Journal of Loss and Trauma, 17:38–55, 2012

ISSN: 1532-5024 print/1532-5032 online
DOI: 10.1080/15325024.2011.583903

Routledge
Taylor & Francis Group

Posttraumatic Symptoms and Thought Control Strategies Among Aging Hidden Jewish Children

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This study examined the severity of posttraumatic stress disorder (PTSD) symptoms and the coping strategies of 51 aging hidden children (28 women and 23 men) 65 years after the Holocaust. Results indicated a positive relation between age and PTSD symptoms that was fully mediated by sense of danger and education. Regression analyses showed that lower educational level ($\beta = -.32$) and more reappraisals ($\beta = .38$) were associated with severity of PTSD symptoms. Reappraisal also predicted intrusions ($\beta = .36$) and arousal ($\beta = .37$).

Six million Jews were killed in the Holocaust between 1933 and 1945, including one and a half million children (Sternberg & Rosenbloom, 2000). Only 11% of the Jewish children alive in 1939 survived the war (Dwork, 1991). In Belgium, more than half of the Jewish population escaped death. Around 6,000 children under the age of 15 survived the war by hiding, and 3,000 of them lost one or both parents in the Holocaust (Steinberg, 2009).

Received 22 February 2011; accepted 12 April 2011.

This research was supported by Grant 1.1.233.09 to the second author and Grant 1.5.175.06 to the third author from the Belgian National Fund for Scientific Research. Also, the authors greatly acknowledge the support of Susann Heenen-Wolff, who initiated the project. Finally, the authors would like to extend their thanks to all of the participants for their openness and trust.

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HIDDEN JEWISH CHILDREN AS A SUBGROUP OF HOLOCAUST SURVIVORS

Hidden children represent a particular subgroup of Holocaust survivors. First, they were not recognized as Holocaust survivors until the late 1980s (Kestenberg, 1988; Cohen, 2005). Their suffering was underestimated and went unrecognized for decades by society in general and even in the Jewish community, including their own families. They were considered to be too young to remember and "lucky" in comparison to concentration camp survivors (Sternberg & Rosenbloom, 2000). However, similar to concentration camp survivors, hidden Jewish children were threatened by death. The main difference was, as a consequence of having to remain hidden, hidden children were constantly in a state of fear of being discovered (Dwork, 1991).

They suffered from numerous separations during and after the war at an early stage of development, which affected their emotional growth and the development of a secure attachment (Koren-Karie, Sagi-Schwartz, & Joels, 2003). These separations represented major traumatic events throughout the children's lives (Keilson, 1992). Furthermore, these separations were often abrupt, leaving the child little understanding of the reasons. As a result of these separations, the hidden children were forced to adapt to unfamiliar environments (institutions, host families, or both). At the end of the war, they suffered from the separation of the foster environment. This second separation induced a powerful traumatic impact (Fohn & Heenen-Wolff, 2011).

Another important difference between hidden children and concentration camp survivors concerns their identity. During the war, all hidden children had to hide their Jewish identity, and many of them changed their names. This change of identity saved their lives, but it also led to identity confusion in the aftermath (Cohen, 2005). Many hidden children were converted to another religion or asked to follow different religious rituals (Hogman, 1988). Conversion to Catholicism could sometimes lead to feelings of guilt (Fohn, 2010).

Finally, silence as a survival strategy, the changing of names, and the nonrecognition of their experiences in the aftermath of the war discouraged them from disclosing their suffering for more than 40 years and led them to continually attempt to hide their Jewish identity (Cohen, 2005).

CONTRIBUTIONS OF THE PRESENT STUDY

The current study extends previous research in several ways. Most studies examining Holocaust survivors include a very heterogeneous population (e.g., adults and children, hidden children, concentration camp survivors, labor camp survivors, Jews who left Europe before 1945) and do not distinguish between groups' different survival experiences (see Cohen, Dekel, & Solomon, 2002; Lis-Turlejska, Luszczynska, Plichta, & Benight, 2008; Lurie-Beck, Liossis, &

Gow, 2008; Van der Hal-van Raalte, Van IJzendoorn, & Bakermans-Kranenburg, 2007). To address this issue, our research focuses on a homogenous sample consisting only of aging hidden children who were all separated from their parents during the war. We also examine the relation between posttraumatic stress disorder (PTSD) symptoms, age, and parental loss, as the trauma literature on these questions remains unclear. Finally, no study so far has examined the impact of differential cognitive coping strategies in the long term and on posttraumatic stress in this population.

LITERATURE REVIEW AND HYPOTHESES

Our research questions and hypotheses were as follows.

Is there an association between age at the time of the traumatic events and the severity of PTSD symptoms? Some studies have found age to be negatively correlated with posttraumatic stress (Prot, 2010), while others have observed a positive correlation (Cohen et al., 2002; Dyregrov, Gjestad, & Raundalen, 2002; Keilson, 1992; Schaal & Elbert, 2006). Three studies, however, failed to find such clear associations (Cohen, Dekel, Solomon, & Lavie, 2003; Lis-Turlejska et al., 2008; Yehuda, Schmeidler, Siever, Binder-Brynes, & Elkin, 1997). Yehuda et al. (1997) found that older survivors suffered more intrusive thoughts and nightmares than younger survivors. In turn, younger survivors reported higher levels of arousal than did older survivors. Lis-Turlejska et al. (2008) found that only Jewish survivors younger than 5 years old at the time of the traumatic events, and found their parents after the war were less likely to suffer from PTSD. Finally, two studies failed to find significant correlations between age and PTSD (Robinson, Rapaport-Bar-Sever, & Rapaport, 1994; Van der Hal-van Raalte et al., 2007). This literature review shows that the relation between age and PTSD remains unclear. In the present study, we hypothesized that age would be positively correlated with PTSD (Hypothesis 1).

