Contextualized emotional images in children’s dreams: Psychological adjustment in conditions of military trauma

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This study examines the impact of military trauma on contextualized emotional images in children's dreams, and the function of the intensity and valence of the emotional images in protecting mental health from negative trauma impact. Participants were 345 Palestinian children and adolescents (aged 5–16 years) belonging to high trauma (Gaza) and non-trauma (Galilee) groups. They reported nocturnal dreams using a seven-night dream diary. The results show, as hypothesized, that the dreams of children exposed to severe military trauma incorporated more intense and more negative emotional images. High intensity and low negative, and high positive emotional images in dreams may protect children's mental health. Children in the trauma group showed relatively fewer post-traumatic symptoms if their dreams incorporated intensive and positive emotional images. Similarly, personal exposure to military trauma was not associated with anxiety and aggressiveness among children whose dreams had low negative valence, or with lower anxiety when dreams had intensive emotional images. The emotional qualities of dreams are discussed as possible indicators of children processing their traumatic experiences.

Keywords: child mental health; contextualized emotional image; dreaming; emotion; trauma

Living in conditions of war and military violence is a reality for millions of children. They experience constant insecurity and threat towards themselves and their families, and suffer from traumatic events involving destruction, killing and loss. Research shows that war trauma forms a serious risk for children’s cognitive, emotional and social development, and increased post-traumatic, depressive and anxiety symptoms (Garbarino & Kostelny, 1996; Pynoos, Steinberg, & Pincus, 1999; Punamäki, 2002; Shaw & Harris, 1994; Smith, Perrin, Yule, Hacam, & Stuvland, 2002).

However, the human mind is flexible and various factors and processes protect children's mental health and development from the negative impact of trauma. Protective factors include flexible and adequate coping strategies (Baker, 1990; Punamäki & Puhakka, 1997; Qouta, El-Sarraj, & Punamäki, 2001), good physical and mental health in the family, in particular good maternal mental health (Laor, Wolmer, & Cohen, 2001; Qouta, Punamäki, & Sarraj, 2003), strong ideological commitment and collective support from the community (Baker & Shalhoub-Kevorkian, 1999; Miller, 1996; Punamäki, 1996). Dreaming is suggested to be one possible protective process in traumatic conditions. It can function as a form of coping in the continuum between conscious and unconscious processes, and thus facilitates integration of the traumatic experience as a part of one’s life history (Punamäki, 1998a). Dreams can be understood as portraying trauma victims’ emotional processing and working through of an overwhelming experience. Our aim is to examine how traumatic events in the context of war and military violence impact emotional dream characteristics and how these emotional images are associated with children’s mental health.

Trauma, dreaming, and emotion

Researchers agree that stressful experiences are incorporated into dreams, although they disagree about the mechanisms by which incorporation is possible (Marquardt, Bonato, & Hoffmann, 1996; Powell, Nielsen, Cheung, & Cervenka, 1995; Strauch & Meier, 1996). Emotions are suggested to be one possible process by which traumatic events are transferred into dream content and structure. There is evidence that dream content mirrors the dreamer’s emotional experience of trauma, rather than the actual event (Delorme, Lortie-Lussier, & De Koninck, 2002; Schredl & Hofmann, 2003; Strauch & Meier, 1996).

Current theories regard emotions as a basic motivational system aiming at adaptation and balance in the face of environmental demands and stress (Frijda, 1986; Levenson, 1999). Stressful and painful events rapidly and automatically activate emotions, which organize behaviour, cognitions such as attention, and physiological responses in order to facilitate adaptation and survival. Humans have a variety of emotions, including the basic emotions of fear, anger, disgust, surprise, sadness and joy that are evolutionarily shaped, as well as more complex multiple emotions such as envy or shame that are learned in social relations (Abe & Izard, 1999). Emotional contents and expressions differ according to their affective valence and intensity. Valence can be positive or negative, indicating the appetitive or aversive nature of emotion (Frijda, 1986), and intensity refers to low or high affective arousal and activation (Lang, Bradley, & Cuthbert, 1998).

Emotions are prominent features of dreaming. Traditionally, research has focused predominately on negative emotions such as
as dreamers’ fears and aggression (Domhoff, 1996; Hall & Van de Castle, 1966; Nielsen, Deslauriers, & Baylor, 1991). However, there is evidence that specific positive emotions, such as joy and pleasant surprise are also common in dreams (Fosse, Stickgold, & Hobson, 2001; Strauch & Meier, 1996). The intensity of emotion in dreams does not depend on the valence, but both positive and negative emotions can have high intensity levels (Fosse et al., 2001; Hartmann, Zborowski, & Kunzendorf, 2001a).

According to Hartmann (2001), dreams contextualize the current emotional concern or dominant emotion of the dreamer. The intensity of the emotion contextualized in a dream reflects the extent to which the current concern is resolved and how actively the dreamer is working with it (Hartmann, Zborowski, & Kunzendorf, 2001a). The valence of the dream can be seen as mirroring the nature of the mental process of resolving the current concern of the dreamer. Negative valence refers to unsolved concern, while positive valence may indicate the success of working through the problem emotionally. Angry, fearful and helpless feelings are not directly portrayed in dreams, but are contextualized in associations, symbols and metaphors. Hartman’s (2001) analyses reveal that combat soldiers and rape victims, for instance, dream about tidal waves, escaping fire, and drowning.

