

# Efficacy of Exposure in Group Settings for Youth With Posttraumatic Stress Symptoms

Elisa Pfeiffer (✉ [elisa.pfeiffer@uniklinik-ulm.de](mailto:elisa.pfeiffer@uniklinik-ulm.de))

Clinic for Child and Adolescent Psychiatry/Psychotherapy, Ulm University

---

## Research article

**Keywords:** Trauma, PTSD, Treatment, Group, Exposure, Youth

**Posted Date:** June 30th, 2021

**DOI:** <https://doi.org/10.21203/rs.3.rs-656813/v1>

**License:** © ⓘ This work is licensed under a Creative Commons Attribution 4.0 International License. [Read Full License](#)

---

## Abstract

**Background:** Exposure to traumatic experiences is a fundamental part of evidence-based trauma-focused cognitive behavioral treatment (CBT) but in group settings it is discussed controversially among researchers and practitioners. This study aims to examine the individual participants' stress level during group sessions with exposure and disclosure of traumatic events.

**Method:**  $N = 47$  traumatized youth ( $M_{age} = 17.00$ , 94% male) participated in a group intervention comprising six 90-minute group sessions (exposure in sessions 2-5). It is based on trauma-focused CBT principles. The individual stress level was assessed by the participants and group facilitators at the beginning, during, and at the end of every session.

**Results:** During the sessions including exposure, the stress level of the participants was higher than during sessions without exposure ( $Z = -3.79$ ;  $p \leq .001$ ). During the exposure sessions, the participants showed significant changes in stress level ( $d = 0.34 - 0.87$ ) following an inverse U-shaped trend.

**Conclusion:** The results show that exposure is feasible within the scope of a trauma-focused group intervention for youth. The further dissemination of trauma-focused group treatments is an important component in the mental health care of traumatized children and youth.

## Background

Approximately 16% of children and youth develop posttraumatic stress disorder (PTSD) in the aftermath of exposure to trauma (1). If left untreated, PTSD becomes a chronic, disabling disease which is associated with severe long-term mental and physical health consequences (2, 3). There are several empirically supported treatments for children and youth to help alleviate PTSD symptoms (4). Trauma-focused cognitive behavioral treatment (CBT) approaches enjoy the most empirical support (5) and are recommended in international treatment guidelines (6). Group trauma-focused CBT has received less attention in child PTSD research despite the numerous advantages of group treatments such as mutual support, group cohesion or cost-effectiveness. A field trial in the aftermath of Hurricane Katrina in New Orleans ( $N = 118$ ) even showed comparable significant results in terms of reductions in PTSD and depression among the participants in "Cognitive Behavioral Intervention for Trauma in Schools (CBITS)" (7) and participants in the individual trauma-focused CBT treatment condition (TF-CBT; 7,8).

Despite the effectiveness and potential benefits of group trauma-focused CBT, researchers and clinicians are often hesitant when it comes to implementing them without any significant modifications (10, 11). One of the most widely debated issues concerning group treatment for PTSD is recourse to exposure with in-session disclosure of the traumatic experiences. Barrera et al. (12) summarize three major concerns about in-group exposure in their meta-analysis with adult samples: 1) group members could be vicariously traumatized by hearing details of other group members' traumatic experiences; 2) by listening to the other group member's traumatic experience, group members could make unhelpful comparisons between their own traumatic experience and the one they are listening to, resulting in a biased perception of the severity of their experience, and 3) the group format might not allow sufficient time for each group member to talk through and discuss their experience resulting in the group format being less efficient than individual treatment. None of these claims is backed by research findings but seem nevertheless to be widely advanced by researchers and clinicians alike. This leads either to the administration of individual treatment only or the omission of the exposure in trauma-focused CBT group sessions. Notably, attrition rates of treatments with in-session exposure (26.4%) are significantly higher than treatments without in-session exposure (18.9%,  $p < .001$ ) (12). The role of exposure in trauma-focused group CBT for children and youth has not been investigated yet. As most group protocols either exclude in-session exposure (13), conduct exposure in extra-individual sessions (group TF-CBT; 13) or only briefly touch on them in the group setting (CBITS), we know very little about whether in-session exposure can be successfully administered in trauma-focused group protocols for children and youth. This leaves a crucial gap in the literature.

