

Secondary traumatization, relationship problems, and adult children's well-being:

Long-term effects of World War II in the Netherlands

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Abstract

The hypothesis of secondary traumatization argues that children raised by parents who were traumatized by war, have more mental health problems than other children. Past evidence for this hypothesis is not consistent. This paper re-examines the hypothesis by analyzing a large nationally representative survey of adult children in the Netherlands in 2002-2003 ($n = 3,413$) with retrospective information on parental trauma caused by the experience of World War II. Using regression models with an elaborate set of controls, it is found that adult children whose parents suffered from World War II, had poorer mental health and experienced more negative life events. About a third of these long-term effects was mediated by the problems traumatized parents had in maintaining secure relationships with their spouse and children when they were raising their children. Echoing this finding, it is found that traumatized parents have poorer relationships with their children when the children are adult.

INTRODUCTION

It is well-known that exposure to war can have long-term negative effects on people's mental and physical health (Pedersen, 2002). Less consensus exists on how war affects later generations, i.e., children who were not themselves exposed to war but who were raised by parents that were (van IJzendoorn, Bakermans-Kranenburg, & Sagi-Schwartz, 2003; Yehuda, Schmeidler, Wainberg, Binder-Brynes, & Duvdevani, 1998). A common hypothesis is that children of traumatized parents have more emotional problems and poorer mental health compared to children who were raised by parents that were not traumatized (Solomon, Kotler, & Mikulincer, 1988; Solomon et al., 1992). Early scholars argued that a process of 'secondary traumatization' takes place in which "children who became deeply engaged in the emotional lives of their fathers [or mothers] seem to have absorbed some of their pain and carry it into their adult lives" (Rosenheck, 1986, p. 326). Recent scholars argue that there is a more indirect effect of war trauma on children, via the difficulties that traumatized parents have in developing a secure and stable home environment for their children (Bar-On et al., 1998; Schwartz, Dohrenwend, & Levav, 1994; Yehuda et al., 1998). Effects of parental war trauma on children are important examples of how externally induced disadvantage can be transmitted across generations and would, in a more general way, confirm the notion of linked lives in life course research which argues that adverse life events in one generation have lasting effects on the life course of another generation (Elder Jr., 1974; Elder Jr., 1995).

The claim that there are transgenerational effects of war has been made most often for the children of Holocaust survivors. Authors have compared the children of people who were in concentration camps during the war to a control group, usually consisting of people who were never in Europe, people who fled from Europe to Israel before the war, or people who lived in non-occupied European countries (Cohen, Dekel, & Solomon, 2002; Sagi-Schwartz

et al., 2003; Schwartz et al., 1994; Yehuda, Halligan, & Grossman, 2001; Yehuda et al., 1998). Many studies in this area are based on small and select samples of parents and some are obtained from clinical settings. Only few studies are based on large and representative random samples (Schwartz et al., 1994). Meta analyses have shown that the effects depend on the type of study: clinical studies often find positive evidence for transgenerational effects whereas large nationally representative samples yield small or no effects (Kellerman, 2001; van IJzendoorn et al., 2003).¹ Although this has been interpreted as negative evidence for secondary traumatization, the number of analyses based on large national samples is still limited. Moreover, some carefully designed community studies that use more direct measures of war trauma still reveal significant effects of parental war trauma on the well-being of the children of Holocaust survivors (Yehuda, Bell, Bierer, & Schmeidler, 2008; Yehuda et al., 2001; Yehuda et al., 1998). Hence, the question of whether the traumatic impact of World War II has traveled across generations remains an important topic for further study. In this paper, I re-examine the impact of trauma caused by World War II on children who were born and raised after the war. The focus is on long-term effects, in contrast to much previous research which focused on adolescents or young adults. The first research question is as follows: *Is there a long-term impact of parental trauma caused by World War II on the well-being of children who grew up after the war?*

One limitation of past research on the impact of World War II on later generations is that few studies have empirically tested the mechanisms behind transgenerational effects. The literature often makes a distinction between direct and indirect effects of parental war trauma on children (Dekel & Goldblatt, 2008). Direct effects occur via psychological processes such

¹ In the literature on *primary* traumatization, there are some negative findings as well. For example, large-scale demographic studies of Finnish cohorts who were drafted to participate in World War II reveal no significant long-term effects on mortality (Saarela & Finnas, 2012) and similarly large studies on forced migration in Finland during World War II reveal no negative effects either (Haukka, Suvisaari, Sarvimaki, & Martikainen, 2017; Saarela & Elo, 2016; Santavirta, 2014).

as projection and identification. Indirect effects occur in various ways but one commonly mentioned pathway lies in the quality of parenting (Yehuda et al., 2001). Parents who are traumatized often have higher levels of depression, anxiety, and stress and this hampers their role as parents. Traumatized parents may develop less supportive and less stable relationships with children, they may be less available emotionally, and they may display more aggression toward the child (Eland, Van der Velden, Kleber, & Steinmetz, 1990; Letzter-Pouw, Shrira, Ben-Ezra, & Palgi, 2014; Prince, 1985; Sagi-Schwartz et al., 2003; Scharf, 2007; Schwartz et al., 1994; Yehuda et al., 2001). Poor parenting leads to a more insecure attachment between parent and child and this is known to have a negative effect on child development (Trickett, Negriff, Ji, & Peckins, 2011) and mental health during adulthood (Arnow, 2004).

Not only the parent-child relationship may be affected, the parent-parent relationship may suffer as well. From research on veterans from Lebanon, Vietnam, Iraq, and Afghanistan, there is evidence that there are negative effects of war trauma on the relationship with the spouse. War veterans on average have more marital discord, display more partner violence, and experience a higher risk of divorce (Goff, Crow, Reisbig, & Hamilton, 2007; Negrusa & Negrusa, 2014; Riggs, Byrne, Weathers, & Litz, 1998; Solomon et al., 1992). Since parental divorce and inter-parental conflict are known to reduce children's well-being (Amato & Cheadle, 2008; Gerard, Krishnakumar, & Buehler, 2006), this could be a related pathway behind secondary traumatization. While several studies have examined differences in parenting styles across parents with and without trauma or studied effects of trauma on the partner relationship, it is not known to what extent such differences empirically explain the presumed effects of parental war trauma on children's well-being. The second research question is: *To what extent can long-term effects of parental war trauma on well-being – if present – be explained by relationship problems during childhood, in particular, by parenting styles, parental divorce, and parents' marital problems?*

Another gap in our knowledge lies in the question of how war trauma affects intergenerational relationships when children are older and living independently. If war trauma affects parenting styles negatively, this will lead to weaker and perhaps more conflict-ridden relationships with parents when children are adult. Similarly, if war trauma leads to more conflict between parents themselves or even to a divorce, this will also have repercussions for adult intergenerational relationships. Past studies have shown that divorced parents, and in particular divorced fathers, have weaker ties to their adult children and that early interparental conflict has negative long-term effects on the adult parent-child relationship (Kalmijn, 2015; Sobolewski & Amato, 2007). There may also be direct effects of war trauma on adult intergenerational relationships, independent of the relationships that existed during childhood. Children of traumatized parents can experience their parents' psychological problems as burdensome (Dekel & Goldblatt, 2008; Rosenheck, 1986). After leaving home, children may therefore try to maintain a distance from their parents in an attempt to escape their parents' problems (Dekel & Monson, 2010). Although there are many studies on adult intergenerational relationships (Bengtson, Giarrusso, Mabry, & Silverstein, 2002; Dykstra et al., 2006; Grundy & Read, 2012), these have not examined the role of war experiences. This leads to the third research question of this contribution: *Are there long-term effects of parental war trauma on the relationships that adult children have with their parents?*

Several studies of war trauma have examined the characteristics and conditions under which people are sheltered from the adverse effects of war experiences (Masten & Narayan, 2012). Following the spirit of these 'resilience' studies, it is interesting to raise the question of moderation for secondary traumatization as well. The fourth and final research question is therefore: *To what extent are the long-term effects of parental war trauma – assumed that such effects are found – dependent on other parental characteristics?* To answer this

question, I focus on three parental characteristics: the parents' socioeconomic status, the parents' age during the war, and the parents' religiosity. For parental age, it has been argued that trauma during childhood is more problematic across generations since it negatively affects parent-child attachment in the parent generation, which in turn could have an impact on parenting styles when the traumatized child becomes a parent him or herself (Bar-On et al., 1998; Bekkering & Bekkering-Merens, 1980). For socioeconomic status, there are more general reasons to expect interactions since it has been suggested in the life course literature that high parental resources provide a buffer against the adverse effects of all sorts of negative life events (Mandemakers, 2011). Finally, it has been argued that religiosity provides a coping style for dealing with negative war experiences (Bryant-Davis & Wong, 2013; Fares et al., 2017) and it is possible that this also will benefit the children who were not themselves exposed to war.

