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## Transgenerational Effects of Trauma in Midlife: Evidence for Resilience and Vulnerability in Offspring of Holocaust Survivors

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### Abstract

Despite abundant research on offspring of Holocaust survivors (OHS), it is relatively unknown how they function in middle-age. Transgenerational effects of the Holocaust may be stronger among middle-aged OHS as they previously suffered from early inclement natal and postnatal environment and now face age-related decline. Yet, middle-aged OHS may successfully maintain the resilience they demonstrated at younger age. This study performed a wide-spectrum functional assessment of middle-aged OHS and comparisons ( $N = 364$ ) drawn from the Israeli component of the Survey of Health, Ageing, and Retirement in Europe (SHARE-Israel). OHS, and especially those with two survivor parents, reported a higher sense of well-being, but more physical health problems than comparisons. The discussion provides possible explanations for this mixed functional profile.

### Keywords

transgenerational transmission; offspring of Holocaust survivors; midlife; functioning profile; SHARE

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It was originally proposed that offspring of Holocaust survivors (OHS) are possibly affected by the long-term distress of their parents through the interplay of several mechanisms (Danieli, 1998; Kellermann, 2001b). Parental distress was presumed to transfer to children through maladaptive, postnatal maternal behaviors (Yehuda, Bell, Bierer, & Schmeidler, 2008), child-rearing behaviors (Bar-On et al., 1998), and parental communication (Wiseman, Metzl, & Barber, 2006). Supporting the above notion of transgenerational effects, early clinical reports and studies suggested that OHS suffer from various disturbances such as depression, anxiety, and personality disorders (for reviews, see Bar-On et al., 1998; Kellermann, 2001a, 2001b; Levav, Kohn, & Schwartz, 1998; Solomon, 1998). However, in their comprehensive meta-analysis, Van IJzendoorn, Bakermans-Kranenburg,

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and Sagi-Schwartz (2003) showed that previously found vulnerabilities were restricted to clinical samples of OHS, and that community-sampled OHS did not differ from comparisons on a myriad of psychosocial outcomes (but see Scharf, 2007 for an exception). In certain community studies, OHS even demonstrated better functioning (Sigal, 1998), as illustrated by higher optimism (Carmil & Breznitz, 1991; Major, 1996) and fewer referrals to psychoeducational services (Rieck, 1994), relative to comparisons.

Although previous studies included middle-aged OHS in their samples, they did not exclusively focus on this age group. Therefore, it is yet relatively unknown if and how the functioning of middle-aged OHS differs from that of their counterparts.

On the one hand, midlife OHS may become more vulnerable to the transgenerational effect of the Holocaust. Born soon after the end of World War II (WWII), many of them were raised in the harsh conditions of the displaced persons' camps. They were also exposed to the effects of maternal hunger or stress-induced high levels of maternal steroids during crucial stages of fetal development (Hazani & Shasha, 2008). Middle-aged OHS are also beginning to face age-related declines (e.g., physical illness and frailty) that may expose dormant vulnerabilities. Simultaneously, they may have psychological problems dealing with the deterioration of their elderly parents, or with their parents' death, due to separation-individuation difficulties (Bar-On et al., 1998).

On the other hand, it is possible that middle-aged OHS successfully maintain the resilience they demonstrated at younger life periods. It is possible that specific strengths (e.g., optimism, motivation for achievement) continue to inhabit their resource reservoir throughout the various developmental stages. These strengths could have been deeply embedded within them by their parents, who often achieved positive self-perceptions and life attitudes (Carmil & Breznitz, 1991; Shmotkin, 2003; Shmotkin, Blumstein, & Modan, 2003; Solomon, 1998) through a process of posttraumatic growth (Tedeschi & Calhoun, 2004).

Relating to the aforementioned lacuna, this study performs a wide-spectrum functional assessment of OHS drawn from a national sample of midlife Israelis. This study also returns to yet unsettled issues in the transgenerational literature, and inquires whether OHS are more affected by cumulative lifetime distress and whether the functional status of OHS is related to the number of parents having survived the Holocaust.

Findings on cumulative lifetime distress are not yet definite. Thus, the low stress tolerance demonstrated by OHS in clinical samples (Baider, Goldzweig, Ever Hadani, & Peretz, 2006; Solomon, Kotler, & Mikulincer, 1988; Sample 1 in Yehuda, Schmeidler, Wainberg, Binder-Brynes, & Duvdevani, 1998) was replicated in one (Sample 2 in Yehuda et al., 1998), but not in another community sample (Schwartz, Dohrenwend, & Levav, 1994). It is also unclear whether transgenerational effects of the Holocaust increase in families with two survivor parents rather than only one. Some studies found greater distress in offspring of two Holocaust survivors (Kellermann, 2001a, 2001b; Yehuda et al., 2008) while others did not (Levav et al., 2007).

