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ORIGINAL PAPER

Efficacy of Trauma-Focused Single Session ACT in Adolescents of Southern Punjab, Pakistan: Two Years Following 2022 Torrential Flood

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Abstract
Natural disasters pose significant psychological challenges, particularly for adolescents, who are developmentally vulnerable to trauma-related disorders. In 2022, widespread flooding in Southern Punjab, Pakistan, caused substantial loss. The present study evaluated the efficacy of Single-Session Acceptance and Commitment Therapy (SS-ACT) in reducing PTSD symptoms among adolescents aged 12–18 years in Taunsa, Pakistan. A two-arm randomized multiple baseline design was employed, with 85 participants equally distributed across experimental ($n=38$) and control ($n=47$) groups. The intervention was structured around the ACT Triflex model, emphasizing *Be Present*, *Open Up*, and *Do What Matters*. Outcome measures included the Child PTSD Symptom Scale (CPSS). Repeated-measures ANOVA revealed a significant reduction in PTSD symptoms in the experimental group immediately post-intervention $F(3.38, 280.57)=19.43$, $p < .001$, $\eta^2 = 0.19$), with a significant time × group interaction $F(3.38, 280.57)=8.78$, $p < .001$, $\eta^2 = 0.10$). Gender analyses indicated minor differences but no significant three-way interaction (time × group × gender). The findings suggest that SS-ACT is a feasible, culturally adaptable, and cost-effective intervention for post-disaster adolescent populations, and may serve as an early, stepped-care psychological support approach to help reduce acute symptoms. Implications for theory, clinical practice, policy, and future research underscore its potential integration into disaster-response frameworks and preventive mental health programs in resource-limited, disaster-prone regions.

Keywords Single-Session Acceptance and Commitment Therapy · PTSD · Adolescents · Taunsa

Introduction

Natural disasters are recurring global crises that exert profound psychological impacts, especially on vulnerable populations such as adolescents. The most recent large-scale disaster in Pakistan occurred in 2022, affecting the provinces of Baluchistan, Sindh, and parts of Southern Punjab (The Express Tribune, 2022). In Punjab, the floods severely damaged the Dera Ghazi Khan and Bahawalpur divisions, with Dera Ghazi Khan and Rajanpur identified as the most affected districts. Across Punjab, approximately 1,700 people lost their lives, and over 13,000 sustained severe injuries (British Red Cross, 2023).

Beyond the visible destruction, these floods inflicted long-term mental health consequences, including grief, displacement, and trauma-related disorders. Evidence from previous disasters in Pakistan indicates high rates of post-traumatic stress disorder (PTSD) among survivors (Ahmad et al., 2025). Ali et al. (2024) reported elevated PTSD symptoms among children aged 8–16 in rural South Punjab, particularly among those experiencing economic loss, displacement, and family hardship.

However, adolescents remain underrepresented in disaster-related research, as most studies focus on adult populations (Ahmad et al., 2025; Rehman et al., 2025; Ghazali et al., 2025). This oversight is concerning, given that adolescents are developmentally more vulnerable to trauma exposure and its consequences. Therefore, special attention should be given to children exposed to trauma-related disorders.

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Despite growing recognition of PTSD among youth, limited evidence exists on the efficacy of brief psychological interventions during crises, including Cognitive Behaviour Therapy (CBT), trauma-focused therapy, and Acceptance and Commitment Therapy (ACT), for adolescents in Pakistan. This gap underscores the urgent need for cost-effective, evidence-based interventions tailored to adolescents in resource-limited, disaster-prone contexts (Beck & Fleming, 2021).

Acceptance and Commitment Therapy (ACT) has emerged as a flexible alternative (Hayes, 2004), enhancing psychological flexibility through acceptance, cognitive defusion, mindfulness, values, and committed action (Hayes et al., 2011). Rooted in Relational Frame Theory and functional contextualism, ACT conceptualizes cognition as a form of learned verbal behavior shaped by both arbitrary and non-arbitrary contextual relations. By targeting how individuals derive meaning and relate experiences through language, ACT integrates mindfulness and behavioral principles to provide a culturally adaptable framework suited to the complex, context-dependent nature of PTSD.

ACT has been applied in two main formats. The first involves multiple sessions (10–12) to reduce long-term trauma, with evidence supporting its effectiveness for adults, particularly women (Fiorillo et al., 2017; Shari et al., 2020; Rehman et al., 2025b), and veterans (Wharton et al., 2019), as well as for anger and experiential avoidance (Masoumian et al., 2024). One study also found positive outcomes among adolescents with PTSD (Woidneck, 2013).