The context of this paper is the trauma that has been caused by World War II in the Netherlands. The content of this trauma is diverse and not comparable to that of the typical Holocaust survivor study. Of the approximately 140,000 Jews living in the Netherlands before the war, 107,000 were deported and only 5,000 survived; moreover, many of these moved to Israel after the war (Blom, 1989).² There were several other traumatic events that the Dutch population faced, especially during later years of the war. Examples are harsh treatment of civilians by the Nazi occupation, participation in violent acts in the resistance movement, large-scale forced labor of young Dutch men in Germany, long-term hiding of both Jewish and non-Jewish civilians, bombardments by enemy (and allied) forces, large-scale evacuation of border areas by the Nazi regime, war experiences of Dutch soldiers, and a large-scale famine in the last winter of the war. It is estimated that nearly 20% of the Dutch

² The sample contains only a small number of respondents with a Jewish background. The Holocaust may have traumatized other persons in the Netherlands, for instance those witnessing deportation and those who helped Jews to hide. For a small case study of Holocaust survivors in the Netherlands, see Eland et al. (1990)

population at the time was affected to some degree by one or more of these events and conditions during World War II (Van der Heijden, 2001). In addition, it is estimated that about 40,000 Dutch soldiers and 100,000 Dutch civilians were detained in Japanese concentration camps in Indonesia, a Dutch colony at the time (De Jong, 1985; Van Velden, 1977). These men, women, and children suffered from starvation, cruel treatment, death of family members, and downward economic mobility (Bekkering & Bekkering-Merens, 1980; Van Velden, 1977). Most of these returned to the Netherlands after the war.

DATA, MEASURES, AND METHODS

Given the historical case of this paper and the goal to examine long-term effects, we need to rely on retrospective data. The data come from a multi-purpose survey which did not specifically focus on war experiences but on family relationships more generally, i.e., the Netherlands Kinship Panel Study [NKPS] (Dykstra et al., 2007; Dykstra, Kalmijn, Komter, Liefbroer, & Mulder, 2005). The NKPS was based on a nationally representative random sample of adult individuals in the Netherlands. Data were collected in four waves starting in 2002/2003 but I only use the first wave and an additional set of variables that was included only in the second wave. Interviews were done in the homes of the respondents and there were additional self-completion questionnaires for more sensitive topics. Retrospective questions were asked about family structure, parents' marital discord, parenting styles, and parents' socioeconomic status. In addition, there are detailed questions about the respondent's own life course, his or her well-being, and current relationships with the parents.

Because of the length of the questionnaire (75 minutes) and the face-to-face nature of the interviews, the response rate was on the low side (45%) and was caused both by noncontact and refusal. Note that high nonresponse is not directly related to a high degree of selectivity of the response (Groves & Peytcheva, 2008; Stoop, 2005). The NKPS examined

how representative the data were and found that men, younger persons and children living at home are somewhat underrepresented whereas married and cohabiting couples with children are somewhat overrepresented (Dykstra et al., 2005). Register data have also been used in the past to estimate effects of war trauma (Saarela & Finnas, 2012; Saarela & Elo, 2016) and while such data obviously have much lower nonresponse, they do not have direct measures of war trauma. On the other side of the spectrum are small-scale psychological and clinical studies which have even more in-depth measurement, but this comes at the cost of having small and nonrandom samples. Such tradeoffs are inevitable in this area and I believe that the evidence must come from multiple sources.

The sample is limited to respondents whose parents were born before 1940 and who themselves were born between 1946 and 1970, which covers the most relevant segment of the second generation (N = 3,413). The children were between 31-57 years old with a median age of 45. Their parents were born on average in 1924; 61% of the mothers were still alive and 34% of the fathers. Retrospective information was given for all parents, including parents who had died. Descriptive information on the variables is included in Table 1.

Measures of war trauma

A series of questions was asked about the situation of the respondent when he or she was growing up (until he/she was 15 years old). These questions were also posed to respondents whose parents were no longer alive at the time of the survey. One of the questions asked respondents to respond to the following statement: *“The life of my parent(s) is/was seriously marked by war experiences.”* Respondents could choose one of the following answers: (1) strongly agree, (2) agree, (3) neutral, (4) disagree, and (5) strongly disagree. Based on this scale, I construct two dichotomous measures: (a) people who “strongly agree” to the question are coded 1 (otherwise 0), and (b) people who “agree” are coded 1 (otherwise 0). In the text, I

refer to the former group of respondents as ‘strongly traumatized’ and to the latter group as ‘moderately traumatized.’

Although there was only one question on this topic, the question has high face validity in that it directly addresses what we need to know: the degree to which parents were emotionally affected by their experiences in the war. It is possible that children (or parents) misattribute their parents’ emotional problems to the war, but this is difficult to rule out with the present survey design. In a separate part of the paper (see below), I present simulation analyses to explore the consequences of possible ‘over-reporting’ of war trauma.

Outcome measures

The first indicator of well-being is a 5-item scale of mental health (Berwick et al., 1991). This MIH5 scale consists of five questions about how the respondent felt in the past four weeks: (a) how often the respondent was tense, (b) how often the respondent was feeling so down that nothing could cheer him/her up, (c) how often the respondent was calm and peaceful, (d) how often the respondent felt miserable and depressed, (e) how often the respondent felt happy. Answers range from 1 (“all the time”) to 6 (“never”). The two positively worded items (c and e) were reversed. The scale is the average of the standardized items and the resulting scale was standardized. The reliability of this scale is very good (Cronbach’s $\alpha = .86$).

Because the first indicator relies on a subjective assessment by the respondents of their own well-being, it is important to also look at a more objective and concrete indicator of well-being. For this, I developed a scale of negative life events, following an approach to mental health which is sometimes used in public health research and in psychological studies. In this approach, authors do not consider life events one-at-a-time but instead consider a range of events simultaneously by constructing cumulative measures of life events, typically

retrospectively assessed (Lantz, House, Mero, & Williams, 2005; Milkie, Bierman, & Schieman, 2008). For seven events, it was asked if these ever occurred to the respondent: (a) serious psychological problems, (b) a serious illness, (c) contact with the police (not for a traffic violation), (d) convicted by a criminal court, (e) alcohol or drug addiction, (f) bankruptcy or serious financial problems, and (g) physically assaulted or abused. From elsewhere in the questionnaire, I added (h) the occurrence of a divorce or dissolution of a cohabiting relationship and (i) the occurrence of a spell of unemployment (not including being out of the labor force). A count of the number of events was used as an outcome variable (ranging from 0-9).