Hence, this study aims to investigate the feasibility of exposure in a trauma-focused CBT group treatment for traumatized youth with PTSD symptoms. The underlying mechanism of exposure, which roots in classical conditioning, is the assumption that through the process of (repeated) confrontation of trauma-related stimuli, which is associated with a strong emotional (e.g. fear, sadness, stress) and physical (e.g. heart racing, trembling) response, habituation of emotional responses with the trauma occurs. The patient experiences evidence that disconfirms dysfunctional cognitions especially related to self-competence and control. Fear activation during exposure is considered a necessary condition for correcting pathological elements of the fear structure in PTSD. The objective of this study is, therefore, to analyze levels of stress (fear activation) during exposure and non-exposure sessions in the trauma-focused group intervention "Mein Weg" (English "My Way") (15) which is based on trauma-focused CBT principles comprising psychoeducation, relaxation, exposure, and cognitive restructuring. A pilot study (16) and a subsequent randomized controlled trial (RCT; 16) demonstrated the feasibility and effectiveness of the intervention in reducing PTSD symptoms and depression. Based on current literature on the effectiveness of exposure-based trauma-focused CBTs, I hypothesize that the general stress level is significantly higher during exposure sessions than in sessions without exposure (H1) and that the participant's stress level will increase significantly and subsequently decrease significantly during exposure sessions (H2).

## Methods

### Study Design

This study is part of a single-blind parallel-group RCT ("Mein Weg" versus usual care) which was conducted in Germany in 2016–2017 (17). The study protocol was approved by the IRB at Ulm University (#176/16) and pre-registered in the German Clinical Trials Registry (#DRKS00010915). All study participants and their legal guardians in the case of minors gave their informed written consent before being enrolled in the study.

### Participants

Once allocated to the “Mein Weg” intervention,  $n = 2$  (4%) did not start the intervention for practical reasons within the child welfare program, and  $n = 1$  (2%) due to a lack of motivation. Regarding the  $n = 47$  participants who started the intervention,  $n = 10$  (22%) did not participate in the full format of at least five sessions due to a lack of motivation ( $n = 4$ ; 8.51%), alternative treatment ( $n = 1$ ; 2.13%), high psychosocial stress through a deportation notice ( $n = 1$ ; 2.13%), or organizational reasons within the child welfare programs ( $n = 4$ ; 8.51%). Hence,  $n = 13$  (26%) did not participate in each session of the intervention. Intervention non-completers did not differ significantly from completers in terms of sociodemographic and outcome variables at baseline (Pfeiffer et al., 2018). All participants who started the intervention ( $n = 47$ ) were included in the statistical analyses. The participants were between 14 and 19 years of age ( $M_{age} = 17.00$ ;  $SD_{age} = 1.12$ ) and mostly male ( $n = 44$ ; 93.6%). The majority of participants came from Afghanistan ( $n = 25$ ; 53.2%), followed by Syria ( $n = 4$ ; 8.5%), Gambia ( $n = 4$ ; 8.5%), and Somalia ( $n = 3$ ; 6.4%). There were two participants each from Iran and Pakistan as well as one participant each from Senegal, Guinea, Guinea-Bissau, Iraq, and Eritrea.

## Intervention

The “Mein Weg” intervention is a trauma-focused, component-based group intervention, specifically designed for traumatized young refugees with PTSD symptoms. It is delivered in a format of six weekly 90-minute sessions and implemented by two trained group facilitators in groups of two to five participants. The manualized intervention comprises elements of trauma-focused CBT and group processing principles. The CBT components include psychoeducation and relaxation (session 1), exposure (trauma narrative) and cognitive restructuring (sessions 2–5), and enhancing safety and future development (session 6) (for more information on the session outline, please see Pfeiffer et al. (17) and Pfeiffer and Goldbeck (15)). Each session starts with a welcome round and a review of the content of the previous sessions and homework, and ends with a positive activity (e.g. playing a game, playing music together). The general group processing principles include sharing experiences, feelings and problems, and mutual support when sharing the trauma narrative. The intervention manual is accompanied by different materials such as a culture-sensitive workbook to reduce potential cultural and linguistic barriers. In the current study, the intervention is delivered by specifically trained and supervised social workers in the participating child welfare programs. Overall treatment fidelity to the manual, as assessed using session checklists, was high with 97% of the content marked as completed (17). If a participant misses a session, the group facilitator reviews the group session content with the participant individually.

## In-session Exposure

Gradual exposure to traumatic experiences is covered in sessions 2 to 5. A metaphor (“the wound metaphor”) is used to explain the rationale behind exposure at the beginning of session 2. Each session focuses on a different topic: session 2 ‘My life in my home country’ and ‘My way to Germany’, session 3 ‘My worst experience’, session 4 ‘In Germany – in safety’ and session 5 ‘Letter to a fellow unaccompanied refugee minor’. Participants first draw or write (in their mother tongue, English or German) about the event(s) by themselves with the support of the group facilitator. Afterwards, all participants come together, describe their current level of stress, and then share their narrative with the group. At the beginning of each session, the previous narrations are reiterated either individually or in the group to ensure habituation of the traumatic experiences.

