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A Pilot Open Trial of an Individualized Adaptation of Trauma and Grief Component Therapy (TGCT) in Children and Adolescents

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Abstract

Background Originally designed for use with adolescents in group-based settings, there has been limited evaluation of Trauma and Grief Component Therapy (TGCT) with respect to its use with individual patients across a wide age range of children and adolescents.

Objectives This study describes a pilot open trial of individually administered TGCT, an assessment-driven, modularized treatment for traumatized and/or bereaved children and adolescents. Key outcomes measures include posttraumatic stress, depressive symptoms, and maladaptive grief reactions.

Method The sample consisted of 58 treatment-seeking children and adolescents who experienced trauma and/or bereavement (ages 7–17 years, M = 12.78, SD = 2.93; 68.4% female; 45.6% Hispanic, 14.0% Black, 22.8% White, 14.0% Multiracial). The study used a single-group open trial design. Youth referred to the study due to experiencing a potentially traumatic event or death of a loved one completed self-report measures of posttraumatic stress, depressive symptoms, and maladaptive grief reactions (when applicable). Measures were also completed following Module 1 of the treatment.

Results Bayesian regression models revealed youth who completed TGCT Module 1 reported substantial reductions from baseline, with large effect sizes for posttraumatic stress, depressive symptoms, and maladaptive grief reactions. Rates of reliable improvement ranged from 42 to 65% across treatment outcomes with 69% of youth demonstrating reliable improvement in at least one outcome.

Conclusions The present study provides preliminary evidence supporting TGCT as an individual treatment for traumatized and/or bereaved children and adolescents experiencing posttraumatic stress, depressive symptoms, and/or maladaptive grief reactions.

Keywords Bereavement · Grief · Posttraumatic stress · Trauma · Treatment effectiveness · Trauma and grief component therapy · Children · Adolescents

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Introduction

Experiencing potentially traumatic events is all too common among youth and causes considerable psychological, social, developmental, and physical harm. More than two thirds of children report at least one traumatic event—including child abuse, sexual abuse, community violence, domestic violence, natural disasters, or the death of a loved one—by age 16 (Substance Abuse and Mental Health Services [SAMHSA], 2022). Childhood trauma and loss are associated with a range of mental health problems, including posttraumatic stress symptoms (PTSS; Keyes et al., 2014), depression (Cerel et al., 2006), conduct problems, substance use (Kaplow et al., 2010), and maladaptive grief (Kaplow et al., 2018). Further, trauma and bereavement frequently co-occur (Kaplow et al., 2018), which can produce an especially challenging intersection of posttraumatic stress and maladaptive grief reactions that require specialized treatment approaches to effectively address each construct and their interplay.

The prevalence and deleterious effects of childhood trauma and bereavement require targeted, effective, and wide-spread dissemination of treatments that focus on reducing the co-occurrence of posttraumatic stress and maladaptive grief. To date, relatively few treatments have been developed to assist trauma- and bereavement-exposed youth in coping with both posttraumatic stress and grief reactions. *Trauma-Focused Cognitive Behavioral Therapy* (TF-CBT) is an evidence-based trauma-focused therapy for youth with accompanying grief-focused components for children experiencing "childhood traumatic grief" (Cohen et al., 2017). Additionally, *The Grief and Trauma Intervention* (GTI) is designed for children who have experienced trauma and/or traumatic bereavement with the objective of reducing posttraumatic stress and "traumatic grief reactions" (Salloum & Overstreet, 2008). TF-CBT and GTI have been shown to be effective in reducing posttraumatic stress and traumatic grief among youth across a range of sub-populations and among those who have experienced diverse types of trauma (de Arellano et al., 2014).

It is important to note that TF-CBT and GTI were developed to specifically address "childhood traumatic grief", defined as posttraumatic stress symptoms that infringe on normative grief-related tasks (Cohen et al., 2004). More recent conceptualizations of childhood grief suggest that problematic grief reactions can also arise in the absence of or independent from posttraumatic stress (Kaplow et al., 2013; Layne et al., 2017) and that grief and posttraumatic stress are each associated with distinct causal risk factors, vulnerability factors, protective factors, and causal consequences (e.g., Layne et al., 2017; Nader & Salloum, 2011). Thus, adequately addressing the co-occurrence of childhood trauma and bereavement requires distinct treatment components specifically designed to reduce posttraumatic stress and maladaptive grief reactions (Saltzman et al., 2017).