There is some evidence that trauma is associated with intensive contextualized images portraying core emotions and concerns of life danger, vulnerability and escape. After traumatic events dreamers have abundantly emotionally salient experiences that must be worked through and connected with previous memories, which are reflected in elevated dream recall and intensive emotions in dreams (Punamäki, 1999). The intensification of contextualized emotional images in dreams indicates the victims’ need to work through their painful experiences by framing and regulating them (Hartmann & Basile, 2003). No research is available on the impact of trauma on emotional images in children’s dreams. Based on adult studies, we may hypothesize, however, that severe trauma is associated with negative valence and more intensive contextualized emotional images in dreams.

**Dreaming and mental health**

The function of dreaming has been a controversial subject over the past century. Theories have varied from the wish-fulfilment theory of Freud (1900/1978) to the epiphenomenal view of dreaming being a by-product of brain activity (Hobson & McCarley, 1977). Currently, researchers are fairly unanimous on two phenomena regarding dreaming. First, waking experiences are reflected in dreams, expressed in the continuity hypothesis (Domhoff, 1996; Schredl, 2003; Strauch & Meier, 1996) and second, dreams contain an abundance of emotional material (Domhoff, 2000; Fosse et al., 2001; Schredl & Doll, 1998). The debate is still open on whether the preoccupation with the emotional material in dreams has any mental health implications (Domhoff, 2000; Hobson, 2003). However, there is some evidence that intensive processing of emotional concerns is associated with psychological adjustment among adults (Cartwright, Luten, Young, Mercer, & Bears, 1998; Hartmann, 1996; Koulack, 1993; Kramer, 1993; Zadra & Dondori, 2000). Dreaming enables the handling of waking life negative emotions, and functions either as a mood regulation process (Cartwright et al., 1998; Kramer, 1993; Punamäki, 1999) or a neural network process, assimilating current emotions into previous memories (Hartmann, 2001).

According to Hartmann (1995, 1996), the dream state has a regulatory function so that the dreamer makes connections between new experiences and old schemas in an auto-associative manner. Hartmann conceptualizes dreaming as a safe place, similar to psychotherapy, where dreamers are able to form new and healing contextualizing images of their dominant emotional concerns and dangerous experiences. Making connections is especially important after trauma, which is a highly shattering and disintegrating experience (Brewin & Holmes, 2003; Janoff-Bulman, 1989), and dreaming can link the shocking and threatening emotional states with similar, but soothing, earlier memories. Intensive contextualizing in dreams is beneficial because it enables neutralization of trauma-related overwhelming emotions. Successful associative processes in dreaming can provide new solutions and neutralize emotionally loaded traumatic memories, gradually chocking images and making life-threatening attenuate.

There is some clinical evidence that the content and structure of dreaming change over time after a traumatic experience, indicating the dreamer's attempts at psychological adjustment (Hartmann, Zborowski, Rosen, & Grace, 2001). At first, dreams portray the traumatic event exactly as it has happened, typically involving images of extreme threat, helplessness and terror. Then, gradually, the dreams incorporate other themes that contain both past experiences and new and more plentiful images of the recent trauma. The dominant emotions in dreams also convey more complex feelings such as grief, guilt and envy, in addition to basic emotions such as fear, disgust and anger. Finally, the dreams increasingly contain other, more mundane material from the dreamer’s everyday life, as the trauma is gradually resolved.

The sequential pattern of dreams after trauma can be illustrated by the disruption-avoidance-adaptation (DAA) model of Wright and Koulack (1987). The model depicts the dream process as an oscillation between mastery and compensatory dreams. After a traumatic event, dreams contain concrete and vivid elements from the traumatic scene, thus presenting a continuation of the waking life. Rehearsal and repetition of trauma-related scenes and feelings may contribute to the dreamer’s attempts at mastery. By contrast, compensatory dreams incorporate events that drastically oppose the trauma, involving positive emotions and happy endings. They provide relief and consolation from the painful memories and contribute to the integrity and well-being of the dreamer (Stewart & Koulack, 1993). Mastery and compensatory dreams are expected to alternate, reflecting adaptive processes that continue until the traumatic impacts have been neutralized and the experience has been integrated into the dreamer’s life.

It is naturally possible that the dream process sometimes fails to neutralize the traumatic memories and integrate the trauma scenes into earlier memories (Hartmann, 1999b). One example of failure in psychological adjustment is post-traumatic stress disorder (PTSD), in which the process is blocked and the person is afflicted by repetitive post-traumatic nightmares and intrusions of trauma scenes.
Children's dreaming

Children's dreams differ from those of adults, in both quantity and quality (see review in Murray, 1995), and children's dreaming parallels their cognitive development (Foulkes, 1999). Their dream reports are shorter and their structure is simpler than those of adults, becoming longer and more complex with age. The dreams of preschool children are typically like images, the dreamer is not an active participant and the dream reports contain little or no emotional material. Between the ages of 5 and 7 years dream reports start to have a narrative quality, the characters are more active although the dreamer is still largely an observer in the dream scene.