## Measures

### Participant Stress Level

A 1-item measure of stress level rated on a 10-point Likert scale (0 = “not stressed at all” to 10 = “extremely stressed”) was introduced to the participants. Participants were instructed to take into account both emotional and physiological stress. The group facilitator made sure that the youth understood the concept and ratings. Participants were asked several times during each session (at least three times) to estimate and report their stress level to the group. The group facilitator also rated each participant’s emotional and physiological stress level. The proxy rating by the facilitator and the participant’s self-report were combined into an overall score at three fixed measurement time points (at the beginning of the session (T1), during the session (T2), and at the end of the session (T3)) and documented in the session protocol. The stress level of the first session was only rated by the group facilitator.

### Participants’ Motivation.

The group facilitator rated the group’s overall motivation for each session on a 10-point Likert scale (0 = “not at all motivated” to 10 = “highly motivated”) and documented it in the session checklist.

## Statistical Methods

Descriptive analyses were carried out for demographic data and the stress level for each session across all measurement time points. Due to the non-normality of the data, non-parametric analyses were conducted. The Friedman Test was used to analyze differences within exposure sessions across the different measurement time points. Wilcoxon Tests were used to investigate differences between exposure (sessions 2–5) and non-exposure (sessions 1, 6) sessions for all measurement time points and as post-hoc analysis to test for differences between time points in each exposure session. Dependency of the sample is assumed in both analyses.

There was only one missing value within the sessions (in session 2 at the end of the session (T3)) but several missing values between sessions as participants missed entire group sessions (session 1: 15%; session 2: 12%; session 3: 15%; session 4: 26%; session 5: 23%, and session 6: 23%). There were no statistically significant differences between participants who participated in every session ( $n = 31$ ; 66%), participants who missed single sessions ( $n = 8$ ; 17%), and participants who dropped out during the intervention ( $n = 8$ ; 17%) regarding age ( $p = .319$ ), gender ( $p = .455$ ), duration of time spent in Germany ( $p = .316$ ), baseline scores of PTSD ( $p = .523$ ), and depression ( $p = .524$ ). Missing data was not therefore imputed in the primary analyses.

However, as sensitivity analyses, all analyses were repeated and missing values between sessions were replaced by employing multiple imputation (18). The attendance (yes/ no) of the participant as well as the overall group’s motivation in each session were added as predictors of the model. As non-normally

distributed variables may introduce bias, the individual variables were first transformed via log-transformation into approximate normality before the imputation process was conducted, as suggested by Sterne et al. (19) and Royston (20).

The significance level of all analyses was set at  $p = .05$  (2-tailed). Effect sizes (Cohen's  $d$ ) were calculated for comparisons. All analyses were performed using SPSS Version 26.

## Results

There were no significant differences between exposure sessions and non-exposure sessions at T1 ( $Z = -0.14$ ;  $p = .889$ ) and at T3 ( $Z = -1.87$ ;  $p = .062$ ), but the stress level at T2 was significantly higher in exposure sessions than in non-exposure sessions ( $Z = -3.79$ ;  $p \leq .001$ ) (see Table 1), indicating a higher stress level during exposure.

Table 1  
Descriptives and Test Statistics of Stress Levels Across All Sessions per Measurement Time Points

Measurement time point	Exposure* sessions		Non-exposure** sessions		Z	p
	M (SD)	Md	M (SD)	Md		
T1	3.24 (1.97)	3.50	3.17 (1.95)	3.50	-0.14	.889
T2	5.42 (1.74)	5.50	3.34 (2.12)	2.75	-3.79	$\leq .001$
T3	3.25 (1.91)	3.50	2.39 (1.74)	2.00	-1.87	.062

*Note.* T1 = at the beginning of the session, T2 = during the session; T3 = at the end of the session; \*Sessions 2, 3, 4, and 5; \*\* Sessions 1 and 6.

A significant main effect of time emerged within all sessions ( $p \leq .001$ ) (see Table 2, Fig. 1). Regarding exposure sessions, the stress level significantly increased from T1 to T2 with medium (session 2:  $d = 0.65$ ; session 5:  $d = 0.55$ ) to high (session 3:  $d = 0.87$ ) effect sizes, except session 4 ( $p = .997$ ). Similar effect sizes but in a reversed direction were observed across all sessions for T2 to T3, with significant lower levels of stress at T3 compared to T2 (a small effect size for session 4 ( $d = 0.35$ ); medium effect sizes for sessions 2, 3 and 5 ( $d = 0.53$ ;  $d = 0.70$ ;  $d = 0.45$  respectively)). A comparison of T1 to T3 did not reveal any significant differences in session 3 ( $p = .083$ ) and session 5 ( $p = .472$ ). For sessions 2 ( $p = .047$ ) and 4 ( $p = .001$ ), differences between T1 and T3 were significant with small to medium effect sizes ( $d = 0.23$ ;  $d = 0.38$ , respectively).

