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The Effectiveness of Acceptance and Commitment Therapy on Reducing Post-Traumatic Stress Disorder Symptoms and Enhancing Post-Traumatic Growth in Adolescent Survivors of Sexual Assault

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A B S T R A C T

Sexual assault during adolescence is associated with profound psychological sequelae, particularly post-traumatic stress disorder (PTSD), yet traumatic exposure may also be followed by post-traumatic growth (PTG). This study evaluated whether Acceptance and Commitment Therapy (ACT) could simultaneously reduce PTSD symptoms and strengthen PTG in adolescent survivors of sexual assault. The study used a randomized controlled, pre-test/post-test/follow-up design. Forty-two adolescent girls aged 13–18 years who met diagnostic criteria for PTSD after sexual assault were recruited from counseling centers, forensic medicine clinics, and welfare-related services in Tehran and randomly assigned to ACT or treatment as usual (TAU). The ACT condition involved 12 weekly 90-minute sessions adapted for trauma-exposed adolescents and focused on acceptance, cognitive defusion, present-moment awareness, self-as-context, values clarification, and committed action. Outcomes were assessed using the Clinician-Administered PTSD Scale for DSM-5 (CAPS-5), the Child PTSD Symptom Scale for DSM-5 (CPSS-5), and the Posttraumatic Growth Inventory for Children–Revised (PTGI-C-R). Data were analyzed with mixed-design analysis of variance. Thirty-nine participants completed the study (ACT, n=19; TAU, n=20). A significant Time × Group interaction was found for PTSD symptoms, $F(2,74)=45.32$, $p<0.001$, $\eta p2=0.55$, showing a marked reduction in the ACT group from pre-test to post-test that was maintained at follow-up. A similarly significant Time × Group interaction emerged for PTG, $F(2,74)=38.91$, $p<0.001$, $\eta p2=0.51$, indicating substantial gains in growth-related outcomes in the ACT group, with further improvement at the two-month follow-up. The control group showed no significant change in either outcome. ACT appears to be an effective intervention for adolescent survivors of sexual assault. Beyond symptom reduction, it may also support constructive post-traumatic adaptation by helping adolescents respond more flexibly to trauma-related thoughts and emotions and re-engage with personally meaningful life directions.

Keywords: *acceptance and commitment therapy; post-traumatic stress disorder;*

post-traumatic growth; sexual assault; adolescence; trauma therapy.

1. Introduction

Sexual assault in adolescence is among the most disruptive forms of interpersonal trauma because it occurs during a developmental period characterized by rapid neurobiological, emotional, and social change. In this period, trauma can interfere with identity development, educational engagement, interpersonal trust, and emotional regulation, thereby increasing vulnerability to enduring psychiatric difficulties (1-6). Reviews of the literature consistently show that sexual victimization is associated with elevated rates of post-traumatic stress symptoms, depression, anxiety, self-harm, dissociation, and later psychosocial impairment (2, 4, 6). In Iran, the available evidence also points to serious psychosocial consequences of child and adolescent sexual abuse, while at the same time indicating substantial underreporting and limited integration of trauma-informed care across systems (1).

Among the disorders associated with sexual trauma, PTSD has particular clinical importance. For adolescent survivors, PTSD may include intrusive recollections, trauma-related nightmares, avoidance of reminders, negative alterations in mood and self-appraisal, hypervigilance, concentration problems, and social withdrawal (3, 4, 6). The developmental timing of trauma matters: exposure during adolescence has been associated with alterations in affect regulation and neurocognitive development that may amplify stress reactivity and complicate recovery (5). Moreover, adolescent survivors often face shame, self-blame, fear of disbelief, and concerns about disclosure, all of which may deepen avoidance and prolong distress (3, 6).

