

A Comparison of the Effectiveness of Solution-Focused Therapy and Compassion-Focused Therapy on Rumination and Intolerance of Uncertainty among Adolescents with Inadequate Parental Care

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ABSTRACT

Objective: The present study aimed to compare the effectiveness of Solution-Focused Therapy (SFT) and Compassion-Focused Therapy (CFT) on reducing rumination and intolerance of uncertainty among adolescents with inadequate parental care.

Methods and Materials: This applied, quasi-experimental study employed a pretest-posttest control group design with a 9-month follow-up period. The study population consisted of adolescents with inadequate parental care who were under the supervision of welfare centers in Mashhad, Iran, during 2025. A total of 45 participants were selected through convenience sampling and randomly assigned to three groups: Solution-Focused Therapy (n = 15), Compassion-Focused Therapy (n = 15), and a control group (n = 15). Data were collected using the Ruminative Responses Scale (RRS) developed by Treynor et al. (2003) and the Intolerance of Uncertainty Scale (IUS) developed by Carleton et al. (2007). Participants in the intervention groups received the respective therapeutic protocols, while the control group received no intervention during the study period. Data were analyzed using repeated-measures analysis of variance in SPSS-26.

Findings: The results revealed significant differences among the study groups over time. Compassion-Focused Therapy demonstrated superior effectiveness in reducing rumination compared with both Solution-Focused Therapy and the control group. Furthermore, Compassion-Focused Therapy produced a statistically significant reduction in intolerance of uncertainty compared with the control group. However, no significant difference was observed between Compassion-Focused Therapy and Solution-Focused Therapy regarding intolerance of uncertainty. In contrast, Solution-Focused Therapy did not produce statistically significant improvements in either rumination or intolerance of uncertainty when compared with the control group. The therapeutic gains associated with Compassion-Focused Therapy remained stable throughout the 9-month follow-up period.

Conclusion: The findings suggest that Compassion-Focused Therapy is a more effective intervention than Solution-Focused Therapy for addressing maladaptive cognitive-emotional processes, particularly rumination, among adolescents with inadequate parental care.

Keywords: *Intolerance of Uncertainty; Solution-Focused Therapy; Compassion-Focused Therapy; Rumination; Adolescents with Inadequate Parental Care.*

1. Introduction

Adolescence is a critical developmental period characterized by profound biological, cognitive, emotional, and social changes that shape individuals' psychological adjustment and future well-being. During this period, adolescents are expected to develop effective emotional regulation strategies, adaptive coping mechanisms, and a coherent sense of self. However, adolescents who experience adverse family conditions, particularly those classified as inadequately supervised or maltreated, often face substantial psychological challenges that compromise their developmental trajectories. These adolescents are exposed to heightened levels of stress, emotional insecurity, interpersonal difficulties, and cognitive vulnerabilities, making them particularly susceptible to internalizing disorders and maladaptive psychological processes. Consequently, identifying effective interventions that address the cognitive and emotional difficulties of this vulnerable population has become a significant concern within contemporary clinical and developmental psychology (Malihi et al., 2025; Sajadinejad et al., 2024).

Among the most prominent cognitive-emotional difficulties observed during adolescence is rumination. Rumination refers to a repetitive, passive, and persistent focus on negative emotions, their causes, and their potential consequences rather than on active problem-solving or adaptive coping strategies. According to the response styles theory, individuals who engage in rumination repeatedly revisit distressing experiences and negative thoughts, thereby intensifying emotional suffering and increasing vulnerability to psychological disorders (Nolen-Hoeksema et al., 2008). Rumination is considered a transdiagnostic factor that contributes to the development and maintenance of various emotional disorders, including depression, anxiety, and stress-related conditions. Persistent ruminative thinking interferes with effective emotional processing, impairs problem-solving abilities, and reduces psychological flexibility, ultimately undermining adaptive functioning (Nolen-Hoeksema et al., 2015).

Research has consistently demonstrated that adolescents are particularly vulnerable to rumination because of ongoing cognitive maturation and heightened emotional reactivity. Repeated engagement in ruminative thought patterns is associated with increased psychological distress, social

withdrawal, academic difficulties, and reduced emotional well-being. Furthermore, rumination has been identified as a key mediator linking early adverse experiences with subsequent emotional and behavioral problems (Mansouri et al., 2014). Evidence also suggests that rumination is closely associated with suicidal ideation, impaired social problem-solving abilities, and reduced resilience when confronting stressful life events (Sharaf et al., 2018). Among adolescents with histories of neglect, inadequate supervision, or maltreatment, rumination may become particularly pronounced because of repeated exposure to uncertainty, emotional invalidation, and chronic stress. Recent findings have further demonstrated that rumination significantly predicts anxiety disorders during adolescence and interacts with other cognitive vulnerabilities to exacerbate psychological symptoms (Malihi et al., 2025). Additionally, interventions targeting maladaptive cognitive processes have shown effectiveness in reducing rumination among maltreated adolescents, highlighting the importance of addressing this construct within therapeutic settings (Sajadinejad et al., 2024).

