Increasing research is available on the preconditions for child mental health and optimal development in traumatic conditions, whereas less is known how to translate the findings into effective interventions to help traumatized children. This literature review analyses the effectiveness of psychosocial preventive interventions and treatments and their theoretical bases among children traumatized in the context of armed conflicts (war, military violence, terrorism and refugee). The first aim is to evaluate the effectiveness of preventive interventions in preventing emotional distress and impairment and promoting optimal emotional-cognitive and social development. The second task is to analyze the nature of the underlying mechanisms for the success of preventive interventions, and the theoretical premises of the choice of intervention techniques, procedures and tools. We found 16 relevant published studies, but an examination of them revealed that only four of them had experimental designs strong enough that they could be included in the meta-analysis. While the subjective reports of the researchers suggested that systematic preventive interventions were effective in decreasing PTSD and depressive symptoms among children traumatized due to armed conflict, the more objective results of the meta-analysis and the weaknesses in designs uncovered during the meta-analysis undermine such a conclusion. Additionally, a majority of the reported preventive interventions focused only on children’s biased cognitive processes and negative emotions, while only a few aimed at influencing multiple domains of child development and improving developmental functioning on emotional, social and psychophysiological levels. It is concluded that substantial additional work needs to be done in developing effective preventive interventions and treatments for children traumatized by exposure to war and violence. Aggr. Behav. 36:95–116, 2010.

Keywords: interventions; children; trauma; review

Safety, love, health, family support and schooling form the basis of children’s human rights. Childhood should be dedicated to enjoyment, experimenting and learning human tasks and virtues without excessive burdens and responsibilities. Yet, worldwide a substantial number of children lack basic resources that can guarantee their healthy psychosocial development and are deprived of safety due to armed conflicts. According to UN statistics, about two million children have been killed and six million seriously injured or permanently disabled in armed conflicts in the past decade [Marcal, 2003]. The negative consequences of wars, terrorism, military violence and poverty on children’s psychosocial development and mental health are of great concern. Effective interventions to reduce their emotional suffering and promote their mental health are considered one of the major global mental health challenges [UNICEFF, 2004].

On the other hand, research on developmental vulnerabilities and strengths has gained momentum; we know increasingly which factors related to children, family and community can either protect or impair children’s mental health and optimal development. Also, theoretical and empirical modeling of preventive interventions has made great progress, providing guidelines for planning and implementing evidence-based and effective interventions for traumatized children and their families [Bisson and Cohen, 2006; Cohen et al., 2006; Ehntholt and Yule, 2006]. A crucial question is whether and how these scientific and professional achievements have been applied to help traumatized children in armed conflicts. Accordingly, we analyze...
the effectiveness and theoretical underpinnings of preventive interventions among children exposed to traumatic events of wars, terrorism and military violence. Some of the children studied continue to live in conflict areas and others live as refugees in safer societies.

**Traumatic Experiences and Child Mental Health**

Researchers agree that traumatic events involving life-threat, helplessness and horrifying scenes contribute a risk to mental health and developmental problems among children [Ehntholt and Yule, 2006]. Commonly trauma-related mental health consequences are conceptualized as posttraumatic stress disorder (PTSD). The symptoms include re-experiencing of traumatic events as flashbacks and repetituous thoughts, avoidance of trauma-related memories and numbing of feelings and increased arousal evident in concentration problems and sleeping disturbances [Pynoos et al., 1996]. Among toddlers and preschoolers, PTSD symptoms may involve night terrors and ritualistic play [Scheeringa et al., 2003]. Research shows that although a majority of children experience severe distress after traumatic events, only a minority develops diagnosed or full-blown PTSD [Taylor and Chemtob, 2004].

The nature of trauma is important for the emergence of PTSD. As with adults, human made intentional abuse seems to be more traumatic than natural disasters. About a quarter (17–25%) of children exposed to severe collective trauma, such as natural and technical disasters, suffer from PTSD, whereas among victims of interpersonal trauma such as sexual abuse the rate is considerably higher, ranging from 40 to 58% [Punamäki, 2008; Taylor and Chemtob, 2004]. In the chronic conditions of war and military violence in the Middle East, the PTSD prevalence has been documented to be 20–25% among children [Laor et al., 1997; Thabet et al., 2002a], but personal exposure to severe violence and losses can result in prevalence as high as 58–69% [Palestinian children: Elbedour et al., 2007; Thabet et al., 2002b] or 80% [Iraqi children: Dyregrov et al., 2002]. Similarly, research has revealed very high levels of PTSD among African children in Sudan [Morgos et al., 2008] and Rwanda [Schaal and Elbert, 2006]. This review concentrates on the consequences of traumatic events caused by armed conflicts. Children thus experience human-made trauma but in a less intimate context than family traumas. However, the consequences of military traumas are highly devastating including loss of close persons, demolition of home and witnessing of killing.

Furthermore, excessive fears and internalizing and externalizing symptoms are common consequences of traumatic events [Yule, 2000]. Among refugee children anxiety manifested itself by increasingly dependent behavior, e.g. clinging to parents and expressing fear of being left alone or fear of sleeping in the dark [Montgomery and Foldspang, 2005]. Traumatic events have especially negative impacts on regulative processes on cognitive (e.g. attention, memory and interpretation), emotional (soothing, recognition and expression) and functional (sleeping and eating) domains, which places traumatized children at increased risk for subsequent psychopathology [Maughan and Cicchetti, 2002]. As with adults, high co-morbidity between PTSD and depressive symptoms have been found among children [Thabet et al., 2004] and adolescents [Elbedour et al., 2007] exposed to war and military violence. Some research is available on war and military violence increasing children’s aggressive behavior [Kerestes, 2006; Qouta et al., 2008b]. A follow-up study among Bosnian children showed that severe war trauma in preschool age predicted aggression in adolescents, evidently due to difficulties in emotional regulation and impulse control [Kerestes, 2006].

Concentration on psychiatric disorders such as PTSD among children facing war trauma and military violence has been criticized from two somewhat opposite aspects, the one minimizing and the other maximizing the possible trauma impacts. The first critics note that the focusing solely on diagnoses, pathologies and distress ignores children’s capacity to endure and reconstitute their lives with a positive meaning. Victimizing, individualizing and medicalization of exposed children distracts the focus from their sense of empowerment, resilience and natural potential for recovery. Subsequently, the real source of adversity, such as political injustice and human right abuse, is forgotten and individuals are considered responsible for their suffering [Summerfield, 2002]. The other critics consider a symptom-focused approach too narrow and emphasize the comprehensive developmental impacts of trauma, which can be both negative and positive. Informed analyses should rather delineate the underlying mechanisms through which trauma may find its way into children’s cognitive and emotional development, coping strategies and social activity, e.g. world view, memory, emotion regulation and family and peer relations. Knowledge
about interactions between trauma and multilevel developmental processes is more crucial than the levels of PTSD in contributing to the tailoring and timing of effective preventive interventions [for review, Punamäki, 2006].

**Traumatic Experiences and Cognitive, Emotional and Social Development**

Researchers agree that exposure to trauma alone is seldom sufficient to explain mental health problems, but various protective and risk factors mediate and moderate the trauma impact [Yule, 2000, 2002]. Traumatic experiences have negative effects on the cognitive, emotional and social development of a child and through these changes children’s mental health is at risk. On the other hand, some domains may remain intact and serve as protective factors for mental health. Risks vs. protective factors in conditions of armed conflict have traditionally been conceptualized as related to children themselves, family relations and societal support [Durakovic-Belko et al., 2003; Punamäki, 2006]. Concerning children themselves, cognitive characteristics have mostly been studied, whereas emotional processes such as regulation, expression and recognition of emotions are ignored. Research is still scarce about societal and ideological protective factors, although social cohesion and ideological commitment are routinely expected to protect children’s mental health [Baker and Shalhoub-Kevorkian, 1999].

