

Young Children's Reactions to War-Related Stress: A Survey and Assessment of an Innovative Intervention

Avi Sadeh, DSc, Shai Hen-Gal, PhD, Liat Tikotzky, MA

Adler Center for Research in Child Development and Psychopathology, Department of Psychology, Tel Aviv University, Ramat Aviv, Israel

The authors have indicated they have no financial relationships relevant to this article to disclose.

ABSTRACT

OBJECTIVE. The goal was to assess stress reactions in young children during and after war and the effects of a new brief intervention.

METHODS. Two separate studies were conducted. In study I, we assessed war exposure and stress reactions of 74 children (2–7 years of age) in a sheltered camp during the second Israel-Lebanon war (July to August 2006). Their exposure to war experiences and their stress reactions were assessed through parental reports during the last week of the war. In addition to standard care, 35 children received a brief intervention (Huggy-Puppy intervention) aimed at encouraging them to care for a needy Huggy-Puppy doll that was given to them as a gift. The effects of the Huggy-Puppy intervention were assessed in a follow-up interview 3 weeks after the war. Study II assessed the efficacy of group administration of the Huggy-Puppy intervention to 191 young children, compared with 101 control subjects. The effects of the intervention on stress-related symptoms after the war were assessed in telephone interviews with the parents.

RESULTS. Study I indicated that, during the war, most children had significant exposure to war-related experiences and had severe stress reactions. The Huggy-Puppy intervention was associated with significant reductions in stress reactions in the postwar assessment. A higher level of attachment and involvement with the doll was associated with better outcomes. The results of study II indicated that group administration of the Huggy-Puppy intervention was associated with significant reductions in stress reactions.

CONCLUSION. These studies suggest that the Huggy-Puppy intervention may offer pediatricians and other child health care professionals a promising, cost-effective intervention for children during stressful times.

www.pediatrics.org/cgi/doi/10.1542/peds.2007-1348

doi:10.1542/peds.2007-1348

Key Words

stress, posttraumatic stress disorder, war, intervention, child

Abbreviations

PTSD—posttraumatic stress disorder
HPI—Huggy-Puppy intervention
SRCL—stress reaction checklist

Accepted for publication Jun 25, 2007

Address correspondence to Avi Sadeh, DSc, Adler Center for Research in Child Development and Psychopathology, Department of Psychology, Tel Aviv University, Ramat Aviv 69978, Israel. E-mail: sadeh@post.tau.ac.il

PEDIATRICS (ISSN Numbers: Print, 0031-4005; Online, 1098-4275). Copyright © 2008 by the American Academy of Pediatrics

RESearch on the effects of war on children have indicated that exposure to war and terror leads to severe stress reactions and anxiety in a significant number of children.^{1–8} For instance, in a study of Kuwaiti children after the Persian Gulf War, >70% of the children reported moderate or severe posttraumatic stress reactions.⁸ Similarly, Thabet and Vostanis⁶ reported that as many as 73% of the children exposed to war-related experiences in the Gaza Strip suffered from at least mild symptoms of posttraumatic stress disorder (PTSD), whereas 41% of the children had moderate or severe symptoms of PTSD. These negative effects of war experiences and related trauma could be persistent, producing long-term effects on child development and related psychopathological processes.^{1,3,4,9–11} For instance, Dyregrov et al¹¹ evaluated the psychological adjustment of children exposed to the Persian Gulf War in 1992. They interviewed children 6 months, 1 year, and 2 years after the war. They reported that, 2 years after the war, the stress-related symptoms persisted but the intensity of some symptoms had diminished. Laor et al⁹ found that some children may develop delayed PTSD symptoms, evident only 5 years after the war.

These consistent findings on the adverse psychological effects of war on children have led to a recognized need for suitable early interventions to prevent or to ameliorate stress reactions.^{10,12–16} However, research on early interventions during or after wars or terror episodes has been very limited.^{3,9,10,12,13,17–20} Most of those studies, which were based on a variety of interventions, yielded positive outcomes. For instance, Dybdahl¹⁸ assessed the effects of a psychosocial intervention program on young children and their mothers who had been exposed to the war in Bosnia-Herzegovina. The intervention was based on psychoeducational weekly group meetings with the mothers

that lasted 5 months. The results showed a significant reduction of the children's psychological problems and an improvement in the mothers' well-being only in the intervention group. In another study of children in the Gaza Strip, no positive effects were found for an intervention that was based on encouragement of emotional expression and education about stress symptoms.²⁰ Notwithstanding the positive results reported for most intervention studies, it is important to emphasize that the studies assessed nonspecific interventions with multiple components that were not described in detail, which precludes significant conclusions about specific ingredients.^{17,21} Furthermore, most of the interventions were highly demanding, in terms of professional labor and the families' involvement, were not suitable for pediatricians, and might not be applicable for many children in war-afflicted areas.

With all of the understanding and empathy evoked by the distress of war-exposed children, resources are usually very limited in war-afflicted areas, and children's psychological well-being is not always the first priority.³ One of the purposes of the present study was to assess the effects of a new intervention, which requires minimal resources and can be implemented by pediatricians and by other direct child-health care providers. We named this intervention the Huggy-Puppy intervention (HPI). The HPI is based on providing young children who are undergoing severe stressful events with a new puppy doll and encouraging them to care for this needy puppy.