The second form is single-session ACT (SS-ACT), designed for natural disasters. Unlike Psychological First Aid (PFA), which lacks a strong theoretical base and requires no clinical expertise (Shultz & Forbes, 2013), SS-ACT is theory-driven, targeting experiential avoidance through six core processes. Evidence shows that both multi-session and single-session ACT can be effective in treating trauma-related distress (Eswara Murthy et al., 2020). SS-ACT is

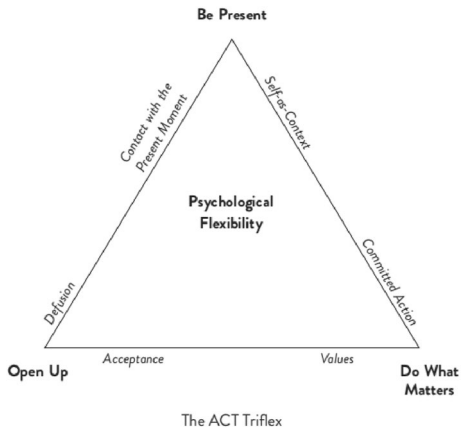

Fig. 1 Triflex acceptance and commitment therapy model

especially valuable in emergencies for its cost-effectiveness, scalability, and rapid delivery without additional infrastructure (Barreto & Gaynor, 2019).

Both single and multiple session ACT therapy, based on the hexaflex model (Hayes, 2004), illustrates the interconnection among these six core processes, where change in one influence the others. Harris (2009) condensed these into three functional units known as the ACT Triflex: (1) Be Present, contact with the present moment and self-as-context; (2) Open Up, acceptance and cognitive defusion; and (3) Do What Matters, values and committed action. Together, these define psychological flexibility as the ability to be present, open, and engaged in meaningful action. The current study applies a Single-Session ACT framework structured around this Triflex model (Fig. 1).

Problem Statement

The 2022 floods in Punjab, Pakistan, caused extensive devastation with elevated post-traumatic stress disorder (PTSD) symptoms in adolescents, with anger and avoidance being especially prominent (Ahmad et al., 2025). Following the 2022 floods in Pakistan, however, most studies have focused on adults (Iqbal & Sial, 2023). Only one study has examined PTSD among children or adolescents, reporting alarmingly high prevalence rates (Ali et al., 2024). This lack of adolescent-focused research highlights an urgent need for targeted investigation. Early psychological intervention is therefore essential to prevent long-term consequences (Meyer et al., 2018). Notably, limited psychological support was available following the floods, prompting calls for mental health services from both researchers and affected individuals.

Providing psychological support to adolescent disaster survivors is thus imperative; however, disaster settings often make multi-session therapies impractical (Cheema et al., 2023). Single-session interventions may serve as an early, stepped-care psychological support approach. While psychological first aid (PFA) focuses on immediate emotional stabilization, single-session therapies are structured, evidence-based interventions designed to produce measurable therapeutic change within one session. Therefore, beyond initial stabilization, single-session therapies are needed for affected adolescents.

Second, available single-session therapies for PTSD include cognitive behavioral therapy (CBT) and acceptance and commitment therapy (ACT). Trauma-focused CBT has shown promising short-term outcomes in single-session formats (Herbert et al., 2019), but concerns remain regarding limited long-term efficacy and relapse risk (Meyer et al., 2018). Evidence for single-session ACT (SS-ACT) in PTSD is particularly scarce, with only one brief ACT intervention showing promising results (Dindo et al., 2020).

Nevertheless, SS-ACT has demonstrated effectiveness across diverse populations and outcomes, including reductions in shame (Eswara Murthy et al., 2020), anxiety (Hadlandsmyth et al., 2019), repetitive negative thinking (Ruiz et al., 2016), and distress, as well as improvements in health-related behaviors (Barreto & Gaynor, 2019). Despite these findings, no study has evaluated SS-ACT for PTSD in adolescents (Pang et al., 2023).

Third, existing SS-ACT research employs varied designs across multiple countries, limiting generalizability and underscoring the need for more rigorous trials in underrepresented populations (Thomas, 2021).

Therefore, this study aims to evaluate the efficacy of SS-ACT for adolescents with PTSD following the 2022 floods in Pakistan, contributing evidence for a scalable, context-appropriate intervention in disaster settings.