Theoretically, the biased and narrowed memory and attention processes and impaired problem-solving skills are considered the core issues in negative consequences of trauma [Feeny et al., 2004]. Trauma has been found to impact especially negatively verbal functioning and prefrontal executive skills in adults [Brewin and Andrews, 2000; Dickie et al., 2008]. Findings among Lebanese children revealed that also traumatized adolescents showed cognitive deficiencies in verbal tasks, but not in performance tasks in IQ tests [Saigh et al., 2006]. Some evidence is available of traumatized children having narrowed autobiographic memory expressed in less integrated and accurate personal episodic memories [Howe et al., 2004]. Dybdahl [2001a] found that 5- to 6-year-old war-traumatized Bosnian children showed lower level of cognitive competence than normative data, the majority falling under the lowest performance quartiles. Among Palestinian children exposure to severe losses, wounding and home destruction was associated with impaired cognitive capacity for attention and concentration [Qouta et al., 1995], which then predicted increased PTSD and depressiveness in adolescence [Punamäki et al., 2007]. Maltreated children in peaceful societies have been found to show biased and poor recollection, especially of narrative episodes [Howe et al., 2004], to have disturbances in attention, and generalized vigilance and hyperawareness of danger [Shields and Cicchetti, 1998].

It is important to note that the cognitive functions that trauma tends to impair are exactly those that are extremely important in protecting children’s mental health. Narrative, episodic and verbal memory is essential in integrating traumatic experiences as a part of normal life history, but the impairment of the verbal memory interferes with successful integrative processing of trauma. Flexible, comprehensive and rich cognitive performance is known to enhance recovery from trauma, but severe trauma has been found to be associated with inflexible and narrowed attention and problem-solving strategies [Qouta et al., 2001]. Furthermore, planning, using multiple strategies, and inhibiting maladaptive and biased thoughts and emotions enhance recovery in life-endangering conditions, and again precisely these processes are disrupted by traumatic experiences, thus forming a vicious circle in child development [Qouta et al., 2008a].

The association between trauma and family relations is twofold. First, exposure to trauma affects family functioning, and both negative and positive impacts have been proposed. At the negative end, research has revealed conflicting and withdrawn relations in traumatized veteran families [Byrne and Riggs, 1996; Orcutt et al., 2003] due to overburdening and inability of the members to share their experiences. In Palestinian families exposed to severe military violence, children perceived their parents as highly punitive, rejecting and controlling [Punamäki et al., 1997]. However, the idea of positive trauma impact on social relations is based on the expectations that in traumatic conditions, people are drawn together in order to survive, which serves as a social buffer [Baker and Shalhoub-Kevorkian, 1999; Smith et al., 2002]. Empirical evidence is not, however, available to support the positive impacts of war trauma on social relations. Second, the quality of the family functioning moderates the child’s vulnerability to trauma. Researchers agree that safety, caring and support within families are important protectors of children’s mental health. Supportive and guiding parenting styles were found to predict low levels of PTSD and emotional distress among children despite severe military trauma [Thabet et al., 2007].

*Aggr. Behav.*
The impact of war and violence on peer and sibling relations has scarcely been studied. Paardekooper et al. [1999] found that Sudanese children exposed to the atrocities of civil war were less satisfied with their social network than children who were spared such exposure, and Howard and Hodes [2000] showed that refugee children in Europe enjoyed less support from friends than native and non-refugee immigrant children. A study among Palestinian children revealed that severe military trauma was associated with low quality of friendship, especially among girls and younger children, and with high level of sibling rivalry. Importantly, optimal friendships and siblingships could protect children’s mental health from negative trauma consequences [Peltonen, Qouta, El Sarraj, and Punamäki, submitted].

Classifications of Preventive Interventions

Traumatic events related to armed conflicts typically cause suffering for a large number of children, who, however, vary greatly in their vulnerability to mental health and developmental problems. Therefore, sophisticated analyses of aims, targets and philosophy of preventive interventions and treatments are of importance. The conceptual phases of preventive interventions can provide insights for theoretical approaches, criteria for target groups and effectiveness of outcomes in analyzing interventions among children in armed conflicts.

Classic prevention models identified three kinds of disease prevention: primary, secondary and tertiary [Commission of Chronic Illness, 1957]. Primary prevention seeks to decrease the number of new cases of a medical disorder, while secondary prevention aims at reducing the rate of established cases of the medical disorder in the population. The function of tertiary prevention is to alleviate suffering and reduce the amount of disability among people already diagnosed with medical disorder. The next generation of prevention models, proposed by Gordon [1983], involved a three-stage system of preventive interventions with medical disorders, conceptualized as universal, selective and indicated. These two classification systems for chronic illnesses served as the basis for the conceptualization of preventing mental health problems and other human suffering. A classification system of preventive interventions that is particularly designed for mental disorders was presented by the Institution of Medicine [IOM, 2001] in 1994.

Primary and universal preventions are targeted at all members within normal population who show no disorders but may be eligible for or prone to their onset. Applied to children and families in armed conflict, examples of the universal prevention are support and psychoeducation provided parents through public health care services. The information can include e.g. leaflets about normal and alarming trauma responses among children and adolescents. All school children in turn can participate in psychoeducation providing tools how to deal with painful and frightening trauma memories. They learn to recognize their own bodily and mental fear responses, regulate arousal and calm down.

Secondary and selective preventions focus on subgroups of populations whose risk of becoming ill is above average, i.e. in our case, children with high risks for PTSD, depression and developmental problems in war conditions. They can involve children exposed to especially harsh trauma such as witnessing family members being killed and home demolition. Orphans and children with parallel stressors such as family members’ somatic or mental illness and financial losses also belong to the vulnerable subgroup. Their preventive interventions would include more trauma-focused cognitive-behavioral processing and a variety of recovery techniques and tools such as guided inner speech, narration and relaxation.

The third and indicated preventive interventions emerge when there are minimal but detectable signs or symptoms foreshadowing mental disorder or biological markers indicating predisposition to mental disorder. Concerning our trauma victims, intensive research is ongoing concerning early signs and biological risk markers such as changed stress hormones of HPA-axis [Yehuda, 2002], startle response [Shalev and Peri, 2000] and heart rate [Halligan et al., 2006]. There is evidence that among children, the initial levels of stress hormones may help to distinguish those who are at heightened risk of PTSD [Delahanty et al., 2005].

Klingman [2001] developed an extension of the IOM classification focusing specifically on the prevention of PTSD among children exposed to community violence. The model is tailored to school settings and includes various levels of intervention strategies such as anticipatory guidance with disaster planning, simulation techniques for symptom management and treatment for children with PTSD and prevention techniques for those at risk of relapses. Klingman’s model is remarkable because it also includes routinely scheduled screenings in schools located in violent areas. The model aims at identifying children with both
generalized stress reactions and sub-threshold PTSD and to work intensively with children with full-blown PTSD.

The Workgroup for Mental Disorders Prevention Research [NIMH, 1998] suggested that the domain of prevention research should be expanded beyond “primary prevention.” The prevention should also be focused on disorder relapse, recurrence and comorbidity of symptoms. Preventive intervention trials could thus involve individuals with psychiatric diagnoses in risk for relapse but without any current disorder symptoms and those with subclinical symptoms. When applying the NIMH model into children traumatized by war and military violence, the focus on care and interventions should be segmented involving, first, children already suffering from PTSD and other anxiety or depressive disorders, and, second, those with psychological and behavioral risk indications such as fragmented memories of traumatic events [van der Kolk, 1996] heightened psychophysiological arousal [Delahanty et al., 2005], peritraumatic symptoms and absence of social support [Ozer et al., 2004].

Finally, the “new generation” of preventive interventions emphasizes the specific and unique strengths and vulnerabilities of the target groups, and concentrates in enhancing protective underlying mechanisms and crucial healing elements. These interventions are typically based on manualized and empirically supported psychosocial treatments that are theoretically sound best practices. Interventions among children at risk are theory-based and tailored to enhance specific developmental achievements and family processes that are salient and at stake in developmental transitions [Brown and Liao, 1999; Durlak and Wells, 1997]. This is a fruitful approach when analyzing interventions among children traumatized by war and military violence. For instance, age-appropriate learning to regulate aggressive behavior is an important developmental task in toddlerhood, and exposure to violence may severely interfere with that development. At the peak of theoretical sophistications are evidence based and empirically validated best practices that help to maintain children’s optimal development. Three premises are important concerning the evidence-based preventive interventions. First, they address the importance of theoretical foundations, treatment portability and goodness of fit between services and clients. Second, they necessitate sophisticated experimental design demonstrating the efficacy. And third, the superiority to any other treatment should be demonstrated by different investigating teams [Chambless et al., 1998].