A number of theoretical and clinical perspectives led us to choose this specific intervention. One perspective is drawn from the literature suggesting that giving responsibility to care for others and encouraging active coping during stressful periods empower individuals and make them less vulnerable and susceptible to stress reactions.²²⁻²⁸ From a child development perspective, it has been well-established that young children, from as early as the middle of the second year of life, are capable of pretend play, which serves important developmental functions.²⁹⁻³¹ The play therapy literature suggests that children are highly likely to project their feelings and anxieties onto toy figures (particularly animals) to identify with those feelings and to regulate those emotions while caring for the toy figures.³²⁻³⁴ Another perspective is related to the literature on attentional processes in anxiety and stress reactions. It has been suggested that anxiety disorders (in both adults and children) are associated with attentional biases that are linked to fear-inducing stimuli.³⁵ Furthermore, it has been shown that anxious individuals are more likely to focus inwardly, on their fear-related sensations and thought processes, and that attention training and reduction of self-awareness may lead to significant improvement for anxious individuals.³⁶⁻⁴⁰ The HPI provides the child with an incentive to focus on the puppy's feelings and needs and on the child's role as caregiver, thus offering a distraction from the child's own fears and anxiety. The child is encouraged to focus on his or her role as a competent caregiver, rather than as an anxious and needy individual. Through caring for the puppy, the child (and the sup-

porting parents, it is hoped) can address these fears and anxieties without being labeled anxious or immature. The current studies assessed the potential efficacy of the HPI for young children after exposure to war.

During the period between July 12, 2006, and August 14, 2006, a war between the Israeli Defense Forces and the Hezbollah took place in northern Israel and southern Lebanon. This war included heavy bombardments and shelling of populated areas on both sides. This study focuses on the war-related stress reactions of young Israeli children exposed to these experiences.

It was estimated that, during this war, >4000 Katyusha rockets and missiles hit the northern parts of Israel. More than 1 million people were in the danger zone for a potential direct hit. It was estimated that as many as 500 000 Israelis relocated during the war to live in safer areas out the range of the rockets. The children in these attacked areas experienced sounds of sirens, explosions, and sounds of the Israeli artillery. They spent considerable time in bomb shelters and were exposed to sights (directly and through the media) of damaged houses and casualties from the attacks.

During the initial stages of the war, a special shelter camp was established in Nitzanim, in southern Israel. This camp was relatively modern, with a reasonable standard of living for the families. The camp was established on a beach; the families resided in large tents, and their major needs (food, health care, and entertainment) were provided free of charge. The camp capacity was 6000 people, and there was full occupancy for most of the war period. Approximately 50% of the camp residents were children. The length of stay in the camp varied from several days to several weeks.

Because of earlier reports describing distress and stress reactions in young children in the camp, we decided to conduct study I to assess the severity of stress reactions in these young children and the potential efficacy of the HPI. After the war, with reports on persisting stress reactions in many young children in northern Israel, we initiated study II to assess the efficacy of group administration of the HPI to larger samples of children.

METHODS

Study I

Study Design

This study was approved by the university ethics committee. The first phase of the study was based on interviewing parents of young children at the Nitzanim camp who volunteered to participate in the study. After the interview, a standard educational intervention was offered to all of the parents. In addition to the educational intervention, a group of 35 children received the HPI. The rest of the children did not receive this additional intervention. Because of the inherent difficulties of a field study and ethical considerations, children were not completely randomly assigned to the groups; there was an inclination to provide the additional intervention to children who were more distressed. There were no significant differences in length of camp stay and exposure

to war between the groups. Three to 4 weeks after the intervention and the end of the war, a follow-up telephone interview was conducted to assess the well-being of the child and the effect of the intervention.

Participants

The study sample consisted of 74 children (40 boys and 34 girls), ranging in age from 2 to 7 years (mean: 4.70 years; SD: 1.34 years). The children were all living with their families in the Nitzanim camp during the last 3 days of the war. Lengths of stay in the camp ranged between 2 and 30 days (mean: 16.00 days; SD: 7.98 days). Most of the children (54.05%) lived with both parents in the camp. In many other cases, one parent (usually the father) continued to work and lived in the family house in the targeted areas in northern Israel.

Many social and play activities were arranged for the children in the camp. Some children and parents adopted the notion that they were on vacation at the beach. However, there were also many local stresses, including the war-related news (a source of many anxieties and fears), the cramped living conditions in the tents, and the related loss of privacy.

Baseline Interview

The baseline interview was based on a questionnaire that covered 2 major areas, that is, (1) the war experiences of the child and (2) a stress reaction checklist (SRCL). In addition, some background information was collected, including means of communication for a follow-up interview.

With regard to war experiences, we developed the war-related experiences scale to assess relevant exposure in young children. The parents were asked about specific experiences to which their child had been exposed and the extent of exposure. The experiences included (1) living in bomb shelters, in their home environment; (2) hearing war alarm sirens; (3) hearing explosions; (4) seeing injured people; (5) witnessing environmental damages near home (eg, destroyed houses); and (6) learning about a casualty in the family. The parents rated these items according to the extent of their child's exposure on a 3-point scale (1 = no exposure, 2 = minimal exposure, and 3 = intense exposure). A summary score was calculated from this scale, and the number of experiences was calculated. The internal reliability of this scale, based on Cronbach's α , was .71.