Another important cognitive vulnerability that has attracted considerable attention in recent years is intolerance of uncertainty. Intolerance of uncertainty refers to an individual's tendency to perceive uncertain situations as threatening, distressing, and unacceptable regardless of the actual probability of negative outcomes. Individuals with high levels of intolerance of uncertainty often experience excessive worry, heightened anxiety, emotional dysregulation, and difficulties making decisions when faced with ambiguity or unpredictability (Carleton, 2016). The construct has emerged as a central factor in numerous psychological disorders and is increasingly viewed as a transdiagnostic mechanism underlying anxiety-related psychopathology.

Contemporary theoretical models suggest that intolerance of uncertainty influences how individuals interpret, evaluate, and respond to ambiguous situations. Rather than viewing uncertainty as a normal and inevitable aspect of life, individuals with elevated intolerance of uncertainty perceive uncertain circumstances as inherently threatening, leading to chronic worry, avoidance behaviors, and emotional distress (Carleton, 2016). Recent advances in this field have demonstrated that intolerance of uncertainty plays a critical role in emotional disorders and contributes significantly to the maintenance of anxiety and maladaptive coping patterns

(Dugas & Robichaud, 2024). Furthermore, longitudinal evidence indicates that improvements in tolerance for uncertainty are associated with meaningful reductions in anxiety symptoms and enhanced psychological functioning over both short-term and long-term periods (Fortin Delisle & Dugas, 2025).

The relationship between rumination and intolerance of uncertainty is particularly noteworthy. Both constructs involve repetitive cognitive processing and difficulties adapting to emotionally challenging situations. Research has shown that these variables function as common vulnerability factors underlying anxiety and depressive symptoms, often reinforcing one another in a cyclical manner (Spinhoven et al., 2023). Adolescents who struggle to tolerate uncertainty may engage in rumination as an attempt to gain cognitive certainty and control, while persistent rumination may simultaneously increase perceptions of uncertainty and emotional vulnerability. Consequently, interventions that effectively target one or both of these cognitive processes may yield significant psychological benefits.

Given the considerable psychological challenges experienced by adolescents with inadequate parental care, the identification of effective therapeutic approaches capable of reducing rumination and intolerance of uncertainty is particularly important. Among contemporary therapeutic interventions, Solution-Focused Brief Therapy (SFBT) has received substantial empirical support. Developed by De Shazer and colleagues, SFBT emphasizes clients' strengths, resources, and future-oriented solutions rather than focusing extensively on problems and deficits. This therapeutic approach assumes that individuals possess the capacities necessary for positive change and that identifying existing competencies can facilitate the achievement of desired goals (De Shazer & Dolan, 2012).

Solution-Focused Brief Therapy employs techniques such as miracle questions, exception finding, scaling questions, and goal clarification to promote adaptive thinking and behavior. Rather than exploring the origins of difficulties, therapists encourage clients to identify circumstances in which problems are less severe and to build upon these exceptions. This strengths-based orientation has made SFBT particularly appealing for use with children and adolescents, who may benefit from interventions that emphasize hope, empowerment, and practical solutions (Franklin et al., 2012).

A growing body of evidence supports the effectiveness of Solution-Focused Brief Therapy across diverse populations and psychological concerns. Meta-analytic findings have

demonstrated that SFBT produces significant improvements in behavioral, emotional, and interpersonal functioning (Kim, 2008). Subsequent reviews have reinforced these conclusions, indicating that SFBT qualifies as an evidence-based intervention for a wide range of clinical and non-clinical populations (Kim et al., 2019). Research involving children and adolescents has shown that solution-focused interventions effectively reduce behavioral problems and improve psychosocial adjustment, particularly when family involvement is incorporated into treatment (Hsu et al., 2021). Additional studies have reported positive effects of SFBT on academic achievement, resilience, emotional regulation, self-control, depressive symptoms, and cognitive functioning (Marvati Ardakani & Aflaki Fard, 2016; Seydaei Golsafidi & Pourseyed Aghaei, 2025; Wang & Chen, 2022). These findings suggest that SFBT may be useful for addressing cognitive-emotional vulnerabilities among adolescents experiencing psychosocial adversity.