We first hypothesized that OHS would present a mixed functional profile that combines unique strengths and vulnerabilities. More specifically, as OHS were previously found to be more optimistic (Carmil & Breznitz, 1991; Major, 1996), we hypothesized that OHS would present a higher sense of optimism. As for physical health – it was rarely examined among OHS and an epidemiological study which did so, did not find significant differences between OHS and comparisons (Levav, Levinson, Radomislensky, Shemesh, & Kohn, 2007). However, a recent review of various traumatized populations postulated that health deficits due to natal and post-natal stress might become more salient among middle-aged

OHS (Hazani & Shasha, 2008). Therefore, another part of our hypothesis was that our middle-aged OHS would report more physical health problems. Finally, as previous findings were inconsistent regarding the stress tolerance of OHS and the vulnerability of OHS with two survivor parents, we examined whether cumulative life-event distress would have a larger impact on OHS, and whether the aforementioned strengths (e.g., optimism) and vulnerabilities (e.g., lower physical health) would be more salient among OHS with two survivor parents.

## Method

### Participants and Procedure

Data were drawn from the Israeli component of the Survey of Health, Ageing, and Retirement in Europe (SHARE-Israel), which presents a national sample of Israelis aged 50 or older and their spouses regardless of age, interviewed during 2005-2006. The design was based upon a probability sample of households within 150 representative statistical areas delineated by geographical and sociodemographic criteria. The total Israeli database includes 2598 community (i.e., noninstitutionalized) dwellers in 1771 households. The data were collected by two means: a comprehensive computer-assisted personal interview, which lasted about 90 minutes, and a supplementary paper Drop-Off questionnaire, which was returned at the end of the interview, or later by mail, to the survey agency. Informed consent had been obtained from all respondents prior to the interview. SHARE-Israel received ethical approval by the Institutional Review Board of the Hebrew University of Jerusalem (for more on SHARE-Israel, see Litwin & Sapir, 2008; Shmotkin & Litwin, 2009).

As the queries regarding the Holocaust were included in the Drop-Off questionnaire, the sample addressed in this study is limited to respondents who completed this questionnaire ( $N = 1725$ , 66% of the total sample). An initial analysis that compared the Drop-Off respondents with non-respondents who were part of the total sample but did not complete the Drop-Off questionnaire did not find significant differences in gender, education, and gross household income. However, Drop-Off respondents included younger (below 60) and married respondents, and a lower proportion of immigrants from the former Soviet Union. When relating to indicators of functioning available for all respondents, Drop-Off respondents reported less physical problems, maintained better health behaviors, reported less depressive symptoms, and had a better cognitive functioning. There were no differences in most physical functioning indicators.

The present sample included 364 respondents. All of them were born in 1945 or later, in Israel, Europe /America, or in the former Soviet Union, with a father from a European origin (except for 20 respondents who were born in Europe/America but had a father from a non-European origin). Respondents who reported that at least one of their parents, or none of their parents, had lived under Nazi or pro-Nazi occupation or domination in Europe during WWII (1939-1945) were assigned to the OHS group ( $n = 215$ ) and to the comparison group ( $n = 149$ ), respectively.

Excluded from the present sample were 495 respondents who were born in Israel, Europe / America, or in the former Soviet Union before 1945, 396 respondents who were born in North Africa or the Middle East, 138 Israeli-born respondents with a father from a non-European origin, 305 Israeli Arabs, and those who fitted the study groups' criteria except that they did not report their father's origin ( $n = 20$ ) or did not report whether their parents had gone through the Holocaust ( $n = 7$ ).

Table 1 shows that the two study groups did not differ significantly in age, gender, education, gross household income, marital status, number of children, or religiosity.

However, there was a significantly higher proportion of immigrants from Europe and America, but a lower proportion of immigrants from the former Soviet Union in the OHS group than in the comparison group. The groups did not significantly differ in the percentage of respondents with at least one living parent (56.3% OHS and 47.9% comparisons),  $\chi^2(1, N=350) = 2.39$ , or in the average age of living parents ( $M = 81.34, SD = 6.02$  for OHS, and  $M = 82.38, SD = 5.99$  for comparisons),  $t(185) = -1.14$ .

## Measures

Aside from background characteristics, the study's variables were grouped into eight domains of functioning (e.g., physical health problems) or experience (e.g., mental distress). The choice of the current indicators from the large number available was guided by their salience in the literature and their ability to represent different aspects of each domain.

**Background characteristics**—Age, gender, geographic origin (born in Israel, in Europe/America, or in the former Soviet Union), marital status, and number of children were recorded. Education was recorded by classifying the participants into one of seven education levels according to the International Standard Classification of Educational Degrees (ISCED-97; United Nations Educational, Scientific and Cultural Organisation, 1997): ranging from “pre-primary” (0) to “second stage tertiary education” (6). Gross household income was the annual household income (in Euro). Religiosity was assessed by self-reported frequency of praying on a scale ranging from “never” (0) to “more than once a day” (5).

