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Comparing the Effectiveness and Maintenance of Acceptance and Commitment Therapy and Mindfulness-Based Stress Reduction Effects on Resilience in Orphaned and Neglected Adolescents

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Abstract

Objective: This study aimed to compare the effectiveness and maintenance of Acceptance and Commitment Therapy (ACT) and Mindfulness-Based Stress Reduction (MBSR) effects on resilience among orphaned and neglected adolescents.

Method: This applied, quantitative, quasi-experimental study used a pretest–posttest–follow-up design with a control group. The sample consisted of 60 orphaned and neglected Adolescents aged 14 to 18 in the city of Ardabil, selected through purposive sampling and randomly assigned to two experimental groups and one control group. The first experimental group received ten sessions of ACT, and the second experimental group received eight sessions of MBSR, while the control group received no intervention. The research instrument was the standardized Connor-Davidson Resilience Scale (2003), and data were analyzed using ANOVA and Bonferroni post hoc tests.

Findings: Findings showed that both interventions produced a significant increase in the total resilience score and all five of its dimensions ($p < .001$), while the control group showed no significant change. Differences between the two experimental groups were not significant on any component, Although ACT showed numerically higher mean scores for resilience, these differences were not statistically significant. The improvement achieved in both groups was maintained at follow-up, and the difference between posttest and follow-up was not significant for any component.

Conclusion: Both Therapies are effective and durable interventions for promoting resilience in orphaned and neglected Adolescents , with no significant superiority of one over the other; therefore, the choice between the two approaches can be based on implementation conditions, the resources available to residential care centers, and Adolescents 's preferences.

Keywords: Acceptance and Commitment Therapy, Mindfulness-Based Stress Reduction, resilience, orphaned and neglected Adolescents .

Introduction

Orphaned and neglected adolescents are among the most vulnerable age groups in society. Due to factors such as the absence of stable family support, experiences of rejection or neglect, and life in congregate care settings, these adolescents may face elevated psychological vulnerabilities, including difficulties in emotion regulation, self-control, and coping with psychological stress (Mahanta et al., 2022). The absence of secure attachment and frequent transfers between care centers and under-resourced care settings have also been associated with higher levels of anxiety, depression, and loneliness in this population (Shekhawat & Gopalan, 2023). Consistent with this, a study conducted among orphaned adolescents in Zimbabwe reported that orphanhood status was associated with higher rates of psychological distress and suicidal ideation (Chipalo, 2024), while research on adolescents in foster care settings has linked out-of-home placement to academic decline and an increased likelihood of early school dropout (Keenan & Choi, 2024). Similarly, a large-scale study of more than eight hundred thousand adolescents in Sweden found that experience of out-of-home care before the age of fifteen was associated with a substantially higher likelihood of developing severe mental disorders and depression in later life (Sariaslan et al., 2022). Although these studies differ in sample characteristics, care settings, and cultural contexts, they collectively point to a pattern in which psychological vulnerability appears to be common—rather than exceptional—among adolescents who have experienced parental loss, neglect, or out-of-home care.

Among the psychological consequences of these conditions, reduced resilience – that is, an individual's capacity to cope effectively with adversity and to return to psychological equilibrium after a crisis – is an important and potentially modifiable psychological capacity. Evidence shows that being placed in unstable care conditions or lacking a caregiver can weaken a child's adaptive capacities (Abate et al., 2024), whereas resilience is not a fixed destiny and can be strengthened through internal and external protective factors and targeted interventions (Tebikew & Bitew, 2024; Mawila-Chauke & Munongi, 2025). In this vein, a study of adolescents living in residential care centers reported a positive and significant relationship among social skills, self-esteem, and resilience (Jose, 2025); a finding that positions resilience as a central target of psychological interventions for this population.

In recent years, two therapeutic approaches drawn from third-wave and cognitive-behavioral interventions have drawn particular research attention in the domain of resilience promotion: Acceptance and Commitment Therapy and Mindfulness-Based Stress Reduction. Acceptance and Commitment Therapy is grounded in contextual behaviorism and, through six core processes – acceptance, cognitive defusion, present-moment awareness, self-as-context, values clarification, and committed action – seeks to

increase an individual's psychological flexibility (Hayes et al., 2011; Arslan et al., 2024). In this approach, rather than avoiding unpleasant thoughts and emotions, the individual learns to accept them without judgment and to direct behavior in line with personal values (Binder et al., 2024; Fang & Ding, 2020). By contrast, Mindfulness-Based Stress Reduction, through training in deliberate, non-judgmental attention to present-moment experience – such as mindful breathing, body scanning, and sitting meditation – helps with emotion regulation and the reduction of impulsive reactions (Zoogman et al., 2015; Felver et al., 2016; Carneiro et al., 2025). Theoretical evidence suggests that mindfulness can influence resilience through physiological pathways (such as the hypothalamic-pituitary-adrenal axis) and psychological pathways (self-regulation) (Qu et al., 2022), whereas in Acceptance and Commitment Therapy this effect is mainly explained through increased psychological flexibility and distress tolerance (Tayyebi et al., 2024).