Multidimensional Grief Theory (MGT; Kaplow et al., 2013; Layne et al., 2017) provides a comprehensive conceptualization of grief that may be especially useful for informing trauma- and grief-focused therapies. According to MGT, childhood grief reactions can be characterized by three broad dimensions: *Separation Distress, Existential/Identity Distress*, and *Circumstance-Related Distress*. Separation Distress concerns psychological distress in response to the physical absence and inability to reunite with the deceased. Existential/ Identity Distress involves psychological distress in response to personal existential and/or identity-related challenges created by the death of a loved one. Circumstance-related distress involves troubling thoughts and emotional pain over the cause of death and is thought to arise when deaths occur under potentially traumatic or distressing conditions (e.g., homicide, suicide, negligence) that can also include witnessing the slow, progressive

deterioration of a loved one's health during an anticipated death (Kaplow et al., 2014). Unlike posttraumatic stress, each dimension of grief is also theorized to have an adaptive or helpful component (e.g., in the case of separation distress, finding healthy ways to feel connected to the deceased; in the case of circumstance-related distress, making meaning of the cause of death) that frequently co-occurs with more problematic grief reactions (Kaplow et al., 2013; Layne et al., 2017). Effective treatments for traumatized and bereaved youth thus require special attention to the broad and diverse ways that grief reactions can manifest independently from and in conjunction with posttraumatic stress.

TGCT is an assessment-driven, modularized treatment, designed specifically to address the developmental needs, strengths, and challenges of adolescents, whose histories of exposure to trauma and/or bereavement place them at high risk for severe persisting distress, functional impairment, and developmental disruption (Saltzman et al., 2017). Informed by a developmental model of child traumatic stress (Pynoos & Wraith, 1995) and a wellness-oriented public health framework (Layne et al., 2009), TGCT emphasizes the need to accommodate individual differences that arise from cultural, developmental, or exposure-based influences on how adolescents respond to traumatic experiences and aims to prevent the developmental impact of accumulating risk factors while cultivating positive resources over time (Saltzman et al., 2017). TGCT is comprised of up to four modules, ranging from 12 to 36 weeks, depending on the specific mental health needs of participants. Module I, titled *Foundational Knowledge and Skills*, focuses on providing psychoeducation concerning common reactions to both trauma and bereavement (including both adaptive and maladaptive grief reactions); trauma reminders as well as loss reminders and how they evoke posttraumatic stress and grief reactions, respectively; emotion regulation skills needed to manage reactivity to trauma and loss reminders; problem solving skills and positive coping strategies to navigate developmental challenges and secondary adversities relates to traumatic or bereavement-related experiences; and strengthening social support skills. Module II, titled *Working through Traumatic Experiences*, focuses on enhancing youths' capacities to cope with intense negative emotions, reducing social withdrawal, addressing preoccupation with desires for revenge, reducing risk-taking behaviors, and building a trauma narrative that addresses intervention fantasies and intense negative emotions. Module III, titled *Working through Grief Experiences*, seeks to reduce maladaptive grief reactions (including the range of grief reactions commonly experienced by adolescents, according to multidimensional grief theory) and promote adaptive grief reactions. To our knowledge, TGCT is the only trauma- and grief-focused treatment for youth that incorporates a multidimensional conceptualization of grief (Claycomb et al., 2016; Kaplow et al., 2019). Module IV, titled *Refocusing on the Present and Looking to the Future*, focuses on encouraging a future-oriented outlook, problem-solving how to handle future transitions, and relapse prevention. TGCT modules are flexibly assigned and tailored based on youths' assessment profiles. TGCT has been shown to reduce posttraumatic stress, depressive symptoms, and maladaptive grief reactions across diverse settings and populations, including in schools following a 1988 earthquake in Armenia (Goenjian et al., 1997), under-resourced inner-city youth exposed to high rates of community violence (Herres et al., 2017; Saltzman et al., 2001), following the 1992–1995 Bosnian civil war (Layne et al., 2008), and in juvenile justice settings (Clow et al., 2023; Olafson et al., 2016).

TGCT has been traditionally been used with adolescents in group-based settings where multiple patients are treated at once by one or more providers. Group-based intervention modalities can help improve accessibility to psychological services by increasing the capacity of healthcare providers to meet the mental health needs of large numbers of traumatized and grieving youth. However, there is some evidence to suggest that group-based

therapies are less effective in reducing posttraumatic stress relative to individual-based therapies (Resick et al., 2017). Group-based therapies may limit rapport-building with the therapist, can inhibit self-disclosure for fear of criticism and rejection by other group members, and may be less tailored to patient needs relative to individual-based therapies (Piper, 2008; Shechtman & Keizel, 2016). It is also possible that group-based interventions are less effective for younger children compared to adolescents given the need for more individual attention and tailored treatments among youth under the age of 12 (Cloitre, 2015; Lawson & Quinn, 2013). No studies to date have evaluated the effectiveness of TGCT among younger youth (under the age of 12), administered within an individual (as opposed to group-based) setting.