At the same time, post-traumatic adaptation cannot be understood solely through the lens of pathology. The PTG literature suggests that some individuals experience positive changes following severe adversity, including greater appreciation of life, improved relationships, enhanced personal strength, changed priorities, and new life possibilities (7-12). PTG should not be interpreted as evidence that trauma is beneficial; rather, it reflects positive psychological development that may arise through the struggle to integrate trauma into one's life narrative (7, 11, 12). In children and adolescents, PTG has been documented across diverse traumatic exposures, including accidents, disasters, medical adversity, and interpersonal trauma (8-12). Systematic reviews indicate that growth-related outcomes in youth are shaped by cognitive processing, social context, supportive relationships, and the meanings constructed around the traumatic experience (11, 12). This dual reality—significant suffering alongside the potential for meaningful adaptation—suggests that effective trauma treatment should not be limited to symptom suppression. It should also facilitate psychological processes that allow young survivors to reconnect with valued roles, relationships, and future-oriented goals. Traditional trauma-focused cognitive-behavioral interventions remain highly important and well supported (13, 14). However, not all adolescents engage readily with exposure-based work, and some continue to struggle with shame, experiential avoidance, and rigid self-definitions even after receiving supportive care (13). This creates a rationale for examining interventions that directly target these processes.

Acceptance and Commitment Therapy (ACT) offers a particularly relevant framework in this context (15, 16). As a contextual behavioral intervention, ACT aims to increase psychological flexibility: the capacity to stay in contact with difficult internal experiences while choosing actions aligned with personally meaningful values (15, 16). Rather than attempting to eliminate distressing thoughts and memories, ACT helps individuals alter their relationship to such experiences through acceptance, cognitive defusion, mindfulness, self-as-context, values clarification, and committed action (16). This orientation may be especially suitable for trauma survivors whose efforts to suppress or control internal distress often intensify symptoms over time (17-20). The relevance of ACT to PTSD is grounded in the role of experiential avoidance. Evidence suggests that attempts to avoid trauma-related thoughts, emotions, bodily sensations, or memories are closely linked to greater PTSD severity and broader emotional distress (17). Related work has shown that acceptance-related capacities and psychological flexibility are associated with lower trauma-related impairment and better adaptation (15, 18-20). In trauma-exposed populations, ACT has shown encouraging results in reducing distress and improving functioning, including in randomized and pilot studies involving PTSD-affected adults and trauma-exposed clinical populations (21-24). Although the ACT evidence base in adolescents exposed to sexual assault remains limited, the underlying mechanisms of change are highly relevant to this group.

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ACT may also have particular value for PTG. By helping adolescents disentangle their identity from the trauma, observe internal experiences without overidentifying with them, and reorient behavior around chosen values, ACT may promote the cognitive and emotional conditions under which growth becomes possible (11, 12, 15, 16). Mindfulness and acceptance processes have been linked to better trauma adaptation, and studies in adolescents suggest that mindfulness may influence the way post-traumatic symptoms are experienced and processed (25, 26). In survivors of sexual abuse, mindfulness-related variables have been found to mediate or moderate trauma symptomatology, suggesting that processes closely aligned with ACT may be useful therapeutic targets (25). When therapy helps adolescents move from "I am damaged" toward "I am a person who has suffered and can still choose how to live," conditions may emerge for both symptom relief and growth. Despite this conceptual fit, there remains a shortage of clinical studies directly examining whether ACT can simultaneously reduce PTSD symptoms and foster PTG in adolescents who have survived sexual assault. Much of the available literature focuses either on adults, on mixed-trauma samples, or on symptom reduction without parallel assessment of growth-related outcomes (11-13, 21-24). The present study was designed to address this gap. Drawing on the results reported in the source thesis document, the study evaluated the effectiveness of a 12-session ACT program for adolescent survivors of sexual assault using a randomized controlled design with pre-test, post-test, and follow-up measurement. It was hypothesized that, compared with treatment as usual, ACT would lead to: (1) a greater reduction in PTSD symptom severity, and (2) a greater increase in post-traumatic growth. By examining both outcomes together, the study sought to contribute to a more comprehensive model of trauma recovery in adolescence—one that recognizes both the need to alleviate suffering and the possibility of fostering resilient, value-based adaptation.