Despite this rich theoretical background, the majority of empirical studies – including domestic Iranian studies – have examined the effectiveness of a single intervention in isolation, without comparing it to an alternative approach, on resilience in this population; for example, Moradi and Zeinali (2024) measured only the effect of Acceptance and Commitment Therapy on the resilience of adolescents under welfare-organization care, and Abolfazli et al. (2020) examined only the effect of Mindfulness-Based Stress Reduction on students' academic resilience – a construct that, although conceptually related, differs considerably from the general psychological resilience examined in the present study – without testing the two approaches head-to-head within a single comparative design. To the authors' knowledge, few studies have directly compared these two treatments; one such study, conducted in a different population – women with recurrent miscarriage – reported a relative superiority for the mindfulness-based treatment (Afshari, 2018). However, given the fundamental differences between the psychological mechanisms of adolescents and adults, this finding cannot be generalized to the adolescent population without direct testing. Although the effectiveness of each of these two approaches on resilience has also been confirmed in various other populations – including non-clinical adolescents (Büyüköksüz, 2025), youths in group therapy (Dallas et al., 2025), emerging adults (Nugraha & Oriza, 2024), and university students (Parandin, 2024; Baumgartner et al., 2023) – no study is yet available that has directly examined the two approaches within a single comparative design in the specific population of orphaned and neglected adolescents.

Another gap that has received less attention in the existing literature concerns the durability of treatment effects. A review of interventions for Adolescents and adolescents in alternative care has shown that, despite the diversity of interventions available, their long-term and durable effects are still not well identified (Trubey et al., 2024). Conversely, some studies have reported the durability of a single intervention's effect at

follow-up – for example, Nekouei et al. (2022) found sustained improvements in self-efficacy and reduced anxiety following Acceptance and Commitment Therapy at follow-up, Badri Gargari et al. (2023) confirmed the durability of this treatment's effect on academic resilience, and Bostani-Mavi et al. (2024) likewise demonstrated the durability of Mindfulness-Based Stress Reduction's effect on resilience at follow-up – yet none of these studies has compared the durability of the two approaches' effects head-to-head in the population of orphaned and neglected Adolescents . Given that the living environment of these Adolescents is often characterized by instability and frequent relocation (Abate et al., 2024), knowing which intervention's effect remains more resistant to these environmental pressures is of high practical importance for resource-limited residential care centers.

From a theoretical perspective as well, although Acceptance and Commitment Therapy and Mindfulness-Based Stress Reduction share considerable conceptual and theoretical overlap – both emphasizing present-moment awareness and a non-avoidant relationship with inner experience – they differ in certain technical and procedural emphases: MBSR relies more heavily on structured mindfulness and physiological self-regulation practices (Qu et al., 2022; Galante et al., 2018; Nila et al., 2016), whereas ACT places relatively greater emphasis on psychological flexibility and distress-tolerance techniques (Tayyebi et al., 2024). A direct comparison of these two approaches can therefore provide clearer empirical evidence about the mechanisms effective in adolescents' resilience and enrich the theoretical literature in this field.

In light of all these considerations, the central problem of the present study is that it remains unclear which of the two approaches – Acceptance and Commitment Therapy or Mindfulness-Based Stress Reduction – is more effective in enhancing dimensions of resilience among orphaned and neglected Adolescents , and which of the two interventions better preserves its effects over time after treatment ends. Accordingly, the present study was conducted with the aim of comparing the effectiveness and durability of Acceptance and Commitment Therapy and Mindfulness-Based Stress Reduction on dimensions of resilience in orphaned and neglected Adolescents ; a study that can both fill an existing research gap in the literature on resilience in vulnerable populations and provide practical evidence for choosing a more effective and durable intervention for Adolescents 's residential care centers and child mental-health policymakers.

Methodology

The present study was applied in purpose and quantitative, quasi-experimental in method, employing a pretest–posttest–follow-up design with a control group. The sample comprised two experimental groups and one control group formed through random assignment; the first experimental group received Acceptance and Commitment Therapy

and the second experimental group received Mindfulness-Based Stress Reduction, while the control group received no intervention. All three groups were assessed at three stages – pretest, posttest, and a 45-day follow-up – so that, in addition to effectiveness, the durability of each intervention's effect could also be evaluated.