Stress reactions were assessed by using the SRCL, which was developed specially for this study and includes 15 items selected on the basis of a literature review on stress reactions and PTSD manifestations in young children and on the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition*.⁴¹ These items include (1) fear of or strong reactions to noise; (2) fear of separation and clinging; (3) passivity and disinterest in play; (4) anxiety and fears; (5) nightmares and anxious arousals; (6) excessive crying; (7) replay and reenactment of war experiences; (8) nervousness, agitation, and aggressiveness; (9) fear of or difficulty going to sleep; (10) excessive sleep; (11) isolation or self-preoccupation;

(12) renewed enuresis or encopresis; (13) talking about or preoccupation with death; (14) unexplained somatic pains or symptoms; and (15) renewed or excessive thumb or pacifier sucking. For each item, the parents first rated to what extent their child presented this behavior (1 = not at all, 2 = mild, and 3 = severe) and then indicated whether this behavior existed before the war. Internal reliability of the SRCL, based on Cronbach's α , was .79. Two composite scores were calculated, that is, (1) the total sum of item scores and (2) the number of symptoms the child presented at a severe level.

Standard Educational Intervention

The intervention was conducted 2 days before the war ended. The ceasefire was expected and so was the return home of the families. Therefore, the standard educational intervention was based on providing parents with information about how to return to routine life after the war and how to address their children's fears and anxieties. The parents were instructed to avoid overexposing the children to scary information or sights and to encourage soothing interactions with them. This information was provided to the parents after the interview, and they received a written summary of the guidelines. Parents of all participating children received this educational intervention.

HPI

The HPI was developed for this study in an attempt to offer young children a brief intervention that could empower them and facilitate their active coping with stressful situations in general and with their war experiences in particular. During the intervention, each child is introduced to a little Huggy-Puppy doll, which looks like a cocker spaniel with long legs and Velcro strips that enable one to place the doll in different hugging positions on the child. The child is told the following story. "This is my friend Huggy. Huggy is usually a very happy puppy. Right now, he looks a little sad and scared. Can you guess why he might be sad?" After the child replies, the story continues. "He is sad because he is very far away from his home and he does not have any good friends. He likes to be hugged a lot but he has no one to take care of him. Do you think you can be his good buddy, take care of him, hug him a lot, and take him to bed with you when you go to sleep?" Once the child agrees, the doll is given to him or her, with some demonstrations regarding how to hug and to be hugged by the doll. After this presentation to the child, the parent is encouraged to maintain the child's interest in the doll and to remind the child about his or her responsibility in caring for the puppy.

Follow-up Interview

The follow-up interview was conducted 3 weeks after the end of the war (which ended 2 days after the intervention). Only 62 families were traced by telephone. All contacted parents agreed willingly to be interviewed. The follow-up interview began with the SRCL that was

used in the baseline interview to assess the stress reactions, and then parents of children who had received the Huggy-Puppy were asked a number of questions to assess the child's attachment to and care of the Huggy-Puppy. These questions included 5 items. (1) Was the child attached to the doll? (2) Has the child played with and cared for the doll? (3) Has the child slept with and cared for the doll? (4) Has the child kept the doll close to him or her? (5) Has the child taken the doll with him or her when leaving home? The responses were rated on a 3-point scale (1 = not at all, 2 = somewhat, and 3 = very much). One summary variable (average rating across the items) was calculated to represent the child's attachment to and care for the doll.

Study II

Rationale

During the first few postwar months, there were reports in the education system of persisting stress symptoms in many exposed young children in northern Israel. After the initial positive outcomes of study I, we decided to conduct our second study with the following aims: (1) to assess the effects of the HPI with larger samples and in a more randomized, controlled manner and (2) to administer the HPI in a group format, to enable quicker access for larger populations.

Participants

Following agreement with the early education system, a list of 16 regular kindergarten classes (age range: 3–6 years) from affected areas was introduced. Eleven classes were selected randomly to be included in the intervention classes, and 5 matched classes served as control classes. The intervention group included 191 children (mean age: 4.41 years; SD: 0.88 years; 106 boys and 85 girls), and the control group included 101 children (mean age: 4.59 years; SD: 0.83 years; 54 boys and 47 girls). There were no significant differences in age or gender distributions between the groups.

Procedure

With the consent to administer the intervention in randomly selected classes, teams of 2 psychologists visited each class with a bag of dolls. The children were gathered in a circle, and one of the psychologists told them that he (or she) came from far away and brought some friends with him. He introduced one of the Huggy-Puppy dolls and told the children a story very similar to that described for the individual intervention. Each child received his or her own doll (with his or her name written on the puppy's collar), and there was a short group discussion regarding how the children could take care of their dolls. The duration of each group administration was ~30 minutes. The parents received a letter describing the intervention and requesting that they encourage their child to care for the doll. The teachers were also asked to remind the children to care for the dolls in group meetings on the following days. There were no visits or interventions offered to the control children.