To measure adult intergenerational relationships, four measures were used. This first was the frequency of face-to-face contact with the parent (on a scale from 1 (“not at all”) to 7 (“daily”)). Values were rescaled to approximate annual frequencies and logged to account for skewness (Waite & Harrison, 1992). The second was the quality of the parent-child relationship on a scale from 1 (“not great”) to 4 (“very good”). The questions were asked separately for the father and the mother and the variable was either the average of the two parents or the measure for the parent who was still alive. We did not ask which parent was affected by war so it is not useful to present models separately for father-child relationships and mother-child relationships. The third variable measures conflicts with parents. Respondents were asked if and how often they had conflict with their father and mother. They could choose between “never or rarely”, “occasionally”, and “frequently”. To simplify matters and to have sufficient numbers in the categories, I contrast cases where there is conflict with any parent to cases where there is no conflict. Hence, conflict can be either heavy or light conflict. The fourth variable measures asymmetry in the relationship, based on the notion that traumatized parents may be more ‘demanding’ emotionally than non-traumatized parents. Children were asked to evaluate who gives more in the relationship, the

respondent, the parent, or both to the same extent. I contrast cases where children perceive that they give more (coded 1) to cases where there is balance or the parent gives more (coded 0). I again combined reports for fathers and mothers.

Models and mediators

To examine the effect of parental war trauma, various types of regression models were used, depending on the type of measurement. OLS models were used for mental health, contact frequency, and relationship quality. Logit models were used for conflict and asymmetry. Poisson regression was used for the count of life events. Using two dummy variables, I compared children with moderately and strongly traumatized parents to children with non-traumatized parents (the reference group). Results for well-being are presented in Table 2 and results for current parent-child relations are presented in Table 3.

To test the mediation hypothesis, the following variables are used (for measurement details, see Table 1): (a) whether the parents were divorced and at what age this happened, (b) a scale of interparental conflict, referring to the time the respondent was 15 (or earlier when the parents were already divorced at that time), (c) a scale of the degree of closeness and support in the parent-child relationship, and (d) a scale for maltreatment by the parent, as reported by the child (Straus, 1979). Unfortunately, there are no items referring to overinvolvement or overprotection in the data. Psychiatric studies show that both too little and too much (and especially unpredictable) involvement in the child's life can be difficult for the child (Eland et al., 1990). Note that the parenting measures were asked only in the second wave (see below).

Mediation is tested by comparing effects of parental trauma on well-being outcomes with and without controlling for the mediators (Table 2). The more the effect declines, the stronger the evidence for mediation. A formal mediation test was obtained from the *khb*

method in STATA (Kohler & Karlson, 2010[2015]). The *khb* model provides a test for the indirect effect of trauma on the outcome via all the mediators combined, which is equal to the degree to which the effect is reduced across the two models. An especially attractive feature is that the *khb* module provides correct estimates of indirect effects for nonlinear models such as logit models. The *khb* approach is analytically equivalent to path-analytic or structural equation methods for testing indirect effects. An advantage of this approach is that it allows us to present both ‘total’ and ‘net’ effects of trauma.

Control variables

The following control variables are used in all analyses (details of these measures are presented in the appendix): the father’s and mother’s occupational status and education, father’s unemployment, home ownership, parent’s financial situation, family size, parent’s religiosity, and parent’s book reading. If parents who are traumatized had fewer resources to begin with, this may bias the effects. Hence, it is important to control for these variables in estimating the effect of parental trauma. The age of the parents during the war is also included. In the mediation analyses, the control variables are treated as given, which means that they are already in the model which estimates the initial effect of trauma.

Missing values

All missing values were imputed with multiple imputation (*mi*) in STATA using chained regression models and 10 imputations. The regression coefficients for the 10 imputations were combined using Rubin’s rules available in *mi estimate* in STATA (Royston, 2005; Rubin, 1996). The dependent variables were used in the imputation procedure but never imputed themselves. The central independent variable was not used and not imputed.

FINDINGS

Of all children, 12.3% reported that their parents were moderately traumatized and 4.3% reported that their parents were strongly traumatized. This is clearly a minority experience but the sample size is large enough to estimate the effects of trauma. In Figure 1, I present the proportion of parents who were traumatized, broken down by the age of the (oldest) parent during the war. The graph shows an increase in the prevalence of trauma with age. People who experienced the war at a younger age may not have participated in traumatic events or may not have understood all traumatic circumstances. For other experiences, such as captivity in a concentration camp, children could be affected more seriously than adults so this would work against the age effect. The graph also makes clear that many parents in the data were relatively young during the war. This is a direct result of the requirement that the children needed to be born after the war (i.e., not traumatized directly).

Regression models for well-being

In Table 2, I present regression models with mental health as an outcome. Adult children of traumatized parents more often have poor mental health than children whose parents were not traumatized (Model 1). The measure of mental health is standardized so that effects of the war-variables are equivalent to Cohen's d , the most commonly used effect size measure. The effect sizes are $d = .42$ for children of parents who were strongly traumatized and $d = .20$ for children of parents who were moderately traumatized. These effects are substantial, especially given that the measures pertain to the present situation, long after the respondents were growing up.

To what extent can we explain the effects of parental war trauma? To address this question, I first explore to what extent the means of the relationship variables during youth differ between groups of children. Figure 2 gives the means of the mediators for the three

groups as well as a test for the differences. The figure clearly shows that traumatized parents on average, were more likely to divorce, had more conflict with their spouse, were less likely to engage in supportive parenting, and more likely to display negative behavior toward the children. All differences were significant except for divorce, which was still an uncommon experience in these cohorts. We also see a dose effect: the means for strongly traumatized parents are higher than the means for moderately traumatized parents. There are obviously differences within groups as well so many traumatized parents may not have had conflicts with their spouse and many may not have been unsupportive of their children. These are simple comparisons of means. They are important in showing that one condition of the mediation hypothesis is met.

When characteristics of the parents' marriage (divorce and interparental conflict) are added to the model, we see that these variables have significant effects on children's mental health (Model 2). Especially interparental conflict is associated with poorer mental health of children later. Parental divorce has no effect but in a model without parental conflict (not shown in the table), children of divorced parents do have significantly poorer mental health. In other words, the divorce effect on children's mental health is due to interparental conflict. Indicators of parenting are added as well, specifically the scale of parental closeness and support and the scale of child maltreatment. Both indicators have the expected effects on children's mental health as adults. The effect of strong trauma declines from $d = .42$ in Model 1 to $d = .29$ in Model 2. Hence, 32% of the effect of trauma can be explained by relationship problems during childhood. The *khb* analysis shows that the decline in the effect between Model 1 and 2 is statistically significant (listed at the bottom of Table 2). For moderate trauma, the percentage of the effect that can be explained is 32% and this too is significant.

In the last two columns of Table 2, Poisson regression models are estimated for the negative life events that the respondent experienced. Children of strongly traumatized parents

have experienced more negative life events than children whose parents were not traumatized (Model 4). The magnitude of the effect is $b = .53$, which means that children of traumatized parents have 1.70 times as many negative life events compared to children of non-traumatized parents. When parents were moderately traumatized, the effect is smaller, hence, there is a clear ‘dose’ effect. The mediators have significant effects (Model 5). When parents were divorced and had conflicts with each other when the child was growing up, the child experienced more negative events during his or her life. Moreover, less supportive parenting and more abuse are also associated with a more problematic life course for the child. Adding mediators leads to a reduction in the effect of parental war trauma. The effects of strong and moderate trauma are significantly reduced between Model 4 and 5. It can be concluded that the findings for mental health generalize to a more objective indicator of well-being.

To explore the link between the two outcome variables themselves, I return to the model for mental health. One extra model is estimated where negative life events is included as an independent variable to predict mental health (Model 3). This variable has a significant effect on mental health, which is plausible and shows that the more negative life events a person has experienced, the lower his or her current mental health. More importantly, life events explain part of the remaining negative effect of parental war trauma on mental health: an additional 41% of the strong trauma effect and an additional 47% of the moderate trauma effect. In other words, adult children of traumatized parents have lower mental health in part because they experience more negative events during their own life course. This is in line with the concept of linked lives in life course research.

Regression models for current parent-child relations

Given the important mediating role of poor parent-child relationships during youth, the question arises how these relationships develop when the children are adult and living on

their own. To address this issue, Table 3 presents regression models for the relationships between parents and their children at the time of the survey. At this time, respondents were between 31 and 57 with an average age of 45.