The statistical population of the study consisted of 205 adolescents aged 14 to 18 under the supervision of the Ardabil Provincial Welfare Organization and the Home-and-Family Support Program in the year 2025 (1404 SH). This population comprised two subgroups: orphaned adolescents, defined as those who had lost both parents, and neglected adolescents, defined as those whose parents were living but had been deemed unfit caregivers by the Welfare Organization and whose legal custody had consequently been transferred to the state. From this population, 60 participants were selected through purposive sampling from residential care centers in the city of Ardabil and, after administration of the pretest, were randomly assigned to three groups of 20. A sensitivity power analysis conducted using G*Power (Faul et al., 2007) for a repeated-measures ANOVA (within-between interaction, 3 groups × 3 measurement points) indicated that, with this sample size (N = 60, $\alpha = .05$, power = .80, assumed correlation among repeated measures = .50), the study had adequate sensitivity to detect effects as small as $f = 0.19$ (partial $\eta^2 \approx .03$); for a medium effect size ($f = 0.25$), the achieved power exceeded .97, confirming that the sample size was sufficient for the aims of the study. To increase sample homogeneity, participants were matched on age, sex, education level, and psychological status, and were then randomly assigned within matched blocks to three groups of 20. Inclusion criteria were: age 14 to 18 years, being under the coverage of Ardabil residential care centers or the Home-and-Family Support Program, the ability to read and understand the questionnaires, the absence of a diagnosed psychotic disorder or intellectual disability, and voluntary consent to participate in the treatment sessions; exclusion criteria included absence from more than two sessions, non-cooperation in completing treatment homework or questionnaires, the onset of a psychological or physical crisis, and voluntary withdrawal. Prior to the study, official approval was obtained from the Ardabil Provincial Welfare Organization, and the purpose and nature of the project were explained to center officials and participants; written informed consent was obtained from the adolescents themselves or their legal guardians, and — in the case of adolescents under the direct custody of the Welfare Organization — from the responsible Welfare Organization authorities. Participants' information was treated as strictly confidential and used solely for scientific purposes, and after the interventions ended, a summary of the therapeutic content was also provided to the control group.

The study was conducted after obtaining approval from the university's ethics committee and coordinating with the Ardabil Provincial Welfare Organization. After identifying eligible care centers and Adolescents , the research questionnaire was administered as a

pretest to all three groups, and the sample of 60 was randomly divided into three groups of 20. Treatment sessions for the two experimental groups were held in group format, in person, on a weekly basis, and were conducted by a trained therapist; attendance at each session was recorded. After the intervention period ended, the same questionnaire was administered again as a posttest and, at the follow-up stage, once more to all three groups, so that the durability of the interventions' effects could be assessed. After the study concluded, a summary of the therapeutic content was also provided to the control group. The collected data were coded and entered into SPSS version 27 and analyzed at both descriptive and inferential levels; at the descriptive level, means, standard deviations, and frequency distribution tables were used to describe the sample's demographic characteristics and resilience status across the three measurement stages. At the inferential level, given the study's mixed within-between design — with time (pretest, posttest, follow-up) as the within-subjects factor and group (Acceptance and Commitment Therapy, Mindfulness-Based Stress Reduction, control) as the between-subjects factor — a repeated-measures ANOVA was conducted separately for each dimension of resilience. Prior to the main analyses, the normality of data distribution was examined using the Kolmogorov–Smirnov test, homogeneity of variances across groups was examined using Levene's test, and the assumption of sphericity for the within-subjects factor was examined using Mauchly's test; as sphericity was upheld for all dimensions, within-subjects effects were interpreted based on the uncorrected degrees of freedom, without applying the Greenhouse–Geisser correction. Multivariate within-subjects effects (time, and the time × group interaction) were evaluated using Pillai's trace; where these effects were significant, univariate within-subjects tests were examined, and pairwise comparisons across measurement stages were conducted using the Bonferroni post hoc test. Between-subjects effects (the group main effect) were examined separately, followed by Bonferroni pairwise comparisons between groups. The significance level for all analyses was set at $p \leq .05$.

Research Instruments

Resilience was measured with the standardized Connor-Davidson Resilience Scale (2003), one of the most widely used instruments for assessing resilience in clinical and research psychology, whose psychometric properties have been confirmed across various clinical and non-clinical populations. On this scale, resilience is defined as an individual's ability to cope effectively with difficult conditions, maintain adequate functioning under pressure, and return to equilibrium after experiencing a crisis (Sedighi Arfai et al., 2014). The questionnaire consists of 25 items scored on a five-point Likert scale (1 = not true at all to 5 = true nearly all the time) and is organized into five factors: personal competence, trust in one's instincts and tolerance of negative affect, positive acceptance of change and

secure relationships, control, and spiritual influences. Scores range from 25 to 125, with higher scores indicating greater resilience. Mohammadi (2005) validated the Persian version of the scale and reported its content validity as confirmed by psychology experts. Regarding reliability, Connor and Davidson (2003) reported Cronbach's alpha coefficients for the scale ranging from .89 to .93 across different samples, and in Mohammadi's (2005) study this coefficient was .93, indicating satisfactory internal consistency of the instrument in the Persian-speaking population.