Two months after the intervention, a research assis-

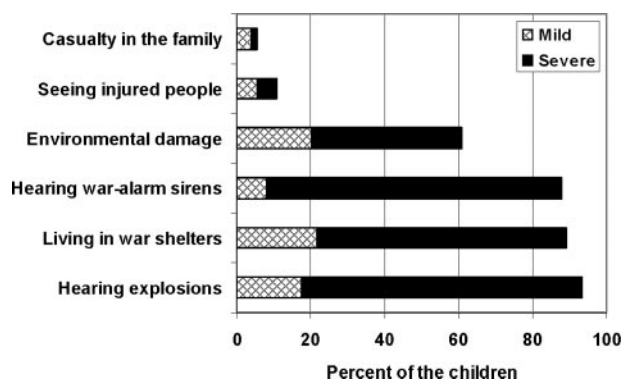


FIGURE 1
Reported exposure to war experiences as in young children. Shown are percentages of children reported to have had mild and severe exposure.

tant conducted a telephone interview with the parents of the children from the intervention and control groups. The interview included the same version of the war-related experiences scale used in study I and the same SRCL. To prevent interviewers' awareness regarding the study group affiliation of the child, questions about attachment to the doll were not included. The parents were asked to rate their child twice on each item. First they were asked to describe the child's reactions during the war, and then they were asked to describe the child's current status. The internal reliabilities of the SRCL in this larger sample, based on Cronbach's α , was .76.

RESULTS

Study I

Study Components

Data analysis consisted of assessment of 3 components, that is, (1) exposure to war experiences, (2) stress reactions and their association with exposure, and (3) the effects of a brief intervention on subsequent adaptation.

Exposure to War Experiences

Before the specific war-related experiences are addressed, it is important to note that all of these children were displaced from their homes and living in a camp, with all associated stressful experiences. In terms of exposure to specific war experiences, only 1 child was reported as not having experienced any of the sampled war-related experiences. Most of the children had experienced 3 (33.78%) or 4 (47.30%) specific experiences. The most-frequent experience was hearing explosions (Fig 1), followed by living in shelters and hearing war alarm sirens. Older children were reported as having greater exposure to war experiences ($r = 0.33$; $P < .01$). There were no gender-related differences.

Stress Reactions and Their Association With War Experiences in Young Children

Most of the children developed stress-related reactions. Figure 2 summarizes the proportions of children presenting different specific reactions, according to their

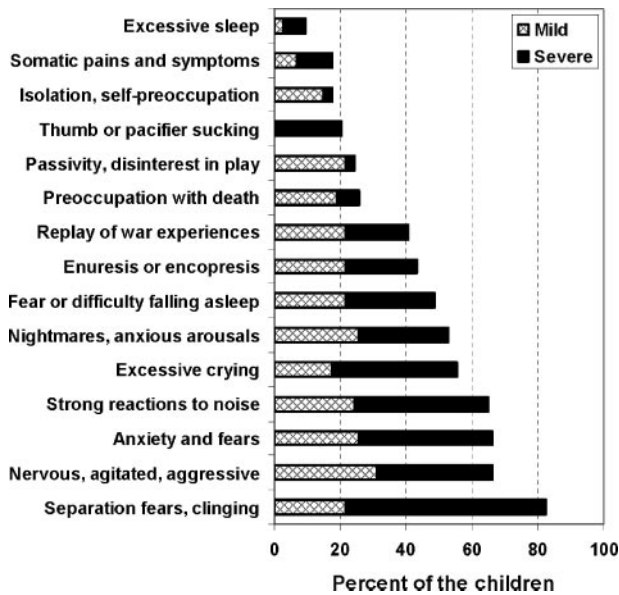


FIGURE 2
Reported stress reactions presented by the children during the war. Shown are percentages of children who presented mild and severe symptoms or behaviors.

prevalence. It is important to emphasize that these reactions were reported by the parents as new behaviors associated with the war and not as problems that existed before the war.

It is important to note that 83.78% of the children reportedly presented ≥ 1 symptom at a severe level and 55.41% of the children presented ≥ 3 symptoms at a severe level. Interestingly, none of the stress reactions was associated significantly with age, gender, or family composition at the Nitzanim camp.

War experiences correlated significantly with the measures of the stress reactions. Higher exposure levels (on the global exposure scale) were associated with increased numbers of severe reactions ($r = 0.25$; $P < .05$) and increased global reaction scores ($r = 0.28$; $P < .05$). A review of the specific exposure experiences revealed that hearing explosions was the best predictor for both SRCL scales ($r = 0.30$; $P < .01$).

Assessment of Effects of the HPI

To assess the effects of the HPI, we used analysis of variance with group (control/intervention) as a between-group variable, time (baseline/follow-up) as a within-group independent variable, and the 2 SRCL scales as the dependent measures. These analyses are presented in Fig 3.

The results for the 2 scores computed from the SRCL were quite similar. The 2 groups were significantly different at baseline (reaction summary score: $F_{1,61} = 5.90$; $P < .05$; number of severe symptoms: $F_{1,61} = 5.57$; $P < .05$). Significant group \times time effects were found for the SRCL summary score ($F_{1,61} = 12.53$; $P < .001$) and for the number of severe symptoms ($F_{1,61} = 9.98$; $P < .005$). The Cohen's d effect size estimates were 0.91 and 0.81, respectively. Posthoc analyses of these interactions indicated that the stress reactions were reduced significantly