Another intervention that has gained increasing empirical support is Compassion-Focused Therapy (CFT). Developed by Gilbert, CFT was originally designed to help individuals characterized by high levels of shame, self-criticism, and emotional distress. The theoretical foundation of CFT integrates principles from evolutionary psychology, attachment theory, affective neuroscience, and cognitive-behavioral approaches. Central to the model is the cultivation of compassion toward oneself and others as a means of regulating emotions, reducing self-criticism, and enhancing psychological well-being (Gilbert, 2010).

Compassion-Focused Therapy emphasizes the development of a compassionate self capable of responding to distress with kindness, understanding, and acceptance rather than judgment and self-criticism. Through mindfulness practices, compassionate imagery, emotional awareness exercises, and self-compassion training, individuals learn to approach difficult emotions more adaptively. Self-compassion has increasingly been recognized as an important therapeutic process associated with emotional resilience, psychological flexibility, and improved mental health outcomes (Neff & Germer, 2022).

Empirical evidence supporting Compassion-Focused Therapy has expanded considerably over the past decade. Meta-analytic findings indicate that compassion-based interventions produce significant improvements in a wide range of psychosocial outcomes, including reductions in anxiety, depression, and self-criticism and increases in emotional well-being (Ferrari et al., 2019). Randomized controlled trials have demonstrated that CFT effectively

enhances emotional regulation and reduces self-critical thinking through identifiable mechanisms of psychological change (Matos et al., 2023). Similarly, recent experimental research has shown that CFT significantly decreases self-criticism and improves emotion regulation capacities among clinical and non-clinical populations (Halamova et al., 2024). Within the Iranian context, compassion-focused interventions have also demonstrated effectiveness in reducing maladaptive psychological outcomes, including impulsivity among women experiencing significant emotional distress (Saeedi et al., 2020).

Despite growing evidence supporting both Solution-Focused Therapy and Compassion-Focused Therapy, relatively few studies have directly compared their effectiveness in addressing cognitive vulnerabilities such as rumination and intolerance of uncertainty among adolescents with inadequate parental care. This population represents a particularly important target for intervention because of the elevated prevalence of emotional difficulties, cognitive distortions, and psychosocial stressors associated with adverse caregiving environments. Moreover, while solution-focused approaches primarily emphasize strengths, goals, and future-oriented problem resolution, compassion-focused approaches target emotional regulation systems and the development of self-compassion. These theoretical differences suggest that the two interventions may exert distinct effects on cognitive-emotional processes.

Given the central role of rumination and intolerance of uncertainty in adolescent psychological maladjustment and the growing empirical support for both therapeutic approaches, further investigation is warranted to determine their relative effectiveness within vulnerable adolescent populations. Such knowledge may contribute to the development of more targeted and evidence-based psychological services for adolescents receiving welfare support and experiencing inadequate parental care.

Therefore, the present study aimed to compare the effectiveness of Solution-Focused Therapy and Compassion-Focused Therapy on rumination and intolerance of uncertainty among adolescents with inadequate parental care.

2. Methods and Materials

2.1. Study Design and Participants

This study employed an applied, quasi-experimental design using a pretest–posttest control group format with a 9-month follow-up assessment. The target population

consisted of male adolescents with inadequate parental care who were under the supervision of welfare centers in Mashhad, Iran, during 2025. Sample size estimation was conducted using G*Power software based on an effect size of 0.30, a significance level of 0.05, a statistical power of 0.80, and three study groups. The analysis indicated a required sample size of 15 participants per group. Accordingly, 45 eligible adolescents were selected through convenience sampling and randomly assigned to three groups: Solution-Focused Therapy (n = 15), Compassion-Focused Therapy (n = 15), and a control group (n = 15).

The inclusion criteria were providing informed consent to participate in the study, being classified as inadequately supervised according to the criteria of the Iranian Welfare Organization, being between 14 and 17 years of age, and having no serious physical illnesses as determined through medical history forms and physical examinations conducted by a general physician. Exclusion criteria included participation in concurrent psychological treatments, absence from more than two intervention sessions, use of psychiatric medications, diagnosis of a severe psychiatric disorder based on clinical history and mental status examination, presence of outlier data, and incomplete questionnaire responses. Following the administration of the pretest assessments, participants in the experimental groups received eight weekly group sessions of either Solution-Focused Therapy or Compassion-Focused Therapy, each lasting approximately 90 minutes. The control group received no intervention during the study period. Posttest assessments were conducted immediately after completion of the intervention programs, and follow-up assessments were carried out nine months later. All intervention sessions were delivered by a clinical psychologist with three years of therapeutic experience. Ethical principles, including confidentiality of participants' information and protection of privacy, were strictly observed throughout the study, and written informed consent was obtained from all participants.