Treatment Protocols

Acceptance and Commitment Therapy was delivered according to the protocol of Hayes et al. (2011) in 10 weekly 90-minute sessions, centered on acceptance of emotions, values clarification, committed action, present-moment awareness, and non-judgmental observation of thoughts and feelings. A summary of session content is presented in Table 1.

Table 1. Summary of Acceptance and Commitment Therapy Sessions (Hayes et al., 2011)

Session	Objective	Homework
Session 1: Orientation and building group trust	The goal of this session is to create a safe space and trust among group members. Adolescents get to know one another and group rules are established. The group activity includes self-introduction, sharing a personal challenge, and reviewing everyday difficult experiences.	Recording a difficult situation and one's reaction to it.
Session 2: Identifying personal and social resources and building resilience	In this session Adolescents learn what skills and supports are available to them for facing problems. The group activity includes practicing the identification of existing strengths and supports, and sharing successful experiences.	Identifying a difficult situation and writing down actions that contributed to resilience.
Session 3: Values clarification and its link to self-efficacy	The goal of this session is to help Adolescents identify personal values and understand their role in decision-making and behavior. In the group activity, Adolescents identify their	Choosing a small values-based behavior and recording the experience of it.

	important values and discuss behaviors consistent with them.	
Session 4: Planning and committed action	This session focuses on translating values into practical goals and concrete actions. The group activity includes designing a weekly goal and practical steps to reach it.	Carrying out the goal and recording successes and obstacles.
Session 5: Practicing present-moment awareness and mindfulness	The goal is to promote psychosocial adjustment and emotion control. Adolescents practice present-moment and attention exercises (e.g., breathing, observing the environment, bodily sensations).	A daily five-minute present-moment practice and recording of experiences.
Session 6: Observing thoughts and feelings without judgment	The goal is to increase psychological flexibility and resilience. Adolescents learn to observe difficult thoughts and feelings without trying to change or escape them. The group activity includes practicing writing down thoughts and feelings and discussing the experience of non-judgmental observation.	Recording situations in which they were able to observe their thoughts and feelings without judgment.
Session 7: Strengthening self-efficacy through problem-solving skills	The goal of this session is to strengthen problem-solving and effective decision-making skills. Adolescents practice identifying real problems and proposing practical solutions. The group activity includes simulating problems and joint decision-making.	Implementing one small solution in real life and recording the outcome.
Session 8: Improving psychosocial adjustment through positive social interaction	The goal is to promote social skills and psychosocial adjustment. Adolescents practice cooperation, empathy, and positive interaction through role-play and group activities.	Recording a positive social experience in which the skills learned were applied.

Session 9: Integrating skills and practicing in real situations	The goal is to consolidate skills and transfer them to real life. Adolescents combine mindfulness exercises, committed action, and values clarification, and simulate them in real situations.	Recording a real experience of using at least two learned skills in daily life.
Session 10: Summary and development of a skill-maintenance plan	The goal is to review and consolidate the skills and develop a personal plan for continued learning. The group activity includes feedback, skill review, and designing a weekly action plan.	Implementing the personal plan and continued practice of the skills over the following four weeks.

Mindfulness-Based Stress Reduction was designed on the basis of Kabat-Zinn's (1990) principles, adapted to the characteristics of orphaned and neglected Adolescents , and delivered in 8 weekly 90-minute sessions focused on mindful breathing, meditation, non-judgmental observation, and present-moment awareness. A summary of session content is presented in Table 2.

Table 2. Summary of Mindfulness-Based Stress Reduction Sessions (Kabat-Zinn, 1990)

Session	Group Activity	Objective	Homework
Session 1: Orientation and foundations of mindfulness	Introducing members, establishing group rules, explaining mindfulness concepts, practicing breathing and sitting meditation.	Building initial awareness of emotions and bodily states, creating a safe space, and increasing present-moment awareness.	Daily practice of 3–5 minutes of present-moment awareness and recording experiences.
Session 2: Observing	Reviewing the previous week, practicing mindful	Increasing focus, identifying and managing emotions,	Recording an emotional experience and a