Aims of the Study

The literature review analyses the effectiveness of psychosocial preventive interventions and treatments and their theoretical base, techniques and tools among children exposed to trauma caused by armed conflicts. The literature reviewed focuses on preventing psychopathology and promoting optimal development among children living in conditions of war, military violence, terrorism and living as refugees. The first aim is to evaluate the effectiveness of preventive interventions to improve children’s mental health and enhance their emotional, cognitive and social development. The second task is to analyze the nature of the underlying mechanisms for success of preventive interventions and the theoretical premises of the choice of intervention techniques, procedures and tools.

METHOD

Eligible studies for the review reported interventions among children in conditions of war, military violence, terrorism and living as refugees published between 1980 and 2008. The keywords for the manual search for journal articles and other publications were: prevention, intervention, treatment, children, trauma, PTSD, mental health, child development, refugees, violence, military conflict, war and terrorism. To be included in the review, a study had to meet the following criteria: (a) the intervention or program should include systematic action for children with or without trauma symptoms for a limited time period, (b) primary foci are child and adolescent mental health, and psychological, social or behavioral development and functioning, (c) mean age of subjects less than 18, (d) participants are considered at risk for developing potentially serious mental health or developmental problems or currently have these problems, and (e) intervention description and possible results of effectiveness have been published in international scientific journals and book chapters.

To evaluate the effectiveness of preventive interventions, we applied meta-analysis and calculated and combined the effect sizes (ES) for the most commonly used outcome measure, namely PTSD. For experimental and quasi-experimental studies which include treatment and control groups, ES is defined as the difference between the mean scores of the treatment and control group mean scores following intervention, divided by the pooled harmonic standard deviation of the outcome scores of the two groups. We used the standardized mean
difference procedure described by Lipsey and Wilson [2001], which is commonly applied in meta-analyses. Data were analyzed for summary effects using Review Manager 4.2 software.

RESULTS

Intervention Features

According to the criteria and keywords 19 studies were identified that examined the effectiveness or described the content of psychosocial preventive interventions among children exposed to traumatic events caused by armed conflict. Ten studies were conducted among children exposed to war and military violence, six among refugee and traumatized immigrant children and three among children exposed to terrorist attacks. Three of the studies were descriptive in their nature (one conducted in conditions of war and military violence and two in terrorist attacks), while other 16 studies tested the effectiveness of preventive intervention. Majority of the studies on intervention and prevention effectiveness were published in this millennium.

Table I presents the details of the studies including participation, treatment type and intervention characteristics, theoretical basis and effectiveness findings. The majority of the studies among children in war and military violence were conducted during or after the wars in the former Yugoslavia, involving Croatian [Woodside et al., 1999] and Bosnian children [Barath, 2000; Dybdahl, 2001a,b; Layne et al., 2001, 2008]. Three studies were conducted in Africa [Bolton et al., 2007; Onyut et al., 2005; Schauer et al., 2004], two in the Middle East [Berger et al., 2007; Thabet et al., 2005] and one in Asia [Chase et al., 1999]. The refugee children participating in preventive interventions in their new home countries were from these main conflict areas. Two studies are available on the preventive interventions and treatments of victims of the 9/11 terrorist attack [Brown et al., 2006; Silva et al., 2003] and one of the victims on the Oklahoma City bombing [Call and Pfefferbaum, 1999].

The sample sizes in the studies reviewed ranged between a single case study [Vickers, 2005] to a community sample of 450 war-affected families [Barath, 2000]. The duration of the reported interventions was typically 2–6 months, involving 1–2 weekly sessions. The number of sessions varied between 4 and 20. Five of the studies reported 16 sessions [Bolton et al., 2007; Brown et al., 2006; Silva et al., 2003; Vickers, 2005; Woodside et al., 1999].

In most of the studies (14 of 19) children themselves were the only participants in preventions and interventions. In two interventions, parents were provided psychoeducation about normal and risk-indicating trauma response and encouraged to apply optimal ways of coping with children’s problems and symptoms [Berger et al., 2007; Call and Pfefferbaum, 1999]. In the intervention program by O’Shea et al. [2000], parents participated in sessions where they shared experiences and information, how to enhance children’s adjustment. In interventions by O’Shea et al. [2000] as well as Möhlen et al. [2005], parents could also participate in family therapy sessions together with their children. One of the interventions focused only on parents and aimed at improving their mental health and increasing their resources, empowerment and understanding of developmental consequences of war trauma, which was expected to be reflected in optimal child well-being and development [Dybdahl, 2001a,b].

Effectiveness of Interventions

The research aim of the 16 studies was to examine the effectiveness of interventions. Ten studies reported decrease in PTSD symptom or diagnostic scores as an outcome of intervention. However, only four of them [Berger et al., 2007; Ehnholt et al., 2005; Layne et al., 2008; Thabet et al., 2005] were eligible for the formal meta-analytic calculation of the overall effect size of PTSD decrease. The reasons for exclusion of seven studies were as follows: Woodside et al. [1999] offer no numeric data concerning PTSD. Schauer et al. [2004] and Vickers [2005] were case studies, the study by Onyut et al. [2005] had only four subjects in pos-intervention setting, and Layne et al. [2001] compared the effectiveness between full vs. partial treatment. Two studies [Barath, 2000; Möhlen et al., 2005] used a pre–post intervention setting without a control group. Out of four eligible studies, two had randomized and two nonrandomized control groups. The total number of participants in the four studies included in the meta-analysis was 198 in experimental group and 186 in control group.

Given the statistical heterogeneity between the four studies included, we used the Random effects model, which assumes that the true treatment effects in the individual studies may be different from each other. The results of the effect sizes (ES) are presented in Table II. ES estimates are interpreted by their positive or negative value. Negative ES values reflect the change in dependent variable.
<table>
<thead>
<tr>
<th>Author and intervention</th>
<th>Sample: Participants</th>
<th>Intervention:</th>
<th>Site</th>
<th>Mean age (SD)</th>
<th>Aims and criteria of effectiveness</th>
<th>Techniques and tools</th>
<th>Theoretical basis</th>
<th>Effectiveness: decreased symptoms and increased resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>[Woodside et al., 1999] Health to Peace Initiatives</td>
<td>251 war-affected children (n for intervention and control groups not reported)</td>
<td>During 4 months, weekly, 2 hr training sessions as a part of curriculum</td>
<td>Schools in Croatia</td>
<td>11.9 (0.6) years</td>
<td>Promoting trauma-healing and non-violent conflict resolution</td>
<td>Universal</td>
<td>Psychoeducation of reactions and symptoms</td>
<td>Decrease in PTSD</td>
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<tr>
<td></td>
<td>Symptom severity not known</td>
<td>Non-randomized assignment to intervention and control groups</td>
<td></td>
<td></td>
<td>Reducing ethnic bias</td>
<td></td>
<td>Exploring ethnic biases and prejudices: discussion of “creative conflict resolution”</td>
<td>Increase in self-esteem in girls</td>
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<td></td>
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<td>Pre-, post-, and one year follow up assessments</td>
<td></td>
<td></td>
<td>Informing on human rights</td>
<td></td>
<td>Trauma processing: recognizing traumatic experiences</td>
<td>Protective role of good classroom</td>
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<td></td>
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<td>Manual (5)</td>
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<td>Communication skills</td>
<td>Psychosocial climate</td>
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</table>

| [Chase et al., 1999] Health-Peace Initiative | 150 war-affected children | Weekly sessions for 6–9 month including play and creative arts; one-on one sessions with personal storytelling and healing meditation rituals | Schools and orphanages in Sri Lanka | Age not known | Trauma healing at the child level and peace-building at the community level | Universal | Promoting sense of fearlessness, dignity and hope and re-inspire creativity via open communication and engagement in creative activities | None |
|                         | Symptom severity not known | No research setting | | | | | Trauma healing conceptualized as “health initiative” and non violence and ethnic bias reduction as “peace initiative” | |
|                         | | | | | | | (3) | |

