

# Pre-Post Study to Assess EMDR-Based Group Therapy for Traumatized Refugee Preschoolers

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Cross-culturally effective, low-threshold therapies for refugees that can be carried out quickly are urgently required. Worldwide, therapies are lacking, particularly for preschool refugee children, which support coping and prevent chronification of posttraumatic stress. This pilot study examined eye movement desensitization and reprocessing (EMDR)-based group treatment for preschool refugee children in German daycare centers. Ten refugee preschool children aged 4–6 years ( $n = 5$  female) with posttraumatic stress disorder (PTSD) symptoms took part in an EMDR-based group treatment (with 2–4 children per group). PTSD symptoms were rated by parents and preschool teachers using items from the Child Behavior Checklist (CBCL 1½–5), pre- and posttreatment, and at 3-month follow-up. After treatment children tended to display less fear of animals or situations than before treatment. According to preschool teachers' perspective, the total number of PTSD symptoms dropped significantly at posttreatment ( $d = .93$ ) and at follow-up ( $d = .81$ ). Before the intervention, preschool teachers rated the children as being more defiant than their parents did ( $p = .020$ ). After the intervention, the PTSD symptoms of boys were significantly higher than those of girls ( $p = .036$ ) according to preschool teachers. The results indicate that timely psychotherapeutic interventions can be conducted with refugee children displaying PTSD symptoms in daycare centers. The efficacy of this intervention needs to be studied in a larger sample under controlled randomized conditions.

**Keywords:** preschoolers; eye movement desensitization and reprocessing (EMDR); refugees; posttraumatic stress disorder; group treatment; PTSD in young children

**B**etween 2015 and 2018, the number of displaced persons seeking asylum in Germany reached a similar level as in the 1990s, during the war in Kosovo. Unlike the previous period, the people who arrived between 2015 and 2018 came

mainly from countries outside the European Union (EU). The most common countries of origin were nonmember countries such as Syria, Afghanistan, Iraq, Iran, Nigeria, and Eritrea (Bundesamt für Migration und Flüchtlinge [BAMF], 2018). Of

approximately 1.3 million refugees arriving in Germany between 2015 and 2018, around 36% (2016) to 48% (2018) were children and adolescents under the age of 18. A significant proportion of these children experienced traumatic events either in their home countries (premigration phase), during their flight (perimigration phase), or in the host country (postmigration phase), causing psychological stress. Kien et al. (2018) showed that 19%–53% of refugee children in European host countries have developed posttraumatic stress disorder (PTSD). Similar results were reported by Metzner, Reher, Kindler, and Pawils (2016) in Germany, who found that while the assessed studies' operationalization of PTSD diagnosis differed according to the methods and classification systems used, 14%–60% of children and adolescents in non-clinical samples met PTSD diagnostic criteria. Of the refugees who sought asylum in Germany in 2018, 30% were preschoolers under the age of 6 (BAMF, 2018). Effective, resource-friendly, and development-appropriate group interventions are therefore necessary in order to take care of the numerous preschool-aged refugee children who have developed PTSD.

## PTSD in Preschool Children

The symptoms of PTSD in children and adolescents can differ due to the children's cognitive developmental phase and age-dependent language skills. These aspects have to be considered during the diagnostic procedure (Scheeringa, 2011). Vasileva, Haag, Landolt, and Petermann (2018) pointed out that the PTSD criteria in the ICD-11 (International Classification of Diseases for Mortality and Morbid Statistics) display a lower sensitivity for preschool children than the PTSD criteria in the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5)*; American Psychiatric Association, 2013), meaning that cases of PTSD are more likely to be missed under application of the ICD-11 criteria.

The *DSM-5* (APA, 2013) included new criteria for the diagnosis of PTSD in children under the age of 6, identifying 16 symptoms in 3 PTSD clusters: intrusions; avoidance or negative alterations in cognitions; and alterations in arousal and reactivity (De Young & Landolt, 2018). Preschool children with PTSD often display overlapping symptoms that could also indicate a pure anxiety disorder or an attention-deficit hyperactivity disorder. For Criterion C (*Avoidance of Stimuli or Negative Alterations in Cognitions*), only one symptom is now necessary from one of the two areas, in contrast to the earlier requirement of at least two symptoms. The *DSM-5* PTSD for children aged 6

years and younger takes into account conspicuous play behavior in children (e.g., repetitive play), characterizes caregiver-child-related losses as a main source of trauma, and pays attention to the behaviorally expressed PTSD symptoms. It is a more child-friendly and development-appropriate alternative to previous PTSD criteria.

## Psychotherapeutic Treatment of Preschool Children With PTSD

Wlodarczyk et al. (2015) have pointed out that psychological problems and conspicuous behaviors at a preschool age can have a negative effect on a child's cognitive development at school and his or her ability to interact socially. Halevi, Djalovski, Vengrober, and Feldman (2016) have shown that posttraumatic stress, caused by wartime experiences, does not heal spontaneously over the first 10 years of life. Therefore, specific psychotherapeutic programs need to be developed for children. In their longitudinal study on the impact of stressful childhood experiences, Felitti et al. (1998) showed that these experiences are correlated with an increase of harmful behaviors in adulthood such as smoking, excessive alcohol consumption, drug abuse, promiscuity, and massive adiposity. Nevertheless, only a small number of trauma-specific interventions for preschool children with PTSD symptoms whose effectiveness and practicability have been tested empirically exists worldwide. Different psychotherapeutic treatments are available for treating PTSD in preschool children in an individual setting, including parent-child psychotherapy for young children, eye movement desensitization and reprocessing (EMDR), and trauma-focused cognitive behavioral therapy (De Roos et al., 2011; Diehle, Opmeer, Boer, Mannarino, & Lindauer, 2015; Hurn & Barron, 2018; Perilli et al., 2019; Scheeringa, Weems, Cohen, Jackson, & Guthrie, 2010.)