emotions and attentional focus	listening, observing positive and negative emotions, and practicing non-judgmental description.	and promoting emotional self-awareness.	5-minute present-moment practice.
Session 3: Accepting thoughts and emotions	Practicing non-reaction to thoughts and emotions, sitting meditation, group discussion on accepting inner experiences.	Increasing psychological flexibility, strengthening resilience, and controlling thoughts.	Daily recording of thoughts and feelings observed without judgment.
Session 4: Present-moment awareness and bodily relaxation	Practicing body-based meditation, deep-breathing and emotional-release exercises, observing the body and sensations.	Reducing tension, increasing focus, and consolidating present-moment awareness.	Practicing present-moment awareness with a focus on bodily sensations.
Session 5: Accepting emotions and self-awareness	Practicing observation and acceptance of emotions in everyday activities, identifying the difference between thoughts and emotions.	Increasing self-awareness, accepting inner experiences, and strengthening resilience and self-efficacy.	Recording an experience of accepting emotions during the day.
Session 6: Focus and connection with bodily experience	Practicing body-based mindfulness, mindful movement, and present-moment practice.	Controlling thoughts, increasing focus, and improving connection with bodily and emotional experiences.	Daily practice of 5–10 minutes of present-moment awareness focused on the body.

Session 7: Releasing emotions and self-care	Practicing visualization and emotional release, heart-centered meditation, and mindful listening.	Improving self-care skills, releasing negative emotions, and strengthening focus and resilience.	Recording an experience of releasing emotions in real situations.
Session 8: Consolidating skills and applying them in real life	Reviewing all exercises, simulating real situations, and designing a practical plan for continued practice.	Consolidating skills, promoting self-efficacy and resilience, and strengthening psychosocial adjustment in real conditions.	Implementing the personal plan for continued skills practice over the next four weeks.

Results

Participants were homogeneous with respect to demographic characteristics across the three groups. A one-way ANOVA indicated no statistically significant difference among the groups in age, $F(2, 57) = 0.08$, $p = .927$. The mean age in the Acceptance and Commitment Therapy group was 16.10 years (SD = 1.29), in the Mindfulness-Based Stress Reduction group was 15.95 years (SD = 1.18), and in the control group was 16.05 years (SD = 1.24). Likewise, a chi-square test indicated no significant difference in the distribution of sex across groups, $\chi^2(2) = 0.40$, $p = .819$; the Acceptance and Commitment Therapy group consisted of 11 boys (55%) and 9 girls (45%), the Mindfulness-Based Stress Reduction group consisted of 10 boys (50%) and 10 girls (50%), and the control group consisted of 9 boys (45%) and 11 girls (55%). Finally, a chi-square test indicated no significant difference across groups in custody type (orphaned vs. neglected), $\chi^2(2) = 0.40$, $p = .817$; the Acceptance and Commitment Therapy group comprised 12 orphaned (60%) and 8 neglected (40%) adolescents, the Mindfulness-Based Stress Reduction group comprised 11 orphaned (55%) and 9 neglected (45%) adolescents, and the control group comprised 10 orphaned (50%) and 10 neglected (50%) adolescents. These results confirm that the three groups were statistically homogeneous with respect to age, sex, and custody type prior to the intervention.

Descriptive results show that in both experimental groups, the mean total resilience score and all of its components increased substantially from pretest to posttest; the mean total resilience in the Acceptance and Commitment Therapy group rose from 81.15 to 104.85, and in the Mindfulness-Based Stress Reduction group from 80.60 to 101.05, whereas this mean changed only slightly in the control group (from 74.90 to 76.45) and

remained close to its initial level. At the follow-up stage, the means in both experimental groups showed a slight decrease relative to posttest (103.35 for the acceptance-and-commitment group and 98.65 for the mindfulness group), yet remained substantially higher than the pretest level, indicating relative durability of both interventions' effects over time; the control group's mean at this stage likewise remained essentially unchanged and close to its initial level (75.55). This pattern was repeated across all five resilience components – including personal competence, trust in one's instincts, positive acceptance of change, control, and spiritual influences – and shows that both treatments produced substantial improvement in various dimensions of resilience among orphaned and neglected Adolescents , and maintained most of this improvement through the follow-up stage.

Table 3. Means and Standard Deviations of Resilience Components across the Three Groups and Three Measurement Stages

Group	Component	Pretest M	Pretest SD	Posttest M	Posttest SD	Follow-up M	Follow-up SD
ACT	Personal competence	26.15	5.28	33.50	5.00	32.85	6.02
ACT	Trust in instincts / tolerance of negative affect	22.25	5.06	29.20	3.96	28.70	4.70
ACT	Positive acceptance of change / secure relationships	16.55	3.26	21.05	2.82	21.10	3.59
ACT	Control	10.00	2.12	12.60	1.95	12.60	1.78
ACT	Spiritual influences	6.20	1.28	8.50	1.53	8.10	1.65
ACT	Total resilience	81.15	16.17	104.85	14.20	103.35	16.80
MBSR	Personal competence	25.95	5.70	32.15	5.24	31.60	6.02
MBSR	Trust in instincts / tolerance of	22.90	4.97	27.55	4.63	27.55	4.70