**Physical health problems**—This domain was assessed by six indicators: (1) Major health problems were assessed by summing listed illnesses (e.g., heart attack, stroke, cancer, osteoporosis) that participants reported to have been diagnosed with by a physician (possible range was 0-14); (2) Physical symptoms were assessed by summing listed health conditions (e.g., dizziness, pain in various body parts) that participants reported to have been bothered by for the past six months (possible range was 0-11); (3) Number of medications was determined by summing listed medications the participants reported to take at least once a week (possible range was 0-14); (4) Number of contacts with doctors was determined by asking the participants to sum the number of times they had seen or talked to medical doctors in the last year; (5) Number of Hospitalizations was determined by asking the participants to sum the times they had been a patient in a hospital overnight during the last year; (6) Subjective health was rated on a scale ranging from “very bad” (1) to “very good” (5).

**Physical functioning**—This domain was assessed by four indicators: (1) Activities of daily life (ADL) were assessed by summing everyday activities adapted from Katz, Downs, Cash, and Grotz (1970) (e.g., dressing up, showering; an adaptation of) that participants reported to have been limited in their performance (possible range was 0-6); (2) Instrumental activities of daily life (IADL) were assessed by summing activities adapted from Lawton and Brody (1969) (e.g., shopping, working around the house or garden; an adaptation of) that participants reported to have been limited in their performance (possible range was 0-7); (3) Activities with movement were assessed by summing activities adapted from Nagi (1976) (e.g., walking 100 meters, climbing stairs) that participants reported to have been limited in their performance (possible range was 0-10); (4) Subjective disability was assessed by asking participants to rate if they had been limited because of a health problem in activities people usually do on a scale ranging from “not limited” (1) to “severely limited” (3).

**Health behavior**—This was assessed by five indicators: (1) Vigorous activities and (2) moderate-energy activities were assessed by asking the participants to rate how often they engaged in vigorous physical activity (e.g., sport, heavy housework), and in activities that required a low or moderate level of energy (e.g., gardening, cleaning the car), respectively. Both items included a scale ranging from “hardly ever, or never” (1) to “more than once a week” (4); (3) Smoking behavior was assessed by asking the participants if they smoked at present time. The item was scored “no” (0) or “yes” (1); (4) Alcohol consumption was assessed by asking the participants to rate how often they had been drinking alcoholic beverages in the last six months on a scale ranging from “not at all in the last six months” (1) to “almost every day” (7); (5) Weight was assessed by first calculating the Body Mass Index (BMI). BMI scores were further divided to “below 18.5” (1 = underweight), “18.5-24.99” (2 = normal), and “25 and above” (3 = overweight).

**Mental distress**—This was assessed by three indicators: (1) Lifetime depression was assessed by asking the participants whether there had been a time or times in their lives when they had suffered from symptoms of depression which lasted at least two weeks. The item was scored “no” (0) or “yes” (1); (2) Depressive symptoms were assessed by the adapted version of the Center for Epidemiological Studies-Depression scale (ACES-D). It was based on 11 items from the original CES-D (Radloff, 1977) and three others borrowed by SHARE from parallel measures. Each item specified a depressive symptom (e.g., “I felt sad”). Participants were asked to rate the frequency they had experienced each item in the last week on a scale ranging from “almost none of the time” (0) to “almost all of the time” (3). Four items were phrased positively (e.g., “I was happy”) and reverse coded. The respondent’s score was the sum of ratings over the 14 items. In the present analysis, a minimum of 80% completion of 11 items was required for scoring, with scores of 11-13 items being interpolated by assigning the respondent’s mean of the completed items to the missing one. Cronbach’s alpha coefficient for the ACES-D in the current study was .84; (3) Depressive symptoms were also assessed by the European Depression scale (Euro-D, Prince et al., 1999). It contains 12 items that specify recent depressive symptoms (e.g., “In the last month, have you cried at all?”), scored as a sum of “no” (0) and “yes” (1, indicating presence of a symptom) encoded answers. Five items were phrased in positive terms (e.g., “do you keep up your interests?”). In the present analysis, a minimum of completion of 10 items was required for scoring, with scores of 10-11 items being interpolated. Cronbach’s alpha coefficient for the Euro-D in the current study was .63.