Is parental loss associated with the severity of PTSD symptoms? Previous studies have emphasized that parental loss in childhood has an impact on the severity of PTSD symptoms (Dyregrov, Gupta, Gjestad, & Mukanoheli, 2000), cognitive functioning (Keilson, 1992), and grief (Gampel, 2005). Only two studies have investigated the link between parental loss and the severity of trauma among aging Jewish child survivors. One of them found that parental loss was not associated with severity of PTSD symptoms (Van der Hal-van Raalte et al., 2007), while the other study supported a direct effect of parental death on severity of trauma (Lis-Turlejska et al., 2008). In our research, we postulated that parental loss would be positively associated with severity of PTSD symptoms (Hypothesis 2).

Is sense of danger during the war correlated with the current severity of PTSD? Previous literature indicates that a higher subjective sense of danger

during traumatic events is associated with more PTSD symptoms (e.g., Dyregrov et al., 2000; Schaal & Elbert, 2006; Kimhi, Eshel, Zysberg, & Hantman, 2010). However, no study has investigated the long-term impact of subjective sense of danger on severity of PTSD symptoms, in particular among aging populations. However, based on the relevant literature, we postulated that sense of danger during the war would be associated with more posttraumatic symptoms (Hypothesis 3).

Is there a link between the number of different hiding places during the war and subjective sense of danger? At the moment, no research has investigated whether hidden children who moved frequently to different hiding places during the war were more likely to report higher PTSD. Nevertheless, some survivors' narratives suggest that the obligation to move during the war occurred in a climate of danger (betrayal, round-up) that led to a higher sense of danger (Keilson, 1992; Kestenberg & Brenner, 1996). Thus, we postulated that the more frequently children were forced to move during the war, the higher they would rate their perceived sense of danger (Hypothesis 4).

Are the strategies used to control negative thoughts related to the severity of PTSD symptoms in the long term? The Thought Control Questionnaire (TCQ; Wells & Davies, 1994) is a scale that assesses five types of thought control strategies to cope with unwanted negative thoughts (distraction, reappraisal, social control, worry, and punishment). Studies using the TCQ have indicated that thought control strategies such as worry and self-punishment are positively associated with PTSD, whereas distraction, social control, and reappraisal are negatively associated with PTSD (Bennett, Beck, & Clapp, 2009; Bryant, Moulds, & Guthrie, 2001; Roussis & Wells, 2006). Thus, we hypothesized that worry and punishment would be positively associated with PTSD, whereas distraction, social control, and reappraisal would not (Hypothesis 5).

METHODS

Participants

The sample consisted of 51 volunteers (23 men and 28 women) who were all hidden Jewish children during the Second World War and currently live in Belgium. All of them experienced persecution in Europe and were separated from their parents during the Holocaust. They were born between 1927 and 1943 in Europe, mostly in Belgium. Participants were recruited from a previous study (Fohn & Heenen-Wolff, 2011). Approximately two-thirds (61.8%) of this initial sample agreed to participate in this study ($N = 34$). Seventeen additional participants were recruited through an announcement we published in the Jewish newspaper *Regards* in May 2009. Importantly, none of the participants suffered from dementia.

The mean age of participants was 74.35 years old ($SD = 3.8$, range = 66–82). At the time of separation from their parents, they were on average

7.37 years old ($SD = 3.76$, range = 0–15). All of them were separated from their parents during the war. They were hidden in institutions (convents, monasteries, orphanages) and/or by host families. One-third (33.3%) stayed at the same place during the war, 37.3% moved one or two times, 29.4% moved more than twice, and four participants were interned in a transit camp before hiding. After the war, 25.5% were orphans ($n = 13$), 41.2% found both parents ($n = 21$), and 33.3% found one parent survivor ($n = 17$). All of them were persecuted for their Jewish identity.

Educational levels were as follows: primary school (15.7%), grades 7–9 of secondary school (23.5%), grades 10–12 of secondary school (19.6%), and university (41.2%). Most of the participants (90.2%) reported having been married at least once and having had children (88.2%). More than one-third of those who were married had divorced (36.9%). Interestingly, participants younger than 10 during the war period reported higher rates of divorce later in life (under 5 years = 43.7%; 6–9 years = 50%; 10–15 years = 14.2%).

Measures

Personal data were assessed by questions about gender, age at the time of the war, educational level, and experiences related to the Holocaust (parental loss, placements in families and/or institutions, number of displacements during the war).

The Impact of Event Scale-Revised (IES-R; Weiss & Marmar, 1997), derived from the original Impact of Event Scale (Horowitz, Wilner, & Alvarez, 1979), is a widely used instrument to assess the current degree of subjective posttraumatic distress following a stressful event. The revised scale includes seven additional items and arousal as a third new factor. The self-report instrument's 22 items measure the three main PTSD symptoms: intrusions (8 items; e.g., "Pictures about it popped into my mind"), avoidance (8 items; e.g., "I stayed away from reminders about it"), and arousal (6 items; e.g., "I was jumpy and easily startled"). Symptoms are assessed on a 5-point Likert scale. The current study used the French version of the IES-R, which shows good psychometric properties (Brunet, St-Hilaire, Jehel, & King, 2003). We also adapted the scale by asking participants to mention symptoms that occurred during the last month, rather than in the last week, due to the temporal distance from the stressful events. According to Mels, Derluyn, Broekaert, and Rosseel (2010), this difference in time period should not affect the comparability of the adapted version of the IES-R to the original version, and the validity of the scale should remain unchanged. Indeed, the IES-R has already been used to assess long-term PTSD symptoms (60 years after traumatic events) in various populations (Maercker, 2002, survivors of the 1945 Dresden bombing; Lurie-Beck et al., 2008, Holocaust survivors).