The current study describes preliminary outcomes of a pilot open trial of individual-based TGCT among trauma- and bereavement-exposed children *and* adolescents aged 7–17 years. This pilot study focuses on evaluating the effectiveness of Module 1 of TGCT given that the benefits of this treatment have been demonstrated early in the intervention using a modularized group-based approach with adolescents (e.g., Layne et al., 2008). Specifically, it was hypothesized that successful completion of TGCT Module 1 would be associated with reductions in posttraumatic stress symptoms, depressive symptoms, and maladaptive grief reactions (when applicable) across each of the three domains of grief (separation distress, existential/identity distress, circumstance-related distress).

Method

Participants

Participants were 58 youth aged 7 to 17 years-old (M = 12.78, SD = 2.93; 68.4% female), with a history of trauma exposure and/or bereavement, who were seeking treatment at a trauma and grief specialty outpatient clinic in a large metropolitan city in the United States. Participants were recruited via referrals from community agencies and schools in the clinic's catchment area, or via self-referral. Baseline assessments were conducted between November 2015 and January 2020 and follow-up assessments were conducted following the completion of Module 1.

Inclusion criteria for TGCT treatment were (1) endorsement of one or more traumatic events or bereavement (i.e., death of a loved one); AND (2) scoring 35 or higher on the Posttraumatic Stress Disorder Reaction Index for DSM-5 (PTSD-RI-5; Elhai et al., 2013) and/or (3) a mean cut-off score of > 2 on any grief domain (as measured by the Persistent Complex Bereavement Disorder [PCBD] Checklist; Layne et al., 2014); or (4) high levels of psychological distress (e.g., depression) warranting intervention, as judged by consensus of the clinical team. In total, 73 youth completed a T1 (baseline) assessment and qualified for and enrolled in TGCT. Among these youth, 58 youth completed a T2 (post-Module 1) assessment, indicating attrition was 20.5%.

The racial/ethnic distribution of the sample approximated that of the geographic catchment area in which the clinic is located. Participants self-identified as Hispanic/Latino(a) (45.6%), White (22.8%), Black (14.0%), Multiracial (14.0%), or another race/ethnicity (3.5%). The average duration from T1 to T2 was 7.24 months (SD = 4.35, range = 1.6–23 months). The sample was characterized by substantial endorsement of bereavement (50%) and exposure to traumatic events other than bereavement (98.3%); 65.5% endorsed at least one non-bereavement-related traumatic event plus bereavement.

The average number of traumatic events experienced other than bereavement was 4.6 (SD=2.8, range=0–13). The most commonly reported non-bereavement traumatic experience was exposure to a natural disaster (67.2%), followed by discrimination (i.e., being mistreated or bullied because of their identity/ies; 54.8%), witnessing domestic violence (48.3%), and sexual abuse (46.4%). The most commonly endorsed index event (i.e., the event causing the most distress) was sexual abuse (46.4%), other (i.e., did not fit into a category, e.g., parent incarcerated; 16.1%), and bereavement (10.7%). The average duration since the index trauma took place was 3.89 years (SD=3.57, range = <1 year to 12 years).

Among bereaved youth (n=36), the most commonly identified relationship to the deceased included grandparents (31.0%) and extended family (12.1%); 6.9% reported the death of a parent or sibling. Bereaved youth (n=29) reported an average duration since the death of 3.03 years (SD=2.98, range = <1 year to 12 years). The majority of bereaved youth identified the death of a grandparent as their most difficult death (n=14, 45.2%), followed by the death of another relation (n=10, 33.3%), death of a parent (n=3, 10%), and the death of a sibling (n=3, 10%). The most common cause of death was sudden natural death (e.g., heart attack or stroke; n=10, 32.3%) and long-term illness (n=10, 32.3%), followed by murder (n=3, 9.7%), accident (e.g., car accident, drowning, or fire; n=2, 6.5%), suicide (n=2, 6.5%), and other (n=2, 6.5%).

Procedure

All procedures were reviewed and approved by the appropriate Institutional Review Board prior to the start of the study. [Blinded for review] is a co-author of Trauma and Grief Component Therapy and receives royalties from Cambridge University Press. Parents/guardians seeking psychological services for their children contacted the clinic. They were then provided with a brief description of the clinic and services available, and if deemed appropriate, were scheduled for an initial assessment (T1), where parent/guardian written informed consent and child written assent were obtained. All assessments and treatment sessions were completed in private clinic rooms within an outpatient clinic setting. Clinicians read assessment measures to their clients to ensure youth understood the questions and were available to answer any questions throughout the assessments.