Theoretical Assumptions: A Transdiagnostic Model of Psychopathology

The current transdiagnostic model provides strong evidence that childhood trauma contributes to both internalizing and externalizing psychopathology and that timely psychological support can buffer these adverse outcomes. Childhood trauma refers to exposure to natural or human-made events such as floods, earthquakes, bereavement, harassment, and socioeconomic loss that produce enduring psychological effects (Fan & Kang, 2025). While some children exhibit normative grief responses that gradually resolve, others develop persistent internalizing or externalizing difficulties (Rehman, 2021). Internalizing symptoms involve inwardly directed distress, including intrusive memories, avoidance, and negative mood, whereas externalizing symptoms include hyperarousal, irritability, and behavioral dysregulation that disrupt social functioning (Saba et al., 2023).

The transdiagnostic framework explains these outcomes through four interacting mechanisms: social information processing, emotional processing, accelerated biological maturation, and protective factors such as social support (McLaughlin et al., 2020). Trauma can distort children's interpretation of social cues and emotional experiences, particularly in invalidating environments, reinforcing maladaptive cognitions and trauma memories. Developmental changes may further intensify trauma responses during adolescence. Within this framework, brief interventions such as SS-ACT can function as early, structured psychological support that promotes emotional regulation, psychological flexibility, and resilience among disaster-exposed adolescents (Fig. 2).

Aim

The current study aims to evaluate the efficacy of Single-Session Acceptance and Commitment Therapy **in reducing** PTSD symptoms in adolescents in Taunsa, Pakistan.

Methodology

Research Design

This study employed a two-arm randomized controlled trial (RCT) to evaluate the effects of SS-ACT. Participants were randomly assigned to one of two parallel conditions:

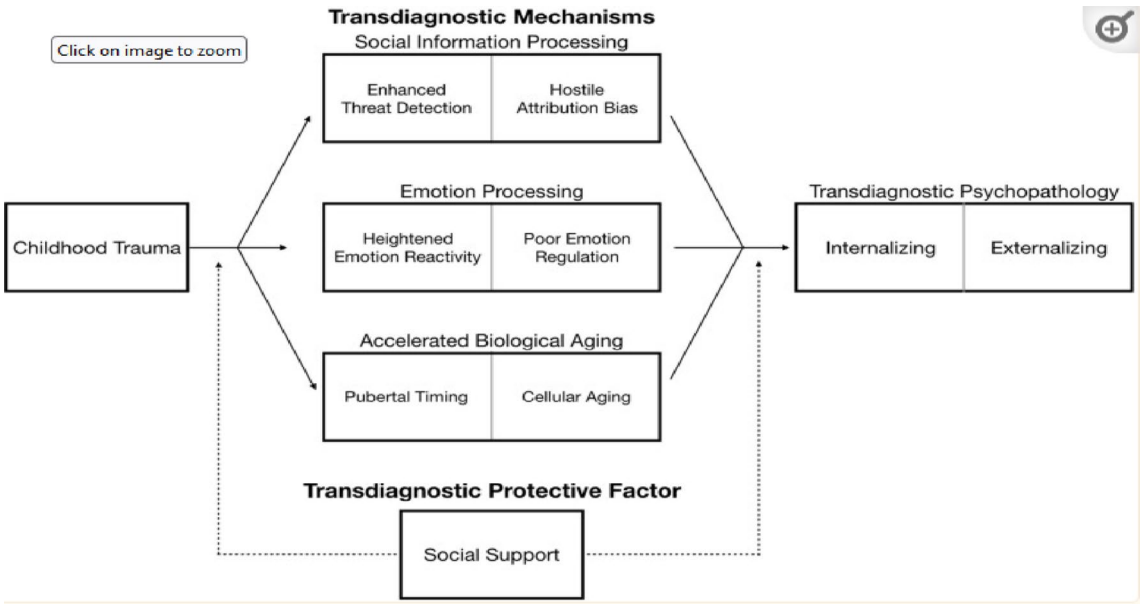

Fig. 2 Trans-diagnostic model of psychopathology. *Note.* Transdiagnostic model illustrating the internalising and externalising psychopathologies

an experimental group and a waitlist control group. To strengthen internal validity and account for spontaneous recovery or measurement reactivity, three baseline assessments were conducted before intervention delivery to establish symptom stability. The SS-ACT session was administered only after completion of these baseline assessments.

Participants were enrolled on a rolling basis; therefore, baseline assessments occurred at slightly different calendar times. Following the intervention, three post-intervention assessments were conducted to monitor changes in PTSD symptoms over time.

Sampling Method

Participants were recruited using purposive, non-probability sampling from two schools located in a single village in a disaster-affected area. This sampling strategy was selected due to practical and ethical constraints, including accessibility, urgency of service provision, and the need to identify adolescents presenting with elevated PTSD symptoms (Zrineh et al., 2026).