So far, no group interventions for preschool children with PTSD symptoms have been identified that require little language competency and can easily be implemented in large groups of psychologically stressed preschool children. The WHO (2013) and the International Society for Traumatic Stress (ISTSS Guidelines Committee, 2018) recommend EMDR for the treatment of children with PTSD.

## EMDR in Traumatized Preschool Children

EMDR is a trauma-specific psychotherapeutic method developed initially for adults by Shapiro and used for processing emotionally stressful memories through

desensitization and via eye movements (Shapiro, 2018). The underlying theoretical model is the Adaptive Information Processing (AIP) Model developed by Shapiro. It posits that trauma and pathogenic memories are stored in isolated neural networks in the brain. Bilateral stimulation (BLS) is thought to access the dysfunctional information and create new neural pathways. When EMDR is used on children and adolescents, the eight-phase standard protocol is adapted depending on their age and stage of development (Tinker & Wilson, 1999).

Until now, the effectiveness of EMDR in preschool children has been examined only in a very small number of studies worldwide (Beer, 2018, Hensel, 2009). A systematic analysis of the literature on approaches to treating traumatized refugees revealed no studies dealing with EMDR preschool refugee children (Lambert & Alhassoon, 2015).

Jarero, Artigas, and Montero (2008) developed the EMDR Integrative Group Treatment Protocol (EMDR-IGTP) for children based on the standard EMDR protocol (Shapiro, 2018). In the EMDR-IGTP, children are encouraged to follow a structured procedure in which they think about traumatic experiences, draw pictures about these, and give themselves “butterfly hugs,” which involves crossing their arms and gently patting their own chest on each side. Butterfly hugs were developed by Artigas and Jarero (1998) as a form of BLS and as a self-calming technique. Although the IGTP protocol has been used (with some adaptations) in countries around the globe (Jarero, Artigas, Uribe, & Miranda, 2014), no study has investigated its use with preschool children. No empirical findings are available worldwide concerning the effects of trauma-specific group treatments for preschool refugee children aged 4–6.

The aim of the pilot study presented here was to examine the value of an EMDR-based group treatment in the setting of daycare centers, aiming to reduce PTSD symptoms in displaced preschool children. It was assumed that children below the age of 6 years do develop clinically relevant PTSD symptoms, that these can be diagnosed, and that these PTSD symptoms can be reduced to a subclinical level by the intervention.

## Method

### Sample

Before carrying out the study, the approval of the Ethics Commission of the Hamburg Chamber of Psychotherapists was obtained. The children included

were between 4 and 6 years old and attended nursery schools in the district of Neuwied in Rhineland-Palatinate, having fled their home countries to Germany. They were all living in Germany between 223 and 832 days (median 451.5 days).

In line with the German laws, requiring each federal state to take in refugees, the district of Neuwied receives 4.5% of the asylum-seekers in the state of Rhineland-Palatinate every year. Between 2015 and 2017 the district of Neuwied, with a total registered population of 181,929 inhabitants, took in 3,042 asylum-seekers, of whom 943 were minors, and 176 were children aged 4–6 years (A. Ulrich, personal communication, April 3, 2019). The Rhineland-Palatinate law on daycare centers states that refugee children from 2 to 4 years are entitled to get a place in a public or private daycare center. Places in Rhineland-Palatinate daycare centers are free of charge. About 2%–10% of the children in daycare centers in the district of Neuwied were refugees in 2015.

The key inclusion criteria for the children were (a) between the ages of 4 and 6 years, (b) attending a public daycare center, (c) having themselves fled from a non-EU country, (d) living in Germany for at least 1 month, (e) whose parents have applied for asylum, and finally (f) showing evidence of a posttraumatic stress response based on a screening procedure using the Daily Life Test for Children (Lempertz, 2015). This screening tool was developed during the training of the nursery teachers as an easy-to-apply guide to observe the children’s behavior. It was a special request of the nursery teachers to help them to respond to their questions like “What shall I look for?” and “What kind of behavior is noticeable?”

A further condition for taking part in the study was an informed consent signed by at least one parent. Key exclusion criteria were psychotic symptoms, acute suicidality, pervasive developmental disorders, and ongoing physical or sexual abuse of the child.

Since the minimum size for a group was two children, children were also excluded from the study if no other child from the same daycare center meeting the inclusion criteria was available.

The children were recruited for the study by preschool teachers. For this purpose, all preschool teachers of the district of Neuwied were invited to attend a voluntary 2-hour group training, free of charge. Altogether, 37 preschool teachers took part in the training course conducted by a certified child and adolescent psychotherapist (CAP) having an additional certification as an EMDR therapist for

children and adolescents. The training course provided general information about posttraumatic disorders in preschool children and distinctive features of teaching and conducting psychotherapy with displaced children. The aim of this training was to train the preschool teachers to enable them to identify children displaying PTSD symptoms, to inform their parents about the study, and, if they wished to take part, to pass on the contact details of the families to the principal investigator.