Following the T1 assessment, both the parent/guardian and youth participated in a feedback session where the assessment results were reviewed (in age-appropriate language) and clinical recommendations were provided. Families for whom TGCT was recommended were then assigned a clinician and commenced treatment. The clinical team included clinical psychologists, social workers, and supervised advanced clinical psychology interns and postdoctoral fellows. Clinicians were provided standardized training in the delivery of TGCT and were assessed for skill acquisition by one of the treatment developers (JK). Weekly supervision was held with this treatment developer in which fidelity was reviewed. Treatment was provided via weekly 45–60-min sessions at an outpatient clinic within a large medical center. Immediately following Module 1, a second assessment (T2) was completed. If youth were judged, based on their assessment profile and via discussion with parents/guardians and youth, to have substantially improved and no longer require treatment, treatment was terminated. In contrast, youth whose assessment profiles exhibited elevated posttraumatic stress reactions and/or maladaptive grief reactions continued treatment. Treatment was free of charge and modest remuneration ($20) was provided to youth for completing each assessment; no incentives were provided for attending treatment sessions. To reduce treatment dropout, the clinic coordinator established regular contact with

participants to schedule ongoing treatment sessions. Due to the single-group open trial design, participants and assessors were not blinded to study condition. Our compliance with the Transparent Reporting of Evaluations with Nonrandomized Designs (TREND) guidelines is reported in the Supplemental Materials.

TGCT

TGCT is a modularized intervention, the modules of which are flexibly assigned based on assessment results. Depending on which modules are implemented, the total number of sessions is intended to range from 8 to 24. All youth eligible for TGCT received Module 1, titled *Foundational Knowledge and Skills*. Module 1 sessions focus on building rapport; providing psychoeducation regarding traumatic stress and grief reactions as well as trauma and loss reminders; building emotional regulation and problem-solving skills; strengthening positive coping strategies including cognitive processing skills; and developing skills to recruit social support.

Measures

Posttraumatic Stress Symptoms

The 31-item UCLA Posttraumatic Stress Disorder (PTSD) Reaction Index for DSM-5 (RI-5; Elhai et al., 2013) is a child self-report measure used to assess past-month symptoms of PTSD in relation to an identified index trauma. Symptoms (e.g., "I have upsetting thoughts, pictures, or sounds of what happened come into my mind when I do not want them to") are rated on a 5-point scale from 0 (*none*) to 4 (*most*). A total score is created by summing ratings across 20 symptoms (range=0–80; α=0.92). A score ≥ 35 denotes significant risk for PTSD with good sensitivity and specificity (Kaplow et al., 2020; Rolon-Arroyo et al., 2017).

Depressive Symptoms

The 13-item Short Mood and Feelings Questionnaire (SMFQ; Angold et al., 1995) was used to assess child depressive symptoms. Frequency of symptoms (e.g., "I felt miserable or unhappy") experienced during the last two weeks is rated on a 3-point scale (0=not true, 1=sometimes true, 2=true). Responses are summed to create a total score (range=0–26; α=0.88). A score of 8 or higher is an indicator of clinically significant symptoms (Thapar & McGuffin, 1998).

Maladaptive Grief Reactions

The PCBD Checklist is a 39-item measure of grief for youth designed to assess DSM-5 provisional PCBD criteria and identify youth at risk for maladaptive grief (Layne et al., 2014). Grief reactions (e.g., "I just can't stop thinking about [insert loved one who died]") are rated on a 5-point Likert type scale ranging from 0 (*not at all*) to 4 (*all the time*). The PCBD Checklist has demonstrated strong convergent, discriminant, and discriminant-groups validity as well as developmental appropriateness and clinical utility (Kaplow et al., 2018). The PCBD Checklist can also be scored in relation to the primary grief domains proposed by multidimensional grief theory: Separation Distress (k=15 items, α=0.90),

Existential/Identity Distress (k=7, α=0.66), and Circumstance-Related Distress (k=10, α=0.84). Scoring according to multidimensional grief theory involved averaging the items in each of the three grief domains (possible range=0 to 4). Only youth who indicated bereavement exposure received the PCBD (n=36).

Covariates

Youth demographic characteristics were examined as covariates, including child-reported age, gender (1=female, 0=male), and race/ethnicity (Black vs non-Black, Latino/a vs non-Latino/a, and White vs non-White). In addition, the number of days between youths' baseline assessment and youths' follow-up assessment was calculated as a proxy for treatment duration. For bereaved youth, the PCBD (Kaplow et al., 2018) was used to assess the circumstances of participants' loss; only sudden natural death (32.3%) and long-term illness (32.3%) had sufficient sample sizes to include as covariates. Time since the death of their loved one was calculated at baseline in months.