Inclusion and Exclusion Criteria. Only those participants exposed to the 2022 torrential flood were recruited in the current study. Participants were assessed using the CPSS-5-SR screening tool. Participants with mild, moderate, or severe PTSD were recruited. Minimal symptoms were excluded to avoid floor effects, and very severe symptoms were excluded for ethical and safety reasons requiring intensive care, including these three ranges allowed evaluation of SS-ACT across clinically meaningful symptom levels while ensuring safety, feasibility, and methodological rigor. Only those participants were selected who did not have another mental, medical, or medication-induced disorder. The participants taking any other intervention or having been part of any intervention in the past have been excluded from the study.

Sample Size Determination

A priori power analysis was conducted using G*Power to determine the minimum sample size required to detect a medium effect size ($f = 0.25$) with $\alpha = 0.05$ and statistical power $(1 - \beta) = 0.80$ in a repeated-measures between-group design (Kang, 2021). The analysis indicated that a minimum of 32 participants (16 per group) would be sufficient to detect a significant time × group interaction effect. To account for potential attrition and increase statistical stability, recruitment exceeded the minimum required sample size; a total of 92 participants were initially recruited and screened for eligibility.

Randomization and Allocation

An independent researcher generated a random allocation sequence using Randomization.org to assign eligible participants to either the SS-ACT or the waitlist control groups. Of 115 students recruited, 98 met the inclusion criteria and were randomized (49 per group). During baseline and follow-up, 12 participants from the treatment group and two from the control group were excluded due to withdrawal, absence, or outlier status. The final sample comprised 85 participants: SS-ACT ($n = 38$) and control ($n = 47$). Allocation concealment was ensured using sequentially numbered, opaque, sealed envelopes prepared by the independent researcher and opened only after baseline data were collected. All exclusions and deviations were documented in the CONSORT-style flow diagram (Fig. 3).

Measures

Child PTSD Symptoms Scale (CPSS). The **CPSS** (Foa et al., 2001) is a 27-item self-report measure designed to assess the severity of PTSD symptoms in children and adolescents aged 8 to 18 years. The 20 items of CPSS measure the symptom frequency, and seven items evaluate the functional impairment. The CPSS has sound psychometric properties, including a Cronbach's alpha of 0.916 for total symptom severity and a test-retest reliability of 0.800. The scale includes the following subscales: Intrusion, Avoidance, Cognitive and Mood Alterations, Arousal and Reactivity.

Other Measures

In the present study, participants were screened before inclusion through structured clinical interviews and review of available school and caregiver reports to identify acute psychiatric risk. Adolescents presenting with active suicidal intent, severe behavioral dysregulation, psychosis, or substance dependence were not included in the intervention phase and were instead referred to appropriate mental health services for comprehensive assessment and care.

Intervention Module

The intervention was delivered in an SS-ACT format adapted from the single-session protocols proposed by Esawara Murthy (2020) and Dindo et al. (2020), with contextual and developmental modifications for adolescents experiencing trauma-related distress. The session followed the SS-ACT Triflex processes of **Being Open**, **Being Present**, and **Doing What Matters**, and was completed within a single structured therapeutic encounter.