The Thought Control Questionnaire (TCQ; Wells & Davies, 1994) is a 30-item self-report questionnaire that assesses the cognitive strategies used

to deal with negative unpleasant and unwanted thoughts. The questionnaire consists of five subscales: distraction (e.g., "I occupy myself with work instead"), reappraisal (e.g., "I try a different way of thinking about it"), social control (e.g., "I talk to a friend about the thought"), worry (e.g., "I focus on different negative thoughts"), and punishment (e.g., "I tell myself not to be so stupid"). Participants rate each item on a 4-point Likert scale. Internal consistency is moderate to good (Wells & Davies, 1994). As no validated French version of the scale exists at the moment, the English version was translated into French by the first author and back-translated from French into English by a native English speaker. Only 2 items out of 30 included minor changes from the original version. However, a careful assessment by a native English speaker indicated that these small changes did not affect the meaning.

Subjective sense of danger during traumatic events was assessed with the question "How would you now rate your perception of insecurity during the war?" Participants answered on a scale ranging from 0 (*no sense of danger*) to 11 (*extreme sense of danger*).

Procedure

Data were collected from March to June 2009. Questionnaires and a cover letter were sent by post in a prepaid envelope.

RESULTS

First, we examine the descriptive statistics. Second, we investigate to what extent our "predictors" are associated with PTSD symptoms by conducting correlation and mediation analyses. Lastly, we conduct regression analyses to examine which factors predict the development of PTSD symptoms.

Descriptive Statistics

Descriptive statistics are shown in Table 1. The Cronbach alpha for most variables was above .80 (except for reappraisal, $\alpha = .79$; social control, $\alpha = .65$; and punishment, $\alpha = .72$). The mean score on the IES-R was 30.2 ($SD = 21.82$). Men ($M = 30.04$) and women ($M = 30.32$) did not differ on the IES-R, $t(49) = .04$, $p > .10$, nor on the subscales. According to a cutoff point of 33 (Creamer, Bell, & Failla, 2003), 49% ($n = 25$) of our sample suffered from high levels of posttraumatic symptoms. Only 31.4% ($n = 16$) sought psychological help at any point, and 60% who reported a high severity of posttraumatic stress never sought psychological help. Our results showed that older children (ages 13–15 years) at the time of trauma onset reported higher levels of PTSD symptoms compared to other age groups (see Table 2). The mean score for sense of danger was 6.30 ($SD = 4.09$).

TABLE 1 Internal Reliability, Means, and Ranges of IES-R Scores, TCQ Scores, and Sense of Danger During the War.

	Cronbach alpha	Mean (*SD*)	Range
IES-R			
Total	.94	30.2 (21.82)	0–73
Intrusions	.93	14.31 (10.27)	0–32
Avoidance	.80	8.71 (7.03)	0–23
Arousal	.88	7.18 (6.98)	0–24
TCQ			
Total	.85	52.71 (12.11)	34–93
Distraction	.82	13.39 (4.99)	6–24
Reappraisal	.79	11.45 (4.28)	6–22
Social control	.65	11.31 (3.69)	6–21
Worry	.82	9.31 (3.42)	6–20
Punishment	.72	7.24 (1.85)	6–15
Sense of danger during the war		6.30 (4.09)	0–11

Concerning TCQ scores, distraction was found to be the most commonly used thought control strategy ($M = 13.39$, $SD = 4.99$). Reappraisal ($M = 11.45$, $SD = 4.28$) and social control ($M = 11.31$, $SD = 3.69$) were also frequently used, whereas worry ($M = 9.31$, $SD = 3.42$) and punishment ($M = 7.24$, $SD = 1.85$) were less common. There were gender differences on the TCQ reappraisal subscale, $t(49) = -2.94$, $p < .01$. Men ($M = 13.26$, $SD = 3.91$) used more reappraisal coping strategies than women ($M = 9.96$, $SD = 4.05$).

Correlation and Mediation Analyses

Associations between IES-R scores, age, sense of danger during the war, and number of placements were tested with Pearson correlations (Hypotheses 1, 3, and 4). As parental loss is a categorical variable, associations between IES-R scores and parental loss were tested with Spearman correlations (Hypothesis 2). Correlations are presented in Table 3.

Current IES-R scores are presented by age at trauma onset in Table 2. In support of Hypothesis 1, age was positively correlated with the IES-R total score ($r = .36$, $p < .01$) and all subscales (see Table 3). However, when the participants who suffered from childhood amnesia (less than 5 years old throughout the war) were excluded from the sample, the Pearson correlation

TABLE 2 Severity of PTSD Symptoms by Age at Trauma Onset.

Age at trauma onset	*n*	IES-R total	IES-R intrusions	IES-R avoidance	IES-R arousal
Under 3 years	4	15.75	8	4	3.75
3–5 years	13	21.08	11.23	5.23	4.62
6–8 years	13	32	13.62	10.15	8.23
9–12 years	15	34.53	16.27	11.13	7.13
13–15 years	6	44.83	21.83	10.17	12.83

TABLE 3 Correlations Between IES-R, Age, Parental Loss, Educational Level, Sense of Danger, and Number of Hiding Places During the War.