In middle childhood (8–12 years), the dreamer begins to act as an active participant and dream narratives involve increasingly coherent thematic patterns, characterized by the emergence of different scenes, dream actors, shifts in events and conclusion, and even a message. Dream narratives incorporate increasingly emotionally toned events that usually present positive feelings. Foulkes (1999) regards the emergence of feelings in dream reports as a sign of the child's advanced development in waking cognitive competence. An increasing ability to handle concepts in mind, especially visual–spatially, enables children to combine new and more sophisticated mental elements in dreams, including repertoires of emotions.

The dreams of early adolescents start to resemble adult dreams but still involve fewer negative emotions. They typically dream about positive social interactions and friendship conflicts that have happy endings. Negative emotions in dreams increase towards adolescence, and the dream narrative structure becomes similar to that of adults (Foulkes, 1982, 1999; Strauch, 2005). These changes in the dream valence concur with substantial rise of negative affects reported in adolescence waking lives (Abe & Izard, 1999).

Children's dream content also changes according to their developmental age, concerning the nature of dream characters, familiarity and bizarreness of dream scenes and events. The dreams of preschool children involve a lot of animal characters, human characters appear increasingly from middle childhood to adulthood. Among young children, the dream setting is typically outdoors and the scenes involve both familiar and strange elements. The dream characters of school-aged children are predominantly familiar, either relatives or acquaintances (Avila-White, Schneider, & Domhoff, 1999; Foulkes, 1985; Strauch, 2005; Strauch & Lederbogen, 1999). Strauch and Meier (1996) found no differences between children's and adults' dreams in terms of their realistic versus fictional qualities (Foulkes, 1985), although some research suggests that children's dreams involve more bizarre elements than those of adults. Results are also discrepant concerning the level and role of aggression in childhood and adulthood dreams. Some researchers have found that the dreams of preadolescent children have more aggressive acts than the dreams of adults (Avila-White et al., 1999; Domhoff, 1996; Strauch & Lederbogen, 1999), whereas others maintain that the level of aggression in children's dreams is lower (Foulkes, 1982).

The dreams of boys and girls resemble each other at early childhood. The emerging differences that begin to appear in middle childhood can be attributed to gendered social and cultural experiences. School-aged girls' dreams contain more pro-social activities and friendly characters and their dreams happen more often in home settings (Foulkes, 1982; Strauch & Lederbogen, 1999). The conflicts in girls' dreams relate more often to familiar settings and the dreamer is in a more passive role (Cuena & Domich, 1998). In boys' dreams there is more aggression, more negative outcomes (Foulkes, 1982), and high activity, i.e. playing sports, fighting and even participating in battles (Cuena & Domich, 1998).

We examine dream emotions among girls and boys living in conditions of war and military violence. Research is scarce about the impact of trauma on children's dreams. Yet, researchers agree that the characteristics of dream contents and narratives reflect children's experiences both in chronic military and political violence (Bilu, 1989; Levine, 1991; Masalha, 2003; Punamäki, 1998b) and in facing single criminal trauma (Terr, 1981). Terr observed different types of dreams after a traumatic experience of kidnapping. Immediately after the trauma, contentless night terrors were typical, followed by exact repetitions of the traumatic scene. Gradually children's dreams involved modified repetitions of the trauma, and, finally, dreams incorporated feelings of fear and horror in a more symbolic form. The dreams of children experiencing traumatic events typically contain realistic violent scenes, lack bizarre and fantasy elements (Punamäki, 1998b), and involve feelings of anxiety and hostility (Bilu, 1989; Levine, 1991). Furthermore, children exposed to military trauma frequently incorporated themes of threat, danger and death into their dreams. In particular, narratives of threats to the life of the dreamer and significant persons are common, which indicates threat simulation as a way of coping with intensive trauma-related fears (Valli, Revonsuo, Pälkäs & Punamäki, 2006).

Concerning the mental health function of dreaming, research among Palestinian children by Punamäki (1998b) suggested that happy compensatory dreams have a protective role for children living in a violent environment and exposed to traumatic experiences. Compensatory dreams were characterised by bizarre and camouflaged scenes and atmospheres. By contrast, the more dreams incorporated repetitious, unpleasant and threatening scenes, the more the children suffered from psychological symptoms.

Aims of the study

The first aim of this study was to investigate the impact of military trauma on the contextualized emotional images in dreams, and whether the intensity and valence of the images vary according to age and gender. Participants were two groups of Palestinian children, the Gaza children living in an environment exposed to high level of military violence including curfews, street fighting and house destruction, and Galilee children living as Israeli citizens in environment that lacked military activity. In Gaza, children are personally exposed to different degrees of traumatic events such as loss of family members, being wounded and witnessing destruction. The impact of military trauma on the contextualized emotional images in dreams was analysed by (a) comparing dream intensity and valence between the trauma group (Palestinian children living in Gaza) and the non-trauma group (Palestinian children living in Galilee); and (b) analysing the differences between children personally exposed to low and high levels of traumatic events in the Gaza trauma group. We hypothesize that the contextualized emotional images in the dreams of children exposed to severe trauma are more intense and have
more negative and less positive valence than those of less exposed children.