2.2. Measures

Rumination was assessed using the Ruminative Responses Scale (RRS) developed by Treynor et al. (2003). The instrument consists of 10 items rated on a four-point Likert scale ranging from 1 (almost never) to 4 (almost always). Factor analytic studies have identified two underlying dimensions, namely brooding and reflection. Higher scores indicate greater levels of ruminative thinking. Treynor and colleagues reported satisfactory internal

consistency coefficients, with Cronbach's alpha values of .85 for the total scale, .80 for the brooding subscale, and .75 for the reflection subscale. Evidence of validity was established through factor analytic procedures and associations with depressive symptomatology. The Persian version of the scale has demonstrated acceptable psychometric properties, with Cronbach's alpha coefficients of .80 for the total scale and .66 and .72 for the brooding and reflection subscales, respectively. Convergent validity has also been supported through significant correlations with the Beck Depression Inventory. In addition, the test-retest reliability coefficient over a two-month interval was reported to be .61, indicating acceptable temporal stability.

Intolerance of uncertainty was measured using the 12-item Intolerance of Uncertainty Scale (IUS-12) developed by Carleton et al. (2007). The scale evaluates negative beliefs and reactions toward uncertain situations and future events. Items are scored on a five-point Likert scale ranging from 1 (not at all characteristic of me) to 5 (entirely characteristic of me). Total scores range from 12 to 60, with higher scores reflecting greater intolerance of uncertainty. The developers reported excellent internal consistency, with a Cronbach's alpha coefficient of .91. Evidence for convergent validity was demonstrated through significant correlations with measures of depression, anxiety, pathological worry, and generalized anxiety disorder symptoms. The Persian version has also shown strong psychometric properties, including a Cronbach's alpha coefficient of .87. Convergent validity has been supported through significant correlations with cognitive avoidance measures, acceptance and commitment scales, and negative beliefs about worry. Furthermore, the scale demonstrated acceptable test-retest reliability over a two-month period, with a coefficient of .54.

2.3. Interventions

The Solution-Focused Therapy intervention was implemented based on the treatment model proposed by de Shazer and Dolan (2012) and adapted by Marvati Ardakani and Aflaki Fard (2016). The program consisted of eight weekly 90-minute group sessions. The initial session focused on establishing rapport, introducing participants to the objectives and procedures of the intervention, and fostering hope for positive change. Subsequent sessions emphasized the core principles of solution-focused practice, including identifying personal strengths and resources, encouraging active responsibility, constructing solution-

oriented narratives, and recognizing effective coping strategies. Participants were guided to identify exceptions to their problems, develop alternative ways of thinking and behaving, and focus on desired future outcomes rather than existing difficulties. Scaling questions, future-oriented discussions, pretend tasks, and predictive assignments were used to strengthen participants' awareness of their capabilities and progress. The final session was dedicated to reviewing therapeutic gains, consolidating learned skills, evaluating progress through scaling techniques, and preparing participants for maintaining positive changes beyond the intervention period.

The Compassion-Focused Therapy intervention was based on the protocol developed by Ranjbar Kahan and Nouri (2016). The program consisted of eight weekly group sessions lasting approximately 90 minutes each. The intervention began with an introduction to the concepts of self-compassion, kindness toward oneself, and the establishment of a supportive therapeutic environment. Participants were subsequently introduced to mindfulness practices, including mindful awareness of breathing and sensory experiences, to enhance emotional awareness and regulation. Later sessions focused on recognizing, labeling, accepting, and compassionately responding to difficult emotions. Participants learned strategies for confronting emotional distress, cultivating self-care behaviors, and developing positive emotional experiences through compassion-focused exercises. Additional sessions included loving-kindness meditation, self-compassion practices, exploratory learning techniques, and exercises designed to improve interpersonal relationships, forgiveness, responsibility, self-awareness, and self-regulation. The final session emphasized common humanity, integration of previously learned skills, preparation for future challenges, and consolidation of therapeutic achievements. Throughout the intervention, participants were encouraged to practice self-compassion techniques in daily life through structured homework assignments.

2.4. Data Analysis

Data analysis was performed using SPSS software version 26. Descriptive statistics, including means and standard deviations, were calculated for all study variables across assessment points. Prior to inferential analyses, the assumptions of repeated-measures analysis of variance, including normality of distribution, homogeneity of variances, and sphericity, were examined. To evaluate

changes in rumination and intolerance of uncertainty across the pretest, posttest, and follow-up assessments and to compare differences among the three study groups, repeated-measures analysis of variance (RM-ANOVA) was conducted. Significant interaction and main effects were further examined through post hoc comparisons to identify the specific patterns of change across time and between groups. Statistical significance was established at the .05 level for all analyses.