<p>| [Dybdahl, 2001a,b] Psychosocial intervention | (a) 42/(b) 45 war-affected internally displaced mother-child dyads | During 5 months, weekly, 2 hr sessions of group meetings &amp; semistructured discussions with mothers, home visits | Community center and homes in Bosnia | 5.5 (0.7) years | Promoting emotional, social and intellectual development and well-being of young children | Universal | Psychoeducation for mothers, including recognition of trauma symptoms in children | Increase in children’s cognitive performance |
|                         | High vs. low maternal depression | Random assignment to intervention and control groups | | | | | Promoting mother’s understanding of her own and children’s well-being | Decrease in children’s psychological problems |
|                         | Community center and homes in Bosnia | Pre- and post-tests | | | | | Enhancement of self-confidence &amp; ability to care children. | |
|                         | 5.5 (0.7) years | Manual (4) | | | | | Enhancement of communication | Increase in mothers trauma symptoms |
|                         | | | | | | | | Increase in mothers life satisfaction |
|                         | | | | | | | | Increase in mothers perceived social support |</p>
<table>
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<tr>
<th>Author and intervention</th>
<th>Sample: Participants</th>
<th>Symptom severity</th>
<th>Site</th>
<th>Mean age (SD)</th>
<th>Intervention: Frequency, Duration and Method</th>
<th>Intervention type and quality of evidence</th>
<th>Aims and criteria of effectiveness</th>
<th>Techniques and tools</th>
<th>Theoretical basis</th>
<th>Effectiveness</th>
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<td>[Schauer et al., 2004]</td>
<td>1 war-affected Somali boy</td>
<td>Diagnostic level of PTSD</td>
<td>Refugee camp in Uganda</td>
<td>13 year old</td>
<td>During 3 week period, 4, 1-1.5 hr sessions of brief psycho-education and individual sessions of Narrative Exposure Therapy</td>
<td>Indicated Pre- and post-tests (6)</td>
<td>Reducing PTSD symptoms</td>
<td>Trauma processing: Constructing the narrative of the event and its consequences, re-experiencing emotions, reconstruction of traumatic memory and habituation to the emotional response of traumatic memory</td>
<td>Principles of cognitive behavioural exposure (3)</td>
<td>Decrease in PTSD symptoms to a degree below diagnostic level (3)</td>
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<tr>
<td>[Onyut et al., 2005]</td>
<td>6 war-affected children</td>
<td>Moderate to severe PTSD and four of the six clinically significant depression</td>
<td>Refugee camp in Uganda</td>
<td>13-17 years</td>
<td>4-6, 1-2 hr sessions of brief psycho-education and individual sessions of Narrative Exposure Therapy</td>
<td>Indicated Pre- and post-tests, and 9-month follow-up without control group (6)</td>
<td>Reducing PTSD symptoms</td>
<td>Trauma processing: Constructing the narrative of the event and its consequences, re-experiencing emotions, reconstruction of traumatic memory and habituation to the emotional response of traumatic memory</td>
<td>Principles of cognitive behavioural exposure (3)</td>
<td>Decrease in PTSD symptoms. At 9-month follow-up four of the six patients no longer met the criteria of PTSD Decrease in depression symptoms. At the post-test or 9-month follow-up none met the criteria of depression (1)</td>
</tr>
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<td>[Thabet et al., 2005]</td>
<td>(a) 47/(b) 22/(c) 42 war affected Palestinian children</td>
<td>Mild, moderate and severe PTSD</td>
<td>Refugee camps in Gaza</td>
<td>11-12 years</td>
<td>(a) 7 weekly sessions of group crisis intervention, (b) four teacher education training sessions, (c) no intervention</td>
<td>Indicated Non-randomized assignment to intervention, education-or no intervention groups Pre-and post-test (5)</td>
<td>Reducing PTSD and depressive symptoms</td>
<td>Trauma processing: Reframing trauma Processing thoughts &amp; emotions Psychoeducation of symptoms &amp; risks</td>
<td>Critical Incident Stress Management (CISM) (3)</td>
<td>No effect on PTSD or depression symptoms</td>
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<tr>
<td>[Berger et al., 2007]</td>
<td>(a) 70/(b) 72 children with various levels of terrorism related distress</td>
<td>7,8% clinical PTSD</td>
<td>7,8% clinical PTSD</td>
<td>(a) 8, 90-minute sessions of Classroom based OTT and two psychoeducation</td>
<td>Universal Random assignment of classes to intervention</td>
<td>Helping symptomatic children Enhancing students' Psychoeducation for children and parents Enhancement of coping skills, body- and emotional awareness</td>
<td>Cognitive behavioural components Techniques from art therapy, body oriented strategies</td>
<td>Decrease in PTSD, somatic complaints, generalized anxiety and separation anxiety (1)</td>
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<td>Study</td>
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<td>Intervention Description</td>
<td>Sample Characteristics</td>
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<td>Bolton et al., 2007</td>
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<td>Interpersonal Psychotherapy vs. Creative Play</td>
<td>High level of depression</td>
<td>Reducing depression and improving functioning</td>
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<td>(a) 105</td>
<td>(b) 105</td>
<td>(c) 104 war-affected children in Uganda, 14-17 years</td>
<td>Indicated Random</td>
<td>(a) Identifying interpersonal problems, and assisting individuals in</td>
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<td>assignment to</td>
<td>building skills to manage these problems</td>
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<td>psychotherapy sessions</td>
<td>(b) Strengthening resilience by verbal and non verbal expression of</td>
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<td></td>
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<td></td>
<td>, (b) weekly, 1.5-2 hr</td>
<td>thoughts and feelings through age appropriate creative activities +</td>
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<td></td>
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<td></td>
<td>sessions of Creative play,</td>
<td>postactivity group discussions focusing on building skills</td>
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<td>(c) no intervention</td>
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<td>Manual (4)</td>
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<tr>
<td>Layne et al., 2001</td>
<td>55</td>
<td>School-based trauma- &amp; grief-focused programme</td>
<td>Moderate to severe PTSD</td>
<td>Decrease in PTSD, grief and depression</td>
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<td></td>
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<td>symptoms &amp; grief or depression</td>
<td>Indicated Pre- and post-</td>
<td>Positive goals Ecologically &amp; developmentally based formulations of</td>
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<td></td>
<td></td>
<td></td>
<td>Schools in Bosnia, 17.05 (1.17) years</td>
<td>tests without control</td>
<td>post-traumatic adjustment</td>
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<td></td>
<td>group, but including full</td>
<td>Increase in psychosocial adaptation</td>
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<td></td>
<td>vs. partial treatment</td>
<td>No significant effects of full vs. partial treatment</td>
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<td>Manual (6)</td>
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<tr>
<td>Layne et al., 2008</td>
<td>(a) 66</td>
<td>(b) 61</td>
<td>war-affected adolescents</td>
<td>Indicated Random</td>
<td>Stress reduction and relaxation</td>
<td></td>
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<tr>
<td>Classroom-based Psychoeducation and Skills Intervention and School-based trauma &amp; grief-focused programme</td>
<td></td>
<td></td>
<td>Severe symptoms of PTSD, depression or traumatic grief and significant functional impairment</td>
<td>assignment to intervention- and control groups Pre- and post- and 4-month follow-up assessments Manual (4)</td>
<td>Trauma processing: Reprocessing trauma experience, meaning making, framing and sequencing</td>
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<td></td>
<td></td>
<td></td>
<td>Schools in Bosnia, 15.9 (1.11)/16.0 (1.13) years</td>
<td>Reducing PTSD, depression and grief Facilitating positive psychological adjustment Promoting healthy developmental progression Psychosocial formulation of symptoms and risks</td>
<td>Grief processing Constructive problem-solving Thought and emotion regulation</td>
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</tbody>
</table>
|                                                                     |       |       |                                             | Stress reduction and relaxation Trauma processing: Reprocessing trauma experience, meaning making, framing and sequencing Grief processing Constructive problem-solving Thought and emotion regulation | Positive goals Ecologically & developmentally based formulations of post-traumatic adjustment (2) | Decrease in PTS, grief & depression symptoms | Decrease in PTSD and depression in post- and 4 month follow-up assessments in both groups (stronger improvement in intervention group) Decrease in maladaptive grief reactions in intervention group (1)
TABLE I. Continued