	Age[a]	Parental loss[b]	Educational level[b]	Sense of danger[a]	Number of hiding places[a]
IES-R total	.36**	.25	−.43**	.44**	.17
IES-R intrusions	.35**	.24	−.33*	.45**	.23
IES-R avoidance	.31*	.26	−.48***	.25	.11
IES-R arousal	.30*	.17	−.35*	.46**	.09
Sense of danger during the war	.46**	−.81	−.36*		.41**

Note. Parental loss: 0 = found both parents, 1 = lost one parent, 2 = orphan. Educational level: 1 = primary school, 2 = grades 7–9 of secondary school, 3 = grades 10–12 of secondary school, 4 = university.

[a]Pearson correlation.

[b]Spearman correlation.

*$p < .05$; **$p < .01$; ***$p < .001$.

coefficient was no longer significant ($n = 39$, $r = .25$, *ns*). Except for this change, all other results remained significant. Hypothesis 2 was not supported. No significant association was found between parental loss and the severity of PTSD symptoms, although tendencies in the expected direction were observed for the IES-R total score ($\sigma = .25$, $p = .07$), intrusions ($\sigma = .24$, $p = .09$), and avoidance ($\sigma = .26$, $p = .07$). Participants who had lost both parents in the war tended to report more severe posttraumatic distress, more intrusions, and more avoidance than participants who subsequently found both of their parents. In support of Hypothesis 3, higher sense of danger was significantly correlated with severity of posttraumatic symptoms ($r = .44$, $p < .01$), with more intrusions ($r = .45$, $p < .01$), and with more arousal ($r = .46$, $p < .01$). In support of Hypothesis 4, number of placements during the war was positively associated with a higher sense of danger during the war ($r = .41$, $p < .01$). The more a child moved to different places during the war, the more he or she felt threatened.

A mediation analysis (Sobel, 1982) was run in order to assess whether the relation between age and IES-R could be mediated by sense of danger. We hypothesized that children who were older at the time of the trauma more accurately perceived the surrounding danger, which may explain their higher levels of posttraumatic stress. As stated above, age and sense of danger were both significantly associated with the severity of PTSD symptoms, and we also found that age was positively correlated with sense of danger ($r = .46$, $p < .01$). The mediation analysis showed that sense of danger fully mediated the link between age and IES-R total ($z = 2.37$, $p < .02$), intrusions ($z = 2.38$, $p < .02$), and arousal ($z = 2.43$, $p < .02$) (see Figure 1). However, reappraisal did not mediate the link between age and posttraumatic stress.

We also observed that education was an important factor. Level of education was negatively associated with the IES-R total score ($\sigma = -.43$, $p < .01$), each IES-R subscale (especially avoidance), and sense of danger (see Table 3). Spearman correlations also showed that age was negatively

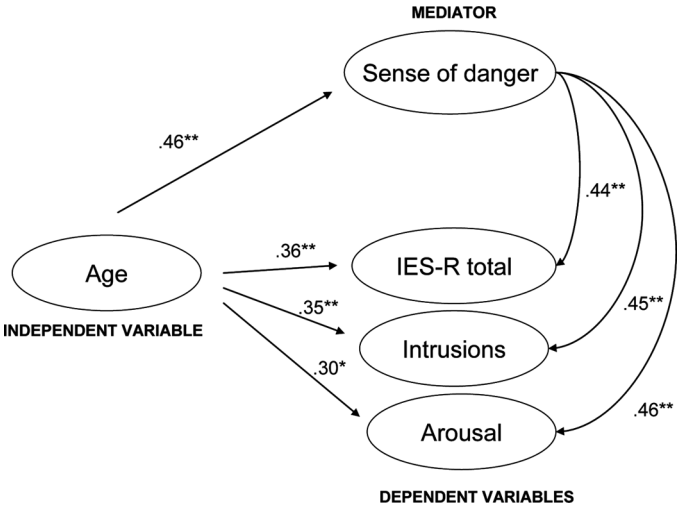

FIGURE 1 Mediation analysis: relationship between age and PTSD symptoms, mediated by sense of danger.

correlated with level of education ($\sigma = -.51$, $p < .001$). Younger children attained a higher level of education than older children. The mediation analysis showed that level of education fully mediated the link between age and IES-R total ($z = 2.49$, $p < .02$), intrusions ($z = 2.19$, $p < .03$), avoidance ($z = 2.55$, $p = .001$), and arousal ($z = 2.26$, $p < .03$).

Regression Analyses

We conducted hierarchical regression analyses to examine which factors were associated with the IES-R total and subscale scores. Two regression analyses were performed due to the small sample size. In the first regression analysis, sociodemographic data (age, gender, and education), sense of danger, and TCQ total score were entered as predictors of PTSD. In the second regression analysis, predictors included the thought control strategies: distraction, reappraisal, social control, worry, and punishment. Parental loss was not entered in the regression because of its low association with the severity of PTSD. A control test showed that this factor only accounted for 2% of the variance.

Table 4 presents the results of the first hierarchical regression for the IES-R total score. Analyses showed that the sociodemographic data (age, gender, and education) accounted for 28% of the IES-total variance, although the beta standard coefficient was significant for education only ($\beta = -.32$, $p < .05$). Lower levels of education were associated with higher IES-R total scores. In addition, sense of danger was nearly significant for posttraumatic stress ($\beta = .25$, $p = .07$). Finally, the total score for thought control strategies was significantly associated with the severity of PTSD (R^2 change $= .11$,

TABLE 4 Regression Analysis: Prediction of IES-R Total Score by Sociodemographic Data, Sense of Danger, and TCQ Total Score.