	negative affect						
MBSR	Positive acceptance of change / secure relationships	15.85	3.23	20.65	2.87	20.15	3.59
MBSR	Control	9.25	2.29	12.50	1.96	11.45	1.78
MBSR	Spiritual influences	6.65	1.78	8.20	1.32	7.90	1.65
MBSR	Total resilience	80.60	17.03	101.05	15.21	98.65	16.80
Control	Personal competence	24.40	6.68	24.20	6.66	24.60	6.70
Control	Trust in instincts / tolerance of negative affect	20.65	5.91	21.70	5.40	21.40	5.23
Control	Positive acceptance of change / secure relationships	15.05	4.34	15.60	4.00	14.75	4.05
Control	Control	8.70	2.69	9.15	2.49	8.70	2.53
Control	Spiritual influences	6.10	1.94	5.80	1.85	6.10	2.17
Control	Total resilience	74.90	20.98	76.45	18.58	75.55	20.09

Table 3 presents the descriptive statistics (means and standard deviations) for total resilience and its five components across the three measurement stages in each group. As shown in the table, all three groups had relatively similar mean scores at pretest, although the control group's pretest means were numerically somewhat lower than those of the two intervention groups across most components. To examine whether this numerical difference reflected a genuine baseline disparity, one-way ANOVAs were conducted comparing the three groups at pretest; the results indicated no statistically significant differences among the groups in total resilience, $F(2, 57) = 0.73$, $p = .489$, or in any of

the five components (personal competence: F(2, 57) = 0.52, p = .595; trust in instincts and tolerance of negative affect: F(2, 57) = 0.94, p = .395; positive acceptance of change and secure relationships: F(2, 57) = 0.85, p = .434; control: F(2, 57) = 1.51, p = .231; spiritual influences: F(2, 57) = 0.60, p = .552). These findings confirm that the three groups were statistically equivalent on resilience and its components prior to the intervention, and that the changes observed at posttest and follow-up can therefore be attributed to the interventions rather than to pre-existing group differences. Following the intervention, both the Acceptance and Commitment Therapy and Mindfulness-Based Stress Reduction groups showed a marked increase in total resilience and its components from pretest to posttest, with these gains largely maintained at the follow-up stage; the control group, by contrast, showed negligible change across the three measurement stages.

The results in Table 4 show that the effect of time was significant for all resilience components, with the largest time effect size belonging to the positive-acceptance-of-change component (η^2 = .680) and the smallest to spiritual influences (η^2 = .368). The time × group interaction effect was also significant for all components (largest for positive acceptance of change, η^2 = .497, and smallest for spiritual influences, η^2 = .306), indicating that the pattern of change in these components differed across the study groups over the three measurement stages.

Table 4. Within-Group Test Results for Resilience Components

Component	Source	SS	df	MS	F	Sig.	Partial η^2	Power
Personal competence	Time	747.478	2	373.739	80.027	p<.001	.584	1.000
	Time × Group	387.456	4	96.864	20.741	p<.001	.421	1.000
	Error	532.400	114	4.670	-	-	-	-
Trust in instincts	Time	669.078	2	334.539	90.167	p<.001	.613	1.000
	Time × Group	231.956	4	57.989	15.629	p<.001	.354	1.000

	Error	422.967	114	3.710	-	-	-	-
Positive acceptance of change	Time	381.811	2	190.906	121.131	p<.001	.680	1.000
	Time × Group	177.189	4	44.297	28.107	p<.001	.497	1.000
	Error	179.667	114	1.576	-	-	-	-
Control	Time	144.400	2	72.200	51.723	p<.001	.476	1.000
	Time × Group	58.467	4	14.617	10.471	p<.001	.269	1.000
	Error	159.133	114	1.396	-	-	-	-
Spiritual influences	Time	50.411	2	25.206	33.142	p<.001	.368	1.000
	Time × Group	38.222	4	9.556	12.564	p<.001	.306	1.000
	Error	86.700	114	0.761	-	-	-	-

As shown in Table 5, for all resilience components the difference between pretest and posttest and between pretest and follow-up was significant ($p < .001$), whereas the difference between posttest and follow-up did not reach significance for any component. This pattern shows that the improvement achieved in resilience components during the intervention period was maintained through the follow-up stage and that the therapeutic effects showed acceptable durability.