Data Analyses

Bayesian paired-sampled t-tests were used to estimate unadjusted effect sizes for mean differences between T1 (baseline) and T2 (after Module 1) scores using the following interpretations of Cohen's d: 0.20=small, 0.50=medium, and 0.80=large (Cohen, 1969). To account for covariates, bayesian multilevel regression models estimated mean differences between T1 and T2 scores, with time (0=T1, 1=T2) modeled as a predictor of symptom scores while specifying participant as a random-effect to account for the dependency introduced by repeated measures. Youth demographic characteristics (age, gender, and race/ethnicity) as well as treatment duration were included as covariates in each model. For models predicting maladaptive grief reactions, months since the death and cause of death (sudden natural death vs other causes of death and long-term illness vs. other causes of death) were also included as covariates. A region of practical equivalence (ROPE) was specified for the posterior distribution as one tenth of a standard deviation of the dependent variable above and below zero (Cohen, 1988). Bayes Factors were used to provide evidence for the alternative model (BF_{10}) relative to the null model (BF_{01}). To interpret the magnitude differences between models, the following labels were assigned to BF_{10}: anecdotal (1–3), substantial (3–10), strong (10–30) decisive (> 100) (Jeffreys, 1998). Evidence in support of the alternative hypothesis is also indicated by 95% of the posterior distribution being located outside of the ROPE. Default weakly informative priors were also used for the Bayesian regressions, which entails applying scaling adjustments to normal priors centered at 0 and with a 2.5 standard deviation. Weakly informative priors were preferred over flat or uninformative priors, which assign an equal probability to values near zero as extreme values (Steinberg et al., 2009). All analyses were performed in RStudio version 4.1.1 using the rstanarm and bayestestR packages (R Core Team, 2020).

Planned Robustness Checks

To test the generalizability of possible treatment effects, a series of robustness checks examined whether treatment effects on symptom scores varied across youth age, gender, race/ethnicity, or treatment duration. Primary regression models were re-estimated with an interaction term specified between time and each covariate.

Reliable Change Index (RCI) values (Jacobson & Truax, 1991) were calculated using Coefficient Alpha as the reliability estimate as recommended by Lambert and Ogles (2009). The RCI is an analytic tool that can help determine if a change in scores on a given outcome from pre-to-post-treatment is due to real change or chance variation; individual cases are classified into three mutually exclusive groups comprised of (a) reliable improvers, (b) reliable deteriorators—both as indicated by difference scores on the outcome measure $> \pm 1.96\sqrt{(2(SE)^2)}$, respectively; or (c) treatment non-responders, indicated by difference scores $\leq |1.96\sqrt{(2(SE)^2)}|$.

Missing Data

There were low levels of missing data (< 3%; see Supplemental Materials Table S1). Missing data for covariates and baseline symptoms were imputed using multiple imputation. Findings were consistent using listwise deletion and multiple imputation; models using multiple imputation are reported. Sample size was based on past research for open trials with grief-related therapy in similar populations (N = 65; Hill et al., 2019).

Results

Descriptive statistics and bivariate correlations among T1 (baseline) and T2 (after Module 1 intervention) scores for posttraumatic stress symptoms, depressive symptoms, and maladaptive grief reactions are summarized in the Supplemental Materials (Tables S1-S2). Unadjusted mean differences between T1 and T2 scores are displayed in Fig. 1. Effect sizes
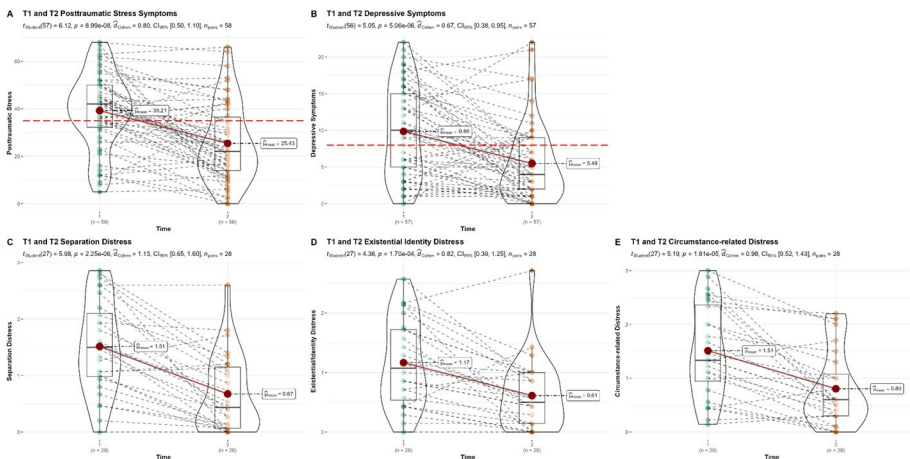