3. Findings and Results

All participants were male adolescents enrolled in upper secondary education. The mean (SD) age of participants in the Compassion-Focused Therapy, Solution-Focused Therapy, and control groups was 16.20 (1.26), 15.07 (1.38), and 15.93 (1.83) years, respectively. No significant age differences were observed among the groups, $F(2, 42) = 2.29, p = .11$. Descriptive statistics for the study variables are presented in Table 1.

Table 1

Means, Standard Deviations, and Shapiro–Wilk Normality Test Results for the Study Variables

Variable	Group	Pretest M	Pretest SD	Shapiro–Wilk p	Posttest M	Posttest SD	Shapiro–Wilk p	Follow-up M	Follow-up SD	Shapiro–Wilk p
Rumination	Compassion-Focused Therapy	25.13	2.64	.77	20.33	3.84	.27	21.26	4.99	.42
	Solution-Focused Therapy	27.93	5.14	.90	26.26	4.83	.94	23.86	3.97	.17
	Control	26.13	4.22	.19	25.73	4.16	.60	26.66	4.09	.43
Intolerance of Uncertainty	Compassion-Focused Therapy	35.13	8.06	.23	23.53	5.33	.38	27.86	6.45	.56
	Solution-Focused Therapy	37.80	6.61	.13	30.93	5.96	.39	29.53	5.97	.02
	Control	32.93	8.11	.28	33.40	7.06	.68	36.20	3.93	.68

The dependent variables were measured on interval scales, and observations were independent. The results of the Shapiro–Wilk test indicated that all study variables were normally distributed ($p > .01$). Levene’s test demonstrated that the assumption of homogeneity of variance was satisfied for rumination at pretest ($p = .13$), posttest ($p = .62$), and follow-up ($p = .54$), as well as for intolerance of uncertainty at pretest ($p = .53$), posttest ($p = .67$), and follow-up ($p = .15$).

Mauchly’s test of sphericity indicated that the assumption of sphericity was violated for rumination ($MW = .76, p =$

$.007$) and intolerance of uncertainty ($MW = .83, p = .02$). Therefore, the Greenhouse–Geisser correction was applied. Results of Wilks’ Lambda multivariate tests revealed significant effects of time on rumination ($\eta^2 = .32, p < .0001$) and intolerance of uncertainty ($\eta^2 = .57, p < .0001$). In addition, the interaction between time and group was significant for rumination ($\eta^2 = .15, p = .009$) and intolerance of uncertainty ($\eta^2 = .32, p < .0001$). Based on these findings, repeated-measures analysis of variance was conducted to examine within-group and between-group differences. The results are presented in Table 2.

Table 2

Within-Group and Between-Group Effects for Rumination and Intolerance of Uncertainty in the Experimental and Control Groups

Variable	Effect	Source	SS	df	MS	F	p	η^2
Rumination	Within-group	Time	170.32	1.64	103.43	6.51	.004	.13
		Time × Group	155.94	3.29	47.34	2.98	.03	.12
		Error	1097.73	69.16	15.87	—	—	—
	Between-group	Group	446.50	2	223.25	7.78	.001	.27
		Error	1203.86	42	28.66	—	—	—
Intolerance of Uncertainty	Within-group	Time	845.57	1.70	494.82	18.37	< .0001	.30
		Time × Group	866.03	3.41	253.39	9.39	< .0001	.31
		Error	1935.73	71.77	26.97	—	—	—
	Between-group	Group	686.45	2	343.23	4.23	.02	.17
		Error	3407.46	42	81.13	—	—	—

As shown in Table 2, significant differences were observed in rumination and intolerance of uncertainty across the pretest, posttest, and follow-up assessments ($p < .05$). These findings indicate that 13% and 30% of the within-subject variance in rumination and intolerance of uncertainty, respectively, were explained by the effect of time.

The significant Time \times Group interaction effects for rumination and intolerance of uncertainty ($p < .05$) suggest that changes across assessment points differed among the study groups. Specifically, 12% of the variance in

rumination and 31% of the variance in intolerance of uncertainty were attributable to the interaction between time and group.

The between-group effects were also significant for both study variables ($p < .05$), indicating meaningful differences among the Compassion-Focused Therapy, Solution-Focused Therapy, and control groups. The effect sizes were .27 for rumination and .17 for intolerance of uncertainty. To further investigate these differences across time and groups, Bonferroni post hoc comparisons were conducted. The results are presented in Tables 3 and 4.