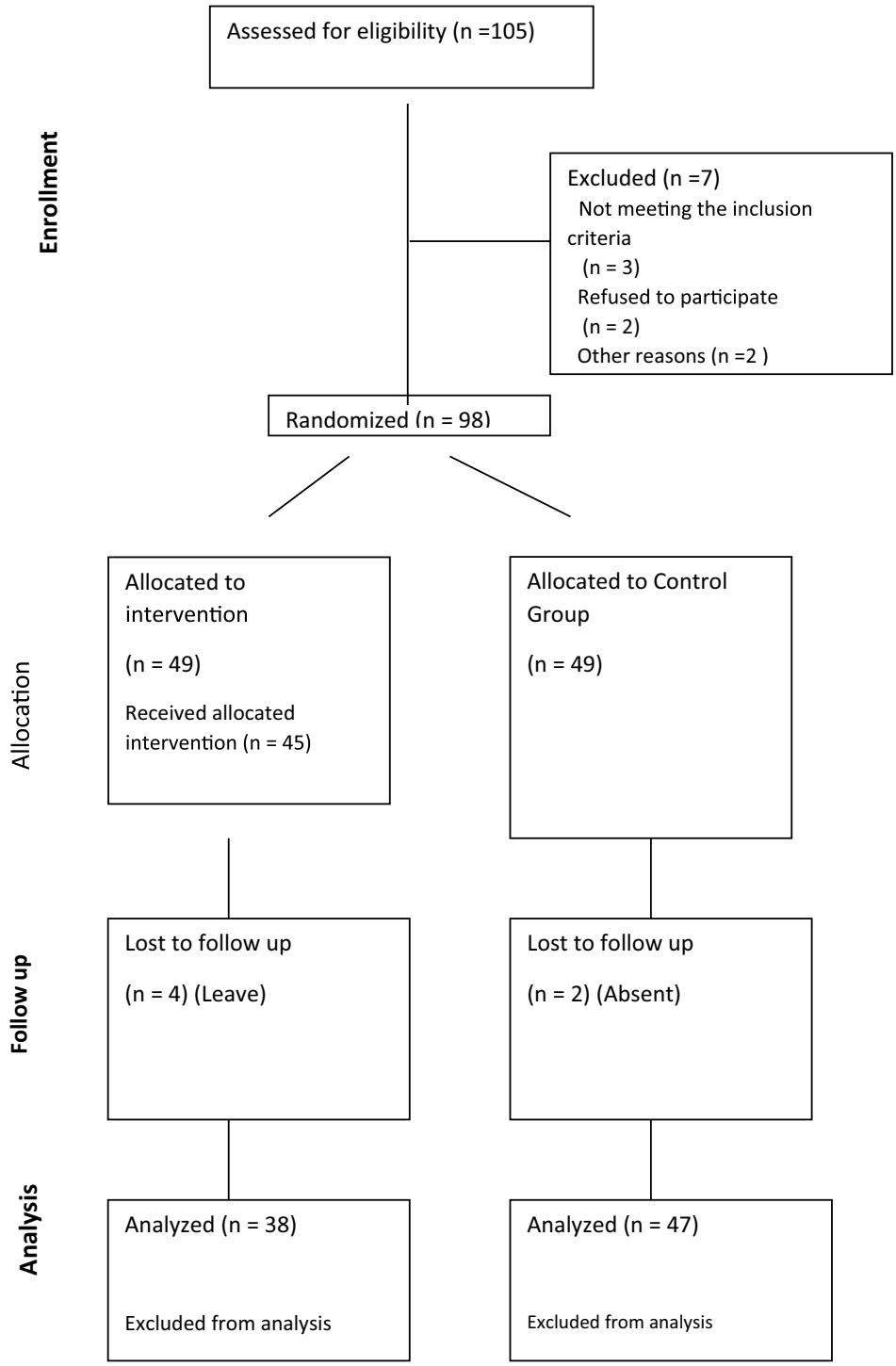

Fig. 3 CONSORT diagram showing the flow of participants through each stage of a randomized trial

Being Open

In the Being Open component, participants learned acceptance and cognitive defusion to change their relationship with distressing experiences. Younger adolescents (12–14) used the tug-of-war with the monster and anger-as-passing-cloud metaphors through gestures, drawings, and role-play, while older adolescents (15–18) reflected on how suppressing emotions increases distress. Cognitive defusion exercises, including labeling thoughts ("I am having the thought that…") and repeating them aloud, were practiced by both groups, with younger adolescents guided step-by-step and older adolescents encouraged to evaluate emotional reactions and thought credibility.

Being Present

The Being Present component aimed to develop present-moment awareness and strengthen the observing perspective. Younger adolescents used the 5-4-3-2-1 grounding exercise and simplified "leaves on a stream" imagery with slow, structured guidance. Older adolescents engaged with deeper mindfulness metaphors, including the chessboard, reflecting on internal experiences. The silent witness exercise was applied to both groups, with younger adolescents receiving concrete instructions and older adolescents encouraged to differentiate between the thinking self and observing self to enhance self-awareness and adaptive responses.

Table 1 Structure of SS-ACT

Phases	Aim	Intervention content and exercises
Introduction		
General assessment, Informed consent, limit to confidentiality Defining Anger and Experiential Avoidance (15 min)	The first step aimed to provide debriefing and psycho-educate the client on two possible responses for trauma, i.e., Anger and Experiential Avoidance	Informal assessment The willingness Dial Exercise for seeking consent to start the intervention Psycho-education: Defining anger and Experiential Avoidance
Open up		
Acceptance (10 min)	Developing willingness as an alternative to suppression Acknowledgment of aggression and the physical sensation associated with it	Things you can control and you cannot control, along with the Tug of War Exercise Anger as a Cloud
Defusion Training (15 min)	Noticing thoughts as barriers to Action	I'm having thoughts/ Leaves on the stream Say Though Aloud
Being present		
Self as context	Differentiate between noticing and observing the self	The Chessboard Metaphor The Witness Anger Exercise/ Stream of Consciousness
Contact with the present moment	Being fully aware	Grouding Technique Leaves on Stream
Do what matters		
Values clarification (10 min)	To clarify what matters to clients in To identify a hierarchical motivator to sustain behavior change	Values card sort My Super Hero
Committed action and rounding up (15 min)	Encourage workable behavior Change	The SMART Goal The 10-minute rule