**Well-being**—This was assessed by three indicators: (1) Life satisfaction was assessed by asking the participants to rate how satisfied they were with their lives in general on a scale of “very dissatisfied” (1) to “very satisfied” (4); (2) Quality of life was measured by 12 items originating from the CASP-19 (Hyde, Wiggins & Blane, 2003; Von Dem Knesebeck, Wahrendorf, Hyde, & Siegrist, 2007). The items referred to having a sense of control, autonomy, self-realization, and pleasure, and the scale ranged from “never” (1) to “often” (4). In the present analysis, a minimum of completion of 10 items was required for scoring, with scores of 10-11 items being interpolated. Cronbach’s alpha coefficient for the CASP in the current study was .80; (3) Optimism and hope was measured by seven items originating from the Life Orientation Test-Revised (Scheier, Carver, & Bridges, 1994) and from the Hope scale (Snyder et al., 1996). The items tapped expectations and beliefs about the future and perceived ability to cope with the future on a scale ranging from “strongly disagree” (1) to “strongly agree” (5). In the present analysis, a minimum of completion of five items was required for scoring, with scores of 5-6 items being interpolated. Cronbach’s alpha coefficient for this scale in the current study was .79.



**Cognitive functioning**—This was assessed by seven indicators: (1) Time orientation was the sum of accurate responses participants gave in request to name the current year, month, day of the month, and day of the week (possible range was 0-4); (2) Verbal learning was the sum of words participants spontaneously recalled from a 10-word list immediately after it was read to them (possible range was 0-10); (3) Verbal recall was the sum of words spontaneously recalled by participants from the list five minutes following the verbal learning task (possible range was 0-10); (4) Word fluency was the sum of correct names of animals participants could think about within a one-minute trial; (5) Arithmetic was the sum of correct answers participants gave to four arithmetic questions (possible range was 0-4); (6) Subjective reading and (7) writing were measured by two items asking the participants to rate their reading and writing skills on a scale ranging from “poor” (1) to “excellent” (5).

**Social exchange**—This was assessed by four indicators: (1) Conflicts inside family and (2) conflicts outside family were respectively assessed by five items and one item. The first five items asked the participants whether they had experienced conflict with parents, parents-in-law, partner/spouse, children, and other family members. The final item inquired about conflicts with friends, coworkers, or acquaintances. All these items were rated on a scale ranging from “never” (1) to “often” (4) (with a fifth option of “does not apply”). The respondent’s score for conflict inside family was the mean rating of a minimum of two items. The respondent’s score for conflicts outside family was the raw score given for the sixth item. Cronbach’s alpha coefficient for conflicts inside family items was .64; (3) Feeling rewarded was assessed by asking the participants to rate three items asking (a) whether they were always satisfied with the balance between what they had given to their partner and what they had received in return, (b) whether they had always received adequate appreciation for providing help in their family, and (c) whether they had always been satisfied with the rewards for their efforts in their major activities (e.g., job, looking after home). These items were rated on a scale ranging from “strongly disagree” (1) to “strongly agree” (5). Cronbach’s alpha coefficient for feeling rewarded items was .62.

**Cumulative life-event distress**—This was assessed by two indicators: (1) Self- and (2) other-oriented adversity was assessed by the Traumatic Events Inventory that includes 17 difficult life events (Shmotkin & Litwin, 2009). Self-oriented adversity was the number of confirmed events in which the primary infliction was upon the self (e.g., “was the victim of violence or abuse,” possible range was 0-8) and other-oriented adversity was the number of confirmed events in which the primary infliction was upon another person (e.g., “experienced the death of a spouse,” possible range was 0-9). If confirming the experience of an event, the participants were further asked to specify their age when the event had first taken place and to rate the impact of the event on their life on a scale ranging from “little” (1) to “great” (3). A minimum of completion (checking yes/no) of 13 events was required for scoring, with scores of 13-16 items being interpolated.

## Data Analyses

Age, gender, and origin were included as covariates in all the hypothesis-testing statistics. To test our first hypothesis, group differences were examined by eight multivariate analyses of covariance (MANCOVA) in which each domain of functioning or experience provided a set of dependent variables. These analyses were followed by a discriminant analysis in order to obtain an integrative view of the unique and combined effects of the variables that had been found in the domain-specific MANCOVAs to differ significantly among the study groups. In order to test stress tolerance, group differences in impact of cumulative life-event distress were examined for self- and other-oriented adversity by two ANCOVAs. In order to test transgenerational effect of the Holocaust as a function of number of survivor parents, the aforementioned eight MANCOVAs and the discriminant analysis were performed again

with three groups: OHS having either one survivor parent (OHS-1) or two (OHS-2) and comparisons.

## Results

### Multivariate Comparisons of the Study Groups

Table 2 presents the results of the MANCOVAs for the health-related domains. The domain of physical health problems yielded an overall significant effect. Subsequent univariate analyses found that OHS reported significantly more major health problems, more physical symptoms, and consumption of more medications, relative to comparisons. Additional analyses showed that relative to comparisons, a higher percentage of OHS reported high blood pressure and hypertension (36.3% vs. 23.5% among comparisons),  $\chi^2(1, N=364) = 6.72, p < .01$ , high blood cholesterol (34.9% vs. 23.5% among comparisons),  $\chi^2(1, N=364) = 5.44, p < .05$ , and sleeping problems (22.3% vs. 11.4% among comparisons),  $\chi^2(1, N=364) = 7.15, p < .01$ . There were no significant effects in domains of physical functioning or of health behaviors.