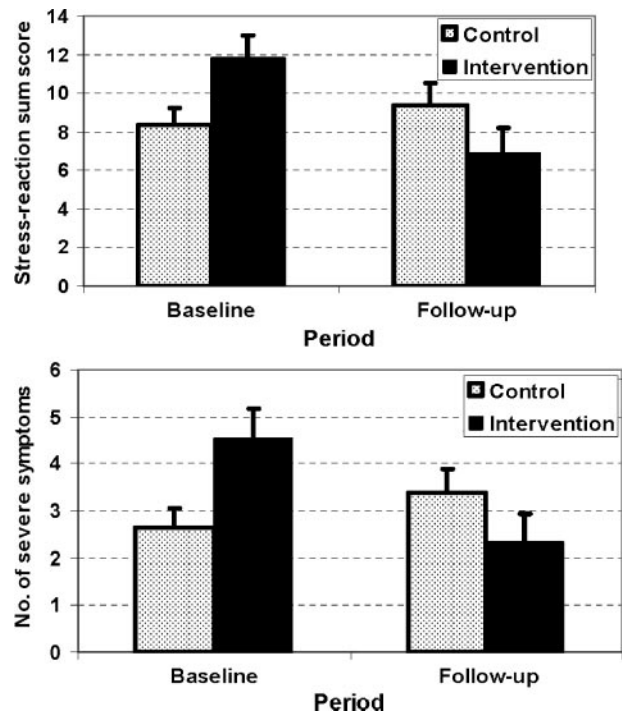


FIGURE 3
Effect of the Huggy-Puppy Intervention on 2 stress-reaction measures. Shown is a comparison between the intervention and control groups at baseline and during the follow-up periods (study I).

after the intervention in the HPI intervention group, whereas no significant change occurred in the control group.

To explore which specific reactions the interaction effects were based on, we performed separate analyses of variance for each item on the SRCL, to detect all interaction effects that were significant at $P < .05$. Significant interaction effects were found for talking about death, fear of or difficulty going to sleep, nightmares and anxious arousal, nervous and aggressive behavior, excessive crying, and anxious and fearful behavior. Interestingly, enuresis was the only item for which there was a significant time effect ($F_{1,61} = 14.97$; $P < .0005$). Renewed enuresis and encopresis rates decreased significantly in both groups from baseline to the follow-up period.

Only 4 children (15.3%) in the HPI group did not develop any signs of attachment to the doll, as measured with our 5-item scale. To facilitate understanding of the HPI effect, we correlated the score of the child's attachment to the Huggy-Puppy with the SRCL scores before and after the intervention. Stronger attachment to the Huggy-Puppy was associated with lower values for the SRCL summary score ($r = -0.46$; $P < .05$) and the number of severe symptoms ($r = -0.44$; $P < .05$) during the follow-up interview.

Study II

To assess the effects of the intervention, we performed analyses of variance for repeated measures with group (intervention/control) as one independent variable and time (wartime/current) as the second independent vari-

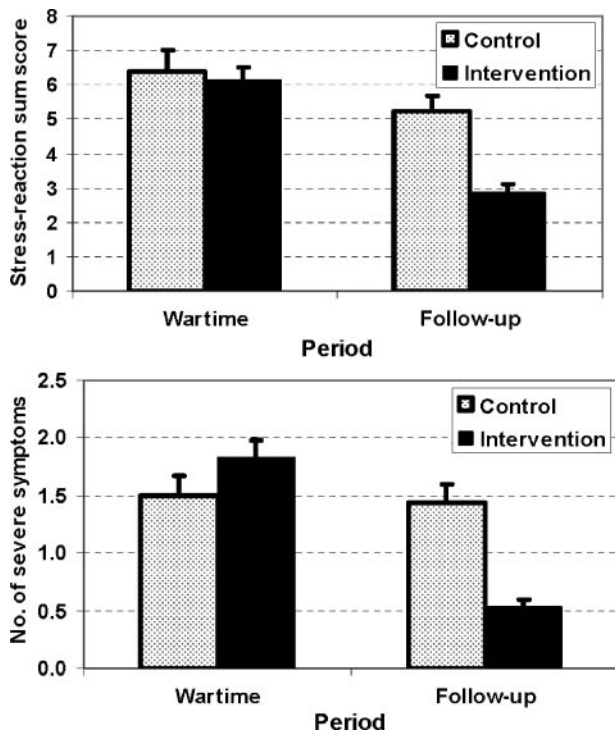


FIGURE 4 Effect of the Huggy-Puppy Intervention on 2 stress-reaction measures. Shown is a comparison between the intervention and control groups during/immediately after the war and in the follow-up periods (study II).

able. The dependent measures were the 2 summary scales of the SRCL (the same as in study I). The results are presented in Fig 4.

Significant group \times time effects were found for both measures. Although there were no significant differences between the groups in wartime-related stress reaction summary scores, scores were significantly lower in the current assessment for the intervention group, compared with the control group ($F_{1, 287} = 17.55$; $P < .0001$). A similar interaction was found for the number of severe symptoms reported on the SRCL ($F_{1, 287} = 34.87$; $P < .0001$). The Cohen's d effect size estimates were 0.56 and 0.62, respectively.

In the follow-up period, 71% of the children in the intervention group were symptom-free (ie, not presenting any severe symptom), compared with only 39% of the children in the control group. Inclusion of gender or age group (younger or older than 4.5 years, which was approximately the median age) in the analyses of variance did not reveal any significant main or interaction effects associated with gender or age group.