Doing What Matters

In the Doing What Matters component, participants clarified personal values and translated them into committed actions. Younger adolescents (12–14) used the superhero values activity and value cards, identifying admired heroes such as Quaid-e-Azam and describing how to demonstrate qualities like bravery, kindness, and honesty in daily life. Older adolescents (15–18) reflected on identity, aspirations, and personal principles. Committed action was guided through SMART goals and the 10-minute rule, with younger adolescents receiving stepwise support and older adolescents planning independently while addressing barriers (Table 1).

Study Procedures and Ethical Considerations

Ethical approval was obtained from the institutional ethics committee and participating schools, and the study adhered to ICH-GCP guidelines. Participants were identified through school records and screened using standardized PTSD measures; adolescents with very severe symptoms were excluded for safety. Risk monitoring was embedded throughout the intervention, and those showing escalating distress or self-harm thoughts were promptly evaluated by the supervising clinical psychologist, with caregivers informed and referrals made to local child and adolescent mental health services as needed. Non-responders were provided recommendations for stepped-up care, including specialist trauma-focused psychotherapy or psychiatric consultation to ensure continued support.

Data Analysis

All analyses were conducted using IBM SPSS Statistics (Version 24). Data were screened for entry errors, missing values, and assumption compliance. Descriptive statistics were calculated across six assessment points, and sociodemographic variables were summarized using frequencies and percentages. Normality was assessed via skewness, kurtosis, and the Shapiro–Wilk test, while internal consistency was evaluated using Cronbach's alpha. Given the two-group design (intervention vs. waitlist) with repeated measurements over time, mixed-design repeated-measures ANOVA was used to examine changes in PTSD symptoms over time within participants and between groups. This approach allowed testing of interaction effects to determine whether symptom trajectories differed significantly between the intervention and waitlist conditions. Three-way ANOVAs were additionally conducted to explore gender effects. Mauchly's test assessed sphericity, with Greenhouse–Geisser corrections applied when violated. Effect sizes were reported using partial eta squared, and statistical

Table 2 Socio-demographic characteristics of participants at baseline

Baseline characteristics	Experimental group		Control group	
Gender	n	%	n	%
Male	14	16.5	21	24.5
Female	24	28.2	26	30.6
Total	38	44.7	47	53.3
Age				
12–14	10	11.8	18	21.2
15–16	17	20.0	15	17.6
17–18	11	12.9	14	16.5
Total	38	44.7	47	55.3

significance was set at α = 0.05. Missing data were minimal and handled using listwise deletion, as the proportion of missing responses did not materially affect sample size or group balance.

Results

Table 2 presents the demographic characteristics of the sample (N = 85), with 38 participants in the experimental group (44.7%) and 47 in the control group (55.3%). Most participants were female (58.8%), and ages ranged from 12 to 18 years, with the largest proportion between 15 and 16 years (37.6%).

According to Table 3, the internal consistency of the CPSS ranged from acceptable to good (α = 0.70–0.83), indicating a reliable assessment of the constructs. The Shapiro–Wilk test values (W = 0.97–0.98, p = .06–0.45) were nonsignificant, suggesting that the data did not significantly deviate from normality. Skewness (−0.84 to 0.38) and kurtosis (−0.81 to −0.04) values were within the acceptable range (±2), further supporting the assumption of normality (Table 4).

Table 4 Means, standard deviations, and one-way repeated measure ANOVA

Measure	Pretest (1,2,3)	Posttest (1,2,3)	F	*P*	Partial η^2
	M (SD)	M (SD)			
CPSS					
Experimental	151.13 (34.19)	126.55 (30.19)	37.98	0.00	0.34
Control	136.63 (2903)	129.63 (34.35)			

A repeated-measures ANOVA revealed a significant main effect of time on *CPSS* scores, $F(1, 83) = 37.99$, $p < .001$, $\eta p^2 = 0.31$, indicating a reduction in PTSD symptoms over time. The time × group interaction was also significant, $F(1, 83) = 11.77$, $p = .001$, $\eta p^2 = 0.12$, showing that the change in PTSD symptoms differed between groups.