<table>
<thead>
<tr>
<th>Author and intervention</th>
<th>Sample: Participants</th>
<th>Intervention: Frequency, Duration and Method</th>
<th>Intervention type and quality of evidencea</th>
<th>Aims and criteria of effectiveness</th>
<th>Techniques and tools</th>
<th>Theoretical basisb</th>
<th>Effectiveness: decreased symptoms and increased resourcesc</th>
</tr>
</thead>
<tbody>
<tr>
<td>Call and Pfefferbaum, 1999; Pfefferbaum et al., 1999; Pfefferbaum et al., 2003</td>
<td>Project Heartland, community mental health program</td>
<td>Crisis counselling and support Psychoeducation for teachers and parents Education for victims of terrorism</td>
<td>Universal No systematic evaluation of effectiveness</td>
<td>Intervening in the short to medium term with victims of Oklahoma City bombing showing social and mental health</td>
<td></td>
<td>None</td>
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<tr>
<td>Silva et al., 2003</td>
<td>The Skills Training in Affect and Interpersonal Regulation with Narrative Story Telling program (STAIR/NST)</td>
<td>16 individual or group therapy sessions (STAIR/NST) based on Cognitive Behavioral therapy</td>
<td>Universal Helping persons exposed to 9/11 terrorist attacks</td>
<td>Trauma processing: Making meaning of trauma history Labelling &amp; mastery of emotions Evaluating the impact on sense of self and the world Self-esteem and efficacy building Sense of competence Coping resources Training emotion regulation and interpersonal skills</td>
<td></td>
<td>None</td>
<td></td>
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<tr>
<td>Brown et al., 2006</td>
<td>Two-step, school-based trauma intervention</td>
<td>63 children exposed to World Trade Center Attack Diagnostic level of PTSD (n = 22), no PTSD (n = 40) School in New York 10.3 (1.5) years</td>
<td>During 10 weeks, ten sessions of classroom intervention with skill-training Cognitive Behavioral Therapy: Six individual therapy sessions for those who were still with PTSD Selective AND Indicated (step-wise intervention) Classroom intervention Classroom intervention was open trial with no group assignment</td>
<td>Classroom intervention: Reducing PTSD, anxiety, depression and aggression Classroom intervention: Decreasing PTSD, anxiety and depression and treatments of anxiety disorders (4) Classroom intervention: Decrease in PTSD among children who met criteria for PTSD</td>
<td>No reduction among those without PTSD Decrease in depression and anger Individual treatment: Decrease in PTSD, depression and anxiety Trend decrease in anger (1)</td>
<td></td>
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<tr>
<td>Study</td>
<td>Sample Description</td>
<td>Program Details</td>
<td>Findings</td>
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<tr>
<td>Barath, 2000</td>
<td>Total of 450 participants: refugees from Croatia, Bosnia and Herzegovina, also local residents, children and their parents and teachers</td>
<td>7–12, 2 hr sessions of group-based psychosocial aid modules with creative activities workshops Pre- and post tests (6) Stages of facilitating cultural and psychosocial adaptation, promoting children’s rights, social competence and moral sensibilities, improving societal atmosphere and attitudes, enhancing intergenerational understanding, and attachment in family Promoting children’s emotional and social well-being and symbolic processes</td>
<td>Decrease in PTSD by 38% Increase in mental health test scores by an average of 15% (13–18 year olds) (1)</td>
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<tr>
<td>O’Shea et al., 2000</td>
<td>14 refugee children from different countries Psychological difficulties and psychiatric disorders School in London, United Kingdom 9.6 (1.15) years</td>
<td>Parent appointment with professional Screening of adversity &amp; trauma Various treatments: family therapy and cognitive counseling Selective Pre- and post-tests without control group (6) Helping psychologically distresses refugee pupils</td>
<td>Cognitive work (case example) Social skills promoting (case example)</td>
<td>Decrease in psychological distress indicated by SDQ total scores (only 7 pupils in post-test) (2)</td>
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<tr>
<td>Lustig et al., 2004</td>
<td>3 Somalian adolescent refugees Symptom severity not known Clinical setting in Boston 17–18 years</td>
<td>3–9 sessions of Testimonial psychotherapy based on social and political aspects of trauma Indicated Post reports from participants and Social services and satisfaction survey as post-test Manual (7) Not explicitly mentioned</td>
<td>Improving cohesion in community Relaxation training Trauma processing: cognitive restructuring, meaning making &amp; distancing by narratives Identifying courage and intelligence that led to survival Enhancing a sense of agency &amp; counteracting feelings of powerlessness and inferiority Exploring feelings of sadness, fear and loss</td>
<td>Constructivist approach: Improvement of cognitive processing of experiences in social context Integrating trauma by assimilating own schemas or accommodating trauma Ecological &amp; transactional models of childhood trauma (1)</td>
<td></td>
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<tr>
<td>Author and intervention</td>
<td>Sample: Participants</td>
<td>Mean age (SD)</td>
<td>Site</td>
<td>Intervention: Frequency, Duration and Method</td>
<td>Intervention type and quality of evidence</td>
<td>Aims and criteria of effectiveness</td>
<td>Techniques and tools</td>
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<tr>
<td>Möhlen et al., 2005</td>
<td>10 war-affected Kosovan refugee children</td>
<td>13.3 (3.2) years</td>
<td>Refugee center in Germany</td>
<td>During 12 weeks, various 2–3 hr sessions of information, diagnosing, trauma- and grief focusing therapy, group-, individual- and family sessions</td>
<td>Universal Pre-and post test assessments without control group (6)</td>
<td>Alleviating emotional distress and improving psychosocial functioning</td>
<td>Trauma processing: verbalization of traumatic experience Creative methods of guided imagery, group discussions Relaxation Psychoeducation for parents</td>
</tr>
<tr>
<td>Vickers, 2005</td>
<td>1 war-affected African refugee girl</td>
<td>14 year</td>
<td>Child and adolescent mental health service in London, United Kingdom</td>
<td>Weekly, 16 one-hour sessions of Cognitive Behavioral Therapy with specific cognitive component</td>
<td>Indicated A case-study (7)</td>
<td>Treating PTSD</td>
<td>Trauma processing: Cognitive restructuring Differences between thought and feeling Identifying automatic thoughts Enhancing positive self-talk Sleep hygiene Information to parents</td>
</tr>
<tr>
<td>Ehntholt et al., 2005</td>
<td>(a) 15/(b) 11 war-affected refugee and asylum-seeking children from different countries 92% diagnostic level of PTSD and 20% diagnostic level of depression</td>
<td>Ages 12.47 (0.74)/13.46 (1.13) years</td>
<td>Two schools in London, United Kingdom</td>
<td>During six-weeks, weekly one-hour sessions of Cognitive Behavioral group therapy</td>
<td>Selective Non-randomized assignment to intervention- and control groups Pre- and post test and 2-month follow up Manual (5)</td>
<td>Treating PTSD</td>
<td>Psychoeducation Effective coping Relaxation Trauma processing: Multisensory control of intrusive trauma memories Emotion recognition &amp; regulation Fear management Sleep hygiene Activity scheduling</td>
</tr>
</tbody>
</table>
Quality of Evidence for Evaluating Preventive Interventions, grading based on Biglan et al. [2003]: Grade 1. Evidence from multiple well-designed, randomized, controlled trials or multiple well-designed, interrupted time-series experiments that are conducted by two or more independent research teams. And, in addition, evidence of effectiveness when the preventive intervention is implemented in its intended setting with adequate training of personnel and monitoring of implementation and outcomes. Grade 2. Evidence from multiple well-designed, randomized, controlled trials or multiple well-designed, interrupted time-series experiments that are conducted by two or more independent research teams. Grade 3. Evidence from multiple well-designed, randomized, controlled trials or multiple well-designed, interrupted time-series experiments that are conducted by a single research team. Grade 4. Evidence from at least one well-designed, randomized, controlled trial or an interrupted time-series design that is replicated across three cases. Grade 5. Evidence from comparisons between groups that are not effectively randomized to conditions. Grade 6. Evidence only from pre-post evaluation with no comparison group or repeated assessment on a single case for which an intervention is introduced at some point in the time series. Grade 7. Endorsement based on clinical experience by respected authorities, descriptions of programs and case reports.