Six preschool teachers registered 13 children from six daycare centers for the study (see Figure 1). Three children were excluded because of the exclusion criterion concerning the minimum group size, and their parents were informed about potential alternative individual interventions.

Ten children were included in the study and took part in the intervention group. Seven of these ten children attended all five sessions, while three children were absent for one session each, due to, for example, illness.

## Procedure

The study intervention was designed as an EMDR-based, trauma-specific group treatment for posttraumatically stressed children in nursery school who had experienced the same or similar events. All children had experienced war in their country of origin, the escape, and the arrival in a foreign country. Parents whose children were assessed by the preschool teachers as suffering from posttraumatic stress were invited to take part in a voluntary and confidential conversation at the nursery school with the child's primary teacher, the CAP, and the interpreter. They were informed about the offer of treatment, the study associated with it, and the professional discretion of all the persons involved. Written consent to the participation in the study was obtained in their respective native language. The wording of the informed consent was read out by the interpreter to parents who were unable to read or write. The talks were held with the support of interpreters for the languages Arabic, Kurdish, Farsi, and Pashto. Only interpreters who had submitted an extended police clearance certificate were used.

No monetary compensation was paid for the participation of the children and parents in the study. In connection with the written consent, the guardians of the participating children were informed that they or their children could discontinue their participation in the intervention at any time without stating reasons. The parents were informed that leaving the group after the

second day of treatment would require careful consultation between the parents and the CAP in order to support the children in processing any traumatic memories that may have been activated and to prevent dysfunctional coping strategies from developing.

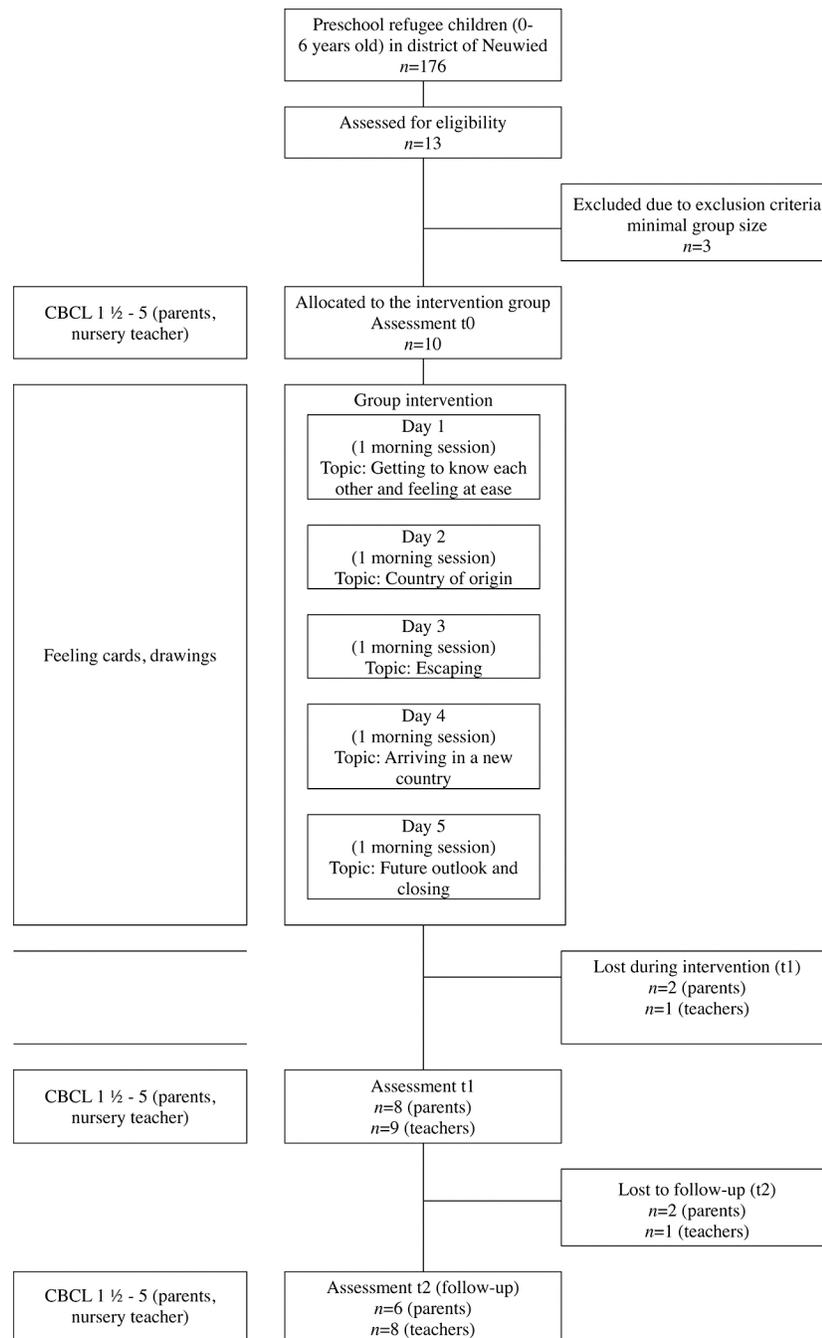
A pretest was first carried out with 7 refugee children aged 3–6 years. The group treatment was tested at a high frequency on 3 days, with one session each in the morning and the afternoon, as suggested by the IGTP. Due to the routines at the daycare center, this form of treatment proved difficult to integrate into the children's daily routine and put a distinct burden on the children after the afternoon sessions. For this reason, sessions afterward took place once a day and only in the mornings. The pretest used a therapeutic story about people who had experienced stressful events in their country of origin and had been forced to flee, and it was initially worded in abstract terms. This was not understood by the preschool children and they displayed no spontaneous, emotional responses to the contents of the story. Following the pretest, the story was reworded in a child-appropriate manner by introducing a bear named "Ben" as the protagonist of the story (Lempertz, 2015). The cognitive abilities and attention span of children of the age 3–6 years were so different from each other that it was very difficult for them to work jointly on a therapeutic topic for 50–60 minutes during the trial sessions. Accordingly, the age range was adjusted to 4–6 years.