Model 1 of Table 3 shows that the perceived quality of the relationship is lower for children of traumatized parents than for children of non-traumatized parents ($d = -.30$ for strong trauma and $d = -.20$ for moderate trauma). Model 2 shows similar effects for contact frequency. The measures of contact frequency are logged so that the (exponentiated) effects of war trauma can be interpreted in terms of relative changes (Pindyck & Rubinfeld, 1991). Children see their parents 24% less frequently if the parents are strongly traumatized (i.e., $1 - e^{-.275}$). There is no significant effect of moderate trauma on contact. In Model 3, the dependent variable is adult intergenerational conflict. I use a logistic regression model and contrast cases where there is conflict with any parent to cases where there is no conflict. Children of traumatized parents have a 58% higher odds to have conflict with their parents as adults compared to children with non-traumatized parents ($e^{.458} - 1$). Finally, Model 4 shows that children of traumatized parents more often feel that the relationship with their parents is asymmetric. When there was trauma, children more often say that they give more in the relationship than what the parent gives, compared to a situation where there was no trauma. The effect is marginally significant for strong trauma and significant for moderate trauma but the effects are about equal in magnitude.

Reporting bias

One question that arises in my data is to what extent the reports of children of their parents' war problems are accurate. Children may observe psychological problems in their parents but incorrectly attribute these to what their parents experienced during the war. Similarly, parents may explain to their children that they suffer from war trauma but this may not be entirely

correct. For example, there may be personality problems involved that would have emerged even without these negative war experiences. As a result, it is possible that war trauma is overestimated to some extent. Moreover, it is possible that children's own well-being plays a role in this. Children who are depressed, for example, may be more likely to report parental war trauma, either because they are more sensitive to such problems or because they seek an external cause for their own problems (projection). In sum, there may be 'false positive reporting' on trauma and this tendency may also be selective.

Without reports from other family members, from the parents themselves, or from clinical psychologists, it is difficult to evaluate this problem. It is possible, however, to explore the *potential* impact of false positive reporting in observational data using simulation models. Several methods are available for conducting such experiments (Greenland, 1996, 2005), but in this paper I opted for a simple and straightforward approach. The starting point of my approach is to take a random sample of traumatized parents, reclassify them as having no trauma ('false positive'), and re-estimate the effect of trauma on the respondent's mental health. To explore the impact of false positive reporting, we can vary (a) the *level* of false positive reporting (10%, 20%, or 30%), and (b) the degree of *selectivity* of false positive reporting (no selectivity, medium selectivity, and high selectivity). Selectivity is defined in terms of how the likelihood of false positive reporting depends on the respondent's mental health score (for details, see Table 4). This yields nine conditions and for each condition, I estimated 50 models.

The numbers in Table 4 are the average effect of trauma on mental health and the average standard error of that effect across the 50 simulations. The rows represent different levels of false positive reporting, the columns represent different degrees of selectivity. Models are controlled for selected baseline variables but not for the mediators and no multiple imputation is used. I first observe that the level of false positive reporting has no

effect on the coefficients but only on the standard errors. Standard errors become larger when there are more false positives. The effects remain significant, however, even with 30% false positive reporting (row C, column 1). More consequential is obviously the degree of selectivity. When false reporting is greatly dependent on the respondent's own mental health (column 3), the effect of strong trauma declines but only with about a third of the effect. Moreover, even in the 'high level' condition (row C, column 3), this reduced effect of trauma remains statistically significant. The effects of moderate trauma become smaller as well and these become insignificant in the most selective condition (column 1). Overall, the simulations indicate that the conclusions are robust. There may be overreporting and this may attenuate the effects, but the effects are so strong that they will not be reduced to null effects.

Moderator effects

To what extent are the long-term effects of war trauma dependent on other attributes? In other words, the question is whether some of the variables included are moderators of the trauma effect. To explore this, I dichotomized the trauma variable and interacted it with a selection of relevant variables in the model (for all five dependent variables). I look at the parent's socioeconomic status, the parents' age during the war (0-14 versus 14+, based on the oldest parent), and parent's religiosity. All interactions are presented in Table 5.

There is a positive interaction between parents' socioeconomic status and war trauma on mental health. The interaction shows that the effect of war trauma on mental health is more detrimental in high-status families. A similar interaction is observed for relationship quality. Trauma has a more negative effect on parent-child relationships in high-status families. Life course studies have argued that parental resources can work as a buffer against negative life course events but the findings here suggest that it is the other way around for war trauma. The table also shows a positive interaction effect of parental age during the war

on negative life events, showing that the trauma effect on negative life events is larger when the parents were children during the war. This is in line with expectations. Although the other interactions with parental age are not significant, they do have a sign conforming to my expectations. This provides tentative evidence that children of parents who were younger during the war are more negatively affected. Religiosity does not moderate the effects of war trauma either, suggesting that faith or spirituality may not be a useful coping strategy, at least not from the perspective of the second generation.

CONCLUSION

Using nationally representative survey data on the children of Dutch parents who were traumatized by World War II, I find positive evidence for the thesis of secondary traumatization. The children in my study were raised from the mid-1950s to the early 1970s and they were approached for the survey when they were in their thirties, forties, or early fifties. I find significant negative long-term effects of parental war trauma on children's well-being. These effects are found for both subjective and objective aspects of well-being: a mental health inventory and a scale of negative life events. For both outcomes, there is also a dose effect: the group of children with strongly traumatized parents is more negatively affected than the group of children with moderately traumatized parents.

Authors have often theorized that relationships play a key role in this effect, in particular, the relationship between the traumatized parent and his or her spouse and the relationship between the traumatized parent and his or her children. These notions were tested using mediation analyses. I first find that when traumatized parents were raising their children, they more often had conflicts with their spouse and also experienced a higher risk of divorce. Moreover, traumatized parents showed, on average, lower levels of support and higher levels of maltreatment of their children. Most importantly, these differences explain

about a third of the trauma effect on children's later well-being. In other words, children of traumatized parents experience negative long-term effects in part because their parents had more difficulties in maintaining healthy relationships when the children were growing up. In my view, this is one of the first systematic tests of the mediating role of relationships in a nationally representative data set.

The present study also examined long-term effects on intergenerational relationships. I hypothesized that parental war trauma could lead to lower-quality relationships with parents later in the life course. In line with this hypothesis, I find clear negative effects of war trauma on the ties that adult children have with their parents; this evidence applies to the frequency of contact, the prevalence of conflict, the perceived quality of the tie, and even the degree of asymmetry. Both direct and indirect pathways were theorized. An indirect pathway is that parental war trauma leads to poorer adult intergenerational relationships because it is associated with more interparental conflict and poorer parenting during the child's youth. This echoes the mediating role of relationships in my analysis of well-being. A direct pathway is that children of traumatized parents aim for greater independence from their parents after making the transition to adulthood in order to 'escape' the problems their parents are facing. This latter reasoning is confirmed by the findings on asymmetry: children of traumatized parents perceive that they give more in the relationship than the parent. The finding that there are negative long-term effects of war trauma on parent-child relations is worrisome since traumatized parents may need more social and emotional support from their children when they are old and especially in circumstances when they become single (Fridman, Bakermans-Kranenburg, Sagi-Schwartz, & Van IJzendoorn, 2011).

The data in this paper have both strengths and weaknesses. One potential weakness lies in the measurement of trauma. Many studies on the effects of World War II relied on measures of war experiences without regard to how people have responded mentally to these

experiences. For example, authors contrast persons who were in a concentration camp in Europe during the war to persons who lived outside of Europe at the time (Rieck, 1994; Scharf, 2007; Schwartz et al., 1994). Later studies of World War II used more elaborate measures that focused on the mental response to war experiences. The studies by Yehuda and her colleagues, for example, use children's reports on parents' post-traumatic stress disorder (PTSD) among Holocaust survivors (Yehuda et al., 2008; Yehuda et al., 2001). In the survey, children were asked to evaluate the degree to which their parent's life was marked by war experiences and in this respect, I also rely on the mental response to war rather than to the specifics of the war experiences.