	Final β	R^2	R^2 change	*df*	*F*	*F* change
Step 1		.28	.28	3, 45	5.53**	5.53**
Age	.05					
Gender	−.13					
Level of education	−.32*					
Step 2	.25	.35	.06	4, 45	5.42**	3.92
Sense of danger						
Step 3	.36**	.46	.11	5, 45	6.71***	8.12**
TCQ total						

Note. Gender: 1 = women, 2 = men. Educational level: 1 = primary school, 2 = grades 7–9 of secondary school, 3 = grades 10–12 of secondary school, 4 = university.
$^{**}p < .01$. $^{***}p < .001$.

$p < .01$; $\beta = .36$, $p < .01$) and accounted for 11% of the variance. This five-factor model explains 46% of the variance for the IES-R total score. The second regression showed that reappraisal was significantly associated with the IES-R total score ($\beta = .38$, $p < .05$), whereas the beta coefficient of worry was almost significant ($\beta = .30$, $p = .07$).

Similar regression analyses were performed for IES-R subscales. Reappraisal was positively associated with intrusions ($\beta = .36$, $p < .05$) and arousal ($\beta = .37$, $p < .05$), whereas sense of danger during the war was associated with arousal only (R^2 change = .08, $p < .05$; $\beta = .31$, $p < .05$). Finally, higher level of education was negatively associated with avoidance ($\beta = -.32$, $p < .05$) and arousal ($\beta = -.32$, $p < .05$). Even though the beta coefficient of the sociodemographic data was not significant, these variables explained a major part of the variance (20%–26%), whereas TCQ strategies explained the variance of intrusions (7%), avoidance (17%), and arousal (5%).

DISCUSSION

The present findings clarify the long-term effects of traumatic events, 65 years after the Holocaust, on a population of elderly hidden Jewish children. Our findings are consistent with other empirical research with child survivors of the Holocaust (Cohen et al., 2003; Keilson, 1992; Lis-Turlejska et al., 2008; Lurie-Beck et al., 2008). In the present study, half of the sample (49%) still reported severe posttraumatic symptoms. This rate is higher than in the study of Lurie-Beck et al. (2008), who also assessed the IES-R in a population of Jewish survivors living in Australia (33%). This discrepancy may be due to the fact that Holocaust survivors who immigrated to countries such as Israel, the United States, Canada, and Australia encountered better access to mental health care than in European countries (Lis-Turlejska et al., 2008). It is also possible that survivors who still live in Europe, where the persecutions

occurred, feel more threatened than those who emigrated. The severity of PTSD symptoms among hidden children 65 years later suggests that their traumatic sufferings, endured at a young age, still impact their present lives.

Consistent with our first hypothesis, the age of hidden children was positively correlated with the severity of PTSD. Older hidden Jewish children suffer from more intrusions, avoidance, and arousal than younger hidden children. This is consistent with other research examining children who survived the Holocaust (Cohen et al., 2002, 2003; Lurie-Beck et al., 2008). Other studies also reported more intrusions (Yehuda et al., 1997) and more avoidance (Trappler, Braunstein, Moskovitz, & Friedman, 2002) among older Holocaust survivors. In contrast to our findings, Yehuda et al. (1997) showed that younger survivors tend to report higher arousal. However, our study showed that the relation between age and PTSD disappears when children below the age of 5 during the war are excluded from the sample. Childhood amnesia may explain this difference (Conway, 2005).

Regression analyses also indicate that age is not a significant predictor of the severity of PTSD symptoms, which is consistent with work by Van der Hal-van Raalte et al. (2007). Furthermore, our results suggest that age is associated with other factors, such as sense of danger and education, as shown by mediation analyses. The older a child was during the war, the more he or she felt threatened, which then explains the higher level of current PTSD symptoms (intrusions and arousal). This is consistent with the fact that older children were more aware of the situation (Yehuda et al., 1997).

Furthermore, age was negatively associated with education. Children who were younger during the war attained a higher level of education after the war when their situations stabilized, while the educational progress of older children was impeded by the war. In their narratives, older children often said they started to work after the war to support financial needs. Mediation analyses showed that education mediates the relation between age and PTSD (intrusions, avoidance, and arousal). Regression analyses also indicated that level of education is an important predictor of posttraumatic stress. Elderly survivors with a lower level of education reported higher levels of posttraumatic stress, more avoidance, and more arousal. Similar results were reported by Cohen et al. (2002).

As most Holocaust studies fail to report level of education, our results demonstrate the need for future research to control for this potentially strong predictor of trauma outcome. Studies investigating other types of trauma also confirm the importance of education as a predictor of PTSD (Brewin, Andrews, & Valentine, 2000). Education is associated with a better quality of life, mental and physical health, social integration, and a better family life (Smith-Osborne, 2009). Education also supports the process of "working through" trauma, which is a cognitive task that enables the integration of traumatic events (Engelhard, Van den Hout, & Schouten, 2006). These studies, in conjunction with our results, suggest that education may protect individuals from

developing PTSD through the development of better abilities and strategies to integrate trauma. Future research should continue to examine the importance of education and the role it plays in mediating the occurrence and evolution of PTSD.

In our study, we also observed a very high rate of divorce (37%). This rate is higher than previous studies (between 2% and 13%; Lurie-Beck et al., 2008; Robinson et al., 1994; Shrira, Palgi, Ben-Ezra, & Shmotkin, 2011). This discrepancy in divorce rates may be due to cultural factors and to the fact that participants were older in these studies. Our results also indicate that younger survivors were more likely to divorce, particularly when they were under the age of 10 at the time of separation. Psychoanalytical theories suggest that separation at a young age may lead to a less secure attachment (Kestenberg & Brenner, 1996), and this insecure attachment may impair people's ability to form close and intimate relationships as adults (Koren-Karie et al., 2003). Thus, the fact that separations at an early age impeded our respondents' ability to forge and maintain stable attachments as children may explain the high divorce rate within our population.