Table 3

Bonferroni Post Hoc Comparisons for the Study Variables Across Time

Variable	Time 1	Time 2	Mean Difference	Standard Error	p
Rumination	Pretest	Posttest	2.29	0.55	.001
	Pretest	Follow-up	2.46	0.84	.01
	Posttest	Follow-up	0.17	0.84	1.00
Intolerance of Uncertainty	Pretest	Posttest	6.00	0.80	< .0001
	Pretest	Follow-up	4.09	1.17	.003
	Posttest	Follow-up	-1.91	1.03	.21

The results presented in Table 3 indicate that the effects of Compassion-Focused Therapy and Solution-Focused Therapy on rumination and intolerance of uncertainty were significant from pretest to posttest and from pretest to

follow-up ($p < .05$). However, no significant differences were found between posttest and follow-up assessments ($p > .05$), indicating maintenance of treatment gains over time.

Table 4

Bonferroni Post Hoc Comparisons for the Study Variables Across Groups

Variable	Group 1	Group 2	Mean Difference	Standard Error	p
Rumination	Compassion-Focused Therapy	Solution-Focused Therapy	-3.77	1.12	.005
	Compassion-Focused Therapy	Control	-3.93	1.12	.003
	Solution-Focused Therapy	Control	-0.15	1.12	1.00
Intolerance of Uncertainty	Compassion-Focused Therapy	Solution-Focused Therapy	-3.91	1.89	.13
	Compassion-Focused Therapy	Control	-5.33	1.89	.02
	Solution-Focused Therapy	Control	-1.42	1.89	1.00

As shown in Table 4, significant differences were found between Compassion-Focused Therapy and both Solution-Focused Therapy and the control group with respect to rumination ($p < .05$). However, no significant difference was observed between Solution-Focused Therapy and the control group ($p > .05$). These findings indicate that Compassion-Focused Therapy was more effective in reducing rumination.

Regarding intolerance of uncertainty, no significant differences were observed between Compassion-Focused Therapy and Solution-Focused Therapy, nor between Solution-Focused Therapy and the control group ($p > .05$). However, a significant difference was found between

Compassion-Focused Therapy and the control group ($p < .05$). These results suggest that Compassion-Focused Therapy had a greater impact on reducing intolerance of uncertainty than the other conditions.

4. Discussion

The present study aimed to compare the effectiveness of Solution-Focused Therapy (SFT) and Compassion-Focused Therapy (CFT) on rumination and intolerance of uncertainty among adolescents with inadequate parental care. The findings demonstrated that both interventions produced changes across time; however, Compassion-Focused

Therapy was significantly more effective than Solution-Focused Therapy and the control group in reducing rumination. Furthermore, Compassion-Focused Therapy significantly reduced intolerance of uncertainty compared with the control group, whereas no significant difference was observed between Compassion-Focused Therapy and Solution-Focused Therapy on this variable. In contrast, Solution-Focused Therapy did not demonstrate a statistically significant advantage over the control group in reducing either rumination or intolerance of uncertainty. Additionally, the improvements observed following the interventions remained relatively stable throughout the nine-month follow-up period.

One of the principal findings of the study was the superior effectiveness of Compassion-Focused Therapy in reducing rumination among adolescents with inadequate parental care. This finding is theoretically consistent with contemporary models of rumination, which conceptualize repetitive negative thinking as a maladaptive strategy for managing distressing emotions and self-evaluative concerns (Nolen-Hoeksema et al., 2015; Nolen-Hoeksema et al., 2008). Adolescents who experience neglect, inadequate supervision, or unstable caregiving environments often internalize negative self-perceptions and develop heightened self-criticism. These cognitive tendencies can intensify repetitive self-focused thinking and maintain emotional distress over time. Compassion-Focused Therapy directly targets these mechanisms by cultivating self-kindness, emotional acceptance, and a compassionate internal dialogue. Through repeated practice of mindfulness, compassionate imagery, and self-soothing techniques, adolescents learn to disengage from cycles of self-judgment and repetitive negative thinking.

The present finding is supported by empirical evidence indicating that compassion-focused interventions are particularly effective in addressing maladaptive cognitive and emotional processes. For example, randomized controlled trials have demonstrated that Compassion-Focused Therapy significantly improves emotional regulation capacities while simultaneously reducing self-critical thinking patterns (Matos et al., 2023). Similarly, Halamova et al. reported that compassion-based interventions effectively reduce self-criticism and enhance adaptive emotion regulation strategies, both of which are strongly associated with lower levels of rumination (Halamova et al., 2024). The findings are also consistent with meta-analytic evidence indicating that compassion-focused interventions generate broad psychosocial benefits,

including reductions in anxiety, depression, and maladaptive repetitive thinking patterns (Ferrari et al., 2019). Furthermore, the importance of self-compassion as a protective factor within psychotherapy has been emphasized by Neff and Germer, who argued that self-compassion enables individuals to respond to emotional suffering with greater acceptance and psychological flexibility, thereby reducing vulnerability to persistent negative cognition (Neff & Germer, 2022).