Theoretical basis of choosing intervention methods and tools, according to Kok et al. [2004]: 1. General theories approach involves considering of general theories that may be applicable to the problem under consideration by using theories that the one is already familiar with; 2. Concept approach indicated by linking the list of answers i.e. concepts of provisional list of answers that were identified from the literature on theoretical constructs and theories that seem to be useful; 3. Issue approach, referring to searching literature for theoretical perspectives/approach on the issue or problem; 4. Literature search, referring to searching literature and resulting provisional list of answers.

Levels of statistical significances: 1, Statistically significant; 2, Tendencies, statistically nonsignificant; 3, The impact not measured statistically.

TABLE II. Standardized Mean Difference Effects Sizes and 95% Confidence Intervals for Intervention and Its Effect on PTSD

<table>
<thead>
<tr>
<th>Study or subgroup</th>
<th>Experiment</th>
<th>Control</th>
<th>Std.mean difference</th>
<th>Std.mean difference</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Total</td>
<td>Weight</td>
</tr>
<tr>
<td>Berger et al., 2007</td>
<td>13.9</td>
<td>7.8</td>
<td>70</td>
<td>28.2%</td>
</tr>
<tr>
<td>Ehntholt et al., 2005</td>
<td>33.8</td>
<td>9.71</td>
<td>15</td>
<td>17.0%</td>
</tr>
<tr>
<td>Layne et al., 2008</td>
<td>24.52</td>
<td>13.61</td>
<td>66</td>
<td>28.3%</td>
</tr>
<tr>
<td>Thabet et al., 2005</td>
<td>28.3</td>
<td>13.4</td>
<td>47</td>
<td>26.6%</td>
</tr>
<tr>
<td>Total (95% CI)</td>
<td>28.3</td>
<td>13.4</td>
<td>198</td>
<td>100%</td>
</tr>
</tbody>
</table>

Heterogeneity \( \chi^2 = 14.50, df = 3 (P = .002); I^2 = 79\%

Test for overall effect: \( Z = 0.26 (P = .02) \)
(PTSD), which favors experimental group, whereas positive ES values reflect a change in the dependent variable, which favours control group. The average effect size for PTSD change was evaluated using Cohen’s [1988] widely used criteria of .20 being the smallest effect size that has any significant practical or clinical meaning, with three specific categories or levels of power: small (.20 to .49), medium (.50 to .79) and large (.80 and higher).

Results in Table II demonstrate that interventions of Berger et al. [2007] (Cohen’s $d = -1.05$) and Ehntholt et al. [2005] (Cohen’s $d = -0.85$) showed a large power of positive changes in PTSD among experimental group compared to control group, whereas interventions of Layne et al. [2001] and Thabet et al. [2005] showed a small power. The confidence intervals for effect sizes of the two studies with small power included zero, indicating that the associated effectiveness cannot be warranted. Although the weighed mean effect size (Cohen’s $d = -0.56$, $Z = 2.26$, $P = .02$) implies a significant result favouring experimental group, the strong contextual and statistical heterogeneity ($\chi^2 = 14.50$, $P < .01$) hinders us to reliably summarize the effects of the four studies. Taken together, we can observe that the conclusion of effectiveness was somehow different according to researcher-reported results and meta-analysis. There is evidence for arguing that preventive interventions decrease children’s PTSD in conditions of armed conflict. The conclusions can, however, be undermined due to inappropriate research settings according to the meta-analytic criteria.

Table I further suggests that a number of interventions were effective in reducing other mental health problems among children in armed conflict. Results were positive for outcomes of depression [Bolton et al., 2007; Brown et al., 2006; Kataoka et al., 2003; Layne et al., 2001; Möhlen et al., 2005; Onyut et al., 2005], anxiety and behavioral problems [Berger et al., 2007; Ehntholt et al., 2005; Möhlen et al., 2005; O’Shea et al., 2000]. Bolton et al. [2007] for example showed that interpersonal group psychotherapy for war-exposed children was effective for depression symptoms. Depression scores among adolescent girls in group psychotherapy showed significant decrease compared to scores in control- and creative play-groups.

The choice of techniques and tools that were used across the interventions implicitly refer to a wide variety of cognitive, emotional and social processes explaining successful recovery from trauma, and thus mediating between the interaction and mental health outcomes. Very few, however, examined the effectiveness of the intervention to impact these processes, and none of them formally tested the mediation mechanisms. Results show that a family-focused intervention among Bosnian war-traumatized families was marginally effective in improving children’s cognitive performance [Dybdahl, 2001a,b]. Another study evidenced intervention effectiveness in increasing girls’ self-esteem and positive attitudes toward the enemy among war-traumatized Croatian children [Woodside et al., 1999]. Vickers [2005] reported that in her single case study the applied CBT intervention resulted in thorough positive changes in the participating boys’ social development and his family’s interactional quality. These results concur with the argument that in addition to reducing mental health problems, it is also important to enhance resources, resilience and positive attitudes among traumatized children [Barenbaum et al., 2004; Punamäki et al., 2007].

Quality of Effectiveness Evidence

To assess the quality of evidence for the effectiveness of the preventive intervention, we applied a 7-grade classification by Biglan et al. [2003] that depicts “the golden rules” of evaluating the validity of conclusions on therapy effectiveness. The criteria include issues such as the degrees of random assignment, use of a control group, sustainability of positive results and fidelity of implementations of the effective treatments, thus extending the meta-analytical requirements. The requirements for each quality grade are presented in the footnote of Table I. For instance, at best Grade 1 conclusions about effectiveness are based on evidence from multiple well-designed, randomized and controlled trials or multiple well-designed, interrupted time-series experiments conducted by two or more independent research teams. In addition, there must be adequate documentation that the preventive intervention has been implemented in its intended setting with adequate training of personnel and monitoring of implementation and outcomes.

The results of our review suggest that none of the studies reviewed could provide evidence for Grades 1, 2 or 3. Without replication of their studies Berger et al. [2007], Bolton et al. [2007], Dybdahl [2001a,b], and Layne et al. [2008] achieved the Grade 4, for which evidence is required from at least one well-designed randomized and controlled trial. Studies by Ehntholt et al. [2005], Thabet et al. [2005] and Woodside et al. [1999] provided evidence at Grade 5, indicating that they draw evidence from comparisons between groups that were not, however,
effectively randomized to treatment and non-treatment conditions.

Table I shows that the available evidence on preventive interventions among children in armed conflicts is typically based on Grade 6, indicating pre- and post-evaluations of changes in symptoms or other relevant outcomes in only one intervention group [Barath, 2000; Brown et al., 2006; Layne et al., 2001; Möhlen et al., 2005; Onyut et al., 2005; O’Shea et al., 2000; Ovaert et al., 2003]. The study by Lustig et al. [2004] based on clinical experience, and Vickers [2005] reported a case study, and their provided evidence of the treatment efficiency is at Grade 7.

Four out of 16 studies had follow-up in addition to the pre–post-intervention assessments. Children’s symptoms were measured after one year [Woodside et al., 1999], nine months [Onyut et al., 2005], four months [Layne et al., 2008] and two months [Ehntholt et al., 2005] after the intervention.

Techniques, Tools and Underlying Mechanisms

There was a considerable variation in the techniques and tools applied in the psychosocial preventive interventions among children exposed to war, military violence, terrorism and refugees. Group therapies based on cognitive behavioral therapy (CBT) were the most common modes. Seven studies reported the effectiveness of standard CBT or trauma- and grief-focused CBT group therapies. Different forms of creative therapies such as storytelling, playing and fantasizing were applied to treat war-traumatized children in two studies [Barath, 2000; Chase et al., 1999]. Psychoeducative modules were common and they were typically applied as a part of the CBT or creative intervention methods. For instance, the interventions studied by Call and Pfefferbaum [1999], Thabet et al. [2005], and Vickers [2005] included information about children’s common trauma responses, psychiatric symptoms and age-salient ways of understanding trauma. Narrative approach was either applied as the main technique of intervention [Onyut et al., 2005] or combined with other methods [Chase et al., 1999; Lustig et al., 2004]. The narrative techniques typically involved ways of restructuring fragmented memories into coherent trauma stories and multisensory integrative training methods.