## Treatment

Treatment was provided in four groups of two to five children in sessions of 50–60 minutes, held daily for 5 days. The treatment provider was the first author, who is a CAP and EMDR child and adolescent practitioner and who had been trained in EMDR level 1 and 2 and in EMDR for children and adolescents according to the standards of EMDR Europe. No fidelity assessment was conducted.

Each group treatment took place in the room where the children normally spent their days, thus minimizing the disruption for the families. It was easier for the children to reorient after the intervention by allowing them to make a direct transition to the routine of the daycare center. The preschool teachers were able to observe the children during the rest of the day after a session and inform the parents or CAP about any positive or negative effects of the treatment.

During the first session, the CAP explained to the children that a group meeting would take place every morning for 1 week, during which they would



**FIGURE 1.** Study design and flow of participants through the trial.

meet “Ben the Bear” and hear his story. All children were allowed to attend the sessions with their primary teachers if they wished. The staff of the nursery schools kindly provided this availability in advance for supporting the treatment of the children. An interpreter was present during each group session to enable the children to communicate spontaneously and freely. The children were able to speak in their native language or in German during the treatment. All children communicated in German during the sessions but made use of the offer to switch to their native

language when describing a particular form of stress, for example, a monster, in more detail. Four of the ten children made use of this offer, whereas the other children spoke German throughout.

Each of the five 60-minute sessions included a greeting round, an introduction to the topic of the session, a 20-minute EMDR-based intervention, and a final exercise game played in a circle (e.g., hopping, playing ball) for the sake of mental and physical reorientation. During the 20-minute EMDR-based intervention, the children were told the story of “Ben

the Bear,” based on the EMDR storytelling method described by Lovett (2007). The bear was chosen as a cross-cultural figure with positive connotations in order to convey the contents of the story. He was present at all sessions as a cuddly toy and interacted with the children. At the beginning of each session, the bear would be lying on the table asleep, next to a singing bowl. He was awakened by the CAP with the help of the children, by having one child tap the singing bowl. All the children were instructed to listen to the sound and to continue listening to it until it had fallen silent. This short exercise in attentiveness indicated the beginning of the session to the children and shifted their focus to the story. The CAP interacted with the bear by asking him how he felt, after which the bear would speak to the children and ask them questions. At the end of the session, the children would lay the bear, who was described as being tired, down to sleep, as instructed by the CAP.

Based on the concept of sequential traumatization proposed by Keilson (1991), the intervention considered the children’s experiences not as single event but as a process with changing traumatic situations. Various key topics like the traumatic sceneries in their home countries, the flight, and the arrival in host countries were addressed in the course of the sessions, as the story of “Ben the Bear” was told:

*Day 1: Getting to know each other and feeling at ease:* During the first session, resources were activated in the children, such as happy places, favorite foods, or skills. The identified resources were drawn and linked to positive cognitions (e.g., “I am strong!” and “I am clever!”). Children who could not come up with any resources were offered materials that gave a sense of well-being and provided pleasant stimulation, like balls of cotton wool with which the backs of their hands or their cheeks were stroked. Feeling comfortable in the here and now was promoted and assigned a personal color of well-being. Children were assisted in drawing, or drawings were made by the CAP according to their instructions. The aim was for each child to create a full, colorful picture of the resources. On completion, these resource pictures were inspected one after another by the children and the CAP. Two forms of slow self-administered BLS were demonstrated to the children: four to six slow butterfly hugs or tactile kinesthetic stimulation by tapping alternately on their thighs or the table. These were meant to reinforce the children’s positive feelings while looking at the pictures. The children selected a favorite type of stimulation and tried it for themselves, in some cases assisted by the therapist. Afterwards, the bear—played by the

CAP—looked at the children’s resource pictures and responded with praise and enthusiasm to reinforce the children’s positive feelings.

*Day 2: Experiences in the country of origin:* The children were told that the bear had had to leave his home country, and they were asked why that might have been necessary. The ideas and suggestions mentioned by the children reflected their own experiences, which were expressed in general terms as stressful experiences (e.g., “The bear was scared” or “He was afraid because there were bad people there”). With the guidance of the CAP, the children searched for a metaphorical image of the evil or the stress that they had themselves experienced. They came up with the symbol of a monster or an evil lion that threatened and frightened them and their families. The children drew pictures of the metaphors, which were supposed to express the threat they had felt and a negative “cognition” (e.g., “I am [or the bear is] in danger!”). These pictures were conceptualized as an expression of the current stress elicited by the memory and were used as target-image for desensitization and reprocessing. The children were told to look at their picture and to assign a negative cognition, an emotion or a corresponding physical sensation. To make it easier for the children to find the name for the emotions, picture cards were used for the four emotions: neutrality, fear, anger, and grief, showing “Ben the Bear” with the appropriate facial expression and posture (see Figure 2).