Table 3 presents the results of the MANCOVAs for the psychosocial domains. The domain of well-being yielded an overall significant effect. Subsequent univariate analyses found that OHS reported higher life satisfaction, higher quality of life, and higher sense of optimism and hope, relative to comparisons. Although there was no overall significant effect in the cognitive domain, subsequent univariate analyses found that OHS showed significantly lower arithmetic abilities relative to comparisons. The domain of cumulative life-event distress did not yield an overall significant effect, but subsequent univariate analysis found that OHS reported significantly more other-oriented adversity than comparisons. There were no significant effects in the social exchange domain.

### Univariate Comparisons of the Impact of Cumulative Life-Event Distress

Two separate ANCOVAs examined the reported impact of self and other-oriented adversity. These analyses included the participants that reported to have one or more self-oriented ( $n = 72$  and  $40$  for OHS and comparisons, respectively) and other-oriented difficult life events ( $n = 163$  and  $86$  for OHS and comparisons, respectively). There was no significant difference between the reported impact of self-oriented adversity of OHS ( $M = 1.88, SD = 0.82$ ) and that of comparisons ( $M = 2.11, SD = 0.82$ ),  $F(1,107) = 2.88$ . There was also no significant difference between the reported impact of other-oriented adversity of OHS ( $M = 2.27, SD = 0.73$ ) and that of comparisons ( $M = 2.23, SD = 0.73$ ),  $F(1,244) = 0.03$ .

### Discriminant Analysis of the Study Groups

The three covariates and the 8 variables that had been found in the domain-specific MANCOVAs to differ significantly among the study groups were included in the discriminant analysis. Altogether, 11 discriminating variables were included in the equation simultaneously and, in another analysis, were also subjected to a stepwise inclusion. The results are shown in Table 4.

The simultaneous solution reflected that the OHS had a younger age, lower proportion of women, more major health problems, and higher levels of satisfaction with life, and optimism and hope. The stepwise solution showed that all other variables were redundant except for major health problems and life satisfaction.

### Multivariate Comparisons Accounting for Number of Holocaust Survivor Parents

Next, OHS-1 ( $n = 37$ ), OHS-2 ( $n = 178$ ), and comparisons ( $n = 149$ ) were studied. The groups did not differ in age,  $F(2,361) = 0.90$ , gender,  $\chi^2(2, N=364) = 4.94$ , education,

$F(2,360) = 2.13$ , income,  $F(2,361) = 0.16$ , marital status,  $\chi^2(2, N=364) = 6.17$ , and no. of children,  $F(2,359) = 1.87$ . There was a significant effect for religiosity,  $F(2,361) = 3.31$ ,  $p < .05$ , but Bonferroni post-hoc analyses failed to find any difference between the groups. The groups significantly differed in origin,  $\chi^2(2, N=364) = 38.56$ ,  $p < .0001$ . Relative to the other groups, there was a significantly higher proportion of immigrants from Europe and America among OHS-2.

Additional MANCOVAs compared between OHS-1, OHS-2 and comparisons. There was an overall significant effect for physical health (Wilks'  $\lambda = .90$ ,  $p < .0001$ ). Subsequent univariate analyses found significant differences in number of major health problems,  $F(2,358) = 6.23$ ,  $p < .01$ ,  $\eta^2 = .034$ , number of physical symptoms,  $F(2,358) = 4.97$ ,  $p < .01$ ,  $\eta^2 = .027$ , and number of medications,  $F(2,358) = 4.27$ ,  $p < .05$ ,  $\eta^2 = .023$ . Bonferroni post-hoc analyses showed that OHS-2 reported significantly more major health problems ( $M = 1.60$ ,  $SD = 1.39$ ), more physical symptoms ( $M = 1.25$ ,  $SD = 1.36$ ), and using more medications ( $M = 1.57$ ,  $SD = 1.44$ ) relative to the comparison group (health problems:  $M = 1.14$ ,  $SD = 1.14$ ; physical symptoms:  $M = 0.91$ ,  $SD = 1.06$ ; medications:  $M = 1.15$ ,  $SD = 1.28$ ). There were no differences between the other groups. Other health-related domains did not show an overall significant effect.