Our second aim was to examine the mental health function of the contextualized emotional images in dreams. Main effect function tests direct associations among the dream intensity and valence and children's aggressive, anxiety, depressive and post-traumatic symptoms, and cognitive difficulties. We hypothesize that high intensity, low negative valence, and high positive valence emotional images in dreams are associated with low levels of psychological symptoms. The interaction effects analyse which qualities of emotional images in dreams can protect children's mental health from the negative impact of trauma. We hypothesize that exposure to severe trauma is not associated with increased psychological symptoms if children's dreams incorporate high intensity, low negative valence and high positive valence emotional images. Intensive emotional contextualizing in dreams is expected to be beneficial because it enables attuning and neutralizing of children's overwhelming and painful trauma-related emotions.

Method

Participants and procedure

The participants were 345 Palestinian children and adolescents. The age of participants ranged from 6 to 16 years (M = 11.04, SD = 2.58), 55% were boys and 45% girls. The selected group did not differ from the original group in criterion that they had reported at least one dream narrative. The group was selected from a basic sample of 412 children on the criterion that they had reported at least one dream narrative. The selected group did not differ from the original group in gender (\(\chi^2 (1,410) = 0.28, p = ns\)) or in age (t(410) = 0.91, \(p = ns\)). Of the sample, 224 children belonged to the trauma group and 121 to the non-trauma group. Trauma group refers to children living under conditions of military violence and war in Gaza, and the non-trauma group refers to children living in peaceful areas in Galilee. Children in Gaza had typically experienced military confrontations, curfews and political strikes, and had often lost family members through death or imprisonment. The Galilee group, even though belonging to the Palestinian nation, had not experienced this kind of violence for the last 15 years. The trauma and non-trauma groups were similar in terms of gender (\(\chi^2 (1,345) = 0.581, p = ns\)) and age (F(1,342) = 1.77, \(p = ns\)).

The participants in the trauma and non-trauma groups were selected using random and systematic sampling procedures. The children were asked to record every morning the dreams they had had the previous night. The form was headed: 'Last night I dreamt that...'.

First, parental consent was inquired, the children and adolescents were asked to participate in the study, and the dream diaries and questionnaires were given to them. Second, after seven days, the field workers collected the dream diaries. Instructions were written in a tightly scripted and standardized statement in order to guarantee consistency across homes. Field workers explained the dream diary and questionnaires meticulously to the child or children in the family. Standardized examples of how to report dreams and respond to questions were given. Field workers checked whether the children had understood the idea by asking them to provide some examples of how to fill in the questionnaire. Young children dictated to their mothers or sisters, who then filled in the diaries.

The rate of return of the dream diaries was almost 100%; one child in Gaza and two in Galilee did not return them. The compliance to participate in the study maybe due to the familiarity of the local field workers, the cultural code of hospitality, and curiosity about the topic of the study. Of the initial sample, four dream diaries were withdrawn due to missing information and five because of identical content.

Procedure

The second author, together with a Palestinian psychologist, contacted the Gaza children and adolescents in their homes during autumn 1993. At the same time, a local psychologist contacted the children and adolescents in Galilee to form the comparison group. The fieldwork proceeded in two stages.

Measures

Dream characteristics. A semi-structured dream and sleep diary was developed for the purpose of the study. The recording period was seven days and for each night there was a separate form. The children were asked to record every morning the dreams they had had the previous night. The form was headed: ‘Last night I dreamt that...’

The dreams’ characteristics were analysed using Hartmann and associates’ scoring system of contextualized emotional images in dreams (Hartmann, Kunzendorf, Rosen, & Grace, 2001). This scoring system is designed to analyse the image-like quality of dreams. The aim is to search the dream for the presence of a vivid and emotional image, that contextualizes strong emotions or current concerns of the dreamer. In this scoring system, the focus is on the emotional impact of the dream, not on the length, particular symbols or specified contents. The variables depicting the emotional images in the dream reports are:

1 The occurrence of a contextualized emotional image in the dream is determined by the presence of ‘a striking, compelling image – not simply a story – but an image which stands out by virtue of being especially powerful, vivid, bizarre, or detailed’ (Hartmann, Kunzendorf, Rosen, & Grace, 2001, p. 99). The presence of an emotional image in the dream is coded as 1 and if the dream narrative contains no emotional image, it is coded as 0.
2 The intensity of the emotional image in the dream is rated on a 6-point scale: 0 (no intensity), 1 (very low intensity), 1.5 (low intensity), 2 (moderate intensity), 2.5 (high intensity) and 3 (very high intensity). For the analysis, the total value of intensity is counted as an average sum score combining intensity evaluations of reported dreams during the seven nights.
3 The valence of the emotional image in the dream is based on the quality of emotions rated from the dream report. The scoring system included the total of 18 categories of emotions, 10 negative (e.g., fear, anxiety, despair) and 8 positive (e.g., power, happiness, hope). For the analysis, two averaged sum scores were formed, indicating the occurrence
of positive and negative emotions in the reported dreams during the seven nights; each score ranging between 0 to 7.