Table 2  
Descriptives and Test Statistics Between Measurement Time Points for Each Exposure Session

Session	T1		T2		T3		T1-T2		T1-T3		T2-T3		Total				
	M (SD)	Md	M (SD)	Md	M (SD)	Md	Z	p	d	Z	p	d	Z	p	d	$\chi^2(2)$	p
<b>Session 1</b> ( $n = 46$ )	4.10 (2.85)	4.00	4.33 (2.48)	5.00	3.68 (2.47)	3.00	-.94	.345	.10	-1.97	.048	.27	-2.98	.003	.39	13.08	$\leq .001$
<b>Session 2*</b> ( $n = 41$ )	3.34 (2.83)	3.00	6.22 (2.26)	7.00	4.0 (2.52)	4.50	-5.25	$\leq .001$	.65	-1.99	.047	.23	-4.95	$\leq .001$	.53	51.25	$\leq .001$
<b>Session 3*</b> ( $n = 40$ )	3.35 (2.58)	3.00	7.92 (2.18)	9.00	4.3 (2.34)	4.50	-5.39	$\leq .001$	.87	-1.74	.083	.33	-5.53	$\leq .001$	.70	63.88	$\leq .001$
<b>Session 4*</b> ( $n = 35$ )	3.51 (3.01)	3.00	3.49 (2.41)	4.00	2.54 (2.57)	2.00	-.03	.977	.01	-3.23	$\leq .001$	.38	-2.37	.018	.35	15.61	$\leq .001$
<b>Session 5*</b> ( $n = 36$ )	2.86 (2.29)	3.00	4.36 (2.13)	4.00	2.67 (2.10)	2.00	-3.96	$\leq .001$	.55	-.72	.472	.07	-5.01	$\leq .001$	.45	43.39	$\leq .001$
<b>Session 6</b> ( $n = 36$ )	2.25 (2.05)	2.50	2.50 (2.26)	2.00	1.36 (1.38)	1.00	-1.21	.226	.15	-3.42	.001	.40	-4.19	.001	.40	23.76	$\leq .001$

*Note.* T1 = at the beginning of the session, T2 = during the session; T3 = at the end of the session; \*exposure sessions.

In addition to these analyses of mean scores across all participants, Fig. 2 shows the individual stress level ratings of participants in session 3, the session with highest stress levels during the session. Figure 2 supports the findings that participants' stress levels increased between T1 and T2 and decreased between T2 and T3. Only two participants did not present any increase in stress level between T1 and T2. In non-exposure sessions the stress level significantly decreased between T1 and T3 and between T2 and T3 with small to medium effect sizes ( $d = 0.27-0.40$ ). However, no U-shaped trend was observed (Fig. 2). In session 6 the stress level is notably low for the entire session and stress levels are comparably high for session 1 at T1.

In terms of sensitivity analyses, only one minor difference emerged when re-calculating all analyses with imputed data: the stress levels were significantly different across all measurement time points between exposure and non-exposure sessions ( $p \leq .001$ ).

## Discussion

This is the first study to investigate the inclusion of exposure in trauma-focused CBT group treatment for traumatized youth with PTSD symptoms. Hypothesis 1 was confirmed as stress levels were significantly higher during exposure sessions, compared with non-exposure sessions. This is consistent with previous studies in adults which demonstrated the effectiveness of CBT group formats in terms of in-session exposure and disclosure (21). Comparisons of stress level ratings during exposure sessions yielded intriguing results and confirmed hypothesis 2. Large effect sizes for in-session stress level change (T1 to T2, and T2 to T3) were found for sessions 2 and 3. This is in line with the manual that suggests that exposure to traumatic events is most intense in these sessions due to their content. From a large body of research on refugees we know that most traumatic events happened in the home country or whilst on the move (22). This explains why many traumatic experiences were addressed in session 2. In session 3, the worst event is specifically addressed which might explain the increase in reported stress. In session 4, no U-shape trajectory of the stress level was detected, only a decrease in stress throughout the session. There are several potential explanations for this finding: Session 4 addresses life in the host country (Germany) compared with life in the home country. Consequently, participants may have predominantly focused on positive factors in the host country (such as provision of basic care through child welfare program or schooling) but discussed differences to their home country (which may have included aversive stimuli that elicited stress due to traumatic events in home country) in the group discussion which took place after rating (T2). Another possible explanation could be that the overall effect sizes for increase and decrease were small in this session. This would seem to imply that session content may not have resulted in any major exposure overall.

The results for individual in-session change (Fig. 2) were particularly encouraging for the field as this graph shows that almost all participants (independent of symptoms, traumatic experiences and so forth) were able to experience an increase and decrease in stress level, meaning that they seem to have successfully confronted their traumatic experiences.