The effectiveness of Compassion-Focused Therapy may be particularly relevant for adolescents with inadequate parental care because these individuals often experience chronic feelings of rejection, shame, and emotional insecurity. According to Gilbert's evolutionary model, compassion functions as an affect-regulation system that counterbalances threat-focused emotional responses and promotes feelings of safety and connectedness (Gilbert, 2010). For adolescents exposed to adverse caregiving environments, the development of compassionate self-relating may compensate for deficits in external emotional support, reducing the tendency to engage in repetitive negative thinking. Consequently, the observed reductions in rumination may reflect improvements in emotional regulation, self-acceptance, and psychological resilience.

Another important finding was that Compassion-Focused Therapy significantly reduced intolerance of uncertainty compared with the control group. This result aligns with contemporary theoretical perspectives suggesting that intolerance of uncertainty is fundamentally linked to emotional responses to ambiguity and perceived threat (Carleton, 2016; Dugas & Robichaud, 2024). Individuals with elevated intolerance of uncertainty tend to perceive uncertain situations as dangerous and uncontrollable, resulting in excessive worry, anxiety, and avoidance behaviors. Adolescents with inadequate parental care frequently encounter unpredictable living conditions and inconsistent interpersonal experiences, which may increase sensitivity to uncertainty and diminish confidence in their ability to cope with ambiguous situations.

Compassion-Focused Therapy may reduce intolerance of uncertainty by altering the emotional meaning assigned to uncertainty rather than directly eliminating uncertainty itself. Through compassion-based practices, individuals learn to approach uncertainty with greater acceptance, emotional balance, and self-reassurance. Rather than attempting to control or avoid ambiguous experiences, participants develop confidence in their capacity to tolerate discomfort and adapt to changing circumstances. This

interpretation is consistent with evidence demonstrating that improvements in emotional regulation contribute to enhanced tolerance of uncertainty and reduced anxiety symptoms (Dugas & Robichaud, 2024). Furthermore, research has shown that increases in tolerance for uncertainty are associated with sustained improvements in psychological functioning over time (Fortin Delisle & Dugas, 2025). The present findings therefore suggest that compassion-based interventions may facilitate adaptive responses to uncertainty by strengthening internal emotional resources and reducing threat-based cognitive processing.

The study also revealed that Solution-Focused Therapy did not differ significantly from the control group in reducing rumination. This finding may initially appear inconsistent with previous evidence supporting the effectiveness of Solution-Focused Therapy across various psychological outcomes. Numerous studies have reported positive effects of SFT on emotional adjustment, resilience, self-control, academic performance, and behavioral functioning (Franklin et al., 2012; Kim et al., 2019; Kim, 2008; Marvati Ardakani & Aflaki Fard, 2016). Furthermore, meta-analytic research has demonstrated meaningful improvements among children and adolescents receiving solution-focused interventions (Hsu et al., 2021). However, the absence of significant effects on rumination in the present study may reflect the specific nature of rumination as a deeply ingrained cognitive process.

Unlike interventions that directly target emotional processing and self-critical cognitions, Solution-Focused Therapy primarily emphasizes strengths, future goals, exceptions to problems, and practical solutions (De Shazer & Dolan, 2012). Although this orientation may enhance hope and self-efficacy, it may not sufficiently address the repetitive negative thinking patterns that characterize rumination. Rumination often operates automatically and is closely linked to underlying emotional vulnerabilities; therefore, interventions focusing predominantly on solution generation may be less effective than therapies that explicitly address emotional regulation and self-relating processes. Consequently, while SFT may promote adaptive functioning in many domains, its influence on persistent ruminative thinking among vulnerable adolescents may be comparatively limited.

Similarly, Solution-Focused Therapy did not demonstrate a significant advantage over the control group in reducing intolerance of uncertainty. Although the intervention encourages individuals to focus on achievable goals and existing strengths, it does not directly target the cognitive

biases and emotional reactions associated with uncertainty. Contemporary models emphasize that intolerance of uncertainty involves deeply rooted beliefs regarding unpredictability and perceived inability to cope with uncertain outcomes (Carleton, 2016; Dugas & Robichaud, 2024). Modifying these beliefs may require interventions that explicitly address emotional experiences and promote acceptance of ambiguity. Therefore, the limited effectiveness of SFT on intolerance of uncertainty observed in the present study may reflect a mismatch between the intervention's primary mechanisms of change and the underlying psychological processes maintaining uncertainty-related distress.