Inter-rater reliability of dream variables. The first author and two independent judges who were trained to use the Hartmann, Kunzendorf, Rosen, and Grace (2001) scoring system of contextualized emotional images in dreams conducted the inter-rater reliability analysis. The judges scored a random sample of 50 children who reported a total of 381 dreams. They were unaware of the demographic and trauma-related characteristics of the dreamers. Reliability was calculated separately for each night’s dreams. The reliability of scoring procedures between raters was measured by using Cohen’s kappa test and results showed fair to strong agreement (Fleiss, 1981). Kappa values for the occurrence of a contextualized emotional image in the dreams ranged from .65 to .79 through seven nights, and for the intensity of emotional image in the dream from .62 to .78. The kappa value for the valence (positive and negative) of the emotional image in the dreams ranged from .67 to .75. Finally, the first author scored all the dreams.

Traumatic events in Gaza. The Traumatic Events Checklist consisted of 15 items describing events that Palestinian children and adolescents typically experienced in Gaza during the Intifada, the national struggle for independence (AbuHein, Qouta, Thabet, & Sarraj, 1993; Summerfield, 1993). Items asked about events such as night raids, the detention of family members, house demolition, beatings, and being wounded. Participants were asked to respond whether they had experienced these events during the Intifada. The composite score was formed (ranging between 2 and 15 in this sample). A categorical variable was formed indicating low level (values 2–7) and high level (values 8–15) of personal exposure to traumatic events.

Psychological distress. The Psychological Symptoms Scale consisted of 34 symptoms including aggressive, depressive, anxiety and post-traumatic symptoms, and cognitive difficulties (Eth & Pynoos, 1985; MackSound, Aber, Dyregrov, & Raundalen, 1990; Punamäki, 1998b). Participants rated the degree to which they suffered from the symptoms (range 1–3). The dimensionality of the scale was analysed by principal components analysis with an orthogonal rotation. A five-factor solution was adopted, which explained 39% of variance. The reliabilities (Cronbach’s alpha) of the dimensions were: aggressive symptoms, .57; anxiety, .64; cognitive difficulties, .58; depressive symptoms, .76; and post-traumatic symptoms, .74.

Statistical analyses

Analyses of variance were applied to examine the impact of exposure to military trauma, gender and age on the contextualized emotional images in dreams, using two separate analyses: 2 (belonging to trauma or non-trauma group, and personal exposure to traumatic events in the trauma group: low vs. high ) × 2 (gender) × (age; 5–12 vs. 13 – 16 years) ANCOVAs with main effects and hypothesized interaction effects were performed. The dependent variables were the intensity, the negative valence and positive valence of the emotional images in dreams. The total sum of reported dreams was used as a covariate in order to control for the effect of dream recall in the analyses.

To study the mental health function of contextualized emotional images in dreams, we conducted two 2 (trauma group vs. non-trauma, and personal exposure to traumatic events: low vs. high) × 2 (intensity of emotional image: low vs. high) × 2 (negative valence of emotional image: low vs. high) MANCOVAs with aggressive, anxiety, depressive and post-traumatic symptoms, and cognitive difficulties as dependent variables. The nature of possible associations were specified by ANCOVA univariate analyses. The number of dreams was used as covariate.

Results

Descriptive statistics

The total number of reported dreams was 1275, of which 1086 (85%) were rated as having contextualized emotional images. Table 1 presents ranges, means and standard deviations of reported dreams according to exposure to trauma, gender and age. The number of reported dreams was significantly greater in the trauma group than in the non-trauma group, F(1,344) = 32.19, p < .0001, and in the trauma group the number of dreams was greater among children personally exposed to high levels of traumatic events than among those exposed to low, F(1,221) = 5.91, p < .02. Girls reported more dreams than boys, F(1,343) = 5.31, p < .05. The age of the child was not associated with dream number.

Exposure to trauma was associated with the occurrence of contextualized emotional images in dreams. In the trauma group, 90% of the dreams incorporated contextual emotional images, while the share was 74% in the non-trauma group (χ²(1,345) = 7.58, p = .001). The mean intensity of the emotional images of dreams reports was 1.7 (SD = .65). In the total sample the prevalence of negative valence was greater (63%) than positive valence (37%) of emotional images. Child gender and age were not significant determinants of either the number of recalled dreams or the occurrence of contextualized emotional images in dreams.

Trauma exposure and emotional images in dreams

Table 2 presents the results of ANCOVA analyses comparing the intensity and valence of contextualized emotional images in dreams between trauma and non-trauma groups, boys and girls, and young and older children. Significant main effects were found between trauma exposure on the intensity and negative valence of emotional images. In accordance with our hypothesis, the dreams of children in the trauma group incorporated more intense and more negative emotional images than the dreams of children in the non-trauma group. Against to our hypothesis, trauma exposure was not associated with positive valence of the emotional images in dreams.

Gender was associated with the intensity and valence of emotional images; boys had more intense emotional images and marginally more positive emotional images than girls. Age was associated with the intensity of emotional images, adolescents having more intense emotional images in their dreams than children aged 5–12.
Significant interaction effects were found between trauma exposure and age in relation to negative valence, $F(1,343) = 4.05$, $p < .05$, $\eta^2 = .01$, and positive valence $F(1,341) = 3.74$, $p = .054$, $\eta^2 = .01$, of the emotional images in dreams. Figure 1 shows that, only in the trauma group, the dreams of adolescents involved more negative valence than the dreams of younger children. Also, only in the trauma group, the dreams of younger children involved more positive valence than the dreams of adolescents. No age differences were found in the non-trauma group concerning the valence of emotional images in dreams.