All the interventions were based on knowledge of protective factors and cognitive-emotional and behavioral mechanisms that are found to contribute to children’s symptom formulation in traumatic conditions. First, majority of the interventions (16 out of 19) focused either wholly or partly on promoting children’s cognitive skills and effective trauma processing. The techniques included correcting of biased interpretations and enhancing constructive reasoning and problem solving. Further, cognitive-emotional exercises involved new ways of making sense of trauma, adequate framing of traumatic memories and causal attributions, empowering coping skills and integrating of fragmented and intrusive thoughts and feelings into a more coherent experience.

Second, many of the interventions (12 out of 19) focused either wholly or partly on negative emotions such as grief, anger, guilt and fear. Various methods were applied to enhance adaptive recognition, expression, regulation and re-processing of painful, shameful and unrecognized feelings. Seven interventions involved behavioral aspects in alleviating negative trauma impacts. For instance, children were familiarized with relaxation techniques and good sleep habits and primed for their daily functioning by mapping fear-evoking events and building safe havens or setting and attaining positive goals [Layne et al., 2001].

Third, less than half (7 out of 19) interventions focused on improvement of social relations in terms of promoting social support and problem solving as well as open communication. This was done, for example, by re-enacting conflicting social situations with introducing new aspects and clarifying both positive and negative consequence.

Fourth, 4 out of 19 interventions aimed at encouraging rich, structurally coherent and healing symbolic processes by using, for instance, guided imagery, play and dream work. And finally, 5 out of 19 interventions applied techniques that aimed at positively affecting the societal level of protectors, for example, by promoting a sense of justice and community cohesion and providing information on children’s trauma reactions for teachers and other adults.

Explicit Nature of Theoretical Basis

To assess the theoretical basis of interventions, we applied a classification by Kok et al. [2004] that depicts how successfully the intervention methods and tools are linked in theoretical background.

The use of general developmental theories as a source of intervention techniques and tools was explicitly expressed in four of the reviewed studies [Barath, 2000; Dybdahl, 2001a; Lustig et al., 2004;
Vickers, 2005]. The intervention by Dybdahl [2001b] focused on systematically encouraging and teaching parents to apply new and healing interactive skills with their traumatized children. The step-by-step guidance and intensive emotional support helped the mothers to create a warm family environment and was based on determinants of healthy child development. Barath [2000] used the principles of multi-ethnic community development and the interpersonal social work paradigm as theoretical criteria for choosing various intervention techniques, such as promoting children’s rights, social competence and moral sensibilities. Vickers’s [2005] single case study on PTSD treatment was well-designed and insightfully conducted, and provides an example of clear theoretical articulation of underlying theory, applied tools and methods. She expanded the cognitive-behavioral model [Ehlers and Clark, 2000] by emphasizing age- and experience-salient cognitions and based the therapy on the trauma survivor’s (8-year-old refugee boy) personal meanings and beliefs. Lustig et al. [2004] employed the constructivist approach and ecological and transactional models of childhood trauma [Cicchetti and Lynch, 1993]. The constructivist approach to improve children’s cognitive processing of trauma included techniques focused on integrating painful memories by assimilating victims’ own schemas to fit into the new shattering experience or/and accommodating traumatic memories by giving them new meanings and emotional color. Application of ecological and transactional model indicates that the different spheres of youngster’s world and the interaction between them were acknowledged and the testimonial narratives as a product of the intervention can exert effects at the community level.

Layne et al. [2001] based their interventions on the developmental psychopathology framework applied to trauma victims and their posttraumatic adjustment by Pynoos et al. [1995]. It outlines various therapeutic foci such as trauma reminders, specific postwar adversities and developmental progression. The participants were Bosnian children and their specific war and refugee experiences and their meaning formed the context of psychological processing. Children were guided and encouraged to work through the reminders of their traumatic experiences and losses by mapping the frightening reminding cues in their everyday lives and training their skills to recognize their own reactions and helping them to attenuate arousals.

Most interventions employed manualized modules developed in the trauma field. For instance, Ehnholt et al. [2005] used Teaching Recovery Techniques and the intervention by Thabet et al. [2005] was broadly based on Critical Incident Stress Management [CISM; Everly and Mitchell, 1999] and adjusted to the trauma caused by military violence. Silva et al. [2003] based the development of their intervention tools on the Skills Training in Affect and Interpersonal Regulation and Narrative Story Telling (STAIR/NST). Cognitive intervention techniques were applied by Onyut et al. [2005], whose focus was on cognitive behavioural exposure. Two interventions [Chase et al., 1999; Woodside et al., 1999] were based on a paradigm called “Health to Peace Initiatives.” According to MacQueen et al. [1997] it implies initiatives to improve children’s health and simultaneously enhance group interactions and affiliation, processes of understanding, reconciliation and conflict resolution. Bolton et al. [2007] in turn introduced African refugee children to an interpersonal group psychotherapy that had been developed and applied to depressive adults and adolescents in the USA.

It is noteworthy that there is a general lack of comprehensive theory and framework for the rationale for which certain tools such as drawing and other group activities were chosen. Yet, there is an impression that the majority of intervention techniques among traumatized children are based on CBT and its derivatives, which are considered powerful enough to entitle the theoretical basis as such. Therefore, no further elaboration of underlying or developmental mechanism in trauma recovery is available.

DISCUSSION

Interventions among children traumatized in conditions of armed conflict aim at preventing psychopathology and promoting healthy development, as well as supporting shattered families and communities. In this review we aimed at ascertaining how these ambitions were achieved.

We could identify 16 eligible and three descriptive studies on intervention effectiveness among children experiencing war, military violence, terrorism and living as refugees. The numbers are relatively small considering the large number of children who are affected by armed conflict. The World Health Organization [WHO, 2007] estimated that almost a half (48%) of Iraqi children living in Baghdad has experienced suicide bombing, explosion, shelling and loss of family members. A retrospective study by Schaal and Elbert [2006] in Rwanda showed that 84% of children had been exposed to attacks or
The number of effectiveness studies is also small with respect to the accumulation of psychosocial interventions, empowerment and relief programmes provided to the communities affected by war and military violence as well as to child refugees. The UN (UNICEF and UNESCO) and other international organizations (e.g. Save the Children, Red Cross and Red Crescent, Care International) provide well-informed preventive interventions to children in major military conflicts and disasters. In addition, local and international NGOs (nongovernmental organizations) dedicate their human and professional concern to protecting, helping and treating traumatized children. Reports are available on their contents and philosophies, but research is lacking about their effectiveness, efficacy and possible underlying mechanism for success or failure. Carrying out prevention programs and sophisticated research in war-torn communities is not, however, an easy task. Dissemination of information, lack of trained mental health workers, ongoing insecurity and lack of room and equipments for interventions are real challenges in war-affected areas.

As a conclusion of the overall effectiveness of reviewed studies we argue that there are promising, although scarce, results of healing and alleviating PTSD, depression, anxiety and pathological grief as well as enhancing cognitive, emotional and social resource of exposed children. However, only a quarter (4 out of 16) of eligible studies fulfilled the criteria for meta-analysis, indicating effectiveness in its strictest sense. The meta-analysis showed that interventions which were CBT-based and included resilience enhancing together with symptom-based techniques and systematically also applied bodily rehearsals came up as the most effective interventions in alleviating PTSD. Concerning the other effectiveness outcome criteria (e.g. depression and anxiety), meta-analytic procedure was not possible. However, the similar elements were present in effective interventions. We have to be aware that when using the strictest criteria of effectiveness, the conclusion is that there is not enough evidence for arguing that available techniques and programs are powerful enough to prevent and treat the mental health problems among children in extremely traumatizing conditions.