There was not an overall significant effect for well-being (Wilks'  $\lambda = .96$ ), but subsequent univariate analyses found significant effects for life satisfaction,  $F(2,331) = 3.63$ ,  $p < .05$ ,  $\eta^2 = .021$ , and optimism and hope,  $F(2,331) = 3.37$ ,  $p < .05$ ,  $\eta^2 = .020$ . Bonferroni post-hoc analyses showed that OHS-2 reported significantly higher optimism and hope ( $M = 19.67$ ,  $SD = 3.82$ ) relative to the comparison group ( $M = 18.40$ ,  $SD = 4.73$ ). There were no significant post-hoc differences in life satisfaction. Although there was no overall significant effect for cognitive functioning (Wilks'  $\lambda = .94$ ), there was a significant effect for arithmetic,  $F(2,357) = 3.87$ ,  $p < .05$ ,  $\eta^2 = .021$ . OHS-2 had significantly lower scores in arithmetic ( $M = 1.90$ ,  $SD = 0.84$ ) than comparisons ( $M = 2.12$ ,  $SD = 0.87$ ). Other psychosocial domains did not show an overall significant effect.

### Univariate Comparisons of the Impact of Cumulative Life-Event Distress Accounting for Number of Holocaust Survivor Parents

Two separate ANCOVAs examined the reported impact of self and other-oriented adversity. These analyses included the participants that reported to have one or more self-oriented ( $n$ s being 13, 59, and 40 for OHS-1, OHS-2, and comparisons, respectively) and other-oriented difficult life events ( $n$ s being 29, 134, and 86 for OHS-1, OHS-2, and comparisons, respectively). There was no significant difference between the reported impact of self-oriented adversity of OHS-1 ( $M = 2.23$ ,  $SD = 0.78$ ), OHS-2 ( $M = 1.80$ ,  $SD = 0.81$ ), and that of comparisons ( $M = 2.11$ ,  $SD = 0.82$ ),  $F(2,106) = 2.59$ . There was also no significant difference between the reported impact of other-oriented adversity of OHS-1 ( $M = 2.30$ ,  $SD = 0.79$ ), OHS-2 ( $M = 2.27$ ,  $SD = 0.72$ ), and that of comparisons ( $M = 2.23$ ,  $SD = 0.73$ ),  $F(2,243) = 0.03$ .

### Discriminant Analysis Accounting for Number of Holocaust Survivor Parents

The discriminant analysis yielded one significant discriminant function ( $p < .0001$ ) that explained 76.3% of the variance. Inspection of the distances between the centroids showed that this function maximally separated between OHS-2 and comparisons. This function reflected that the OHS-2 had a lower age (standardized discriminant coefficient [SDC] =  $-0.31$ ), lower proportion of women (SDC =  $-0.52$ ) and of Israeli-born participants (SDC =  $0.44$ ), higher number of major physical problems (SDC =  $0.38$ ) and physical symptoms (SDC =  $0.47$ ), and higher optimism and hope (SDC =  $0.38$ ). In the stepwise solution the effects of age, major physical problems and optimism and hope became redundant.



## Discussion

This study examined the functional status of middle-aged OHS drawn from the SHARE-Israel data. Overall, OHS did not differ from comparisons on most functional indicators. This finding is in line with previous findings (Sagi-Schwartz et al., 2003; Van IJzendoorn et al., 2003). Nevertheless, the OHS in our study did differ from comparisons in specific areas of functioning, demonstrating a mixed functional profile of specific strengths intertwined with specific vulnerabilities. More specifically, OHS reported a significantly higher sense of well-being, but also more physical health problems, relative to comparisons. These unique features further validate and expand previous accounts of a unique, mixed profile of OHS (Carmil & Breznitz, 1991; Major, 1996). We will now turn to discuss our specific hypotheses and findings in more detail.

In accordance with our first hypothesis, OHS reported a stronger sense of optimism and hope. They also reported a higher satisfaction with life and a superior quality of life than comparisons. The discriminant analysis further revealed that life satisfaction was the most robust discriminator between the study groups. Although previous studies rarely inquired into the well-being of OHS, the few studies which did, also found more optimism among OHS (Carmil & Breznitz, 1991; Major, 1996). Additionally, as hypothesized, but unlike a previous epidemiological study (Levav et al., 2007), OHS reported more physical health problems.

Taking an overall view on these findings, there are several possible explanations for the mixed functional profile of OHS. One possibility is that middle-aged OHS presents a unique combination of psychological resilience and physical vulnerability. It appears that although OHS have witnessed the sequelae of their parents' trauma, they have simultaneously absorbed the strengths of their parents as manifested in their survivorship and possibly in a posttraumatic growth process (Lev-Wiesel & Amir, 2003). OHS were likely to be their parents' extension for a hopeful life, social integration and goal fulfillment. Hence, possibly due to their unique familial role, OHS have developed a greater value of life and optimism (Sigal, 1998; Solomon, 1998). On the other hand, the physical vulnerability of middle-aged OHS might reflect an increased risk for morbidity due to their early inclement experience in the natal and postnatal environment (Hazani & Shasha, 2008). Physical vulnerability may also signal somatization, previously documented in survivors' families (Danieli, 1985, 1988). In any case, as Levav and his colleagues (2007) did not find physical vulnerability among a younger sample of OHS, it is possible that the manifestation of such vulnerability emerges as OHS begin to suffer from age-related losses.