2. Methods and Materials

2.1. Study design

This study employed a randomized controlled trial with two parallel arms and three measurement points: pre-test, post-test, and two-month follow-up. The intervention arm received group-based ACT, whereas the comparison arm received treatment as usual (TAU). The design was chosen to evaluate whether change over time differed between groups for the two primary outcomes: PTSD symptoms and PTG.

2.2. Participants and setting

According to the source document, the study population consisted of adolescent girls aged 13 to 18 years with a history of sexual assault who were referred to counseling centers, forensic medicine clinics, and social welfare-related services in Tehran during 2024–2025. Participants were selected purposively from clinically accessible cases and then randomly assigned to either the ACT group or the TAU group. The thesis text reports an initial sample of 42 adolescents, with 21 assigned to each group. Inclusion criteria were: age 13–18 years; documented sexual assault at least six months before enrollment; PTSD diagnosis based on CAPS-5; a CPSS-5 score of at least 25; willingness to participate; guardian consent and participant assent; and no recent participation in ACT or similar mindfulness-based interventions. Exclusion criteria included severe psychiatric comorbidity interfering with participation, acute suicidality requiring emergency intervention, unstable psychotropic medication, and current substance dependence requiring immediate specialized treatment. Three participants discontinued during the study period because of relocation or scheduling conflicts, leaving a final analytic sample of 39 adolescents: 19 in ACT and 20 in TAU. Baseline comparisons indicated no statistically significant between-group differences in age, education level, or time elapsed since the traumatic event.

2.3. Measures

PTSD diagnosis and clinician-rated severity were established using the Clinician-Administered PTSD Scale for DSM-5 (CAPS-5), which is widely regarded as a gold-standard structured clinical interview for PTSD assessment (27). Self-reported PTSD symptoms were assessed using the Child PTSD Symptom Scale for DSM-5 (CPSS-5), a validated youth measure aligned with DSM-5 criteria (28). PTG was assessed with the Posttraumatic Growth Inventory for Children–Revised (PTGI-C-R), a brief

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measure developed to capture positive changes in children and adolescents following traumatic events (9). Demographic and background information, including age, education, socioeconomic status, and time since trauma, were collected with a researcher-developed questionnaire.

2.4. *Intervention*

The ACT protocol consisted of 12 weekly sessions of approximately 90 minutes each. Based on the supplied file, the treatment was delivered in small groups and adapted for adolescents with sexual trauma. The structure covered the central ACT processes while incorporating trauma-sensitive group work. Session content included: establishing safety and group norms; psychoeducation about trauma reactions; examining ineffective control strategies; cognitive defusion from shame- and self-blame-related thoughts; acceptance of painful internal experiences; grounding and present-moment awareness; self-as-context; clarification of personal values; re-engagement with relational, academic, and future-oriented goals; committed action; and relapse prevention. This structure is consistent with the broader ACT model and with trauma-informed applications emphasizing psychological flexibility, mindfulness, and values-based recovery (15, 16, 21-24). The TAU condition consisted of the routine services normally available in participating centers, such as supportive counseling and psychiatric referral when clinically indicated. No structured ACT components were provided in the TAU arm during the main study period.

2.5. *Data analysis*

Data were analyzed in SPSS version 27. Descriptive statistics were used to summarize participant characteristics and outcome scores at each measurement point. To test the study hypotheses, mixed-design analysis of variance (ANOVA) was conducted with Group (ACT vs. TAU) as the between-subjects factor and Time (pre-test, post-test, follow-up) as the within-subjects factor. This analytic strategy was appropriate for identifying both overall time effects and the critical Time × Group interaction indicating differential change between conditions. The source file reports that where assumptions such as sphericity were examined, appropriate corrections and post-hoc comparisons were applied. Partial eta squared was used to represent effect size.

3. Findings and Results

3.1. *Participant characteristics*

The mean age of participants was 15.42 years (SD=1.61) in the ACT group and 15.65 years (SD=1.53) in the TAU group. The mean time since trauma was 14.21 months (SD=6.34) in ACT and 13.85 months (SD=5.98) in TAU. Educational level distributions were also comparable across groups. These findings support the baseline homogeneity of the two conditions. Table 1 presents the demographic characteristics. None of the baseline differences reached statistical significance.