Generally taken, the evidence in the field of childhood trauma interventions is still scarce. The National Child Traumatic Stress Network [2005], for example, emphasizes the relative importance of “practice-based evidence” for the absence of evidence-based interventions for refugee children. There are, however, some guidelines on how to treat traumatized children exposed to abuse [Cohen et al., 2006], natural disasters and terrorism [LaGreca, 2008] and military violence [Barenbaum et al., 2004]. They recommend as the first-line approach to treat the active ingredients of trauma-focused CBT (TF-CBT) for decreasing PTSD, anxiety and depressive symptoms in children and adolescents. They involve in vivo re-experience in safe human interaction, multisensory emotion regulation and experimental reconstruction of biased cognitions, beliefs and emotions as well as the adaptation of one’s own behaviour into challenging circumstances.

The interventions among war-traumatized children followed the recommended lines, as the group-based CBT interventions and therapies were the most commonly applied modes. Seven out of 16 eligible studies reported the effectiveness of standard CBT or trauma- and grief-focused CBT group therapies. Typically, however, the CBT principles and techniques were supplemented by other developmentally and contextually salient elements such as creative techniques, family-focused psychoeducative tools and attitude change toward war, peace and the enemy. One of the future challenges will be to filter out the relative impact of different components of CBT, find out whether same results would be achieved with only the most effective of these components and tailor developmentally informed modifications of these techniques.

Half of the studies reviewed based on research settings involving pre- and post assessments only in the intervention group, and was missing the control group. These studies cannot tell whether the symptoms can also change for the better without the intervention and whether the improvements achieved are sustainable. The choice of control group for preventive intervention in armed conflicts is not simple. Children often experience both Type I trauma (single life threatening events) and Type II trauma (long standing and repeated exposure to extreme events) [Terr, 1991] possible resulting in complex PTSD steaming from prolonged traumatization [Herman, 1992]. Consequently, the passage of time since main traumatic exposures may not be equal for intervention and control groups. Further, in the midst of armed conflict in addition to studied intervention also other forms of help and supports are often available. The usage of those resources among experimental and control groups should be carefully mapped out. In reviewed studies the
variation of the choice of control-group selection varied substantially. In some interventions there were purely convenience and availability-based, not randomly assigned, control groups [e.g. Ehntholt et al., 2005]. In other program the whole classes were used and randomly assigned in experimental and control groups [Berger et al., 2007], and in some interventions children were carefully tested and interviewed and after that they were randomly assigned to intervention and control groups [Layne et al., 2008].

The long-term follow-up studies are practically missing in interventions among children exposed to armed conflict. Only 4 out of 16 studies assessed children in three time points. These four present promising results of long-term effects of improving sustainability of psychosocial interventions. However, in order to obtain accurate recommendations or guidelines for practitioners, we still need more information of how children adjust to their safe or still traumatizing environments with or without intervention as they grow up.

Most contemporary wars and armed conflicts occur in poor countries with no well-developed mental health systems [de Jong and Komproe, 2002]. However, our review showed that most published effectiveness studies on psychosocial interventions were from former Yugoslavian countries, while only single studies are available from areas of continuous armed conflicts. Critics note that applying universal or western models of CBT or interpersonal interventions among war-traumatized children is neglecting the alternative culturally salient, religiously appreciated and traditional ways of healing mental distress. The treatments locate the pathology inside the victims who are expected to be cured as if recovering from an illness, while alternative views conceptualize the suffering as a result of collective political injustice that should be erased [Summerfield, 2002]. There is concern that individual-focused CBT methods are not applicable to diverse cultural and social settings that appreciate spiritual and communal bereavement and healing practices [Hays and Iwamasa, 2006]. Sophisticated theoretical analyses are required to clarify the extent to which recovery from trauma is culturally unique and to what extent sharing emotional experiences is a universal process. Also dismantling analyses of the power of traditional healing elements such as meditation or magic and CBT and other treatments in decreasing suffering of traumatized children would be welcome.

It was delightful to see that in addition to extensive knowledge of PTSD, the other mental health outcomes concurrently have an established position in theoretical as well as intervention literature. Among reviewed studies at least depression, pathological grief, anxiety and behavioral problems were at the scope of intervention. The future development of the intervention research in this field offers possibilities to assess how much these symptoms overlap and whether there are unique or universal techniques that should administer in order to prevent or treat each of the symptom categories.

Multidisciplinary developmental science is seeking answers to questions of timing of prevention, salience of developmental tasks and intervention-induced cognitive, socio-emotional, familial and physiological underlying mechanisms. There is no clear consensus about when it is best to intervene in children’s lives [Weisz, 1997], and therefore, general statements such as “the earlier the better” are often repeated. Yet, some risk factors are strong predictors of dysfunction at specific periods of development, and this dynamic nature of development indicates that interventions that are efficacious for children at one stage may not be so at another stage [Waddell and Godderis, 2005]. For instance, vulnerability of young children is often explained by their dependence on a caregiver as they realize that traumatized parents are not able to protect them or provide safe bases to express distress or curiosity [Scheeringa and Zeanah, 1995]. There are arguments that preventive and early interventions are most effective when timed at the sensitive periods in the development of the central nervous system [Fonagy, 1998]. We could add that sensitive periods of emotional, social and cognitive developments are as important for timing the interventions. Further, prevention may be most effective during developmental transition periods, because mental processes are then intensively reorganizing, more porous and flexible, and are therefore, more receptive to compensating experiences and new challenges [Punamäki, 2006].

Prevention scientists agree upon the importance of understanding the processes behind psychopathology and ways to support healthy development [Barenbaum et al., 2004; Ehntholt and Yule, 2006; Lloyd et al., 2005]. Further, there is an urge to understand causal mechanisms and pathways between interventions in childhood and successful long-term development and mental health outcomes, and to specify program features associated with these crucial impacts. Related challenge is to genuinely appreciate children’s own activity and advocacy. Enhancing active child involvement, parental participation and integrated multidisciplinary service models are emphasized, but our results
show that a majority of preventive interventions still focus solely on children, and on single domain.

The intervention by Layne et al. [2001] provides an example of a focus on developmental issues, the meaning of timing and age appropriate content tailoring in complex trauma in war conditions. The aim of their group psychotherapy sessions was to alleviate the adverse developmental impacts of war experiences by identifying missed developmental opportunities, replacing maladaptive beliefs and functioning in age-salient ways, as well as promoting prosocial behavior.

Based on the reviewed research, we suggest that the practice of psychosocial interventions for children in war zones can be forwarded by tailoring interventions according to the findings of contemporary prevention science and developmental research. The interventions that are CBT-based, combine symptom- and resilience-based techniques and take advantage of children’s social network can be recommended. The first challenge is to match the mental health services to the needs of traumatized children and families, and tailor age- and context-specific services. Too often a number of international NGO’s all have their own psychosocial help, sometimes consisting of single modules such as creative summer camp programmes and lasting for short periods of time. Psychosocial interventions and psychological first aid for traumatized children, also in war time, should thus be embedded as programmes in primary health and child care and as tools for school health personnel.

**Limitations of the Review**

Important areas of childhood traumatic stress were excluded from this review: extreme poverty, sexual and physical abuse and natural and technical disasters. Actions aiming to alleviate the suffering and malevolent consequences of poverty in child development, however, are informative when planning preventive interventions with children living amid chronic war trauma and military violence. Programmes focusing on children in poverty and other societal adversities are typically large-scale community-based interventions. In contrast to the interventions analyzed in this review, they are targeted at wide, often undefined populations and are not limited to a certain period of time, for example, Head Start [Knitzer, 2000; Yoshikawa and Knitzer, 1997], Homevisiting Program [Olds et al., 2004] and the Perry Pre-School Program [Schweinhart et al., 2005]. Comprehensive reviews and treatment guidance are available for children exposed to sexual and physical abuse [Cohen et al., 2000] and for children in natural disasters [LaGreca, 2008].

Our review is descriptive in nature, and was able to employ a meta-analytical method on only a small number of studies. The review can be considered a pilot systematic study on preventive interventions among children traumatized in armed conflicts.

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