Table 5. Bonferroni Correction for Resilience Components by Time

Component	Time (1)	Time (2)	Mean Diff.	Sig.
Personal competence	Pretest	Posttest	-4.450	p<.001
	Pretest	Follow-up	-4.183	p<.001

	Posttest	Follow-up	0.267	1.000
Trust in instincts	Pretest	Posttest	-4.217	p<.001
	Pretest	Follow-up	-3.950	p<.001
	Posttest	Follow-up	0.267	1.000
Positive acceptance of change	Pretest	Posttest	-3.283	p<.001
	Pretest	Follow-up	-2.850	p<.001
	Posttest	Follow-up	0.433	.232
Control	Pretest	Posttest	-2.100	p<.001
	Pretest	Follow-up	-1.600	p<.001
	Posttest	Follow-up	0.500	.112
Spiritual influences	Pretest	Posttest	-1.183	p<.001
	Pretest	Follow-up	-1.050	p<.001
	Posttest	Follow-up	0.133	1.000

According to Table 6, the effect of group was significant for all resilience components ($p < .001$), indicating a difference among the acceptance-and-commitment, mindfulness, and control groups. The largest group effect size belonged to the control component ($\eta^2 = .966$) and the smallest to spiritual influences ($\eta^2 = .202$).

Table 6. Between-Group Test Results for Resilience Components

Component	Source	SS	df	MS	F	Sig.	η^2	Power
Personal competence	Group	1450.178	2	725.089	7.956	p<.001	.218	.945
	Error	5194.800	57	91.137	-	-	-	-
Trust in instincts	Group	1059.211	2	529.606	7.722	p<.001	.213	.939
	Error	3909.433	57	68.587	-	-	-	-
Positive acceptance of change	Group	683.678	2	341.839	9.885	p<.001	.258	.979
	Error	1971.183	57	34.582	-	-	-	-
Control	Group	273.433	2	136.717	10.897	p<.001	.277	0.988
	Error	715.117	57	12.546	-	-	-	-
Spiritual influences	Group	101.344	2	50.672	7.227	p<.001	.202	.923
	Error	399.650	57	7.011	-	-	-	-

As shown in Table 7, for all resilience components the difference between the Acceptance and Commitment Therapy group and the Mindfulness-Based Stress Reduction group was not significant, whereas both intervention groups showed a significant difference relative to the control group on most components. Overall, the results showed that both Acceptance and Commitment Therapy and Mindfulness-Based Stress Reduction led to a significant increase in resilience and its components in orphaned and neglected Adolescents , and that these changes were maintained through the follow-up stage. Nevertheless, comparison of means and the trend of change showed that Acceptance and Commitment Therapy had a relative advantage over Mindfulness-Based Stress Reduction on most resilience components – including personal competence, trust in one's instincts, positive acceptance of change, and control – while performance on the spiritual-influences component was nearly identical between the two interventions. It can therefore be concluded that, although both approaches were effective and durable in promoting resilience, Acceptance and Commitment Therapy showed a relative advantage in terms of the magnitude of improvement produced.

Table 7. Bonferroni Correction for Resilience Components by Group

Component	Group (1)	Group (2)	Mean Diff.	Sig.
Personal competence	ACT	MBSR	0.933	1.000
	ACT	Control	6.433	.002
	MBSR	Control	5.500	.008
Trust in instincts	ACT	MBSR	0.717	1.000
	ACT	Control	5.467	.002
	MBSR	Control	4.750	.008
Positive acceptance of change	ACT	MBSR	0.683	1.000
	ACT	Control	4.433	p<.001
	MBSR	Control	3.750	.003
Control	ACT	MBSR	0.667	.921
	ACT	Control	2.883	p<.001
	MBSR	Control	2.217	.003
Spiritual influences	ACT	MBSR	0.017	1.000
	ACT	Control	1.600	.005
	MBSR	Control	1.583	.005

Discussion and Conclusion

The present study was conducted with the aim of comparing the effectiveness and durability of Acceptance and Commitment Therapy and Mindfulness-Based Stress Reduction on dimensions of resilience in orphaned and neglected adolescents. The findings showed that both interventions produced a significant increase in the total resilience score and all five of its components – personal competence, trust in one's instincts and tolerance of negative affect, positive acceptance of change and secure relationships, control, and spiritual influences – while the control group showed no appreciable change. The difference between the two experimental groups did not reach statistical significance on any component, indicating that Acceptance and Commitment Therapy and Mindfulness-Based Stress Reduction were comparably effective in improving resilience in this population, despite modest numerical differences in the observed means. More importantly, the improvement achieved in both groups was maintained through the follow-up stage, and the difference between posttest and follow-up was not significant for any component; a finding that clearly answers the study's central question regarding the durability of the effect.

The effectiveness of Acceptance and Commitment Therapy on resilience can be explained within the framework of increased psychological flexibility. Adolescents exposed to the loss of a caregiver and environmental instability often adopt avoidant or suppressive patterns toward their difficult emotions; processes such as non-judgmental acceptance, cognitive defusion, and committed action help them, instead of escaping unpleasant experiences, to direct their behavior in line with personal values and, through this path, to rebuild their capacity for effective coping (Hayes et al., 2011; Tayyebi et al., 2024). This finding is in line with the results of Büyüköksüz (2025) in non-clinical adolescents and Dallas et al. (2025) in youths in group therapy, and shows that this mechanism is also effective in vulnerable populations.

