	Pre-test	6,73±2,58	7,20±2,43
	Post-test	7,93±2,89	7,27±1,90
	Follow up	8,07±2,84	7,47±2,00

Note: a = Mean, b = Standard deviation.

Table 3

Wilks' Lambda Multivariate Test and Examination of the Homogeneity of Covariance Matrices Assumption

Wilks' Lambda			Test of Equality of Covariance Matrices		
Value	F	p-value	Box's M	F	p-value
0,424	10,42	<,001	6,97	1,03	0,406

The Box's M test, aimed at examining the homogeneity of covariance matrices assumption (Table 2), confirmed the aforementioned assumption ($F=1,03$, $p=0,406$). The multivariate effect examined with Wilks' Lambda indicated a confirmed effect of the motivational interview intervention on the linear combination of resilience, purposefulness, and social interest scores at the post-test time (Wilks' Lambda = 0,424, $F = 10,42$, $p < 0,001$). The results of the ANCOVA test within the MANCOVA context are presented in Table 3. The adjusted or marginal means (post-test means after controlling or neutralizing the pre-test scores in both groups) are also included in Table 3.

The analysis of covariance (ANCOVA) results, as shown in Table 3, substantiated the effectiveness of the motivational interview intervention across the three variables of resilience, purposefulness, and social interest ($p > 0,05$). The examination of adjusted means revealed

that the motivational interview intervention successfully enhanced resilience, purposefulness, and social interest among the subjects. The partial eta squared (η_p^2) values indicated that the most significant impact of the intervention was on purposefulness ($\eta_p^2 = 0,473$), followed by resilience ($\eta_p^2 = 0,247$), and social interest ($\eta_p^2 = 0,203$). The findings related to the intervention's effectiveness over the follow-up period (sustainability of effect) are presented in Tables 4 and 5.

The Box's M test results (Table 4) confirmed the homogeneity of covariance matrices assumption ($F = 0,96$, $p = 0,448$). The multivariate effect assessed with Wilks' Lambda indicated a confirmed effect of the motivational interview intervention on the linear combination of resilience, purposefulness, and social interest scores at the follow-up time (Wilks' Lambda = 0,513, $F = 7,28$, $p < 0,001$). The ANCOVA test results within the MANCOVA context are detailed in Table 5.

Table 4

ANCOVA Test for Examining the Effectiveness of the Intervention on Research Variables (at Post-Test Time)

Variable	Marginal mean (Post-Test)		Mean difference	F value	p-value	η_p^2
	Control Group	Intervention Group				
Resilience	82,93a±,605b	80,47±,605	2,46±,859	8,21	0,008	0,247
Purposefulness	92,68±,806	87,26±,806	5,42±1,144	22,44	<,001	0,473
Social Interest	8,10±,280	7,10±,280	1,00±,397	6,38	0,018	0,203

Note: a = Mean, b = Standard error of mean.

Table 5

Wilks' Lambda Multivariate Test and Examination of the Homogeneity of Covariance Matrices Assumption

Wilks' Lambda			Test of Equality of Covariance Matrices		
Value	F	p-value	Box's M	F	p-value
0,513	7,28	0,001	6,55	0,96	0,448

Table 6

**ANCOVA Test for Examining the Effectiveness of the Intervention
on Research Variables (at Follow-Up Time)**

Variable	Marginal mean (Post-Test)		Mean difference	F value	p-value	η_p^2
	Intervention Group	Control Group				
Resilience	82,29a \pm ,700b	79,77 \pm ,700	2,51 \pm ,993	6,43	,018	,205
Purposefulness	91,73 \pm ,949	86,47 \pm ,949	5,26 \pm 1,347	15,22	,001	,378
Social Interest	8,23 \pm ,371	7,31 \pm ,371	,92 \pm ,527	3,05	,093	,109

Note: a = Mean, b = Standard error of mean.

The findings (Table 5) demonstrated that the sustainability of the motivational interview intervention's effect on resilience and purposefulness was confirmed at a 95% confidence level ($p < 0,05$). The sustainability of the intervention's effect on social interest was confirmed with some leniency at a 90% confidence level ($p < 0,10$). Similar to the post-test scores, the most significant effectiveness of the motivational interview intervention was on purposefulness ($\eta_p^2 = 0,378$). Overall, the findings indicated that the motivational interview intervention led to improvements in resilience, purposefulness, and social interest, and the sustainability of the intervention's impact was approximately confirmed over the follow-up period.