Fig. 1 Baseline (T1) and follow-up (T2) symptom scores among youth who received Module 1 of TGCT. **a** Unadjusted mean differences in posttraumatic stress symptoms. **b** Unadjusted mean differences in separation distress. **c** Unadjusted mean differences in existential/identity distress. **d** Unadjusted mean differences in circumstance-related distress. **e** Unadjusted mean differences in depressive symptoms. (*Notes*: Blue and orange dots represent individual data points and red dots represent means. Horizonal red dashed line represents the clinical cut off score for the respective measure. One case was dropped from the depressive symptom model due to missing SMFQ data at T2. One case was dropped from the three grief models due to missing PCBD data at T2)

based on Cohen's d and Bayes Factors were large for grief reactions (d_{cohen}=0.82–1.13; BF_{10}=17.85–324.31), for posttraumatic stress (d_{cohen}=0.80, BF_{10}=497.70), and medium for depressive symptoms (d_{cohen}=0.67, BF_{10}=134.14).

Bayesian regression models which examined mean differences in T1 and T2 symptom scores while accounting for age, gender, race/ethnicity, and treatment duration are reported in Tables 1–2. Bayes Factors indicated strong evidence that youth had lower posttraumatic stress (BF_{10}>10) and depressive symptoms (BF_{10}>10), and substantial evidence that youth had lower maladaptive grief reactions (BF_{10}>7) following Module 1 intervention (Tables 1, 2). Specifically, for posttraumatic stress, there was a 100% probability that T2 posttraumatic stress scores were lower than T1 posttraumatic stress scores, with a median effect (i.e., mean difference) of −13.76 and a 95% Credibility Interval (CI) of −18.32 to −9.19. For depressive symptoms, there was a 100% probability that T2 scores were lower than T1 scores, with a median effect of −4.31 (95% CI [−6.08, −2.54].

With regard to maladaptive grief reactions among the 29 bereaved youth and after accounting for youth demographics, treatment duration, and bereavement-related circumstances, there was a 100% probability that T2 scores were lower than T1 scores for separation distress (median effect=−0.83, 95% CI[−1.11, −0.53]) (see Table 2). The probability that T2 scores were lower than T1 scores for circumstance-related distress and existential/identity distress was nearly 100% (99.05–99.48%), with a median effect of −0.70 (95% CI[−0.99, −0.41]) for circumstance-related distress and -0.55 (95% CI[−0.82, −0.28]) for existential/identity distress.

Robustness Checks

Generalizability across Demographics and Treatment Duration

Bayesian regression models were re-estimated with an interaction term between time and each covariate (age, gender, race/ethnicity, treatment duration). Full model results are presented in the Supplemental File. All credibility intervals for the interaction terms contained zero, and all Bayes Factor values were <1. That is, evidence suggests treatment effects were similar for youth across demographic characteristics (age, gender, race), treatment duration, and bereavement-related circumstances.

Reliable Change Index

RCIs calculated based on T1 and T2 scores are displayed in Fig. 2. Results indicated 49.1% of youth demonstrated reliable improvement in PTSS, 48.2% showed reliable improvement in depressive symptoms, and between 42.3 and 65.4% showed reliable improvement in maladaptive grief reactions across domains. Overall, 69% of youth demonstrated reliable improvement in at least one outcome. Reliable deterioration was rare, with 5.3% (n=3) reporting reliable deterioration in PTSS, 8.9% (n=5) in depressive symptoms, and 0% to 7.7% (n=2) across maladaptive grief reactions.

Table 1 Bayesian Regression Estimates for Pre/Post Posttraumatic Stress Symptoms and Depressive Symptom Accounting for Covariates

Parameter	Posttraumatic stress symptoms					Depressive symptoms				
	Median	95% CI		ROPE %	BF	Median	95% CI		ROPE %	BF
(Intercept)	18.65	1.84	34.90	0.15%	0.28	1.69	−3.96	7.40	1.50%	0.05
Time (T1 as referent)	**−13.76**	**−18.32**	**−9.19**	**0%**	**636.65**	**−4.31**	**−6.08**	**−2.54**	**0%**	**48.67**
Age	1.92	0.80	3.14	0.07%	4.99	0.74	0.36	1.15	0.42%	4.87
Female	−2.43	−9.80	5.30	1.30%	0.06	−1.24	−3.95	1.36	3.23%	0.08
Black	−3.65	−15.98	8.60	1.10%	0.06	−2.13	−6.30	2.16	2.40%	0.07
Latino/a	5.07	−4.36	14.28	0.88%	0.09	1.67	−1.51	4.79	2.93%	0.11
White	1.03	−9.66	11.77	1.15%	0.05	0.47	−3.25	3.99	3.85%	0.06
Treatment Duration	−0.60	−1.38	0.20	4.90%	0.16	−0.15	−0.41	0.12	25.35%	0.09
Number of Observations	*58*					*57*				