We further replicated the analysis of the impact of trauma exposure, gender and age on contextualized emotional images in dreams in the trauma group, using the level of personal...
emotional images as a basis for trauma indicator. The main and interaction effects of ANCOVA analyses including F-values and $\eta^2$-values are summarized in Table 3.

The results show significant main effects of personal exposure to traumatic events on the negative and positive valence of emotional images in dreams within the trauma group. As hypothesized, children exposed to high level of traumatic events had more negative valence in emotional images ($M = 2.52, SD = .16$) than children with lower exposure ($M = 1.93, SD = .14$). However, against our hypothesis, positive valence of emotional images was higher in the dreams of children exposed to a high level of traumatic events ($M = 1.60, SD = .17$) than in the dreams of children exposed to a low level ($M = 1.23, SD = .18$). Similar to the results in the whole data, boys’ dreams incorporated a higher intensity and more positive valence of contextualized emotional images, and the emotional intensity was higher among adolescents than younger children.

Significant interaction effects specified that the associations between personal exposure to traumatic events and valence of emotional images differed according to age. Among adolescents, severe personal exposure to traumatic events was associated with a high level of negative valence, and with a low level of positive valence of emotional images, while no associations were found between traumatic events and dream emotional valence among younger children.

Results of the MANCOVA main and interaction analysis of exposure to trauma (trauma vs. non-trauma group) and contextualized emotional images in dreams (low and high levels of intensity, negative and positive valence) on psychological symptoms (aggressive, anxiety, depressive and post-traumatic symptoms and cognitive difficulties) are shown in Table 4.

Significant main effects were found between trauma exposure (Wilks’ Lambda = .95, $F(5,297) = 2.28, p < .05, \eta^2 = .05$), and positive valence of emotional images in dreams (Wilks’ Lambda = .95, $F(5,297) = 3.33, p < .01, \eta^2 = .05$) on psychological symptoms. Table 4 presents the summary of F- and $\eta^2$-values of subsequent univariate ANCOVA analyses.

Main effect analyses show that children in the trauma group reported a higher level of post-traumatic symptoms, while there were no group differences in other symptoms. As hypothesized, positive valence of emotional images in dreams was associated with good mental health, as indicated by low levels of anxiety symptoms. Significant ANCOVA interaction effects between exposure to trauma and intensity and positive valence of emotional images in dreams confirmed the hypotheses. Belonging to the trauma group was not associated with a higher level of post-traumatic symptoms if children’s dreams incorporated highly intense and positive emotional images.

We further replicated the mental health function of emotional images in dreams in the trauma group, using the level of personal exposure to traumatic events as indicator of trauma.

MANCOVA results show that both negative and positive valence of emotional images in dreams had a significant main effects on psychological symptoms (Wilks’ Lambda = .95, $F(5,203) = 2.32, p < .05, \eta^2 = .05$ for positive, and Wilks’ Lambda = .95, $F(5,203) = 2.13, p < .10, \eta^2 = .05$ for negative valence). There was a significant interaction between personal exposure to traumatic events and the intensity (Wilks’ Lambda = .93, $F(5,203) = 3.19, p < .01, \eta^2 = .07$) and negative valence (Wilks’ Lambda = .93, $F(5,203) = 3.19, p < .01, \eta^2 = .07$) of emotional images on psychological symptoms. The F-values and $\eta^2$-values of the ANCOVA analyses are presented in Table 5.

Table 3

<table>
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<tr>
<th>Main and interaction effects of qualities of emotional images in dreams according to trauma exposure (personal exposure to traumatic events), gender and age</th>
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<tbody>
<tr>
<td><strong>Emotional images in dreams</strong></td>
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<td><strong>Intensity</strong></td>
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<td>Traumatic events $\times$ gender</td>
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<td>Traumatic events $\times$ age</td>
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Note: The total sum of dreams was controlled as covariate in ANCOVA analyses. $N = 213$.

$^*p < .05$; $^{**}p < .01$; $^{***}p < .001$. 

Figure 1. Trauma exposure (Trauma group vs. Non-trauma group) and age-interaction effects on negative valence of contextualized emotional images.
The main effect results reveal, according to our hypothesis, that children whose dreams incorporated high levels of negative valence emotional images reported high levels of anxiety and post-traumatic symptoms, and that children whose dream emotional images involved positive valence showed low levels of aggressive symptoms.

The significant interaction effects indicate, as hypothesized, that personal exposure to traumatic events was not associated with anxiety and depressive symptoms if children’s dreams incorporated high intensity of emotional images. Figure 2 illustrates the protective function of high intensity of dream images for anxiety symptoms. Further, as hypothesized, traumatic events were not associated with high levels of aggressive and anxiety symptoms if children’s dreams involved low levels of negative valence of emotional valence.