It is important to note that the stress level significantly decreased in non-exposure sessions as well. In session 1 this could be explained by the high stress level at the beginning of the session indicating participants' general nervousness and anxiety about starting a trauma-focused intervention. In session 6 general levels are very low indicating a floor effect. At the end of session 6 the group held a graduation party which might explain the very low scores.

## Limitations and Future Research

Several limitations which might impede the generalizability of findings need to be addressed. Firstly, and most importantly, this study does not allow any conclusions to be drawn about the habituation process as group members were neither systematically asked to report their stress level during the revision of previous narrations at the beginning of the sessions, nor was this documented by the group facilitators. Thus, the mechanism of exposure could only be observed for the increase and decrease in stress during the specific content (in exposure sessions the narration) of each session. Future studies should seek not only to replicate and build on the present study but also to assess more systematically the stress level at more measurement time points during each exposure session (e.g. specifically during the revision of the narration of prior sessions at the beginning of every exposure session).

Secondly, this secondary analysis comprised a rather small sample of participants which is still nonetheless comparable in terms of sample size to other studies on group trauma-focused treatments with youth (23) or adults (12). More importantly, however, the representativeness of the study sample comprising mostly adolescent males with a refugee background may be limited. Rates of traumatic experiences, PTSD, and depression among refugee minors are higher than in western samples (e.g. 23). However, research has shown that refugees benefit just as much from established trauma-focused treatments (25, 26). This may indicate that they may constitute an especially vulnerable and burdened population but one which is not that different in terms of treatment response.

Thirdly, the study protocol did not include the systematic documentation of how much content of the trauma narrative was actually disclosed and shared in the group discussion in each exposure session. Solely non-standardized reports of group facilitators in supervision gave the impression that almost all participants wanted to share details about their traumatic experiences as they often appreciated the social support from peers and made the valuable experience that other group members had had similar experiences. Experiences and disclosure of sexual abuse are especially associated with feelings of shame and guilt (27) and there might be an unwillingness to share them in a group setting. However, group facilitators reported that these events were shared as well by naming the event and some context (where and when it happened), instead of disclosing many details. Recent research suggests that this brief exposure might elicit a similar activation of the traumatic event resulting in stress and subsequent habituation (28). Altogether important group processes, such as social support, might come into play during disclosure of traumatic events within a group discussion. Future research needs to investigate group mechanisms and dynamics more closely.

Fourthly, it is important to note that in the first session the stress level rating was probably determined solely by the group facilitator as the stress level measure was not introduced until session 2. It is possible, however, that group facilitators asked the participants about their current stress level in session 1 already, as this was discussed and emphasized in training and supervision.

Fifthly, as this study didn't include an active control group (e.g. a non-exposure CBT group treatment), other potentially stress-related circumstantial factors, effects of time or order of the intervention, and carry-over effects cannot be excluded.

Lastly, although it is a major strength of this study that the stress level was assessed directly in the session and evaluated by the participants themselves and the group facilitators, independent and potentially more objective measurements of stress might have generated additional valuable information. Early studies on trauma-focused treatments employed methods such as ratings of facial expressions and coding of videotaped sessions by independent raters (29). Future research should also take neural and psychophysiological markers into account (30).

### **Clinical Implications**

As no harm to participants could be traced back to the "Mein Weg" intervention (16, 17), in-session exposure with an increase and decrease in stress among traumatized youth seems to be feasible. Hopefully, this will help to refute practitioners' preconceived ideas about using exposure in a group setting. The findings of this study might serve to motivate practitioners who are reluctant to implement group programs, especially those with in-session exposure, to undergo training in this kind of treatment. In settings in which clinicians' time and other resources for individual exposure treatment are limited, the implementation of exposure-based group treatments might even increase the number of patients who could receive and benefit from treatment.

Moreover, this intervention was carried out by trained and supervised social workers who are oftentimes referred to as "lay counsellors" as they do not have specific CBT or mental health training. This is a common approach in several trauma-focused individual treatments such as narrative exposure therapy (NET) (31) and group treatments for children such as group-based TF-CBT (32). Especially in settings that lack trained mental health care professionals, the training and supervision of lay counsellors might ensure greater dissemination of treatments and access for more children and adolescents in need.

## **Declarations**

### ***Ethics approval and consent to participate***

The study protocol of the RCT study was approved by the Ethics Committee at the University of Ulm (#176/16). All participants and their legal guardians, if minor, were informed about the study protocol and gave their written consent prior study inclusion.

### ***Consent for publication***

The consent for publication was obtained from all study participants. The individual information was handled anonymous and no images or videos were employed.

### ***Availability of data and material***

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

### ***Competing Interest***

There are no competing interests.