Table 1

Baseline demographic and trauma-related characteristics of participants.

Variable	ACT Group (n=19), M (SD) or n (%)	TAU Group (n=20), M (SD) or n (%)	Test	p
Age (years)	15.42 (1.61)	15.65 (1.53)	t=-0.46	0.648
Time since trauma (months)	14.21 (6.34)	13.85 (5.98)	t=0.18	0.854
Middle school	8 (42.1%)	7 (35.0%)	χ^2=0.52	0.771
High school	11 (57.9%)	13 (65.0%)		

Group differences at baseline were not statistically significant.

3.2. *PTSD symptoms*

PTSD symptom scores showed a clear divergence between groups over time. In the ACT group, the mean CPSS-5 score decreased from 48.32 (SD=8.45) at pre-test to 28.15 (SD=6.22) at post-test and remained low at follow-up, 26.84 (SD=5.98). In contrast, the TAU group changed only modestly, from 47.85 (SD=7.91) at pre-test to 45.10 (SD=8.10) at post-test and 44.95 (SD=7.85) at follow-up.

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The mixed-design ANOVA reported in the source file demonstrated a statistically significant Time × Group interaction for PTSD, F (2,74)=45.32, p<0.001, ηp2=0.55, indicating that symptom trajectories differed substantially between ACT and TAU. The main effect of Time was also significant, F (2,74)=98.45, p<0.001, ηp2=0.72, as was the main effect of Group, F (1,37)=28.67, p<0.001, ηp2=0.43. Bonferroni-adjusted comparisons showed that the ACT group improved significantly from pre-test to post-test and maintained those gains at follow-up, whereas the TAU group did not demonstrate meaningful change (table 2).

Table 2

Mean outcome scores across study time points.

Outcome	Group	Pre-test, M (SD)	Post-test, M (SD)	Follow-up, M (SD)
PTSD symptoms (CPSS-5)	ACT	48.32 (8.45)	28.15 (6.22)	26.84 (5.98)
PTSD symptoms (CPSS-5)	TAU	47.85 (7.91)	45.10 (8.10)	44.95 (7.85)
Post-traumatic growth (PTGI-C-R)	ACT	22.10 (5.33)	34.85 (4.76)	36.42 (5.12)
Post-traumatic growth (PTGI-C-R)	TAU	21.95 (4.98)	22.40 (5.05)	22.15 (4.88)

Higher CPSS-5 scores indicate more severe PTSD symptoms. Higher PTGI-C-R scores indicate greater post-traumatic growth.

3.3. Post-traumatic growth

PTG scores showed the opposite directional pattern. In the ACT group, PTGI-C-R scores rose from 22.10 (SD=5.33) at pre-test to 34.85 (SD=4.76) at post-test and increased further to 36.42 (SD=5.12) at follow-up. In the TAU group, scores remained largely unchanged across the three assessments: 21.95 (SD=4.98), 22.40 (SD=5.05), and 22.15 (SD=4.88), respectively. The Time × Group interaction for PTG was significant, F (2,74)=38.91, p<0.001, ηp2=0.51. The main effect of Time, F (2,74)=82.14, p<0.001, ηp2=0.69, and the main effect of Group, F (1,37)=32.55, p<0.001, ηp2=0.46, were also significant. Post-hoc comparisons indicated that PTG increased significantly from pre-test to post-test in the ACT group and continued to improve from post-test to follow-up, whereas the TAU group showed no significant within-group change. Taken together, the findings strongly support both study hypotheses: ACT was associated with a clinically substantial decline in PTSD symptoms and a parallel increase in PTG (table 3).

Table 3

Summary of mixed-design ANOVA results for PTSD and PTG outcomes.