The children were asked which of these feelings they experienced in themselves and to use the distance between their hands for expressing the intensity of this feeling. In order to process the stressful picture with the troublesome emotions (e.g., the fear of the monster), the children were then instructed to perform rapid BLS with butterfly hugs. Having carried out alternating “tapping” about 20–30 times, the children were asked whether anything new had turned up (a new thought, idea, physical sensation). If new material had emerged, the children were instructed to draw this on a new sheet of paper or to add a change to the original picture, depicting their experiences in their country of origin. For example, a dangerous monster might shrink in the second drawing, or a helpful character might be added.

Several sets of BLS were performed until the children rated their state as being emotionally neutral (e.g., “Everything is fine”) or relieved (e.g., “The monster has gone!”). The metaphors they had found were revisited in the subsequent sessions during the whole week.



**FIGURE 2.** Ben the Bear showing facial expression and posture.

During the daily final playing sessions, body signals and sensations of energy, strength, or agility were addressed (“You are really good at catching, skipping, singing”). The children were asked to feel into their bodies and to discover where a pleasant or energy-laden feeling emerged. The positive feelings were reinforced with four to six slow butterfly hugs.

The topics on Day 3 to 5 were:

*Day 3: Experiences during the escape (flight)*

*Day 4: Arrival and life in Germany*

*Day 5: Summary and future outlook:* During the last session, the bear’s path from living in his country of origin to his present-day situation was summarized and the various feelings and sensations experienced by the bear were verbalized, to support the formation of personal narratives and help the children embed his experiences in their own life story. By asking the bear about his wishes and plans for the future, the children were encouraged to develop positive perspectives on the future (e.g., “What would you like to be able to do?” and “What do you want to grow up to be?”). The positive internal images and ideas formed were reinforced with four to six slow BLSs.

The program of each session was largely standardized; however, it left enough space to end each session by playing a game with the children. In order to provide emotional release, the children were asked what they would like to do with their picture of a monster or lion. Some children wanted to throw away or burn their picture after reprocessing and having achieved a neutral or positive mood.

It was planned that children who did not achieve adequate stability at the end of the fifth sessions or whose symptoms became more severe would be offered individual therapy sessions with the CAP. However, none of the children needed this.

## Measures

**Social Demographics.** Nine researcher-developed questions were used to collect personal data on the participating children from their parents, including

gender, age, country of birth, nationality, arrival in Germany, overall duration of their escape, as well as illnesses, disabilities, or developmental delays.

**Screening for Posttraumatic Stress Response.** The 16-item Daily Life Test for Children (DLTC; Lempertz, 2015) was used to screen for the posttraumatic stress response. This questionnaire was developed to measure the current everyday situation and stability of children between the ages of 2 and 10 years, as reported by preschool teachers in daycare centers. It asks about the children’s playing, developmental and age-appropriate behavior as well as their emotional well-being and observable behavioral issues—for example, bedwetting or eating problems (e.g., “Does the child live in a safe environment?”)—which are assessed using a three-point rating scale (Often, Rarely, Never). The DLTC has neither been published nor validated but was used as an observational guideline due to being a screening instrument preschool teachers can easily understand and implement.

**PTSD.** PTSD symptoms were assessed using 15 questions from the 100-item Child Behavior Checklist for ages 1½–5 years (Achenbach & Rescorla, 2000). The Child Behavior Checklist (CBCL) 1½–5 is a questionnaire for parents and other guardians to measure behavioral issues and competencies in preschool children. Dehon and Scheeringa (2006) have shown that Items 5, 10, 15, 32, 45, 47, 48, 78, 81, 82, 87, 90, 93, 94, and 98 of the CBCL 1½–5 are strongly correlated with PTSD in preschool children. Items are scored on a three-point Likert scale: “does not apply” (0), “applies somewhat or sometimes” (1), and “applies fully or frequently” (2). Dehon and Scheeringa (2006) have shown that a total score of at least 9 points indicates a high probability of PTSD, and a cut-off score of 9 points was used to indicate possible PTSD.

In this study, parents and teachers indicated how often they have observed these 15 symptoms in the child over the past 2 months. The questions deal with the emotional and physical well-being of the children,

for example, lack of concentration or sudden mood swings. This measure is more comprehensive than simple symptom measures and it also evaluates competencies and behaviors. The items of the CBCL 1½–5 were chosen for the assessment because no alternative short procedure was found that parents—who are often under a lot of stress, for example, after fleeing their country—could reasonably be asked to complete. In addition, one open-ended question was added in order to record any conspicuous behaviors that had not been covered by the items. A parents' and a preschool teachers' version of the questionnaires were used. The parents' version was available in German, English, Arabic, Farsi, and Tigrinya. The items were translated from German into the respective languages by professional native-speaking translators from a translation agency in a single one-way translation process. For financial reasons, it was not possible to carry out a back-translation or a cognitive debriefing to check the cultural equivalence of the translations.