DISCUSSION

These studies had 3 major aims, that is, (1) to assess stress reactions in children living in a sheltered camp during wartime, (2) to explore the potential of a new intervention to alleviate children's stress reactions after the war, and (3) to assess the effects of this intervention in a group format. Before the findings of these studies are addressed, their limitations should be noted. Field studies are very difficult

to perform under war conditions, because of practical and ethical considerations.³ The methods of our studies were compromised by the following main factors: (1) stress reactions were assessed by relying on only 1 source of information (the parents, who were not blinded to the intervention); (2) the children in study I were not completely randomly assigned to the treatment groups, and there were significant group differences at the baseline assessment; and (3) there was only 1 follow-up assessment, a relatively short time (3 weeks in study I and 2 months in study II) after the intervention.

Notwithstanding these limitations, the results of study I indicated that the children in our sample were indeed exposed to war-related experiences in addition to being displaced from home. Most of the children were reported to have experienced 3 or 4 war-related experiences. The most prevalent experiences were hearing explosions, living in war shelters, hearing war alarm sirens, and witnessing environmental damage.

The results further suggested that these experiences were associated with stress reactions. Most of the children developed behaviors and reactions that were reported to be new and associated with the onset of the war. Eighty-four percent of the children presented ≥ 1 stress reaction at a severe level, and 55% presented ≥ 3 stress reactions at this level. Similar high prevalence rates of stress-related reactions to war and displacement experiences have been reported in the literature.^{6,8} These rates demonstrate the strong impact of war-related experiences on young children. The most prominent reactions included separation fears and anxieties, nervousness and aggressive behaviors, strong reactions to noise, and excessive crying. The significant correlation between exposure levels and stress reaction levels supports the notion that specific war-related experiences (eg, hearing explosions) have a direct impact on the child's sense of safety and activate the attachment system and related behaviors.⁴²⁻⁴⁵

The results of the follow-up assessment in study I suggested that the HPI was effective in reducing stress-related symptoms, with a very impressive effect size (Cohen's $d > 0.80$). These effects were evident over a broad spectrum of stress reactions developed by the children during the war. Furthermore, the reduction in stress symptoms in the follow-up assessment was associated with intervention adherence and the child's attachment to the doll.

Alternative explanations for the results of study I cannot be ruled out. The a priori group differences could be used to explain the results as a mere statistical artifact. However, the significant correlations found between strong attachment to the Huggy-Puppy and lower scores on the SRCL scales within the HPI group do not support this explanation. These findings suggest that indeed the child's adherence to the intervention and emotional ties to and preoccupation with the doll were associated with improved well-being at the follow-up interview. These findings are in line with individual parental reports on the role of the Huggy-Puppy in these children's lives. For instance, some children gave up sleeping with their parents at night and went to sleep with the Huggy-Puppy in their own beds, and other children responded to fearful

stimuli, such as explosion noises, by searching for the Huggy-Puppy and hugging the doll.

Study II had the advantages of randomized groups and a significantly increased sample size. The findings of that study indicated that children in kindergarten who received the group format of the HPI had significantly fewer signs of distress at the follow-up interview. These findings are particularly impressive in light of the fact that there were no significant differences between the groups in the earlier reported war/postwar symptoms. In addition to the statistical power of these findings, the difference between 71% symptom-free children in the intervention group and only 39% in the control group is remarkable in clinical terms.

The findings of these 2 studies raise important questions about specific "curative factors." This issue of identifying specific effective (or "curative") elements of interventions is a very difficult topic in psychotherapy in general and in interventions for stress in children in particular.^{3,46-51} One can propose a simple "special attention" explanation for our results. The children received special attention during the intervention, and their parents (and teachers in study II) were requested to pursue the topic further. However, it is important to note that the children received only a single 10-minute dose of professional attention during the HPI. If such a brief intervention can facilitate parental attention and improve the child's well-being, then it is of great clinical value regardless of the rationale of the curative factors.

Our findings suggest that the attachment to the doll is linked to the efficacy of the intervention. This is an important component related to a variety of potential underlying mechanisms (ie, "caretaker role," "attachment object," or shifting attention outward). However, our preliminary findings do not allow determination of which underlying mechanism is dominant in determining the effects of the intervention.

The theoretical rationale for the HPI should be further explored in studies comparing different modes of the HPI (eg, providing dolls with different "cover" stories and comparing the HPI with "special attention" control treatments). Furthermore, future studies should overcome the limitation of using only parental reports for clinical assessment. Direct clinical assessment of the child's well-being and clinical status or reliance on external reporters (eg, teachers) would strengthen the validity of the method.

Considering the ubiquitous role of intense stress and trauma in the lives of many young children⁵² and the potential adverse longitudinal effects of stress on the developing brain and child psychopathological processes,^{44,52-56} the needs for such a cost-effective intervention are vast. The results of our studies lend support to the idea that innovative interventions, based on understanding derived from modern research and theories on child development and cognitive processes underlying developmental psychopathological processes, may show promise in meeting this challenge.

CONCLUSIONS

These studies suggest that a brief early intervention based on mobilizing the child's role as a caregiver to a

needy puppy doll may serve as a cost-effective means to alleviate children's stress reactions after exposure to war experiences. If our results are validated by additional research, then this intervention could provide pediatricians and other child health care professionals with a valuable tool for early intervention for children exposed to stressful and traumatic events.