The second hypothesis was that parental loss would be correlated with current severity of PTSD. Although there were no significant correlations to support this hypothesis, there were trends toward parental loss being positively associated with the severity of PTSD, intrusions, and avoidance. Our results are consistent with the results of Van der Hal-van Raalte et al. (2007) but inconsistent with those of Lis-Turlejska et al. (2008), who found a direct effect of parental death on PTSD. It is clear that orphans had to cope with important losses, which may have impaired their functioning. Losses in the context of genocide are complicated by the uncertainty of death and the absence of graves and funeral rituals. This situation often leads to mourning difficulties (Kestenberg & Brenner, 1996; Sagi-Schwartz, Koren-Karie, & Joels, 2003). A study with 3,030 children in Rwanda found more intrusions and arousal among children who lost close relatives compared to children who were not subjected to losses (Dyregrov et al., 2000). It is likely that parental loss may be associated with severity of posttraumatic symptoms, especially in the immediate aftermath of traumatic events. However, our results suggest that there may be stronger predictors of PTSD in the long term than parental loss.

In support of our third hypothesis, sense of danger was associated with the severity of PTSD, intrusions, and arousal. This is consistent with recent work by Schaal and Elbert (2006) and Kimhi et al. (2010). Our research is the first to examine the influence of sense of danger more than 10 years after the traumatic event. Our results show a positive correlation between age and sense of danger. This suggests that older children may more accurately perceive threats to themselves (Keilson, 1992; Kestenberg & Brenner, 1996). More importantly, we found that sense of danger fully mediates the relation between age and the severity of PTSD symptoms, intrusions, and arousal in the long term.

Consistent with our fourth hypothesis, we also showed that number of different hiding places during the war was correlated with a higher sense of danger. These results support clinical observations with Jewish Holocaust survivors (Keilson, 1992; Kestenberg & Brenner, 1996).

Our last hypothesis was not supported. Worry and punishment did not predict PTSD. This finding is in contrast to previous work showing a positive correlation between worry/punishment and PTSD (Bennett et al., 2009; Bryant et al., 2001; Roussis & Wells, 2006). Surprisingly, we found that reappraisal was associated with a higher level of posttraumatic stress, more intrusions, and more arousal. This result is in contradiction with previous studies in which reappraisal was considered as an effective cognitive coping strategy (Bennett et al., 2009; Bryant et al., 2001; Roussis & Wells, 2006). The main difference between our study and these previous studies is that we assessed individuals 65 years after the collective traumatic event, whereas previous studies assessed individuals relatively soon after the traumatic event. Moreover, in previous studies the traumatic event was generally unique to the individual (e.g., a car accident). It is possible that reappraisal may be less effective in the case of human atrocities such as genocide. Considering our results, reappraisal may be an appropriate strategy in some situations, but may become less effective over time. Some researchers have found a positive correlation between reappraisal and depression after 4 weeks (Warda & Bryant, 1998). Thus, perhaps the benefits of reappraising the event asymptote after a certain period of time and then may begin to border on rumination, refreshing the traumatic memories (Regambal & Alden, 2009).

It is also possible that survivors who were more traumatized originally still need reappraisal strategies in order to deal with the trauma, whereas the less traumatized individuals no longer need to use such coping strategies. In our study, results indicated that men reappraised more than women. This difference may be explained by the fact that men often report a more rational style of thinking compared to women, who are more centered on emotions (Labouvie-Vief, 1996). Future research should examine to what extent coping strategies differ across gender and whether this influences the rate at which individuals recover from their traumatic past.

Importantly, our study opens new avenues of future research. First, the findings are based on a relatively small sample. Thus, it will be important to replicate the study with a larger sample and with a sample of non-Jewish people who also survived World War II as children. Furthermore, 65 years have passed since World War II ended. It is possible that people's appraisal of sense of danger was influenced by their current dispositions and may not reflect their true sense of danger during the war. To help answer this question, researchers should conduct a longitudinal study in order to assess whether traumatized individuals' appraisal of sense of danger changes over time. Our lab is currently examining whether such a study would be feasible

with our current population. Other life events also occurred in the meantime that likely affected posttraumatic symptoms but were not controlled statistically.

Our research also highlighted that the IES-R failed to assess the distress of some individuals (e.g., orphans, younger survivors, defensive individuals). While the scale's results did not show high levels of posttraumatic stress for some participants, their life stories highlighted important impairments related to their war experiences (e.g., feelings of guilt, familial and social difficulties, emotional restriction, inability to trust others, fear of intimacy, and psychosomatic symptoms). Collecting qualitative data in addition to quantitative data would enable researchers to identify subjects whose distress could not be detected by the scale (for mixed studies, see Tashakkori & Teddlie, 1998). The fact that hidden Jewish children still report severe posttraumatic symptoms 65 years later is consistent with other studies (Cohen et al., 2003; Lis-Turlejska et al., 2008). Some researchers even found that the severity of PTSD was as high or even higher for hidden children than other types of Holocaust survivors, especially with respect to avoidance and arousal (Yehuda et al., 1997; Prot, 2010). It is possible that the inability to disclose their experiences may partly explain this phenomenon, as disclosure of traumatic experiences is related to better mental and physical health among Holocaust survivors (Finkelstein & Levy, 2006). This could suggest that nondisclosure and nonrecognition as Holocaust survivors may have impaired the ability of hidden children to adequately process their traumatic past.