Although the question has face validity due to its directness, it contains only one item and therefore does not have optimal reliability. Another disadvantage is that the children rather than the parents answered the question, although it should be recognized that this is done in other studies as well (Rosenheck, 1986; Schwartz et al., 1994; Yehuda et al., 2008). The measurement limitations need to be weighed against the methodological strengths of my study: its large national sample, non-war related recruitment procedures, the broadness of my outcome variables (mental health, life course development, adult relationships), and its long-term perspective. More importantly, even with an elementary measure of parental war trauma, I find significant negative effects on children sixty years after the war and I show that these effects are mediated to a large extent by the difficulties traumatized parents have in developing and maintaining intimate relationships. Simulations further suggest that the conclusions are relatively robust with respect to false positive reporting.

The Dutch context has not often been studied since most studies on World War II have focused on the experience of the Holocaust. Dutch Jews were killed in disproportionate numbers in the Holocaust and few of those who survived remained in the Netherlands after the war (Blom, 1989). The type of trauma that I focus on is different and probably also

diverse in nature. Traumas were potentially caused by a range of events and circumstances, including Japanese concentration camps, enemy bombardments, the resistance movement, harsh treatment by enemy forces (especially later in the war), conflicts with collaborators, and the ‘hunger winter.’ In the cohorts that I study, about 17% of the – now adult – children indicated that their parents were negatively affected by the war when they themselves were growing up. Severe trauma occurs in about 4% of the families and while this is a minority experience, it is an experience with long-term negative effects.

References

- Amato, P. R., & Cheadle, J. E. (2008). Parental Divorce, Marital Conflict and Children’s Behavior Problems. *Social Forces*, 86(3), 1139-1161.
- Arnow, B. A. (2004). Relationships between Childhood Maltreatment, Adult Health and Psychiatric Outcomes, and Medical Utilization. *Journal of Clinical Psychiatry*, 65, 10-15.
- Bar-On, D., Eland, J., Kleber, R. J., Krell, R., Moore, Y., Sagi, A., & Van IJzendoorn, M. H. (1998). Multigenerational Perspectives an Coping with the Holocaust Experience: An Attachment Perspective for Understanding the Developmental Sequelae of Trauma across Generations. *International Journal of Behavioral Development*, 22(2), 315-338.
- Bekkering, P. G., & Bekkering-Merens, M. (1980). De Japanse kampen; Nog geen verleden tijd. *Nederlands Tijdschrift voor Geneeskunde*, 124(13), 467-473.
- Bengtson, V., Giarrusso, R., Mabry, J. B., & Silverstein, M. (2002). Solidarity, Conflict, and Ambivalence: Complementary or Competing Perspectives on Intergenerational Relationships? *Journal of Marriage and Family*, 64(3), 568-576. doi: 10.1111/j.1741-3737.2002.00568.x

- Berwick, D. M., Murphy, J. M., Goldman, P. A., Ware, J. E., Barsky, A. J., & Weinstein, M. C. (1991). Performance of the Five-Item Mental Health Screening Test. *Medical Care*, 29, 169-176.
- Blom, J. C. H. (1989). The Persecution of the Jews in the Netherlands: A Comparative Western European Perspective. *European History Quarterly*, 19, 331-351.
- Bryant-Davis, T., & Wong, E. C. (2013). Faith to Move Mountains: Religious Coping, Spirituality, and Interpersonal Trauma Recovery. *American Psychologist*, 68(8), 675-684. doi: 10.1037/a0034380
- Cohen, E., Dekel, R., & Solomon, Z. (2002). Long-Term Adjustment and the Role of Attachment among Holocaust Child Survivors. *Personality and Individual Differences*, 33(2), 299-310. doi: 10.1016/s0191-8869(01)00156-8
- De Jong, L. (1985). *Het Koninkrijk der Nederlanden in de Tweede Wereldoorlog: Nederlands-Indie (deel 11b)*. Leiden: Martinus Nijhoff.
- Dekel, R., & Goldblatt, H. (2008). Is There Intergenerational Transmission of Trauma? The Case of Combat Veterans' Children. *American Journal of Orthopsychiatry*, 78(3), 281-289. doi: 10.1037/a0013955
- Dekel, R., & Monson, C. M. (2010). Military-Related Post-Traumatic Stress Disorder and Family Relations: Current Knowledge and Future Directions. *Aggression and Violent Behavior*, 15(4), 303-309. doi: 10.1016/j.avb.2010.03.001
- Dykstra, P. A., Kalmijn, M., Knijn, T. C. M., Komter, A. E., Liefbroer, A. C., & Mulder, C. H. (2006). *Family Solidarity in the Netherlands*. Amsterdam: Dutch University Press.
- Dykstra, P. A., Kalmijn, M., Knijn, T. C. M., Komter, A. E., Liefbroer, A. C., & Mulder, C. H. (2007). *Codebook of the Netherlands Kinship Panel Study Wave 2*. The Hague: Netherlands Interdisciplinary Demographic Institute.

- Dykstra, P. A., Kalmijn, M., Komter, A. E., Liefbroer, A., & Mulder, C. H. (2005). *Codebook of the Netherlands Kinship Panel Study Wave 1*. The Hague: Netherlands Interdisciplinary Demographic Institute.
- Eland, J., Van der Velden, P. G., Kleber, R. J., & Steinmetz, C. H. D. (1990). *Tweede generatie Joodse Nederlanders - Een onderzoek naar de gezinsachtergronden en psychisch functioneren*. Deventer: Van Loghum Slaterus.
- Elder Jr., G. H. (1974). *Children of the Great Depression: Social Changes in Life Experience*. Chicago: University of Chicago Press.
- Elder Jr., G. H. (1995). The Life Course Paradigm: Social Change and Individual Development. In P. Moen, G. H. Elder, Jr. & K. Lüscher (Eds.), *Examining Lives in Context: Perspectives on the Ecology of Human Development* (pp. 101-139). Washington, DC: American Psychological Association.
- Fares, J., Gebeily, S., Saad, M., Harati, H., Nabha, S., Said, N., & Fares, Y. (2017). Post-Traumatic Stress Disorder in Adult Victims of Cluster Munitions in Lebanon: A 10-Year Longitudinal Study. *BMJ Open*, 7(8), 8. doi: 10.1136/bmjopen-2017-017214
- Fridman, A., Bakermans-Kranenburg, M. J., Sagi-Schwartz, A., & Van IJzendoorn, M. H. (2011). Coping in Old Age with Extreme Childhood Trauma: Aging Holocaust Survivors and Their Offspring Facing New Challenges. *Aging & Mental Health*, 15(2), 232-242. doi: 10.1080/13607863.2010.505232
- Gerard, J. M., Krishnakumar, A., & Buehler, C. (2006). Marital Conflict, Parent-Child Relations, and Youth Maladjustment - a Longitudinal Investigation of Spillover Effects. *Journal of Family Issues*, 27(7), 951-975. doi: 10.1177/0192513x05286020
- Goff, B. S. N., Crow, J. R., Reisbig, A. M. J., & Hamilton, S. (2007). Impact of Individual Trauma Symptoms of Deployed Soldiers on Relationship Satisfaction. *Journal of Family Psychology*, 21(3), 344-353. doi: 10.1037/0893-3200.21.3.344

- Greenland, S. (1996). Basic Methods for Sensitivity Analysis of Biases. *International Journal of Epidemiology*, 25(6), 1107-1117.
- Greenland, S. (2005). Multiple-Bias Modelling for Analysis of Observational Data. *Journal of the Royal Statistical Society Series a-Statistics in Society*, 168, 267-291. doi: 10.1111/j.1467-985X.2004.00349.x
- Groves, R. M., & Peytcheva, E. (2008). The Impact of Nonresponse Rates on Nonresponse Bias - a Meta-Analysis. *Public Opinion Quarterly*, 72(2), 167-189. doi: 10.1093/poq/nfn011
- Grundy, E., & Read, S. (2012). Social Contacts and Receipt of Help among Older People in England: Are There Benefits of Having More Children? *Journals of Gerontology Series B-Psychological Sciences and Social Sciences*, 67(6), 742-754. doi: 10.1093/geronb/gbs082
- Haukka, J., Suvisaari, J., Sarvimaki, M., & Martikainen, P. (2017). The Impact of Forced Migration on Mortality a Cohort Study of 242,075 Finns from 1939-2010. *Epidemiology*, 28(4), 587-593. doi: 10.1097/ede.0000000000000669
- Kalmijn, M. (2015). How Childhood Circumstances Moderate the Long-Term Impact of Divorce on Father-Child Relationships. *Journal of Marriage and Family*, 77(4), 921-38.
- Kellerman, N. P. F. (2001). Psychopathology in Children of Holocaust Survivors: A Review of the Research Literature. *Israel Journal of Psychiatry and Related Sciences*, 38(1), 36-46.
- Kohler, U., & Karlson, K. (2010[2015]). *KHB: Stata module to decompose total effects into direct and indirect via KHB-method*. Retrieved from <https://ideas.repec.org/c/boc/bocode/s457215.html>.