Table 5 presents means and standard deviations for all outcomes across six time points for both experimental and control groups. The experimental group showed higher pretest scores and a marked reduction following the intervention, whereas the control group scores remained relatively stable across assessments.

Mauchly's test indicated violations of sphericity for all outcomes; therefore, Greenhouse–Geisser corrections were applied. For PTSD symptoms (CPSS-5-SR), a significant main effect of time was observed, $F(3.38, 280.57) = 19.43$, $p < .001$, $\eta^2 = 0.19$, along with a significant time × group interaction, $F(3.38, 280.57) = 8.78$, $p < .001$, $\eta^2 = 0.10$, indicating greater symptom reduction in the ACT group compared to controls.

Table 6 presents means and standard deviations for all outcomes across six time points for males and females in

Table 3 Psychometric properties of the scales

Scale	K	M	SD	Range	α	Kurtosis	Skewness	Shapiro–-Wilk (W)	*p*
CPSS Pre1	20	46.82	12.65	14–69	0.74	−0.59	−0.15	0.97	0.13
CPSS Pre2	20	47.85	12.71	13–69	0.75	−0.31	−0.42	0.97	0.06
CPSS Pre3	20	48.43	11.36	19–69	0.70	−0.43	−0.28	0.98	0.21
CPSS Post1	20	39.34	36.04	10–77	0.83	−0.55	0.38	0.97	0.07
CPSS Post2	20	41.56	12.50	13–69	0.72	−0.52	0.17	0.98	0.27
CPSS Post3	20	47.35	11.96	21–69	0.71	−0.73	−0.15	0.98	21

Note. *CPSS-5-SR* Child PTSD Symptom Scale for DSM-5-Self-Report

Table 5 Means, standard deviations, and one-way repeated measure ANOVA

Measure	Pretest 1	Pretest2	Pretest3	Posttest1	Posttest2	Posttest3	F	*P*	Partial η^2
	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)			
CPSS									
Experimental	50.24 (12.40)	49.81 (13.45)	51.07 (10.50)	34.78 (13.68)	41.36 (11.91)	50.39 (11.62)	19.42	0.00	0.19
Control	44.06 (12.29)	46.27 (11.98)	46.29 (11.68)	43.02 (15.63)	41.72 (13.09)	44.89 (11.79)			

Note. *CPSS* Child PTSD Symptom Scale Child PTSD Symptom Scale for DSM-5-Self-Report

P< .05, *P*< .01 *P*< .001

Table 6 Means, standard deviations, and one-way repeated measure ANOVA across gender

Measure	Males		Females		F	p	Partial η^2
	Experimental	Control	Experimental	Control			
	M (SD)	M (SD)					
CPSS total							
Pre 1	44.00 (12.93)	36.19 (8.71)	53.87 (10.74)	50.42 (11.10)	19.95	0.00	0.19
Pre 2	43.78 (13.81)	40.19 (5.56)	53.33 (12.18)	51.19 (11.62)			
Pre 3	47.35 (8.70)	45.47 (12.08)	53.25 (11.01)	46.96 (11.55)			
Post 1	31.57 (14.81)	32.76 (12.36)	36.66 (12.97)	51.30 (12.95			
Post 2	36.71 (12.35)	35.52 (9.81)	44.08 (11.00)	46.73 (13.42)			
Post 3	46.92 (10.01)	39.00 (10.61)	52.41 (12.21)	49.65 (10.63)			

both experimental and control groups. The experimental group showed higher pre-test scores and a marked reduction after the intervention, whereas the control group scores remained stable over time.

Mauchly's test indicated violations of sphericity; therefore, Greenhouse–Geisser corrections were applied. For PTSD symptoms (CPSS), there was a significant main effect of time, $F(3.36, 272.52) = 19.96$, $p < .001$, $\eta^2 = 0.20$, and a significant time × group interaction, $F(3.36, 272.52) = 7.86$, $p < .001$, $\eta^2 = 0.09$. A smaller but significant time × gender effect was observed, $F(3.36, 272.52) = 2.80$, $p = .034$, $\eta^2 = 0.03$, while the three-way interaction was not significant.

Discussion

The present study demonstrated that SS-ACT effectively reduced PTSD symptoms among adolescents who survived the 2022 floods. A large effect size, $F(1, 83) = 37.99$, $p < .001$, $\eta p^2 = 0.31$, indicated a significant reduction in participants scoring above the clinical cutoff (31) on the CPSS-5-SR. Considering the extremely high baseline prevalence of clinically significant PTSD symptoms (85.3%), these findings underscore the potential value of short, scalable interventions in contexts characterized by widespread trauma and limited mental health resources. These outcomes aligned with Relational Frame Theory (RFT), as SS-ACT targeted cognitive fusion and experiential avoidance, fostering flexible relational responding and acceptance-based strategies to reduce trauma-related distress.