### ***Funding***

This study was funded by the World Childhood Foundation

### ***Author Contributions***

Elisa Pfeiffer: Conceptualization, Methodology, Formal Analysis, Investigation, Data Curation, Writing, Visualization, administration, funding acquisition (together with Prof. Dr. Lutz Goldbeck).

### ***Acknowledgements***

The author would like to thank their cooperation partners, namely Erzbischöfliches Kinderheim Haus Nazareth, Sankt Hildegard Memmingen, eva Heidenheim gGmbH, Paulinenpflege Winnenden e.V., Stiftung Jugendhilfe Aktiv Regionalbereich Esslingen, Arbeiterwohlfahrt (AWO) Augsburg, and Diakonische Jugendhilfe Region Heilbronn with their participating young refugees and social workers, all research assistants, and the World Childhood Foundation for partial funding of the study. The World Childhood Foundation was not involved in the study design, data collection and analysis or writing of this report. The author would like to further thank Ms. Tamara Brenner (B.Sc.), research assistant at Ulm University, for her support in the literature search and formatting of the draft and Ms. Anke de Haan (PhD), post-doctoral researcher at Cambridge University and Zurich University, for her time and helpful thoughts in reviewing this manuscript. Lastly, the author would like to express her gratitude to Prof. Dr. Lutz Goldbeck († 30.10.2017) with whom she planned and conducted this study.

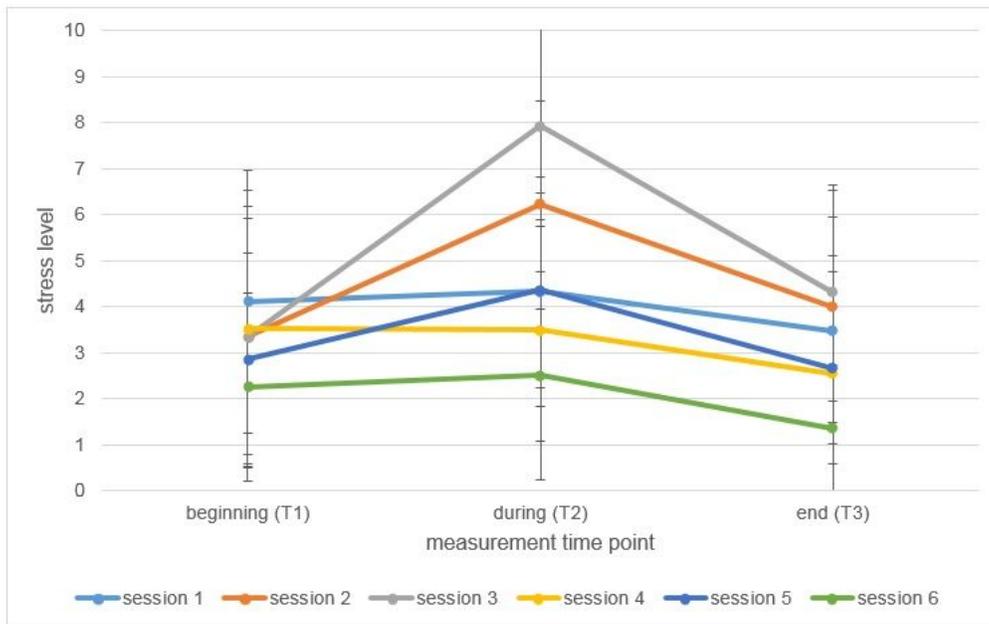
## **References**

1. Alisic E, Zalta AK, Van Wesel F, Larsen SE, Hafstad GS, Hassanpour K, et al. Rates of post-traumatic stress disorder in trauma-exposed children and adolescents: Meta-analysis. *Br J Psychiatry*. 2014;204(5):335–40.