Source	Outcome	SS	df	MS	F	p	ηp^2
Time	PTSD	8452.32	2	4226.16	98.45	<0.001	0.72
Time	PTG	6234.15	2	3117.07	82.14	<0.001	0.69
Time × Group	PTSD	3891.45	2	1945.72	45.32	<0.001	0.55
Time × Group	PTG	2956.80	2	1478.40	38.91	<0.001	0.51
Group	PTSD	1234.67	1	1234.67	28.67	<0.001	0.43
Group	PTG	1452.33	1	1452.33	32.55	<0.001	0.46

Abbreviations: SS, sum of squares; MS, mean square; PTG, post-traumatic growth; PTSD, post-traumatic stress disorder; ηp^2, partial eta squared.

4. Discussion

The present study examined whether ACT could reduce PTSD symptoms and enhance PTG in adolescent survivors of sexual assault. The results provide strong support for both aims. Compared with treatment as usual, the ACT intervention produced substantial symptom reduction and meaningful gains in growth-related outcomes, with effects persisting over a two-month follow-up. These findings are clinically relevant because they suggest that recovery after adolescent sexual trauma may be supported not only through reduction of distress but also through cultivation of adaptive, values-based change. The observed reduction in PTSD symptoms is consistent with the central ACT

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proposition that suffering is intensified when individuals become entangled with aversive internal experiences and organize their lives around escape and control (15-17). Survivors of sexual assault frequently attempt to suppress memories, avoid internal cues, or disengage from situations that might activate fear, shame, or self-blame. Although understandable, these strategies often maintain PTSD by narrowing behavioral repertoires and preventing emotional processing (17). In the present study, ACT appears to have interrupted this cycle by helping participants relate differently to trauma-related thoughts and feelings. The magnitude of the Time × Group interaction for PTSD ($\eta p2=0.55$) suggests that this was not a marginal effect but a large and clinically meaningful one.

This interpretation is compatible with prior work linking psychological flexibility to trauma adaptation. Acceptance- and mindfulness-related processes have been associated with lower trauma-related distress and better functioning across trauma-exposed samples (15, 18-20). Experiential avoidance, by contrast, has repeatedly been implicated in the persistence of PTSD symptoms (17). The treatment gains reported here also accord with emerging ACT literature in trauma-affected populations. Randomized and pilot studies in adults with PTSD or trauma histories have shown that ACT-based interventions can reduce distress, improve functioning, and enhance treatment engagement (21-24). While those studies were not conducted with adolescent sexual-assault survivors specifically, they reinforce the plausibility of the mechanisms suggested by the present findings. One notable strength of the current results is that symptom reduction was maintained at follow-up. Adolescents in the ACT group did not simply improve at post-test and then regress toward baseline; rather, the benefits appeared stable over the two-month observation period. This durability may reflect the skills-based nature of ACT. When adolescents learn cognitive defusion, present-moment grounding, acceptance of distress, and values-guided action, they acquire a framework that can be applied beyond the therapy room. That is particularly important after sexual trauma, where triggers may be recurring, socially embedded, and difficult to avoid completely.

The second major finding was the significant increase in PTG. This is arguably the more distinctive contribution of the study because many trauma-treatment evaluations focus only on symptom reduction. The ACT group demonstrated a sizable increase in PTGI-C-R scores from pre-test to post-test, followed by additional improvement at follow-up. Such a pattern suggests that growth-related processes may continue unfolding after formal treatment ends, perhaps as adolescents begin to apply values-based commitments in daily life. This interpretation aligns with youth PTG research indicating that growth develops through meaning-making, self-reorganization, and relational support rather than through the mere passage of time (8-12). The PTG findings can be understood through several ACT processes. First, self-as-context may help adolescents distinguish their identity from the traumatic event, making it easier to move from a damaged self-concept toward a broader and more flexible sense of self. Second, values clarification may restore future orientation by helping survivors define what kind of person they want to be in relationships, education, family life, and self-care. Third, committed action transforms these values into observable steps, which may rebuild efficacy and agency after experiences often characterized by powerlessness and violation. In that sense, ACT may create the psychological conditions under which PTG becomes more likely: not by denying pain, but by changing how pain is held and how life is rebuilt around it.
The continued growth observed at follow-up is also consistent with broader PTG literature. Foundational and subsequent studies have suggested that growth is often linked to deliberate cognitive processing, reappraisal, and the reconstruction of one's assumptions about self and world (7, 11, 12). In adolescents, PTG is influenced by developmental, interpersonal, and contextual factors, but it can emerge when trauma-related struggle is accompanied by supportive meaning-making processes (11, 12). Mindfulness-related variables may also be relevant here. Research in adolescents exposed to sexual abuse or other trauma has suggested that mindfulness is connected to the way post-traumatic symptoms are managed and may shape adaptation trajectories (25, 26). Because ACT integrates mindfulness with action and values, it may exert a broader developmental impact than symptom-focused coping alone.