## Statistical Analysis

The data were analyzed descriptively in terms of absolute and relative frequencies, as well as group statistics. The sum score of the assessments by the preschool teachers and/or parents for the 15 items of the CBCL 1½–5 was calculated as a total score, indicating probable PTSD. Due to the small sample size, the statistical analyses were conducted using non-parametric methods, as well as a chi-squared test. The analyses included the change over time (pre-post and follow-up) in the ratings by the preschool teachers and/or parents concerning the PTSD symptoms of the children on the levels of total score and symptoms (Friedman test, chi-squared test) as well as comparing the ratings of the preschool teachers and parents at the three different measurement points on levels of total score and symptoms (sign test, chi-squared test). Furthermore, the change over time (pre-post and follow-up) in the PTSD symptoms as seen by preschool teachers and/or parents was tested separately on a level of total score for each gender (Friedman test) and the PTSD symptoms were compared between genders from the points of view of preschool teachers and/or parents and at all measurement points (Mann–Whitney U test). In each case, the level of significance was set at 5%. As measures for effect strength, Cohen's *d*, and—in the case of the chi-squared test—Cramer's *V*, were used with

the following classification: low ( $d/V \geq .10$ ), moderate ( $d/V \geq .30$ ), high ( $d/V \geq .50$ ).

## Results

### Social Demographics of the Children

Altogether,  $n = 5$  boys and  $n = 5$  girls between the ages of 4 and 6 (Median = 5.0 years) took part in the study. The children came from Syria ( $n = 6$ ) or Afghanistan ( $n = 4$ ) and had been living in Germany with their families since spring or autumn of 2015, which was 7 to 23 months before the start of the project (see Table 1).

### PTSD Symptoms in Pre-Post Comparison With Follow-Up

At time  $t_0$ , six children scored above the PTSD cut-off of 9 points on the CBCL items. The preschool teachers identified all six, and parents identified four of the six (Table 2). At  $t_1$  and  $t_2$ , four children's scores were above the cutoff: two identified by the preschool teachers, and two different children identified by parents (Table 3).

From the preschool teachers' point of view, there was a significant decrease in total PTSD scores over the three measurement points ( $p = .030$ ; see Table 4). A post hoc comparison revealed a significant decrease in the PTSD symptoms between  $t_0$  and  $t_1$  ( $z = 1.188$ ,  $p = .018$ ) as well as between  $t_0$  and  $t_2$  ( $z = 1.062$ ,  $p = .034$ ), with high effect sizes ( $d = .93$  and  $d = .81$ ). However, from the parents' point of view, there was no significant decrease in total PTSD scores over the three measurement points.

### Attrition

Data were missing at times  $t_1$  and  $t_2$ . There was a loss of ratings from two parents and one teacher at  $t_1$  and two additional parents and one additional teacher at  $t_2$ , with only six parents and eight teachers providing follow-up scores. Attrition was 40% for parents, and 20% for teachers. The children with missing data were two boys and two girls, each aged 4 ( $n = 1$ ) or 5 ( $n = 3$ ). Three of the children came from Syria, while one escaped from Afghanistan. One family went back to their home country. The loss of participants reflects the challenges of working with a refugee population, who are often transient.

**TABLE 1. Sociodemographics of Sample (N = 10)**

	Md (Range)	n (%)	n.a. in n (%)
Gender			
Male	–	5 (50)	–
Age (years)	5.0 [4 – 6]	–	–
Country of birth			
Afghanistan	–	4 (40)	–
Syria	–	6 (60)	–
Duration of stay at time t0 (days)	451.5 [223 – 832]	–	2 (20)
Duration of flight (months)	1.6 [0.5 – 4.0]	–	2 (20)
Age on arrival (years)	3.5 [3 – 4]	–	2 (20)
Existing illness, disability or developmental disorders	–	1 (10)	2 (20)

Note. Md = Median; median and range rounded to one decimal place; n.a. = not available. All percentages calculated based on overall sample.

### Comparison Between Ratings by Preschool Teachers and Parents

On the level of the total scores, the ratings of the preschool teachers and parents did not differ significantly from each other at any measurement point. At symptom level, the defiant behavior of the children at time t0 differed significantly ( $p = .020$ ), with a high effect strength ( $V = .612$ ): preschool teachers rated the defiant behavior to be significantly greater than did the parents (see Table 2). No further comparisons between the ratings of the preschool teachers and parents at symptom level proved to differ significantly.

### Comparison of Change in PTSD Symptoms Across Genders

The preschool teachers felt that boys displayed significantly higher total PTSD symptoms than girls at time t2 ( $U = .500$ ,  $z = -2.100$ ,  $p = .036$ ) with a high effect size ( $d = -2.22$ ). Considering both genders separately, neither preschool teachers nor parents perceived a significant change in PTSD symptoms over time within each subsample.

## Discussion

The pilot study investigated the feasibility and effectiveness of an EMDR-based group treatment for preschool children suffering from posttraumatic stress. After initial caution and fear, the children were full of trust and open in their contact with the CAP and the interpreters. The use of “Ben the Bear” as the protagonist of the therapeutic story (Lempertz, 2015) activated the children’s own stressful experiences,

which were reprocessed during the interventions that took place over the course of 1 week. All children were stable enough for daily life before and after the treatment, but displayed advances in their development following treatment: for example, daring to go outdoors within the grounds of the nursery school. In all children, the total number of PTSD symptoms decreased during the treatment. The ratings of the parents differed from those of the preschool teachers regarding the item “is defiant.” Possible explanations could be that the children appeared to be more active and more courageous after taking part in the intervention group. Concurrently, one could take into account that these children would have stayed in a state of hyperarousal because of previously activated traumatic memories. However, this state was screened for very carefully during the follow-up process. Perhaps the parents rated this behavior as “defiant” because they were unfamiliar with using questionnaires to describe their child’s emotional and social situation and behavior and because of possible language problems. Some interpreters had trouble finding translations to distinguish among the symptoms and to express the difference between emotions and behavior for example, sullen, irritable, and defiant.