2. Agorastos A, Pittman JO, Angkaw AC, Nievergelt CM, Hansen CJ, Aversa LH, et al. The cumulative effect of different childhood trauma types on self-reported symptoms of adult male depression and PTSD, substance abuse and health-related quality of life in a large active-duty military cohort. *J Psychiatr Res.* 2014;58:46–54.
3. Pacella, M. L., Hruska, B., & Delahanty DL. The physical health consequences of PTSD and PTSD symptoms: a meta-analytic review. *J Anxiety Disord.* 2013;27(1):33–46.
4. Gutermann J, Schreiber F, Matulis S, Schwartzkopff L, Deppe J, Steil R. Psychological Treatments for Symptoms of Posttraumatic Stress Disorder in Children, Adolescents, and Young Adults: A Meta-Analysis. *Clin Child Fam Psychol Rev.* 2016;19(2):77–93.
5. Dorsey, S., Briggs, E.C., & Woods BA. Cognitive-behavioral treatment for posttraumatic stress disorder in children and adolescents. *Child Adolesc Psychiatr Clin North Am.* 2011;20:255–69.
6. Bisson JI, Berliner L, Cloitre M, Forbes D, Jensen TK, Lewis C, et al. The International Society for Traumatic Stress Studies New Guidelines for the Prevention and Treatment of Posttraumatic Stress Disorder: Methodology and Development Process. *J Trauma Stress.* 2019;32(4):475–83.
7. Kataoka, S. A., Stein, B. D., Jaycox, L. H., Wong, M., Escudero, P., Tu, W., Zaragoza, C., & Fink A. A school-based mental health program for traumatized Latino immigrant children. *J Acad Child Adolesc Psychiatry.* 2003;42(3):311–8.
8. Cohen, J. A., Mannarino, A. P., & Deblinger E. Treating trauma and traumatic grief in children and adolescents. New York: Guilford Publications; 2016.
9. Jaycox LH, Cohen JA, Mannarino AP, Walker DW, Langley AK, Gegenheimer KL, et al. Children's Mental Health Care Following Hurricane Katrina: A Field Trial of Trauma-Focused Psychotherapies. *J Trauma Stress.* 2010;23(2):223–31.
10. Beck JG, Coffey SF, Foy DW, Keane TM, Blanchard EB. Group cognitive behavior therapy for chronic posttraumatic stress disorder: An initial randomized pilot study. *Behav Ther.* 2009;40(1):82–92.
11. Chard KM, Resick PA, Monson CM, Kattar KA. Cognitive processing therapy therapist group manual: Veteran/military version. Washington, DC: Department of Veterans Affairs.; 2008.
12. Barrera TL, Mott JM, Hofstein RF, Teng EJ. A meta-analytic review of exposure in group cognitive behavioral therapy for posttraumatic stress disorder. *Clin Psychol Rev [Internet].* 2013;33(1):24–32. Available from: <http://dx.doi.org/10.1016/j.cpr.2012.09.005>
13. Ehntholt KA, Smith PA, Yule W. School-based cognitive-behavioural therapy group intervention for refugee children who have experienced war-related trauma. *Clin Child Psychol Psychiatry.* 2005;10(2):235–50.
14. Deblinger, E., Pollio, E., & Dorsey S. Applying trauma-focused cognitive-behavioral therapy in group format. *Child Maltreat.* 2016;21(1):59–73.
15. Pfeiffer E, Goldbeck L. Mein Weg – Traumafokussierte pädagogische Gruppenintervention für junge Flüchtlinge (1. Aufl.) [engl.: My Way - trauma-focused pedagogic group intervention for young refugees]. (intervention manual). Goettingen: Hogrefe; 2019.
16. Pfeiffer, E., & Goldbeck L. Evaluation of a trauma-focused group intervention for unaccompanied young refugees: A pilot study. *J Trauma Stress.* 2017;30(5):531–6.
17. Pfeiffer, E., Sachser, C., Rohlmann, F., & Goldbeck L. Effectiveness of a trauma-focused group intervention for young refugees: a randomized controlled trial. *J Child Psychol Psychiatry Allied Discip.* 2018;59(11):1171–9.
18. Royston P. Multiple imputation of missing values. *Stata J.* 2004;3:227–41.
19. Sterne, J. A., White, I. R., Carlin, J. B., Spratt, M., Royston, P., Kenward, M. G., Wood, A.M. & Carpenter JR. Multiple imputation for missing data in epidemiological and clinical research: potential and pitfalls. *Bmj.* 2009;338.
20. Royston P. Multiple imputation of missing values: further update of ice, with an emphasis on interval censoring. *Stata J.* 2007;7(4):445–64.
21. Ready DJ, Thomas KR, Worley V, Backscheider AG, Harvey LAC, Baltzell D, et al. A Field Test of Group Based Exposure Therapy With 102 Veterans With War-Related Posttraumatic Stress Disorder. *J Trauma Stress.* 2008;21(2):150–7.
22. Betancourt, T. S., Newnham, E. A., Layne, C. M., Kim, S., Steinberg, A. M., Ellis, H., & Birman D. Trauma history and psychopathology in war-affected refugee children referred for trauma-related mental health services in the United States. *J Trauma Stress.* 2012;25(6):682–90.
23. Gutermann, J., Schreiber, F., Matulis, S., Schwartzkopff, L., Deppe, J., & Steil R. Psychological treatments for symptoms of posttraumatic stress disorder in children, adolescents, and young adults: a meta-analysis. *Clin Child Fam Psychol Rev.* 2016;19(2):77–93.
24. Betancourt, T. S., Newnham, E. A., Birman, D., Lee, R., Ellis, B. H., & Layne CM. Comparing Trauma Exposure, Mental Health Needs, and Service Utilization Across Clinical Samples of Refugee, Immigrant, and U.S.-Origin Children. *J Trauma Stress.* 2017;30(3):209–18.
25. Unterhitzberger J, Wintersohl S, Lang M, König J, Rosner R. Providing manualized individual trauma-focused CBT to unaccompanied refugee minors with uncertain residence status: a pilot study. *Child Adolesc Psychiatry Ment Health.* 2019;13(1):1–10.
26. Acarturk, C., Konuk, E., Cetinkaya, M., Senay, I., Sijbrandij, M., Gulen, B., & Cuijpers P. The efficacy of eye movement desensitization and reprocessing for post-traumatic stress disorder and depression among Syrian refugees: Results of a randomized controlled trial. *Psychol Med.* 2016;46(12):2583.
27. Lemaigre, C., Taylor, E. P., & Gittoes C. Barriers and facilitators to disclosing sexual abuse in childhood and adolescence: A systematic review. *Child Abuse Negl.* 2017;70:39–52.
28. Scheeringa MS, Lilly ME, Staiger AB, Heller ML, Jones EG, Weems CF. Do Children and Adolescents Have Different Types of Trauma Narratives and Does It Matter? Reliability and Face Validation for a Narrative Taxonomy. *J Trauma Stress.* 2017;30(3):323–7.
29. Foa, E. B., Riggs, D. S., Massie, E. D., & Yarczower M. The impact of fear activation and anger on the efficacy of exposure treatment for posttraumatic stress disorder. *Behav Ther.* 1995;26(3):487–99.
30. Shvil E, Rusch HL, Sullivan GM, Neria Y. Neural, psychophysiological, and behavioral markers of fear processing in PTSD: a review of the literature. *Curr Psychiatry Rep.* 2013;15(5):358.