One should not rule out that the unique combination of high well-being and physical vulnerability can mark an extensive use of repressive coping style among OHS. A repressive pattern may also help to explain why OHS did not approach doctors or did not rate their health as poorer despite reporting more physical illnesses and symptoms. Indeed, repressors are characterized by a similar functional profile, in which a pervasive tendency to savor positive aspects, coupled with the inhibition of specific negative aspects, takes its physical toll (for review, see Furnham, Petrides, Sistrone, & Baluch, 2003). Repressive patterns may have been reinforced by a reciprocal intra-familial communication pattern in which survivor parents did not disclose their traumatic stories, and children, who were sensitive to their parents' need to keep silent, did not ask (Bar-On et al., 1998; Danieli, 1988; Wiseman et al., 2006). Although this is only a speculative explanation, it should be further explored, as studies which target coping mechanisms among OHS are scarce.

Failing to support our second hypothesis, and in contrast to several, mostly clinical, studies (Baider et al., 2006; Solomon et al., 1988; Yehuda et al., 1998), but in accordance with a

large community study (Schwartz et al., 1994), OHS did not show lower stress tolerance: cumulative life-event distress did not have more impact on them relative to comparisons. Therefore, it seems that middle-aged OHS coped with stress as well as others, even though they reported more other-oriented adversity. These findings also reflect hardiness and growth among OHS, who possibly hold a different perspective of life hardships and their related distress. Thus, attempting to integrate the contradictory findings from community and clinical samples of OHS, Solomon (1998) suggested that relative to comparisons, OHS cope well, or even better, with stress, but show greater distress when failing to cope. Hence, it is left for future studies to examine whether intergenerational effects of the Holocaust are indeed manifested in a lower stress tolerance or perhaps in an increased distress when OHS are no longer able to handle adversity.

Lastly, confirming our third hypothesis, the unique functional profile of OHS was especially noticeable among those with two Holocaust survivor parents. Most of the significant differences found in the main analyses were replicated when contrasting OHS-2, but not OHS-1, to comparisons. These findings are in line with previous suggestions that the burden of transgenerational transmission is more noticeable when both parents are survivors (Kellermann, 2001a, 2001b; Van IJzendoorn et al., 2003; Yehuda et al., 2008).

Our findings should be considered in light of the study's strengths and limitations. This study drew its groups from a national sample, it included a broad-scope, multi-domain assessment of functioning, and it examined cumulative life-event distress that represented an essential report on the participants' past life. Nevertheless, our sample was confined to Drop-Off participants who were better off in various functional indicators. Some of our study groups were rather small. Furthermore, the cross-sectional design did not allow an explicit test of variations in transgenerational transmission as a function of age. In addition, although several researchers regard the direct transmission of posttraumatic symptoms as most important (Solomon et al., 1988; Yehuda et al., 2008), our study lacked measures of posttraumatic distress. Moreover, some of the measures we did use showed moderate psychometric properties. Finally, we did not have specific information regarding the traumatic experience of the parents.

Future studies should further test whether the mixed transgenerational effects of trauma found here can be generalized for other children of mass trauma victims (Danieli, 1998). Longitudinal designs should be used in order to examine the effect of the aging processes on transgenerational transmission. Observational and experimental designs should be implemented in order to examine the mechanisms that help offspring deal with the sequelae of their parents' trauma.

In conclusion, although decades have passed since the Holocaust, it still reverberates in the functional profile of middle-aged OHS. While OHS are similar to counterparts in most aspects of their functioning, their unique profile includes specific strengths intertwined with specific vulnerabilities. The effect of mass traumata may linger to the children of traumatized people, but it may have a more intricate, mixed quality than previously recognized.

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Table 1

## Background Characteristics of the Study Groups

Variable	OHS <sup>a</sup> group (n=215)	Comparison group (n=149)	Difference test
Age			$t(362) = -0.92$
<i>M</i>	55.14	55.50	
<i>SD</i>	3.47	3.70	
Range	40-61	41-61	
Gender (%)			$\chi^2(1, N=364) = 0.60$
Women	57.7	61.7	
Men	42.3	38.3	
Geographic origin (%)			$\chi^2(2, N=364) = 22.67^{***}$
Israeli born	45.6	50.3	
Europe & America	41.9	21.5	
Former Soviet Union	12.6	28.2	
Education			$t(361) = -1.27$
<i>M</i>	4.00	4.18	
<i>SD</i>	1.31	1.36	
Gross household income			$t(362) = 0.52$
<i>M</i>	41,605.80	39,574.46	
<i>SD</i>	34,865.14	38,806.98	
Marital status (%)			$\chi^2(1, N=364) = 0.46$
Not married <sup>b</sup>	16.7	14.1	
Married	83.3	85.9	
No. of children			$t(360) = 1.93$
<i>M</i>	2.82	2.50	
<i>SD</i>	1.73	1.27	
Religiosity <sup>c</sup>			$t(360) = 1.72$
<i>M</i>	1.07	0.81	
<i>SD</i>	1.54	1.35	

Note. Total  $N = 364$ . Data were missing for 0-2 cases in particular variables.