Finally, we must add that not all hidden children experienced the same trauma. During the war, some of them were sexually and physically abused (Greenfeld, 1993), while others developed loving and caring relationships with the Gentiles who hid them. In this case, being close to people who risked their own lives to save them, and who behaved in an altruistic and sometimes heroic way, may have helped the hidden children cope with their traumatic past and to construct their identity.

This study makes an important contribution to the literature examining Holocaust survivors, in particular hidden Jewish children. This sample of hidden children comprises a rare and very singular aging population that represents the last generation of Holocaust survivors. Furthermore, in examining this rare population we considered a number of variables previous research has demonstrated to be critical in the formation of PTSD (e.g., gender, age, education, parental loss, sense of danger, number of hiding places, cognitive strategies). Our results demonstrated a positive relation between age and PTSD symptoms that was fully mediated by sense of danger and education. Furthermore, lower levels of education and reappraisal predicted severity of PTSD symptoms. Reappraisal also predicted intrusions and arousal, whereas sense of danger during the war predicted arousal. More research with aging traumatized populations is needed in order to better understand

the types of interventions best suited for victims of more recent collective trauma and how the needs of these victims may change across the life span.

REFERENCES

Bennett, S. A., Beck, J. G., & Clapp, J. D. (2009). Understanding the relationship between post-traumatic stress disorder and trauma cognitions: The impact of thought control strategies. *Behaviour Research and Therapy*, *47*, 1018–1023.

Brewin, C. R., Andrews, B., & Valentine, J. D. (2000). Meta-analysis of risk factors for posttraumatic stress disorder in trauma-exposed adults. *Journal of Consulting and Clinical Psychology*, *68*, 748–766.

Brunet, A., St-Hilaire, A., Jehel, L., & King, S. (2003). Validation of a French version of the Impact of Event Scale-Revised. *Canadian Journal of Psychiatry*, *48*, 56–61.

Bryant, R. A., Moulds, M., & Guthrie, R. M. (2001). Cognitive strategies and the resolution of acute stress disorder. *Journal of Traumatic Stress*, *14*, 213–219.

Cohen, E., Dekel, R., & Solomon, Z. (2002). Long-term adjustment and the role of attachment among Holocaust child survivors. *Personality and Individual Differences*, *33*, 299–310.

Cohen, E., Dekel, R., Solomon, Z., & Lavie, T. (2003). Post-traumatic stress symptoms and fear of intimacy among treated and non-treated survivors who were children during the Holocaust. *Social Psychiatry and Psychiatric Epidemiology*, *38*, 611–617.

Cohen, S. K. (2005). *Child survivors of the Holocaust in Israel: Social dynamics and postwar experiences*. Brighton, England: Sussex Academic Press.

Conway, M. A. (2005). Memory and the self. *Journal of Memory and Language*, *53*, 594–628.

Creamer, M., Bell, R., & Failla, S. (2003). Psychometric properties of the Impact of Event Scale-Revised. *Behaviour Research and Therapy*, *41*, 1489–1496.

Dwork, D. (1991). *Children with a star: Jewish youth in Nazi Europe*. New Haven, CT: Yale University Press.

Dyregrov, A., Gjestad, R., & Raundalen, M. (2002). Children exposed to warfare: A longitudinal study. *Journal of Traumatic Stress*, *15*, 59–68.

Dyregrov, A., Gupta, L., Gjestad, R., & Mukanoheli, E. (2000). Trauma exposure and psychological reactions to genocide among Rwandan children. *Journal of Traumatic Stress*, *13*, 3–21.

Engelhard, I. M., Van den Hout, M. A., & Schouten, E. G. W. (2006). Neuroticism and low educational level predict the risk of post-traumatic stress disorder in women after miscarriage or stillbirth. *General Hospital Psychiatry*, *28*, 414–417.

Finkelstein, L. E., & Levy, B. R. (2006). Disclosure of Holocaust experiences: Reasons, attributions and health implications. *Journal of Social and Clinical Psychology*, *25*, 117–140.

Fohn, A. (2010). Secret et traumatisme: L'expérience des enfants juifs cachés en Belgique [Secret and trauma: The experience of hidden Jewish children in Belgium]. *L'autre: Clinique, Culture et Sociétés*, *11*, 189–198.

Fohn, A., & Heenen-Wolff, S. (2011). The destiny of an unacknowledged trauma: The deferred retroactive effect of après-coup in the hidden Jewish children of wartime Belgium. *International Journal of Psychoanalysis*, *92*, 5–20.

Gampel, Y. (2005). *Ces parents qui vivent à travers moi: Les enfants des guerres* [*Those parents who live through me: Children of war*]. Paris, France: Fayard.

Greenfeld, H. (1993). *The hidden children*. Boston, MA: Houghton Mifflin.

Hogman, F. (1988). The experience of Catholicism for Jewish children during World War II. *Psychoanalytic Review*, *75*, 511–532.

Horowitz, M., Wilner, N., & Alvarez, W. (1979). Impact of Event Scale: A measure of subjective stress. *Psychosomatic Medicine*, *41*, 209–218.

Keilson, H. A. (1992). *Sequential traumatization in children*. Jerusalem, Israel: Magnes Press.

Kestenberg, J. S. (1988). Child survivors of the Holocaust: Introduction. *Psychoanalytic Review*, *75*, 495–497.

Kestenberg, J. S., & Brenner, I. (1996). *The last witness: The child survivor of the Holocaust*. Washington, DC: American Psychiatric Press.