- Lantz, P. M., House, J. S., Mero, R. P., & Williams, D. R. (2005). Stress, Life Events, and Socioeconomic Disparities in Health: Results from the Americans' Changing Lives Study. *Journal of Health and Social Behavior*, *46*(3), 274-288.
- Letzter-Pouw, S. E., Shrira, A., Ben-Ezra, M., & Palgi, Y. (2014). Trauma Transmission through Perceived Parental Burden among Holocaust Survivors' Offspring and Grandchildren. *Psychological Trauma-Theory Research Practice and Policy*, *6*(4), 420-429. doi: 10.1037/a0033741
- Mandemakers, J. J. (2011). *Socio-Economic Differentials in the Impact of Life Course Transitions on Well-Being*. Tilburg: Tilburg University.
- Masten, A. S., & Narayan, A. J. (2012). Child Development in the Context of Disaster, War, and Terrorism: Pathways of Risk and Resilience. *Annual Review of Psychology*, *63*, 227-257.
- Milkie, M. A., Bierman, A., & Schieman, S. (2008). How Adult Children Influence Older Parents' Mental Health: Integrating Stress-Process and Life-Course Perspectives. *Social Psychology Quarterly*, *71*(1), 86-105.
- Negrusa, B., & Negrusa, S. (2014). Home Front: Post-Deployment Mental Health and Divorces. *Demography*, *51*(3), 895-916. doi: 10.1007/s13524-014-0294-9
- Pedersen, D. (2002). Political Violence, Ethnic Conflict, and Contemporary Wars: Broad Implications for Health and Social Well-Being. *Social Science & Medicine*, *55*(2), 175-190. doi: 10.1016/s0277-9536(01)00261-1
- Pindyck, R. S., & Rubinfeld, D. L. (1991). *Econometric Models and Economic Forecasts*. New York: McGraw-Hill.
- Prince, R. M. (1985). 2nd Generation Effects of Historical Trauma. *Psychoanalytic Review*, *72*(1), 9-29.

- Rieck, M. (1994). The Psychological State of Holocaust Survivors' Offspring: An Epidemiological and Psychodiagnostic Study. *International Journal of Behavioral Development, 17*(4), 649-667.
- Riggs, D. S., Byrne, C. A., Weathers, F. W., & Litz, B. T. (1998). The Quality of the Intimate Relationships of Male Vietnam Veterans: Problems Associated with Posttraumatic Stress Disorder. *Journal of Traumatic Stress, 11*(1), 87-101. doi: 10.1023/a:1024409200155
- Rosenheck, R. (1986). Impact of Posttraumatic-Stress-Disorder of World-War-Ii on the Next Generation. *Journal of Nervous and Mental Disease, 174*(6), 319-327. doi: 10.1097/00005053-198606000-00001
- Royston, P. (2005). Multiple Imputation of Missing Values: Update of Ice. *Stata Journal, 5*(4), 527-536.
- Rubin, D. B. (1996). Multiple Imputation after 18+ Years. *Journal of the American Statistical Association, 91*, 473-489.
- Saarela, J., & Finnas, F. (2012). Long-Term Mortality of War Cohorts: The Case of Finland. *European Journal of Population-Revue Europeenne De Demographie, 28*(1), 1-15. doi: 10.1007/s10680-011-9246-x
- Saarela, J. M., & Elo, I. T. (2016). Forced Migration in Childhood: Are There Long-Term Health Effects? *SSM - Population Health, 2*, 813-823.
- Sagi-Schwartz, A., van IJzendoorn, M. H., Grossmann, K. E., Joels, T., Grossmann, K., Scharf, M., & Alkalay, S. (2003). Attachment and Traumatic Stress in Female Holocaust Child Survivors and Their Daughters. *American Journal of Psychiatry, 160*(6), 1086-1092. doi: 10.1176/appi.ajp.160.6.1086

- Santavirta, T. (2014). Unaccompanied Evacuation and Adult Mortality: Evaluating the Finnish Policy of Evacuating Children to Foster Care During World War II. *American Journal of Public Health, 104*(9), 1759-1765. doi: 10.2105/ajph.2014.301939
- Scharf, M. (2007). Long-Term Effects of Trauma: Psychosocial Functioning of the Second and Third Generation of Holocaust Survivors. *Development and Psychopathology, 19*(2), 603-622. doi: 10.1017/s0954579407070290
- Schwartz, S., Dohrenwend, B. P., & Levav, I. (1994). Nongenetic Familial Transmission of Psychiatric-Disorders - Evidence from Children of Holocaust Survivors. *Journal of Health and Social Behavior, 35*(4), 385-402. doi: 10.2307/2137216
- Sobolewski, J. M., & Amato, P. R. (2007). Parents' Discord and Divorce, Parent-Child Relationships and Subjective Well-Being in Early Adulthood: Is Feeling Close to Two Parents Always Better Than Feeling Close to One? *Social Forces, 85*(3), 1105-1124. doi: 10.1353/sof.2007.0056
- Solomon, Z., Kotler, M., & Mikulincer, M. (1988). Combat-Related Posttraumatic Stress Disorder among 2nd-Generation Holocaust Survivors - Preliminary Findings. *American Journal of Psychiatry, 145*(7), 865-868.
- Solomon, Z., Waysman, M., Levy, G., Fried, B., Mikulincer, M., Benbenishty, R., & Bleich, A. (1992). From Front-Line to Home Front – A Study of Secondary Traumatization. *Family Process, 31*(3), 289-302. doi: 10.1111/j.1545-5300.1992.00289.x
- Stoop, I. A. L. (2005). *Hunting for the Last Respondent: Nonresponse in Sample Surveys*. Den Haag: Sociaal en Cultureel Planbureau.
- Straus, M. A. (1979). Family Patterns and Child Abuse in a Nationally Representative American Sample. *Child Abuse & Neglect, 3*, 213-225.