Not all changes were revealed by the questionnaires, and in some cases they were observed and reported only verbally. For one child, the preschool teachers had the impression that the overall symptoms manifested in the daycare center had improved as compared with the domestic situation. At the time, the family of this child was being threatened by xenophobic neighbors, and the child was expected

**TABLE 2. Frequency of PTSD Symptoms as Reported by Parents and Preschool Teachers**

	t0					t1					t2				
	Parents <sup>a</sup> (n = 10)		Preschool teachers <sup>a</sup> (n = 10)		* ** *** <i>p</i>	Parents <sup>a</sup> (n = 8)		Preschool teachers <sup>a</sup> (n = 9)		* ** *** <i>p</i>	Parents <sup>a</sup> (n = 6)		Preschool teachers <sup>a</sup> (n = 8)		* ** *** <i>p</i>
Items from CBCL 1 ½– 5 [item number]	<i>n</i>	%	<i>n</i>	%	<i>p</i>	<i>n</i>	%	<i>n</i>	%	<i>p</i>	<i>n</i>	%	<i>n</i>	%	<i>p</i>
Unable to concentrate / pay attention for long [5]	6	60	7	70	n.s.	6	75	6	67	n.s.	4	67	7	86	n.s.
Clings to grown-ups / is too dependent [10]	7	70	4	40	n.s.	3	38	2	22	n.s.	3	50	1	13	n.s.
Is defiant [15]	3	30	9	90	.02	2	25	5	56	n.s.	3	50	4	50	n.s.
Is afraid of certain animals / situations / places [32]	9	90	4	40	n.s.	4	50	2	22	n.s.	2	33	1	13	n.s.
Nausea (without known physical causes) [45]	1	10	–	–	n.s.	–	–	–	–	n.c.	1	17	–	–	n.s.
Is nervous / tense [47]	5	50	6	60	n.s.	2	25	3	33	n.s.	3	50	2	25	n.s.
Has nightmares [48]	3	30	2	20	n.s.	2	25	–	–	n.s.	2	33	–	–	n.s.
Stomachaches / stomach cramps (without physical cause) [78]	3	30	1	10	n.s.	2	25	–	–	n.s.	1	17	1	13	n.s.
Is stubborn, sullen, or irritable [81]	4	40	7	70	n.s.	5	63	4	44	n.s.	2	33	4	50	n.s.
Displays sudden changes in mood /feelings [82]	6	60	6	60	n.s.	2	25	3	33	n.s.	4	67	4	50	n.s.
Is too afraid, is anxious [87]	5	50	5	50	n.s.	5	63	3	33	n.s.	3	50	2	25	n.s.

(Continued)

**TABLE 2. Frequency of PTSD Symptoms as Reported by Parents and Preschool Teachers (Continued)**

	t0					t1					t2				
	Parents <sup>a</sup> (n = 10)		Preschool teachers <sup>a</sup> (n = 10)		*	Parents <sup>a</sup> (n = 8)		Preschool teachers <sup>a</sup> (n = 9)		*	Parents <sup>a</sup> (n = 6)		Preschool teachers <sup>a</sup> (n = 8)		*
Is unhappy / sad / depressed [90]	2	20	4	40	n.s.	2	25	5	56	n.s.	1	17	4	50	n.s.
Vomiting (without known physical cause) [93]	-	-	-	-	n.c.	-	-	-	-	n.c.	1	17	-	-	n.s.
Wakes up frequently at night [94]	3	30	1	10	n.s.	2	25	-	-	n.s.	3	50	-	-	n.s.
Is withdrawn / does not make contact with others [98]	4	40	6	60	n.s.	5	63	5	56	n.s.	1	17	1	13	n.s.
Sum score >8	4	40	6	60	-	2	25	2	22	-	2	33	2	25	-
Other [-]	4	40	1	10	-	-	-	1	11	-	-	-	1	13	-

**Note.** CBCL = Child Behavior Checklist.

<sup>a</sup>Items were dichotomized for analysis: responses of (1) applies somewhat/sometimes and (2) applies exactly/often were counted as “symptom is present”; n.s. = not significant; n.c. = not able to be calculated; the  $\chi^2$  test was used (or Fisher’s exact test in cases with low cell frequencies).

to be quiet at home and not make any noise when playing outdoors. This situation led to the child being afraid of the neighbors. Based on Keilson’s concept of sequential traumatization (1991), it was not only the experiences of war and flight that led to the symptoms, but also the current experiences in the host country. Another child who had never previously spoken in the daycare center started speaking by the end of the 1-week intervention. The preschool teachers had previously suspected that this child suffered from a language development disorder and cognitive impairment. This erroneous interpretation changed with the treatment. The father of a third child mentioned his son’s secondary nocturnal enuresis during the first contact, but did not want to report and record this in the questionnaire out of shame. Over the course of the intervention, the child stopped wetting his bed, and had not had any relapse at the time of the 3-month follow-up. Various factors like these could have led to the differing assessments between parents and preschool teachers concerning the decrease of PTSD symptoms. Overall, the girls in this sample seemed to have

profited more from the intervention than boys, according to preschool teachers. However, as boys tend to show more externalized symptoms than do girls (Klingman & Cohen, 2004), this observation may be inconclusive. While preschool teachers observed a decrease of total PTSD symptoms over time, no such development could be seen when examining both genders separately. This is most likely because the subsample sizes were too small to render significant results, meaning that further research with larger sample and subsample sizes are necessary to properly assess gender differences regarding PTSD symptoms of preschoolers.