Table 4
Main and interaction effects of trauma exposure (trauma vs. non-trauma group) emotional images in dreams on psychological distress

<table>
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<tr>
<th>Psychological symptoms</th>
<th>Aggressive</th>
<th>Anxiety</th>
<th>Cognitive</th>
<th>Depressive</th>
<th>Posttraumatic</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main effects</strong></td>
<td>F</td>
<td>η²</td>
<td>F</td>
<td>η²</td>
<td>F</td>
</tr>
<tr>
<td>Trauma exposure (trauma vs. non-trauma group)</td>
<td>1.88</td>
<td>.01</td>
<td>0.12</td>
<td>.00</td>
<td>0.06</td>
</tr>
<tr>
<td>Emotional images in dreams</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intensity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative valence</td>
<td>0.22</td>
<td>.00</td>
<td>1.99</td>
<td>.01</td>
<td>0.06</td>
</tr>
<tr>
<td>Positive valence</td>
<td>0.40</td>
<td>.00</td>
<td>4.11*</td>
<td>.01</td>
<td>0.64</td>
</tr>
<tr>
<td>Interaction effects</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trauma exposure × intensity</td>
<td>0.53</td>
<td>.00</td>
<td>0.01</td>
<td>.00</td>
<td>0.06</td>
</tr>
<tr>
<td>Trauma exposure × negative valence</td>
<td>0.26</td>
<td>.00</td>
<td>0.11</td>
<td>.00</td>
<td>0.65</td>
</tr>
<tr>
<td>Trauma exposure × positive valence</td>
<td>3.24</td>
<td>.01</td>
<td>0.35</td>
<td>.00</td>
<td>1.30</td>
</tr>
</tbody>
</table>

Note. The total sum of dreams was controlled as covariate in MANCOVA analyses. N’s in analyses range from 315 to 317. *p < .05; **p < .01; ***p < .001.

Table 5
Main and interaction effects of trauma exposure (personal exposure to traumatic events) and emotional images in dreams on psychological distress

<table>
<thead>
<tr>
<th>Psychological symptoms</th>
<th>Aggressive</th>
<th>Anxiety</th>
<th>Cognitive</th>
<th>Depressive</th>
<th>Posttraumatic</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main effects</strong></td>
<td>F</td>
<td>η²</td>
<td>F</td>
<td>η²</td>
<td>F</td>
</tr>
<tr>
<td>Personal exposure to traumatic events</td>
<td>1.40 **</td>
<td>.00</td>
<td>2.74*</td>
<td>.01</td>
<td>0.20</td>
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<tr>
<td>Emotional images in dreams</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intensity</td>
<td>0.71</td>
<td>.00</td>
<td>0.32</td>
<td>.00</td>
<td>1.09</td>
</tr>
<tr>
<td>Negative valence</td>
<td>2.92</td>
<td>.01</td>
<td>5.33*</td>
<td>.01</td>
<td>0.01</td>
</tr>
<tr>
<td>Positive valence</td>
<td>4.38*</td>
<td>.02</td>
<td>3.67</td>
<td>.02</td>
<td>1.79</td>
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<tr>
<td>Interaction effects</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Traumatic events × intensity</td>
<td>1.03</td>
<td>.00</td>
<td>4.53*</td>
<td>.02</td>
<td>0.01</td>
</tr>
<tr>
<td>Traumatic events × negative valence</td>
<td>7.48**</td>
<td>.04</td>
<td>4.38*</td>
<td>.02</td>
<td>0.58</td>
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<tr>
<td>Traumatic events × positive valence</td>
<td>1.12</td>
<td>.01</td>
<td>0.95</td>
<td>.00</td>
<td>1.45</td>
</tr>
</tbody>
</table>

Note. The total sum of dreams was controlled as covariate in MANCOVA analyses. N’s in analyses range from 217 to 220. *p < .05; **p < .01; ***p < .001.
Discussion

In the heights of ‘cognitive revolution’ in psychology, emotions were regarded as irrational, disturbing and peripheral, and dreams as surplus and insignificant for human functioning. Multidisciplinary trauma research has, however, emphasized the integrative function of conscious and unconscious processes involving both emotions and cognitions such as memory, attributing and problem solving (Brewin & Holmes, 2003; Horowitz, 1979). The emotional processing of traumatic experiences was in this study operationalized by the contextualized emotional images in dreams. Our study focused on the intensity and valence of emotional images in dreams and examined their mental health function among children living in traumatic conditions.

Our hypotheses were confirmed concerning military trauma impacting intensity and valence of emotional images in children’s dreams. The results of the heightened intensity and the higher degree of negative emotions in the dreams of traumatized children concur with impacts found among adult trauma victims (Hartmann & Basile, 2003; Hartmann, Rosen, & Grace, 1998; Hartmann, Zborowski, Rosen, & Grace, 2001). We may thus conclude that emotional dream quality is sensitive to different types of traumatic experiences among adults and children. Children in our study were intensively processing emotional experiences in their dreams when their days are filled with military confrontations, destruction, and threats to and loss of family members. Contrary to our hypothesis, children’s personal exposure to severe trauma was also associated with positive emotional images in dreams in the trauma group. The association between trauma and positive valence was partly supported by Hartman and his colleagues (Hartman, Kunzendorf, Rosen, & Grace, 2001; Hartmann, Zborowski, & Kunzendorf, 2001b), who found that the prevalence of positive emotional images in the dreams of traumatized people was 40%, compared with one third in the non-trauma group.