ACKNOWLEDGMENTS

This study was supported by the Adler Center for Research in Child Development and Psychopathology and by the Joint-Ashalim Organization for Children at Risk. The research was conducted in collaboration with the Joint-Ashalim Organization for Children at Risk.

We are thankful to Ornit Arbel and Jeri Hahn-Markowitz for their help in preparing this manuscript and to Prof Amiram Raviv and Dr Yair Bar-Haim for their insightful comments and suggestions.

REFERENCES

1. Fremont WP. Childhood reactions to terrorism-induced trauma: a review of the past 10 years. *J Am Acad Child Adolesc Psychiatry.* 2004;43:381-392
2. Joshi PT, O'Donnell DA. Consequences of child exposure to war and terrorism. *Clin Child Fam Psychol Rev.* 2003;6:275-292
3. Barenbaum J, Ruchkin V, Schwab-Stone M. The psychosocial aspects of children exposed to war: practice and policy initiatives. *J Child Psychol Psychiatry.* 2004;45:41-62
4. Shaw JA. Children exposed to war/terrorism. *Clin Child Fam Psychol Rev.* 2003;6:237-246
5. Stover CS, Berkowitz S. Assessing violence exposure and trauma symptoms in young children: a critical review of measures. *J Trauma Stress.* 2005;18:707-717
6. Thabet AAM, Vostanis P. Post-traumatic stress reactions in children of war. *J Child Psychol Psychiatry.* 1999;40:385-391
7. Papageorgiou V, Frangou-Garunovic A, Iordanidou R, Yule W, Smith P, Vostanis P. War trauma and psychopathology in Bosnian refugee children. *Eur Child Adolesc Psychiatry.* 2000;9:84-90
8. Nader KO, Pynoos RS, Fairbanks LA, Alajeel M, Alasfour A. A preliminary-study of PTSD and grief among the children of Kuwait following the Gulf crisis. *Br J Clin Psychol.* 1993;32:407-416
9. Laor N, Wolmer L, Cohen DJ. Mothers' functioning and children's symptoms 5 years after a SCUD missile attack. *Am J Psychiatry.* 2001;158:1020-1026
10. Wolmer L, Laor N, Dedeoglu C, Siev J, Yazgan Y. Teacher-mediated intervention after disaster: a controlled three-year follow-up of children's functioning. *J Child Psychol Psychiatry.* 2005;46:1161-1168
11. Dyregrov A, Gjestad R, Raundalen M. Children exposed to warfare: a longitudinal study. *J Trauma Stress.* 2002;15:59-68
12. Berkowitz SJ. Children exposed to community violence: the rationale for early intervention. *Clin Child Fam Psychol Rev.* 2003;6:293-302
13. Kruczek T, Salsman J. Prevention and treatment of posttraumatic stress disorder in the school setting. *Psychol Schools.* 2006;43:461-470
14. Vostanis P. The impact, psychological sequelae and management of trauma affecting children. *Curr Opin Psychiatry.* 2004;17:269-273
15. Stichick T. The psychosocial impact of armed conflict on children: rethinking traditional paradigms in research and in-