### Limitations

Due to the small number of participants, only tentative conclusions can be drawn. However, a design like this, similar to that of Hurn and Barron (2018), does not infer generalizability. The number of PTSD symptoms before and after the intervention indicates a reduction in the symptoms, which is in line with

**TABLE 3. Total Score of PTBS Symptoms**

As seen by . . .	t0		t1		t2		Friedman Test			
	Md [Range]	MR	Md [Range]	MR	Md [Range]	MR	n	$\chi^2$	df	p
	n = 10		n = 8		n = 6					
Parents	5.5 [2–16]	2.75	6.5 [1–12]	1.75	6.5 [2–10]	1.50	6	5.727	2	.057
	n = 10		n = 9		n = 8					
Preschool teachers	9.5 [2–17]	2.75	7.0 [0–13]	1.56	3.5 [0–17]	1.69	8	7.032	2	.030

Note. df = degrees of freedom; Md = Median; MR = mean rank.

**TABLE 4. Number of Children (and Percent of Sample) Above Cut-Off Over Time, Comparing t0, t1, and t2**

As seen by . . .	t0	t1	t2	Chi-Squared Test		
	n = 10	n = 8	n = 6	$\chi^2$	df	p
Parents	4 (40%)	2 (25%)	2 (33%)	.450	2	.799
	n = 10	n = 9	n = 8			
Preschool teachers	6 (60%)	2 (22%)	2 (25%)	3.605	2	.165

Note. df = degrees of freedom; Md = Median; MR = mean rank.

the hypothesis, but the reduction was statistically significant only in teacher assessment. Findings are also limited due to the large attrition. Although attrition is expected when working with a transient refugee population, it was not possible to ascertain the treatment response for the 40% of children whose parent scores were missing at follow-up.

In terms of the execution of the study, it was difficult to provide a group treatment for all the children who registered. Some daycare centers registered only a single child requiring treatment, so that no group could be set up there. Also, the children participating in some daycare centers spoke different languages or dialects, so they could not be placed together in one group.

The response options in the measures used had a double negative. This led to problems of understanding among both the translators and the parents; this resulted in wrong answers being marked. Although the results of the pilot study did not show the expected reduction in PTSD symptoms from the parents' perspective, this could be a result of the described limitations.

### Consequences of the Study

Preschool children suffering from posttraumatic stress can be treated economically using a group treatment, provided the group is homogeneous and the children have experienced similar forms of stress; for example, war, flight, displacement. A shared language of the families taking part is necessary, as is the use of translators. It must be ensured that the cost of treatment is covered. In the case of refugee children, the asylum status of the families should be established and favorably decided before the start of the intervention, to prevent the child from current stress and being deported to its home country during the 1-week intervention.

PTSD in preschoolers can be underrecognized by parents because of their own traumatic experiences (Meiser-Stedman, Smith, Yule, Glucksman, & Dalgeish, 2016). Combining the assessments of the parents and the preschool teachers leads to a more comprehensive view of the children and their symptoms. In future, standardized ratings of preschool teachers and parents should be obtained.

Applying this treatment concept in the context of other institutions should be examined. The timing of the treatment needs to be discussed: Should preschool children be treated in reception centers, or should they wait until they have settled in stable locations? On the one hand, the uncertain legal residence status of the families and the ongoing stress could have a destabilizing effect and make trauma-therapeutic treatment more difficult. On the other hand, providing swift psychological relief for the children could contribute to their stabilization. Further research is needed in order to collect additional data.

The concept of group treatment for children who share stressful experiences (e.g., a fire or a burglary) could also conceivably be used in nursery schools when children share common experiences. To be able to offer all children attending daycare centers in Germany such a program at short notice, it would be necessary to network with emergency relief institutions.

### Implications for Research and Policy-Makers

Not all preschool children develop a psychological disorder after a traumatic event. According to metastudies (Marley & Mauki, 2019), social support is one of the protective factors for psychological health in children and adolescents for which the most evidence is available. In the vulnerable group of refugee children and adolescents, the correlation between level of perceived social support and well-being has been demonstrated repeatedly (Fazel, 2018). However, particularly in a war and during flight from a country, people are often separated from or lose members of their family, which can mean additional stress and destabilization of the child. Potential demands to policy-makers could include allowing children to stay with their families, or be reunited with them as quickly as possible, and ensuring that family bonds are maintained.

Regular psycho-education on trauma is needed for preschool teachers, integration assistants, and other educational experts who work with refugee children so that they can identify the children who are affected as early as possible. When assigning refugee children to nursery schools, it is necessary to take into consideration the staffing limits and temporal resources of the individual daycare center. In our pilot study we found that daycare centers with a proportion of up to 5% of refugee children were able to meet the needs of those children. Daycare centers with more than 5% of refugee children considered the integration of the children as being difficult. Research is needed

in order to develop more suitable standardized screening methods that can be used early on in reception centers.

Apart from the benefits to each individual child, a timely psychotherapeutic treatment could also reduce the subsequent cost to the healthcare and youth welfare systems (e.g., child welfare, assistance for children and families). Similarly, potential epigenetically aberrant developments could be avoided (Klengel et al., 2013).

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**Disclosure.** The authors have no relevant financial interest or affiliations with any commercial interests related to the subjects discussed within this article.

**Funding.** The author(s) received financial support from EMDR Europe for the statistical evaluation; they received no specific or financial support for the authorship and/or publication of this article.

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