The comparison with TAU is also informative. Participants receiving routine support did not show comparable improvements in either PTSD or PTG. This

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does not imply that supportive services lack value; such care may provide safety, continuity, and crisis stabilization. However, the present findings suggest that supportive care alone may be insufficient to produce robust change in trauma-related symptoms and growth outcomes in this population. Structured, mechanism-focused interventions appear necessary when the clinical goal is not only stabilization but meaningful recovery. From a practical standpoint, the results support ACT as a promising intervention for adolescent survivors of sexual assault in outpatient or community-linked settings. Group delivery may offer additional advantages, including normalization of reactions, reduction of shame, and opportunities for interpersonal learning, provided that safety and confidentiality are carefully maintained. In contexts where stigma, limited specialist resources, or treatment avoidance are significant barriers, ACT may be especially useful because it does not require immediate confrontation with trauma memories in the same way that some exposure-based protocols do. Instead, it offers a gradual route toward greater willingness, flexibility, and valued engagement.

Several limitations should be considered. First, the sample was relatively small and drawn from one metropolitan context, which limits generalizability. Second, all participants were female adolescents, so the findings cannot automatically be extended to boys or gender-diverse youth. Third, follow-up lasted only two months; longer-term observation is needed to determine whether both symptom reduction and PTG are sustained over six months, one year, or longer. Fourth, although the study design was randomized, the comparison condition was TAU rather than another evidence-based trauma treatment, so the results should be interpreted as evidence of efficacy relative to routine care rather than superiority over all alternative interventions. Finally, the supplied manuscript did not report an ethics code or trial registration number, both of which should be addressed before submission to a peer-reviewed journal. Future research should compare ACT directly with established trauma-focused interventions in adolescent sexual-assault survivors, include longer follow-up periods, and examine mediators such as psychological flexibility, experiential avoidance, shame, and valued living. It would also be useful to test whether caregiver involvement, digital or blended delivery, and culturally adapted ACT protocols strengthen outcomes in settings with high stigma and limited mental health infrastructure. Research of this kind would help clarify when ACT is most effective and for whom.

5. Conclusion

Based on the data reported in the source file, ACT was associated with significant and sustained reductions in PTSD symptoms and meaningful increases in PTG among adolescent survivors of sexual assault. These findings suggest that ACT may offer a clinically valuable model of trauma care that addresses both suffering and adaptive development. For adolescents whose trauma has disrupted not only emotional functioning but also trust, identity, and future orientation, an intervention that combines acceptance, flexibility, and values-based action may provide an especially constructive pathway toward recovery.

Authors' Contributions

All authors contributed substantially to the study and to manuscript development, and all approved the final version.

Declaration

The authors declare that artificial intelligence tools were used only to assist with language editing, translation, and improvement of the manuscript's readability. All conceptualization, study design, data collection, data analysis, interpretation of findings, and final approval of the manuscript were performed by the authors. The authors take full responsibility for the accuracy, integrity, and originality of the content.

Transparency Statement

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

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Declaration of Interest

The authors report no conflict of interest.

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Ethics Considerations

The source file reports an anonymous questionnaire-based study in a school population, but it does not specify the approving ethics committee or approval code. Before journal submission, the authors should verify and insert the formal ethics approval details and the exact consent/assent procedures used. The present manuscript therefore avoids inventing unverified ethics identifiers.

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