- tervention. *Child Adolesc Psychiatr Clin North Am.* 2001;10:797–814
16. Hagan JF, American Academy of Pediatrics, Committee on Psychosocial Aspects of Child and Family Health, Task Force on Terrorism. Psychosocial implications of disaster or terrorism on children: a guide for the pediatrician. *Pediatrics.* 2005;116:787–795
 17. Pincus DB, Friedman AG. Improving children's coping with everyday stress: transporting treatment interventions to the school setting. *Clin Child Fam Psychol Rev.* 2004;7:223–240
 18. Dybdahl R. Children and mothers in war: an outcome study of a psychosocial intervention program. *Child Dev.* 2001;72:1214–1230
 19. Mohlen H, Parzer P, Resch F, Brunner R. Psychosocial support for war-traumatized child and adolescent refugees: evaluation of a short-term treatment program. *Aust NZ J Psychiatry.* 2005;39:81–87
 20. Thabet AA, Vostanis P, Karim K. Group crisis intervention for children during ongoing war conflict. *Eur Child Adolesc Psychiatry.* 2005;14:262–269
 21. Feerick MM, Prinz RJ. Next steps in research on children exposed to community violence or war/terrorism. *Clin Child Fam Psychol Rev.* 2003;6:303–305
 22. Clarke AT. Coping with interpersonal stress and psychosocial health among children and adolescents: a meta-analysis. *J Youth Adolesc.* 2006;35:11–24
 23. Dumont M, Provost MA. Resilience in adolescents: protective role of social support, coping strategies, self-esteem, and social activities on experience of stress and depression *J Youth Adolesc.* 1999;28:343–363
 24. Liu XC, Tein JY, Zhao ZT. Coping strategies and behavioral/emotional problems among Chinese adolescents. *Psychiatry Res.* 2004;126:275–285
 25. Reid GJ, Dubow EF, Carey TC, Dura JR. Contribution of coping to medical adjustment and treatment responsibility among children and adolescents with diabetes. *J Dev Behav Pediatr.* 1994;15:327–335
 26. Schmeelk-Cone KH, Zimmerman MA. A longitudinal analysis of stress in African American youth: predictors and outcomes of stress trajectories. *J Youth Adolesc.* 2003;32:419–430
 27. Smith CL, Eisenberg N, Spinrad TL, et al. Children's coping strategies and coping efficacy: relations to parent socialization, child adjustment, and familial alcoholism. *Dev Psychopathol.* 2006;18:445–469
 28. Steinhausen HC, Metzke CW. Risk, compensatory, vulnerability, and protective factors influencing mental health in adolescence. *J Youth Adolesc.* 2001;30:259–280
 29. Lewis M, Ramsay D. Development of self-recognition, personal pronoun use, and pretend play during the 2nd year. *Child Dev.* 2004;75:1821–1831
 30. Haight WL, Wang XL, Fung HHT, Williams K, Mintz J. Universal, developmental, and variable aspects of young children's play: a cross-cultural comparison of pretending at home. *Child Dev.* 1999;70:1477–1488
 31. Bornstein MH, Haynes OM, Oreilly AW, Painter KM. Solitary and collaborative pretense play in early childhood: sources of individual variation in the development of representational competence. *Child Dev.* 1996;67:2910–2929
 32. Bratton SC, Ray D, Rhine T, Jones L. The efficacy of play therapy with children: a meta-analytic review of treatment outcomes. *Prof Psychol Res Pract.* 2005;36:376–390
 33. Knell SM. Cognitive-behavioral play therapy. *J Clin Child Psychol.* 1998;27:28–33
 34. Axline VM. *Play Therapy.* New York, NY: Ballantine Books; 1969
 35. Bar-Haim Y, Lamy D, Pergamin L, Bakermans-Kranenburg MJ, van Ijzendoorn MH. Threat-related attentional bias in anxious and non-anxious individuals: a meta-analytic study. *Psychol Bull.* 2007;133:1–27
 36. Wells A. GAD, metacognition, and mindfulness: an information processing analysis. *Clin Psychol Sci Pract.* 2002;9:95–100
 37. Wells A, Matthews G. Anxiety and cognition. *Curr Opin Psychiatry.* 1996;9:422–426
 38. Wells A, Matthews G. Self-consciousness and cognitive failures as predictors of coping in stressful episodes. *Cognit Emot.* 1994;8:279–295
 39. Wells A, Sembi S. Metacognitive therapy for PTSD: a preliminary investigation of a new brief treatment. *J Behav Ther Exp Psychiatry.* 2004;35:307–318
 40. Wells A, White J, Carter K. Attention training: effects on anxiety and beliefs in panic and social phobia. *Clin Psychol Psychother.* 1997;4:226–232
 41. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders.* 4th ed. Washington, DC: American Psychiatric Association; 1994
 42. McCarthy G, Davies S. Some implications of attachment theory for understanding psychological functioning in old age: an illustration from the long-term psychological effects of World War Two. *Clin Psychol Psychother.* 2003;10:144–155
 43. Foster D, Davies S, Steele H. The evacuation of British children during World War II: a preliminary investigation into the long-term psychological effects. *Aging Ment Health.* 2003;7:398–408
 44. Cassidy J, Mohr JJ. Unsolvable fear, trauma, and psychopathology: theory, research, and clinical considerations related to disorganized attachment across the life span. *Clin Psychol Sci Pract.* 2001;8:275–298
 45. Bowlby J. The role of attachment in personality development and psychopathology. In: Greenspan SI, Pollack GH, eds. *The Course of Life, Vol. 1, Infancy.* Madison, CT: International Universities Press; 1989:229–270
 46. Luborsky L, Barber JP, Beutler L. Introduction to special section: a briefing on curative factors in dynamic psychotherapy. *J Consult Clin Psychol.* 1993;61:539–541
 47. Taylor TL, Chemtob CM. Efficacy of treatment for child and adolescent traumatic stress. *Arch Pediatr Adolesc Med.* 2004;158:786–791
 48. Westen D, Novotny CA, Thompson-Brenner H. The empirical status of empirically supported psychotherapies: assumptions, findings, and reporting in controlled clinical trials. *Psychol Bull.* 2004;130:631–663
 49. Crits-Christoph P. The efficacy of brief dynamic psychotherapy: a meta-analysis. *Am J Psychiatry.* 1992;149:151–158
 50. Foa EB, Meadows EA. Psychosocial treatments for posttraumatic stress disorder: a critical review. *Annu Rev Psychol.* 1997;48:449–480
 51. Reisner AD. The common factors, empirically validated treatments, and recovery models of therapeutic change. *Psychol Rec.* 2005;55:377–399
 52. Grant KE, Compas BE, Stuhlmacher AF, Thurm AE, McMahon SD, Halpert JA. Stressors and child and adolescent psychopathology: moving from markers to mechanisms of risk. *Psychol Bull.* 2003;129:447–466
 53. Dawson G, Ashman SB, Carver LJ. The role of early experience in shaping behavioral and brain development and its implications for social policy. *Dev Psychopathol.* 2000;12:695–712
 54. Scheeringa MS, Zeanah CH. A relational perspective on PTSD in early childhood. *J Trauma Stress.* 2001;14:799–815
 55. Gunnar MR, Cheatham CL. Brain and behavior interface: stress and the developing brain. *Infant Ment Health J.* 2003;24:195–211
 56. Teicher MH, Andersen SL, Polcari A, Anderson CM, Navalta CP, Kim DM. The neurobiological consequences of early stress and childhood maltreatment. *Neurosci Biobehav Rev.* 2003;27:33–44