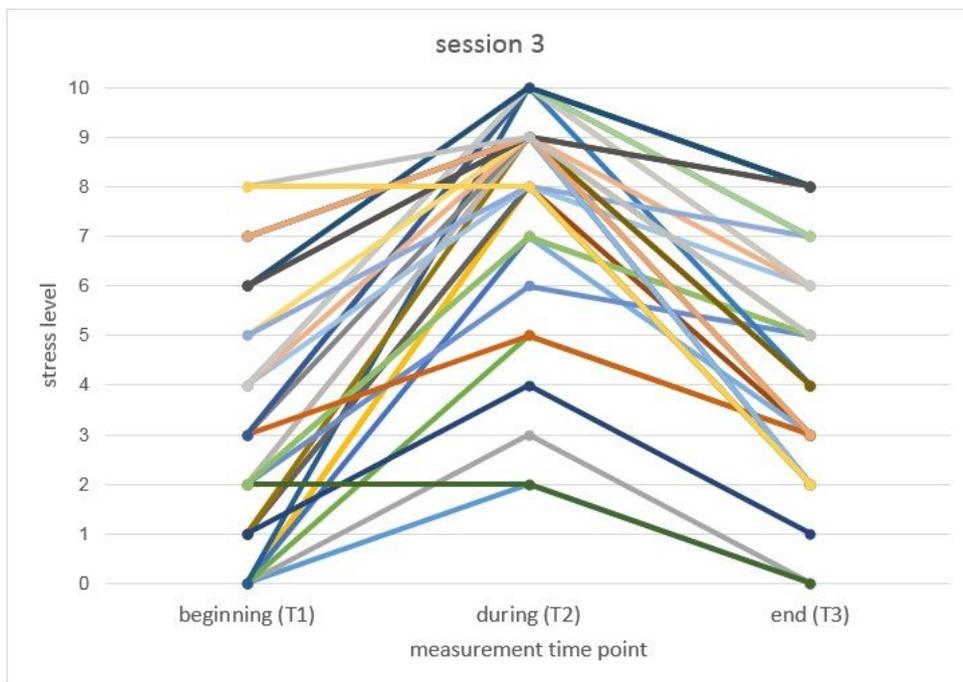
31. Robjant, K., & Fazel M. The emerging evidence for narrative exposure therapy: A review. *Clin Psychol Rev.* 2010;30(8):1030-10-39.
32. O'Donnell K, Dorsey S, Gong W, Ostermann J, Whetten R, Cohen JA, et al. Treating maladaptive grief and posttraumatic stress symptoms in orphaned children in Tanzania: Group-based trauma-focused cognitive-behavioral therapy. *J Trauma Stress.* 2014;27(6):664-71.

## Figures



**Figure 1**

Mean Scores of Participants' Stress Level for Each Session from Beginning (T1) to End (T3)



**Figure 2**

Stress Level of Participants at the Beginning, During, and at the End of Session 3. Each Line Represents a Participant (n = 47)