There is increasing evidence that traumatic events can dramatically impact children’s waking-time life by increasing risks for problems in emotion regulation, attention and social behaviour (Pynoos et al., 1999). Our results confirm that the impact of trauma is also substantial during children’s nighttime. Being personally exposed to traumatic events in the trauma group increased not only the negative valence, but also the positive valence of the emotional images in dreams. To maintain psychological balance and integrate the overwhelmingly painful emotional experiences would necessitate children’s minds to work intensively during the night, producing a variety of dream narratives. Both negative and positive emotional images function as building blocks to attenuate and tune trauma-evoked arousal, and intrusive and fragmented experiences. The intensification of emotional working in dreams concurs with findings that highly traumatized children recall their dreams more, which may be interpreted as a sign of intensive imagery working and dreaming during the night (Punamäki, Ali, Ismähil, & Nuutinen, 2005).

The emergence of positive and negative emotional images may serve the processing of traumatic stress through different ways. Dreams incorporating intense threatening and frightening emotions help the dreamer to find a solution from earlier experiences that were similar but successful, in line with the Threat Simulation Theory (TST) of dreaming. Revonsuo (2000) suggests that the simulation and rehearsal of life-endangering experiences, such as trauma scenes, prepares the dreamer to perceive and avoid real threats in waking lives. Equally important is the role of positive dreams, either in the sense of avoidance, as the mastery–avoidance model of Wright and Koukla (1987) suggests, or as a form of positive refocusing, reappraisal and expression of empowerment. Davidson, Lee-Archer, and Sanders (2005) show evidence of oscillation between negative and positive valences in dreams: dream scenes involving negative emotions were often followed by positive scenes. Hartmann (1998a), in turn, suggests that in dreaming the process of making connections in a safe environment has a restorative function.

As hypothesized concerning the mental health function of dreams, high intensity, and high positive and low negative valence were beneficial. Also, as hypothesized, intensity and positive valence of contextualized emotional images in dreams may function as a protective shield in the whole sample. Living in as dangerous and violent environment, like our Palestinian trauma group, predicted relatively fewer post-traumatic symptoms among children whose dreams incorporated intense and positive emotional images. In the trauma group, experiences such as witnessing killing and military confrontation or losing family members was not associated with anxiety symptoms if children’s dreams were intense and involved a low level of negative valence. These results concur with Hartmann and his colleagues (Hartmann, Kunzendorf, Rosen, & Grace, 2001) who argue that the intensity of the emotional image depicts the active process of resolving a troubling situation. Research on emotion regulation similarly maintains that cognitive reappraisal, rather than the suppression of emotions, has a beneficial role in maintaining mental health (John & Gross, 2004). In the same vein, research among Palestinian children living under violent and dangerous conditions suggested that expressing feelings, whether positive or negative, in dreams were associated with good mental health (Punamäki, 1998a).

Previous research has stated that anxiety-laden nightmares and bad dreams are associated with mental health problems (Belicki, 1992; Chivers & Blagrove, 1999; Hublin, Kaprio, Partinen, & Koskenvuo, 1999; Zadra & Donderi, 2000). The function of the positive emotional qualities of dreams has attached much less interest. Our results suggest that the positive valence of contextualized emotional images has a protective role in dreaming process. Similar findings have been found among Kurdish children who live in a highly dangerous environment: when children’s dreams involve positive emotions, their mental health is better (Punamäki et al., 2005). These results support the mastery–avoidance model of Wright and Koukla (1987), stating that after a stressful experience the dreaming process fluctuates between mastery dreams attempting to master the situation and avoidance dreams containing respite from stress.

Developmentally, one would expect adolescents to have more negative emotions in their dreams, while younger children’s dreams involve more positive valence. Our findings confirmed that adolescents had more negative emotional images in their dreams than did younger children, but only in the trauma group. This illustrates how age-salient universal developments interact with environmental experiences. Violence, war and national struggle combined with danger to life and insecurity thus intensified the general trend of negative emotionality in adolescence, which may explain why ‘war children’ may be especially vulnerable when facing adolescence and its new developmental demands.
Our results revealed gender differences in both the intensity and valence of emotional images in dreams. Boys’ dreams were more intense and more positive than girls’ dreams. The results are not easily interpreted in the light of earlier research arguing that children’s dreams depict the typical gender roles in the culture in which they live (Foulkes, 1982). Males have a more active role in Palestinian culture (Baker, 1990), and one might suggest that intensive dreaming is a sign of the night-time activity. Our result of boys’ higher positive valence of dream emotions contradicts results from Foulkes (1982) showing that boys’ dreams have more negative and aggressive elements.

To summarize, our results showed that if the dreamer had low intensity, low negative valence and high positive valence in their dreams, their mental health was better, when indicated by low levels of aggression, anxiety, depression and post-traumatic symptoms.

The qualities of dream emotional valence and intensity may be used in determining the success and proceeding stage of mental processing after traumatic events. Dreams can give insightful information in clinical work. Analysing the emotional dream images, their intensity and both positive and negative emotions tells about the dreamer’s significant concerns and ways of coping with them. This fluctuation of emotions reveals the process of working through the traumatic and painful experience. The presence of high intensity and high negative valence in the dreams hand indicates, that the dreamer needs help and support in her/his attempt psychologically to adjust to trauma.

References