Nevertheless, it is noteworthy that no significant difference emerged between Compassion-Focused Therapy and Solution-Focused Therapy regarding intolerance of uncertainty. Although only Compassion-Focused Therapy differed significantly from the control group, the absence of a significant difference between the two active treatments suggests that both interventions may contribute to some degree of improvement in adolescents' responses to uncertainty. Solution-focused techniques such as identifying exceptions, recognizing strengths, and constructing preferred futures may indirectly foster confidence and adaptive coping, thereby enhancing tolerance for ambiguity even if the overall effect is modest. This interpretation is supported by studies demonstrating beneficial effects of solution-focused interventions on emotional regulation and self-control among youth populations (Seydaei Golsafidi & Pourseyed Aghaei, 2025).

Another important aspect of the findings concerns the maintenance of treatment gains during the nine-month follow-up period. The absence of significant differences between posttest and follow-up assessments indicates that the benefits achieved through intervention were largely sustained over time. This pattern suggests that participants internalized therapeutic skills and continued applying them beyond the conclusion of treatment. In the case of Compassion-Focused Therapy, ongoing use of self-compassion practices may have enabled participants to maintain improvements in emotional regulation and cognitive functioning. Previous research has similarly documented enduring effects of compassion-focused interventions on emotional well-being and self-regulation (Ferrari et al., 2019; Matos et al., 2023). Likewise, although the overall effects of Solution-Focused Therapy were less pronounced, the stability of outcomes may indicate that

participants continued utilizing solution-oriented coping strategies acquired during treatment.

The findings also contribute to the growing literature identifying rumination and intolerance of uncertainty as common vulnerability factors underlying emotional difficulties. Previous studies have emphasized the central role of these constructs in the development and maintenance of anxiety and depressive symptoms (Spinhoven et al., 2023). The present results extend this literature by demonstrating that interventions designed to enhance compassion and emotional regulation may be particularly effective in modifying these vulnerabilities among adolescents exposed to adverse caregiving environments. Moreover, the findings support evidence suggesting that reductions in maladaptive cognitive processes can facilitate broader psychological adjustment among vulnerable youth populations (Malihi et al., 2025; Sajadinejad et al., 2024).

5. Conclusion

Overall, the findings indicate that Compassion-Focused Therapy offers a particularly promising intervention for adolescents with inadequate parental care. By targeting emotional regulation, self-criticism, and compassionate self-relating, the intervention appears capable of addressing both rumination and intolerance of uncertainty, two cognitive-emotional vulnerabilities strongly associated with psychological distress. Although Solution-Focused Therapy may provide benefits in other domains of functioning, the present findings suggest that compassion-focused approaches may be better suited for addressing the specific cognitive and emotional challenges experienced by this population.

6. Limitations & Suggestions

Several limitations should be considered when interpreting the findings of this study. First, the sample consisted exclusively of male adolescents receiving services from welfare centers in a single city, which limits the generalizability of the findings to females, other age groups, and adolescents from different cultural or geographical contexts. Second, the relatively small sample size may have reduced statistical power and limited the detection of subtle treatment effects. Third, the study relied on self-report measures, which may be influenced by response biases, social desirability, and participants' subjective perceptions. Finally, although a nine-month follow-up was conducted, longer-term assessments would provide a more

comprehensive understanding of the durability of treatment effects.

Future studies should examine the effectiveness of Compassion-Focused Therapy and Solution-Focused Therapy using larger and more diverse samples that include female adolescents and participants from different socioeconomic and cultural backgrounds. Researchers may also investigate potential mediators and moderators of treatment effectiveness, such as self-compassion, emotional regulation, attachment style, resilience, and perceived social support. Comparative studies involving other evidence-based interventions, including cognitive-behavioral and acceptance-based approaches, could further clarify the relative effectiveness of different therapeutic models. In addition, longitudinal research with extended follow-up periods would contribute to a better understanding of the long-term sustainability of therapeutic outcomes.

Mental health professionals working with adolescents who have experienced neglect, inadequate parental care, or other adverse childhood experiences should consider incorporating compassion-focused techniques into their therapeutic programs. Welfare organizations and residential care centers may benefit from implementing structured compassion-based interventions as part of routine psychological services. Training programs for counselors and psychologists should include specialized instruction in compassion-focused approaches to enhance their effectiveness when working with vulnerable youth. Furthermore, integrating emotional regulation and self-compassion skills into preventive mental health programs may help reduce the development of persistent cognitive vulnerabilities and promote psychological resilience among adolescents facing challenging life circumstances.

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Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants. In this study, the principles of originality, honesty, integrity, and

confidentiality were strictly observed. Furthermore, the research proposal was reviewed and approved by the Ethics Committee of the Islamic Azad University, Arak Branch, and received ethical approval under the code IR.IAU.ARAK.REC.1403.366.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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Authors' Contributions

All authors equally contributed to this article.

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