- Trickett, P. K., Negriff, S., Ji, J. Y., & Peckins, M. (2011). Child Maltreatment and Adolescent Development. *Journal of Research on Adolescence*, 21(1), 3-20. doi: 10.1111/j.1532-7795.2010.00711.x
- Van der Heijden, C. (2001). *Grijs verleden: Nederland en de Tweede Wereldoorlog*. Amsterdam/Antwerpen: Contact.
- Van IJzendoorn, M. H., Bakermans-Kranenburg, M. J., & Sagi-Schwartz, A. (2003). Are Children of Holocaust Survivors Less Well-Adapted? A Meta-Analytic Investigation of Secondary Traumatization. *Journal of Traumatic Stress*, 16(5), 459-469. doi: 10.1023/a:1025706427300
- Van Velden, D. (1977). *De Japanse burgerkampen*. Franeker: Wever.
- Waite, L., & Harrison, S. C. (1992). Keeping in Touch: How Women in Mid-Life Allocate Social Contacts among Kith and Kin. *Social Forces*, 70, 637-655.
- Yehuda, R., Bell, A., Bierer, L. M., & Schmeidler, J. (2008). Maternal, Not Paternal, Ptsd Is Related to Increased Risk for Ptsd in Offspring of Holocaust Survivors. *Journal of Psychiatric Research*, 42(13), 1104-1111. doi: 10.1016/j.jpsychires.2008.01.002
- Yehuda, R., Halligan, S. L., & Grossman, R. (2001). Childhood Trauma and Risk for Ptsd: Relationship to Intergenerational Effects of Trauma, Parental Ptsd, and Cortisol Excretion. *Development and Psychopathology*, 13(3), 733-753. doi: 10.1017/s0954579401003170
- Yehuda, R., Schmeidler, J., Wainberg, M., Binder-Brynes, K., & Duvdevani, T. (1998). Vulnerability to Posttraumatic Stress Disorder in Adult Offspring of Holocaust Survivors. *American Journal of Psychiatry*, 155(9), 1163-1171.

Table 1.- Descriptive statistics of independent variables

	mean	s.d.	min	max	count
Mental (ill) health	.001	.806	-1.263	3.892	3,409
# Negative life events	1.103	1.245	0	9	3,394
Relationship strength with parent(s)	3.067	.830	1	4	2,790
Contact with parent(s) (ln)	3.246	1.260	.000	5.707	2,794
Conflict with parent(s)	.274		0	1	2,794
Parent(s) somewhat affected by war	.122		0	1	3,413
Parent(s) strongly affected by war	.043		0	1	3,413
Child daughter	.583		0	1	3,679
Child's age	45.1	6.8	31	57	3,679
Parent's age during war	21.3	9.2	6	69 ^b	3,679
Parental SES age 15	-.013	.817	-1.498	2.713	3,674
Father unemployment age 15	1.088	.452	1	4	3,627
Parents home owner	.511		0	1	3,679
Parents financial situation	2.887	1.088	1	5	3,412
Number of siblings	3.0	2.2	0	10	3,679
Parents religious	2.895	1.196	1	5	3,415
Parents book reading	3.234	1.188	1	5	3,417
Parents divorced 0-17	.056		0	1	3,679
Parents divorced 18+	.033		0	1	3,679
Parental conflict age 15	-.007	.791	-1.136	2.438	3,640
Parental closeness/support age 15	.002	.778	-2.324	1.592	2,784 ^c
Child maltreatment age 15	.002	.654	-.502	3.866	2,779 ^c

^a Missing values in the models are imputed using multiple imputation in STATA using chained regression methods. 10 imputations were done and the regression models were estimated using mi estimate (based on Rubin's rules).

^b Only 0.5% of the parents were older than 40 during the war.

^c Only asked in wave 2.

Table 2.- Regression models for wellbeing and negative life events: unstandardized coefficients

	Model 1	Model 2	Model 3	Model 4	Model 5
	Mental (ill) health (OLS)	Mental (ill) health (OLS)	Mental (ill) health (OLS)	# Negative life events (Poisson)	# Negative life events (Poisson)
Parent(s) strongly affected by war	.421* (.085)	.287* (.084)	.169* (.081)	.528* (.066)	.336* (.069)
Parent(s) somewhat affected by war	.199* (.053)	.135* (.052)	.070 (.050)	.336* (.046)	.236* (.047)
Child daughter	.254* (.035)	.219* (.035)	.198* (.033)	.082* (.034)	.049 (.035)
Child's age	-.027 (.025)	-.041 (.025)	-.057* (.024)	.077* (.024)	.048~ (.025)
Age parent during war	-.008 (.026)	.020 (.026)	.020 (.025)	-.040 (.025)	.012 (.025)
Parental SES age 15	.020 (.020)	-.007 (.020)	-.023 (.019)	.082* (.019)	.055* (.019)
Father unemployment age 15	.062~ (.038)	.046 (.037)	.013 (.036)	.123* (.032)	.097* (.033)
Parents home owner	-.062~ (.037)	-.044 (.036)	-.001 (.035)	-.199* (.036)	-.169* (.036)
Parents financial situation	-.030 (.019)	-.006 (.019)	.000 (.018)	-.047* (.019)	-.015 (.018)
Number of sibs	.005 (.019)	-.023 (.018)	-.030~ (.018)	.062* (.018)	.029 (.018)
Parents religious	-.032~ (.018)	-.026 (.018)	-.007 (.017)	-.095* (.017)	-.082* (.018)
Parents book reading	-.040* (.018)	-.006 (.018)	-.008 (.018)	-.037* (.018)	-.000 (.018)
Parents divorced 0-17		.062 (.077)	.017 (.074)		.164* (.065)
Parents divorced 18+		.047 (.096)	.023 (.092)		.022 (.083)
Parental conflict age 15		.055* (.020)	.038* (.019)		.061* (.018)
Parental closeness/support (age 15)		-.149* (.023)	-.123* (.022)		-.115* (.022)
Child maltreatment (age 15)		.088* (.024)	.047* (.023)		.164* (.018)
Negative life events +1 (ln)			.502* (.031)		
Constant	-.228* (.053)	-.192* (.052)	-.444* (.053)	-.076 (.048)	-.076 (.050)
Observations	3379	3379	3363	3366	3366
Mediation strong trauma		.134*	.099*		.161*
Mediation moderate trauma		.064*	.062*		.083*
R ²	.031	.084	.150	.053	.145

Note: Standard errors in parentheses. R² for Model 4 and 5 from OLS model.

~ $p < 0.10$, * $p < 0.05$

Table 3.- Regression models for current relationship with parents: Unstandardized coefficients

	Model 1	Model 2	Model 3	Model 4
	Relationship strength (OLS)	Contact frequency (OLS)	Conflict (Logit)	Perceived asymmetry (Logit)
Parent(s) strongly affected by war	-.301* (.103)	-.275* (.128)	.458* (.226)	.417~ (.235)
Parent(s) moderately affected by war	-.196* (.062)	-.084 (.077)	.430* (.138)	.550* (.138)
Only father alive	-.315* (.070)	-.313* (.087)	-.009 (.163)	-.010 (.169)
Only mother alive	-.044 (.045)	.120* (.056)	.042 (.106)	-.089 (.110)
Child daughter	-.028 (.039)	.134* (.049)	.442* (.094)	.401* (.097)
Child's age	-.082* (.029)	-.160* (.036)	-.120~ (.068)	.242* (.069)
Age parent during war	.067~ (.035)	.057 (.043)	.070 (.081)	.215* (.083)
Parental SES age 15	-.046* (.022)	-.278* (.028)	.181* (.051)	-.011 (.054)
Father unemployed age 15	-.030 (.044)	.033 (.054)	.063 (.097)	.010 (.107)
Parents home owner	.035 (.042)	.027 (.052)	-.137 (.098)	-.107 (.100)
Parents financial situation	.036~ (.022)	.102* (.027)	.001 (.051)	-.076 (.053)
Number of sibs	-.080* (.023)	-.072* (.029)	-.161* (.057)	.093~ (.054)
Parents religious	.086* (.020)	.045~ (.025)	-.043 (.047)	-.003 (.049)
Parents book reading	.139* (.021)	.035 (.025)	-.146* (.048)	-.141* (.050)
Constant	.110~ (.065)	3.104* (.081)	-1.399* (.151)	-1.209* (.160)
Observations	2608	2608	2608	2561
R ²	.045	.061	-	-

Note: Standard errors in parentheses

~ $p < 0.10$, * $p < 0.05$

Table 4.- Simulation analyses: Effects of parental war trauma on mental (ill) health by level and selectivity of 'false positive' reporting

A. Low level of false positives (10%)	1. No selectivity ^a 10% 10% 10%	2. Moderate selectivity ^a 5% 10% 15%	3. High selectivity ^a 0% 10% 20%
Strong trauma	.395 (.090)	.335 (.090)	.274 (.090)
Moderate trauma	.196 (.055)	.142 (.056)	.097 (.056)
B. Moderate level of false positives (20%)	1. No selectivity ^a 20% 20% 20%	2. Moderate selectivity ^a 15% 20% 25%	3. High selectivity ^a 10% 20% 30%
Strong trauma	.387 (.095)	.317 (.095)	.254 (.096)
Moderate trauma	.178 (.058)	.138 (.058)	.080 (.059)
C. High level of false positives (30%)	1. No selectivity ^a 30% 30% 30%	2. Moderate selectivity ^a 25% 30% 35%	3. High selectivity ^a 20% 30% 40%
Strong trauma	.381 (.101)	.332 (.101)	.235 (.101)
Moderate trauma	.188 (.062)	.117 (.062)	.071 (.062)

Note: Average effect and standard error across 50 simulations for each condition.