Discussion

This research aimed to examine the effectiveness of motivational interview on resilience, purposefulness, and adolescent girls' social interest. The findings suggest that motivational interview enhances the purposefulness of adolescent girls during the intervention phase ($\eta_p^2 = 0,473$) and follow-up phase ($\eta_p^2 = 0,378$). It also enhances their resilience during the intervention phase ($\eta_p^2 = 0,247$) and follow-up phase ($\eta_p^2 = 0,205$). Motivational interview is also effective in increasing adolescent girls' social interest during the intervention phase ($\eta_p^2 = 0,203$) and follow-up phase ($\eta_p^2 = 0,109$). Overall, the use of motivational interview can be effective in enhancing resilience, purposefulness, and to some extent, social interest.

Motivational interview, characterized by active dialogue, non-judgmental stance, and positive acceptance based on client-centered and

humanistic therapy by Rogers, can mitigate negative emotions and feelings (Urfa, Aşçı, 2023), contributing to the development of resilience and fortitude against emotional challenges. In the construct of resilience, regulating and mastering negative emotions, as well as fostering motivation to resist and confront challenges, are influential. In this regard, motivational interview can validate emotions and create a sense of empowerment and motivation to control and address issues, thereby enhancing resilience. Some existing research in this field is consistent with this finding (Glassman et al., 2013; Bagheri Hosein Abadi, Yoosefi, 2023; Rezaei et al., 2023; Kashefzadeh et al., 2022; Moss, 2020; Muturi, 2022).

Motivational interview can encourage adolescent clients to articulate personal values and goals aligned with their beliefs and identity, effectively creating a sense of purposefulness in academic, professional, and social dimensions. It can facilitate change by reassessing clients' values and encouraging the selection of functional values toward desired goals (Caccavale, 2020). These findings are consistent with some research (Hosseini et al., 2020; Karimi et al., 2016; Hwang et al., 2023; Glassman et al., 2013).

Another variable assessed in this study, which increased among adolescents through motivational interview, is the level of social participation and empathy, discussed here as social interest. The core of motivational interview involves empathy and understanding the client's lived world. Such skills ultimately lay the groundwork for social interest and increased social participation among clients. These results are in line with some research (Baradaran et al., 2017; Seifollahzadeh

et al., 2021; Elias, White, 2020; Hampson, Hicks, Watt, 2015; Moss, 2010; Peters et al., 2019; Galal et al., 2018; Kim, Yang, 2016).

Conclusions

As discussed, employing motivational interview as a humanistic and hope-centered approach, feasible in limited session contexts within the school setting and in relation to adolescents with their unique age characteristics, has been effective. It has led to increased resilience, the creation of purpose and meaning, as well as the improvement of social skills and cooperation, and generally, an increase in social interest.

Limitations and Suggestions. Such research, due to its limitation to the group of girls, has constraints that may complicate the generalization of these findings. Additionally, the

authenticity of the questionnaire responses by adolescent students may not be entirely reliable due to fear of disclosure; moreover, the research must be replicated in different cultural contexts and among other gender and age groups, and the validity of the participants' responses should be examined through other assessment methods and data collection, including observation and interviews with teachers and parents of the students. Overall, based on the findings, it is recommended that counselors and therapists working with adolescents become familiar with and trained in motivational interview, both individually and in groups. Furthermore, it is suggested that essential components of this therapeutic method be explained and taught in simple language, free from technical jargon, to teachers, parents, and educators of adolescent students during in-service training sessions.

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Contribution of the authors

Fatemeh Ghasemi Niaei — ideas; annotation, writing and design of the manuscript; planning of the research; control over the research.

Nafiseh Derakhshan — application of statistical, mathematical or other methods for data analysis; conducting the experiment; data collection and analysis.

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No potential conflict of interest was reported by the authors.

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The ethical principles implemented in this study included informed consent, confidentiality, awareness, and researcher availability.

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