The effect of time (bold) can be interpreted as the mean difference between T1 and T2, with negative values representing lower values at T2. CI=Credibility Interval. BF=Bayes Factor. ROPE % calculated based on distribution. The number of observations included in each model is displayed in italic

Table 2 Bayesian Regression Estimates for Pre/Post Maladaptive Grief Scores Accounting for Covariates

Parameter	Separation Distress					Circumstance-related distress					Existential/identity distress				
	Median	95% CI		ROPE %	BF	Median	95% CI		ROPE %	BF	Median	95% CI		ROPE %	BF
(Intercept)	1.30	−0.49	3.09	2.27%	0.31	2.27	0.20	4.30	0.73%	0.74	0.39	−1.16	1.95	7.03%	0.12
Time (T1 as referent)	**−0.83**	**−1.11**	**−0.53**	**0%**	**536.58**	**−0.70**	**−0.99**	**−0.41**	**0.05%**	**54.34**	**−0.55**	**−0.82**	**−0.28**	**0.52%**	**18.57**
Age	−0.03	−0.14	0.07	66.33%	0.14	−0.05	−0.17	0.07	58.88%	0.16	0.00	−0.09	0.09	85.72%	0.10
Female	−0.28	−1.04	0.46	14.82%	0.11	0.08	−0.82	0.93	12.62%	0.11	−0.08	−0.76	0.56	19.68%	0.10
Black	0.24	−0.62	1.11	12.50%	0.11	−0.19	−1.18	0.83	10.75%	0.12	0.49	−0.29	1.21	10.27%	0.15
Latino/a	0.47	−0.40	1.31	8.58%	0.22	0.14	−0.86	1.10	15.05%	0.13	0.29	−0.48	1.01	13.70%	0.17
White	0.19	−0.66	1.05	11.00%	0.15	−0.19	−1.12	0.76	14.25%	0.1	0.26	−0.47	0.98	10.12%	0.18
Long – term Illness	0.05	−0.70	0.77	18.18%	0.09	−0.46	−1.28	0.37	11.53%	0.13	0.10	−0.50	0.71	18.45%	0.11
Sudden Natural Death	0.18	−0.63	0.99	12.95%	0.13	0.03	−0.88	0.94	14.97%	0.12	0.31	−0.36	0.99	12.32%	0.18
Months Since Death	0.01	0.00	0.01	100%	0.35	0.00	−0.01	0.01	100%	0.09	0.01	0.00	0.01	100%	0.71
Treatment Duration	0.05	−0.03	0.13	88.88%	0.09	−0.01	−0.11	0.09	73.08%	0.14	0.03	−0.04	0.10	94.12%	0.09
Number of Observations	*29*					*29*					*29*				

The effect of time (bold) can be interpreted as the mean difference between T1 and T2, with negative values representing lower values at T2. CI: Credibility Interval. BF: Bayes Factor. ROPE % calculated based on distribution. The number of observations included in each model is displayed in italic
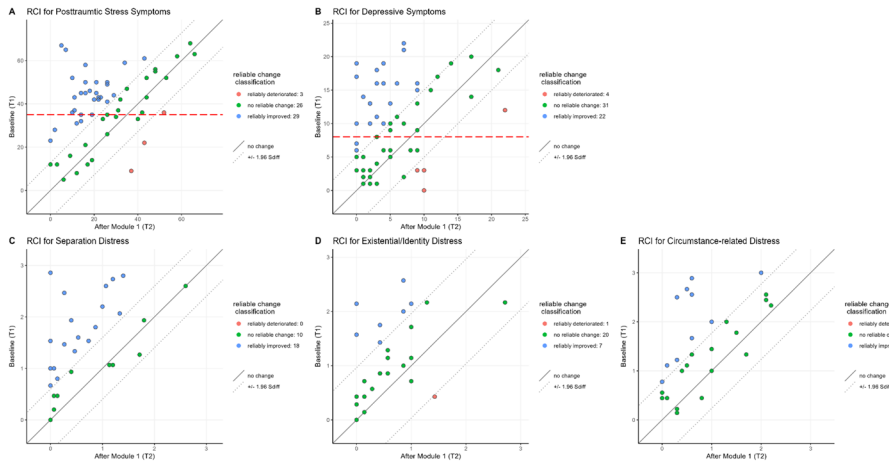
Fig. 2 Reliable Change Index (RCI) plots for each outcome. **a** RCI for posttraumatic stress symptoms. **b** RCI for depressive symptoms. **c** RCI for separation distress. **d** RCI for existential/identity distress. **e** RCI for circumstance-related distress. (*Note* Horizonal red dashed line represents the clinical cut off score for the respective measure)