The effectiveness of Mindfulness-Based Stress Reduction can likewise be justified through the pathway of self-regulation and deliberate attention; exercises in mindful breathing and non-judgmental observation of thoughts and emotions reduce impulsive reactions and enable better emotion regulation, a process that theoretical evidence has also linked to physiological pathways such as the hypothalamic-pituitary-adrenal axis (Qu et al., 2022; Nila et al., 2016). This finding is consistent with the results of Parandin (2024) and Carneiro et al. (2025) regarding the effectiveness of mindfulness on resilience and the mental health of Adolescents and adolescents.

The absence of a significant difference between the two interventions can be attributed to the fact that, despite differences in their technical procedures, both approaches operate at a more fundamental level to redefine the individual's relationship with their inner

experience and share a common path toward reducing experiential avoidance and increasing distress tolerance; hence their ultimate impact on resilience is comparable, even though the dominant mechanism in each differs. This finding is not consistent with the result of Afshari (2018), who reported a relative superiority of mindfulness in a different population – women with recurrent miscarriage – a discrepancy that is expected given the fundamental distinction between the psychological mechanisms of Adolescents versus adults, as well as differences in the type of stressors experienced by the two populations.

The durability of both treatments' effects through the follow-up stage fills an important gap in the research literature, since previous studies had mainly reported the durability of a single intervention (Nekouei et al., 2022; Badri Gargari et al., 2023; Bostani-Mavi et al., 2024) without comparing the two approaches head-to-head in the same population. Given the review by Trubey et al. (2024) on the insufficiency of long-term evidence regarding interventions for Adolescents in alternative care, the present finding shows that, despite the environmental instability these Adolescents face (Abate et al., 2024), the effects of both interventions remain relatively resistant to these pressures.

From a practical standpoint, these findings are important for residential care centers serving orphaned and neglected Adolescents ; since both interventions demonstrated acceptable effectiveness and durability, officials can select the appropriate intervention based on available resources – fewer sessions in Mindfulness-Based Stress Reduction versus more structured content in Acceptance and Commitment Therapy. Given the relative descriptive superiority of Acceptance and Commitment Therapy on most components, particularly where the goal is to simultaneously strengthen control and trust in one's instincts, this approach may be prioritized.

At the theoretical level as well, the direct comparison of these two interventions provides evidence that different pathways – physiological and self-regulatory versus psychological flexibility – can lead to a shared outcome, namely enhanced resilience; a finding that enriches the theoretical literature on resilience in vulnerable populations and lays the groundwork for future research on mediating mechanisms.

Nevertheless, the present study has certain limitations. The relatively limited sample size (twenty participants per group) and the restriction of sampling to residential care centers in the city of Ardabil limit the generalizability of the findings. Reliance on a self-report questionnaire may also involve response bias, and the follow-up interval does not allow conclusions about the durability of the effect over longer periods. In addition, mediating mechanisms such as psychological flexibility or emotional self-regulation were not included in the research design.

It is recommended that future research examine the durability of these two interventions' effects using larger, multi-center samples and longer-term follow-ups.

Likewise, including mediating measures to directly test the proposed mechanisms, and examining the possibility of combining the effective elements of both approaches into a single integrated intervention package, could provide richer practical and theoretical evidence for supporting the resilience of orphaned and neglected Adolescents .

Overall, the findings of this study showed that both Acceptance and Commitment Therapy and Mindfulness-Based Stress Reduction are effective and durable interventions for promoting resilience in orphaned and neglected Adolescents , with no significant superiority of one over the other; therefore, the choice between these two approaches can be based on implementation conditions, the resources available to residential care centers, and Adolescents 's preferences, without concern about a substantial difference in effectiveness or durability.

Ethical Considerations

This study fully observed the ethical principles of research in the behavioral sciences and was conducted after obtaining approval from the university's ethics committee and coordinating with the Ardabil Provincial Welfare Organization. Prior to the study, the purpose and nature of the project were explained to the officials of the care centers and to the participants, and written informed consent was obtained from the Adolescents themselves or their legal guardians. Participation in the study was entirely voluntary, and participants could withdraw from continued cooperation at any stage without any consequences. Participants' information was treated as strictly confidential and used solely for scientific purposes. After the interventions ended, and in order to ensure fairness in access to therapeutic services, a summary of the therapeutic content was also provided to the control group.

Conflict of interest

The authors declare that there is no conflict of interest in conducting this research.

Author Contributions

The first author contributed to the design of the study, implementation of the interventions, data collection, statistical analysis, and drafting of the initial manuscript. The other authors contributed to the conceptual design of the study, scientific supervision of the implementation process, interpretation of the findings, and final editing of the manuscript text. The final version of the manuscript has been approved by all authors.

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