^a Respondents with traumatized parents were divided in tertiles based on their mental health score and each tertile had its own percentage of false positive reporting. The percentages are listed in the column headings. For example, the condition of 'moderate level and moderate selectivity' (in the middle of the table) implies 15% false positives for the lowest tertile, 20% false positives for the middle tertile, and 25% for the highest.

Table 5.- Regression models with interaction effects: Unstandardized coefficients

	Model 1	Model 2	Model 3	Model 4	Model 5
	Mental (ill) health (OLS)	# Negative life events (Poisson)	Relation strength (OLS)	Contact with parent(s) (OLS)	Conflict with parent(s) (Logit)
Parental trauma	.260* (.057)	.337* (.050)	-.151* (.072)	-.083 (.088)	.260 (.161)
Child daughter	.234* (.035)	.056~ (.034)	-.004 (.040)	.118* (.049)	.404* (.093)
Child's age	-.029 (.023)	.068* (.022)	-.056* (.027)	-.151* (.033)	-.145* (.061)
Child's schooling	-.080* (.019)	-.103* (.019)	-.026 (.022)	-.185* (.028)	.055 (.052)
Parents religious	-.030 (.019)	-.108* (.019)	.105* (.021)	.059* (.026)	-.117* (.050)
x parental war trauma	-.027 (.045)	.032 (.038)	-.027 (.053)	-.008 (.064)	.043 (.115)
Parental SES age 15	.004 (.021)	.059* (.021)	.056* (.023)	-.135* (.029)	.100~ (.053)
x parental war trauma	.107* (.045)	.013 (.038)	-.112* (.053)	-.038 (.064)	.092 (.114)
Parent child during war	.022 (.048)	-.001 (.047)	.032 (.053)	-.043 (.065)	-.255* (.122)
x parental war trauma	.002 (.101)	.209* (.085)	-.046 (.114)	-.052 (.140)	.275 (.248)
Constant	-.192* (.036)	-.026 (.036)	.004 (.041)	3.207* (.051)	-1.224* (.098)
Observations	3372	3359	2603	2603	2603
Adjusted R ²	.029	-	.017	.055	-

Note: Standard errors in parentheses

~ $p < 0.10$, * $p < 0.05$

Appendix – Measurement details of independent variables

Variable	Questions
Parental SES age 15	Father's education (rank score), mother's education (rank score), father's occupational status (ISEI), mother's occupational status (ISEI). Scale is the average of the standardized non-missing items for each person. Alpha = .82.
Father unemployment age 15	How often the father was unemployed on a 4-point scale ranging from 1 (never unemployed) tot 4 (almost never worked).
Parents home owner	Whether the parents own the house they lived in.
Parents war experience	5-point Likert item for the statement: "My parents" life is/was strongly marked by their war experiences". Self-administered questionnaire.
Parents financial situation	5-point Likert item for the statement: "Compared to many other families, we were well off financially". Self-administered questionnaire.
Parents religious	5-point Likert item for the statement: "In our home, issues linked with religion and the church were considered to be very important". Self-administered questionnaire.
Parents book reading	5-point Likert item for the statement: "Many books were read in our home". Self-administered questionnaire.
Parental age	The age of the parent in 1940, using the oldest parent.
Parental conflict age 15	Four items: How often did one of your parents put down and blame the other? How often did your parents not want to talk to each other? How often did arguments get out of hand? How often did your parents live apart for a while? Answering categories: never, once or twice, frequently. Alpha = .80.
Parental closeness/support age 15	Four 5-point Likert items: (a) I could always turn to my mother/father if I had problems, (b) My mother/father and I were very close, (c) I always felt that my mother/father supported me, (d) My mother/father understood very well what was on my mind. Alpha = .94 (M) and .93 (F). Self-administered questionnaire.
Child maltreatment age 15	Four questions about the frequency: (a) That your mother/father yelled at you or cursed you? (b) That your mother/father threatened you or scared you in another way? (c) That your mother/father slapped you in the face or hurt you in another way? (d) That your mother/father said nasty things about you when other people were around? Alpha = .78 (M) and .80 (F) Self-administered questionnaire.

Figure 1.- Parents affected by World War II (%)

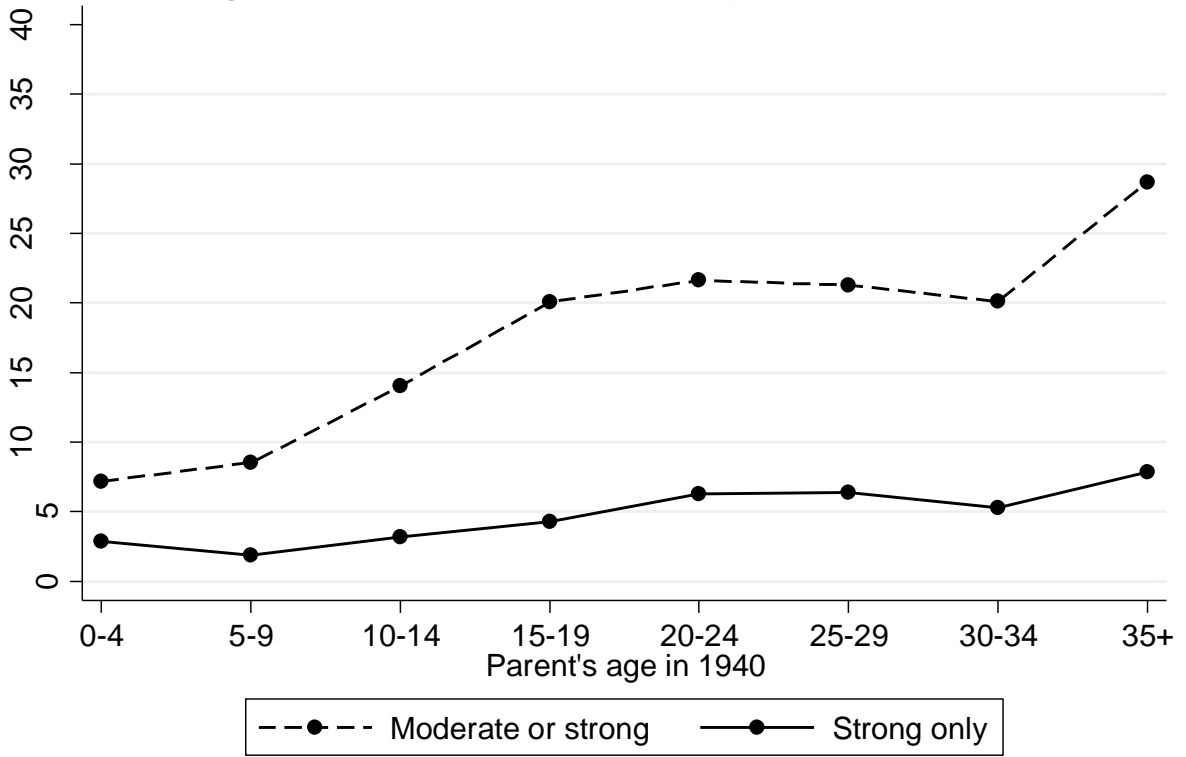


Figure 2.- Parental relationship traits by parental war trauma