Discussion

The present study was a pilot open trial of individualized TGCT—a theoretically grounded, assessment-driven intervention designed to reduce posttraumatic stress symptoms, depressive symptoms, and maladaptive grief reactions among traumatized and bereaved youth. Group mean analyses revealed that completion of Module I, which consists of trauma and grief psychoeducation, skill-building, and managing loss and trauma reminders, was associated with significant reductions in posttraumatic stress, depressive symptoms, and maladaptive grief reactions with large effect sizes. Taken together, the results of this pilot study highlight that use of TGCT Module I with individual children and adolescents is a promising treatment for reducing psychological distress among those who experienced trauma and/or bereavement.

Rates of reliable improvement ranged from 42 to 65% across treatment outcomes with 69% demonstrating reliable improvement in at least one outcome after completing Module 1 of TGCT. These rates appear to be as good as, or better than, those reported by other trauma and grief-focused interventions conducted in group settings. For example, in a randomized controlled trial of group-based TGCT with adolescents, Layne and colleagues (2008) reported reliable pre-to-post treatment improvement in posttraumatic stress symptoms scores of 58%. In other studies, 60%–71% of youth exhibited reliable improvement in posttraumatic stress symptoms after participating in the GTI (Salloum & Overstreet, 2012). Thus, administering TGCT within an individual format may provide added benefits relative to providing trauma- and grief-focused treatment within a group-based format. Further, effect sizes for this study were large and similar to or greater than effects found for other trauma and grief therapies for youth, including TF-CBT (e.g., Ramirez de Arellano et al., 2014) and GTI (Salloum & Overstreet, 2012) as well as group-based TGCT (Grassetti et al., 2015). It is also noteworthy that the current study included children and adolescents of a wide age range (7–17 years) and demonstrated no significant differences in effectiveness based on age.

This pilot open-trial study is the first to evaluate outcomes associated with individually delivered TGCT among both children and adolescents. Our finding of statistically significant effects on each of our primary outcomes (posttraumatic stress, depression symptoms, and maladaptive grief) after completion of just the first Module of TGCT provides initial support for the modularized structure and speaks to the utility of this particular Module, especially given potential time constraints often encountered by clinicians. Additional strengths included the use of a trauma- and grief-focused treatment derived from developmentally informed models of traumatic stress and grief; a modularized, assessment-driven treatment approach; and the use of a diverse child and adolescent sample in terms of age, gender, race/ ethnicity, and bereavement-related circumstances. Studies show that youth of color exposed to trauma and/or bereavement are at an elevated risk for experiencing posttraumatic stress and maladaptive grief compared to White youth, in part due to racial trauma and disproportionate exposure to community violence and COVID-19 related losses. Thus, it is critical to identify accessible treatments that can address both trauma and loss in these historically underserved communities (Douglas et al., 2021; Pumariega et al., 2022).

Results from this study should be interpreted in the context of certain limitations. This study used a sample of clinic-referred youth seeking services for trauma and bereavement-related concerns. It is unknown whether these findings can be generalized to youth not seeking counseling or psychological services. This study also used a pilot open trial study design and did not include a control group, precluding causal inference and the ability to rule out non-treatment effects. It is possible that reductions in posttraumatic stress, depressive symptoms, and maladaptive grief reactions occurred as a product of time; future studies will need to use a randomized control-trial design to ensure findings are specifically due to treatment effects. Although several steps were taken to promote treatment engagement, data concerning fidelity were unavailable. Future research should continue to evaluate treatment implementation and feasibility for TGCT. Additionally, this project only examined the effectiveness of the first module of TGCT. We view this as an important step in evaluating the full, individually delivered TGCT treatment, and future research is needed to test the efficacy of subsequent modules.

In addition to examining all Modules of TGCT, future research should include measures of parent-reported (e.g., Salloum & Overstreet, 2012) and clinician-reported outcomes, (e.g., satisfaction and acceptability of TGCT), as well as youth functioning in developmentally salient domains. Future research should also include the use of larger samples, randomized control trial designs, and post-treatment follow-up assessments. Future studies of TGCT would also benefit from examining possible mechanisms of therapeutic change such as modified cognitions and enhanced coping skills to identify ways in which different practice elements may enhance specific domains of mental health.

Declarations

Ethical approval All procedures performed in this study were in accordance with the ethical standards of the institutional review board and with the 1964 Helsinki Declaration. The Baylor College of Medicine IRB

approved this study. Informed consent/assent was obtained from all individual participants included in this study.

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