Empirical evidence on SS-ACT for PTSD remained limited. Only one study examined SS-ACT in trauma populations, reporting symptom improvements that did not reach statistical significance (Dindo et al., 2020). Despite methodological differences, these findings, together with the current results, provided preliminary support for SS-ACT as a promising trauma intervention. Broader research indicated that SS-ACT could produce meaningful improvements across psychological difficulties, particularly in the immediate post-trauma period (Lavelle et al., 2022; Pang et al., 2023; Rehman et al., 2026a).

SS-ACT was shown to reduce shame, experiential avoidance (Eswara Murthy et al., 2020), anxiety, repetitive negative thinking, and psychological distress, while enhancing well-being (Howard et al., 2023; Levin et al., 2025).

Short-Term Benefits and Follow-Up Outcomes

The randomized multiple-baseline design revealed clear short-term benefits immediately following SS-ACT, with PTSD symptom scores decreasing significantly. However, scores increased during follow-up, indicating attenuation of effects over time. This pattern partially aligns with prior studies showing immediate improvements but variable follow-up outcomes (Dindo et al., 2020; Eswara Murthy et al., 2020; Hadlandsmyth et al., 2019).

Several factors likely limited the durability of effects. Ongoing post-disaster stressors, including displacement, economic instability, and environmental uncertainty, may have undermined maintenance of gains (Lavelle et al., 2022). Adolescents' developing cognitive and emotional regulation skills may require repeated practice to internalize ACT processes. Environmental constraints, limited social support, scarce follow-up, complex PTSD, and entrenched cognitive patterns (Howard et al., 2023; Hormes and Timko, 2024) further reduce the long-term efficacy of brief interventions.

Interpretation Through the Transdiagnostic Model

The findings also align with the transdiagnostic model of childhood trauma, which links psychopathology to interacting social, emotional, and biological mechanisms (McLaughlin et al., 2020). Flood exposure constituted a severe trauma, disrupting social information processing, impairing emotional regulation, and activating chronic stress responses. The immediate reduction in symptoms after SS-ACT suggests that brief interventions targeting experiential avoidance, cognitive fusion, and emotional regulation can temporarily buffer trauma-related processes. Symptom recurrence during follow-up reflects ongoing environmental risk and insufficient protective factors, consistent with the transdiagnostic model.

Limitations and Recommendations

The study had several limitations. It was conducted in a single flood-affected region, limiting generalizability; future research should evaluate SS-ACT across diverse cultural and geographical contexts. Follow-up was brief (two weeks), leaving long-term sustainability uncertain; longer follow-ups and booster sessions are recommended. A single-session format may be insufficient for severe or chronic cases, and multi-session or stepped-care adaptations could enhance durability. The study lacked comparison with other evidence-based interventions. Standardized multi-informant tools for suicidality, substance use, and complex trauma were not used, limiting risk characterization. Post-disaster adversity and scarce psychosocial resources may have reduced maintenance of effects.

Implications

The study has theoretical, clinical, and policy implications. Theoretically, findings support RFT and process-based ACT, showing that flexible relational responding and acceptance reduce trauma-related distress in adolescents. Clinically, SS-ACT is feasible, low-cost, and scalable, promoting psychological flexibility, emotional regulation, and adaptive coping post-disaster. Policymakers may integrate SS-ACT into school- and community-based mental health services in low-resource, disaster-prone regions. Future research should conduct head-to-head trials with established interventions, incorporate longitudinal designs, culturally tailored adaptations, and stepped-care models, and use multi-method assessments, including clinician-rated measures and functional outcomes, to more comprehensively evaluate PTSD symptomatology and real-world impact in adolescents.

Conclusion

SS-ACT produced significant short-term reductions in PTSD symptoms among adolescents exposed to flood-related trauma, providing preliminary empirical support for its efficacy in post-disaster contexts. While long-term outcomes were limited, a single structured session yielded meaningful clinical improvements. RFT offers a framework to understand mechanisms of change, emphasizing cognitive flexibility and experiential acceptance as key targets. Future research should explore sustained, scalable delivery models, booster sessions, and comparative trials to maximize the clinical utility of SS-ACT for trauma-affected adolescent populations.

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Data Availability No datasets were generated or analysed during the current study.

Declarations

Competing interests The authors declare no competing interests.

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