Kimhi, S., Eshel, Y., Zysberg, L., & Hantman, S. (2010). Sense of danger and family support as mediators of adolescents' distress and recovery in the aftermath of war. *Journal of Loss and Trauma*, *15*, 351–369.

Koren-Karie, N., Sagi-Schwartz, A., & Joels, T. (2003). Absence of attachment representations (AAR) in the adult years: The emergence of a new AAI classification in catastrophically traumatized Holocaust child survivors. *Attachment and Human Development*, *5*, 381–397.

Labouvie-Vief, G. (1996). Emotion, thought and gender. In C. Magai & S. H. McFadden (Eds.), *Handbook of emotion, adult development, and aging* (pp. 101–117). San Diego, CA: Academic Press.

Lis-Turlejska, M., Luszczynska, A., Plichta, A., & Benight, C. C. (2008). Jewish and non-Jewish World War II child and adolescent survivors 60 years after war: Effects of parental loss and age at exposure on well-being. *Journal of Orthopsychiatry*, *78*, 369–377.

Lurie-Beck, J. K., Liossis, P., & Gow, K. (2008). Relationships between psychopathological and demographic variables and posttraumatic growth among Holocaust survivors. *Traumatology*, *14*, 28–39.

Maercker, A. (2002). Life-review technique in the treatment of PTSD in elderly patients: Rationale and three single case studies. *Journal of Clinical Geropsychology*, *8*, 239–249.

Mels, C., Derluyn, I., Broekaert, E., & Rosseel, Y. (2010). Community-based cross-cultural adaptation of mental health measures in emergency settings: Validating the IES-R and HSCL-37A in Eastern Democratic Republic of Congo. *Social Psychiatry and Psychiatric Epidemiology*, *45*, 899–910.

Prot, K. (2010). Late effects of trauma: PTSD in Holocaust survivors. *Journal of Loss and Trauma*, *15*, 28–42.

Regambal, M. J., & Alden, L. E. (2009). Pathways to intrusive memories in a trauma analogue paradigm: A structural equation model. *Depression and Anxiety*, *26*, 155–166.

Robinson, S., Rapaport-Bar-Sever, M., & Rapaport, J. (1994). The present state of people who survived the Holocaust as children. *Acta Psychiatrica Scandinavica*, *89*, 242–245.

Roussis, P., & Wells, A. (2006). Post-traumatic stress symptoms: Tests of relationships with thought control strategies and beliefs as predicted by the metacognitive model. *Personality and Individual Differences*, *40*, 111–122.

Sagi-Schwartz, A., Koren-Karie, N., & Joels, T. (2003). Failed mourning in the Adult Attachment Interview: The case of Holocaust child survivors. *Attachment and Human Development*, *5*, 398–408.

Schaal, S., & Elbert, T. (2006). Ten years after the genocide: Trauma confrontation and posttraumatic stress in Rwandan adolescents. *Journal of Traumatic Stress*, *19*, 95–105.

Shrira, A., Palgi, Y., Ben-Ezra, M., & Shmotkin, D. (2011). Functioning and mortality of Holocaust survivors: Physical resilience and psychosocial vulnerabilities. *Journal of Loss and Trauma*, *16*, 67–83.

Smith-Osborne, A. (2009). Mental health risk and social ecological variables associated with educational attainment for Gulf War veterans: Implications for veterans returning to civilian life. *American Journal of Community Psychology*, *44*, 327–337.

Sobel, M. E. (1982). Asymptotic confidence intervals for indirect effects in structural equation models. In S. Leinhardt (Ed.), *Sociological methodology* (pp. 290–312). Washington, DC: American Sociological Association.

Steinberg, M. (2009). L'enfant caché, le défi à la Shoah. In I. Emery (Ed.), *Histoire et mémoire des Juifs d'Anderlecht: Années 20–40* [History and memory of the Jews from Anderlecht: Years 20–40] (pp. 6–8). Brussels, Belgium: Communauté Française.

Sternberg, M., & Rosenbloom, M. (2000). Lost childhood—Lessons from the Holocaust: Implications for adult adjustment. *Child and Adolescent Social Work Journal*, *17*, 5–17.

Tashakkori, A., & Teddlie, C. (1998). *Mixed methodology: Combining qualitative and quantitative approaches*. Thousands Oaks, CA: Sage.

Trappler, B., Braunstein, J. W., Moskovitz, G., & Friedman, S. (2002). Holocaust survivors in a primary care setting: Fifty years later. *Psychological Reports*, *91*, 545–552.

Van der Hal-van Raalte, E., Van IJzendoorn, M. H., & Bakermans-Kranenburg, M. J. (2007). Quality of care after early childhood trauma and well-being in later life: Child Holocaust survivors reaching old age. *American Journal of Orthopsychiatry*, *77*, 514–522.

Warda, G., & Bryant, R. A. (1998). Thought control strategies in acute stress disorder. *Behaviour Research and Therapy*, *36*, 1171–1175.

Weiss, D. S., & Marmar, C. R. (1997). The Impact of Event Scale-Revised. In J. P. Wilson & T. M. Keane (Eds.), *Assessing psychological trauma and PTSD* (pp. 399–411). New York, NY: Guilford Press.

Wells, A., & Davies, M. I. (1994). The Thought Control Questionnaire: A measure of individual differences in the control of unwanted thoughts. *Behaviour Research and Therapy*, *32*, 871–878.

Yehuda, R., Schmeidler, J., Siever, L. J., Binder-Brynes, K., & Elkin, A. (1997). Individual differences in posttraumatic stress disorder symptom profiles in Holocaust survivors in concentration camps or in hiding. *Journal of Traumatic Stress*, *10*, 453–463.

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