<sup>a</sup>OHS= Offspring of Holocaust survivors.

<sup>b</sup>Includes the categories of never married, divorced, and widowed.

<sup>c</sup>Measured by reported frequency of praying.

\*  $p < .05$

\*\*  $p < .01$

\*\*\*  $p < .001$ .

**Table 2**  
Multivariate Analyses of Covariance Comparing Groups in Health-Related Domains

Domain and variable	OHS <sup>a</sup>		Comparison group		Wilks' $\lambda$ (df)	Univariate comparison ( <i>F</i> )	Partial $\eta^2$
	M	Adj. M (SD)	M	Adj. M (SD)			
Physical health problems							
No. of major health problems	1.54	1.56 (1.39)	1.14	1.11 (1.14)	.93*** (1,359)	11.07***	.030
No. of physical symptoms	1.17	1.18 (1.34)	0.91	0.89 (1.06)		5.00*	.014
No. of medications	1.53	1.54 (1.44)	1.15	1.13 (1.28)		8.14**	.022
No. of contacts with doctors	7.66	7.71 (9.49)	6.67	6.60 (7.09)		1.44	.004
No. of hospitalizations	0.11	0.11 (0.39)	0.09	0.09 (0.33)		0.32	.001
Subjective health	4.06	4.05 (0.93)	3.95	3.95 (0.98)		0.95	.003
Physical functioning							
Activities of daily life	0.19	0.20 (0.81)	0.20	0.19 (0.89)	.99 (1,359)	0.00	.000
Instrumental activities of daily life	0.00	0.00 (0.06)	0.02	0.02 (0.32)		0.87	.002
Activities with movement	0.74	0.75 (1.64)	0.78	0.77 (1.69)		0.00	.000
Subjective disability	1.28	1.28 (0.55)	1.34	1.34 (0.62)		0.75	.002
Health behavior							
Vigorous activities	2.87	2.87 (1.34)	3.05	3.05 (1.28)	.98 (1,350)	1.60	.005
Moderate-energy activities	3.31	3.31 (1.15)	3.21	3.21 (1.16)		0.55	.002
Smoking behavior	0.20	0.20 (0.40)	0.25	0.25 (0.43)		1.07	.003
Alcohol consumption	2.06	2.06 (1.44)	1.93	1.94 (1.41)		0.56	.002
Weight	2.60	2.60 (0.50)	2.56	2.55 (0.52)		0.66	.002

Note. The original groups' ns are 215 and 149 for OHS and comparison, respectively (total  $N = 364$ ). Data were missing for 0-8 cases in particular variables. All results are controlled for age, gender, and origin. Adj. = adjusted.

<sup>a</sup>OHS = Offspring of Holocaust survivors

\*  $p < .05$

\*\*  $p < .01$

\*\*\*  $p < .001$ .

**Table 3**  
Multivariate Analyses of Covariance Comparing Groups in Psychosocial Domains

Domain and variable	OHS <sup>a</sup>		Comparison group		Wilks' $\lambda$ (df)	Univariate comparison ( <i>F</i> )	Partial $\eta^2$
	M	Adj. M (SD)	M	Adj. M (SD)			
Mental distress					.98 (1,354)		
Lifetime depression	0.25	0.24 (0.43)	0.22	0.21 (0.41)		0.55	.002
Depressive symptoms (ACES-D)	10.37	10.40 (5.45)	11.09	11.04 (6.25)		1.10	.003
Depressive symptoms (EURO-D)	2.26	2.27 (1.91)	2.11	2.09 (2.02)		0.79	.002
Well-being					.97* (1,332)		
Life satisfaction	3.24	3.23 (0.65)	3.04	3.05 (0.62)		6.82**	.020
Quality of life (CASP)	25.74	25.72 (4.86)	24.35	24.38 (6.27)		5.20*	.015
Optimism and hope	19.66	19.63 (3.72)	18.40	18.45 (4.73)		6.57**	.019
Cognitive functioning					.96 (1,358)		
Time orientation	3.87	3.87 (0.35)	3.92	3.92 (0.28)		2.35	.007
Verbal learning	5.44	5.44 (1.68)	5.32	5.32 (1.76)		0.49	.001
Verbal recall	3.86	3.87 (1.72)	3.77	3.76 (1.61)		0.34	.001
Word fluency	21.82	21.74 (6.65)	22.24	22.35 (6.79)		0.84	.002
Arithmetic	1.90	1.89 (0.82)	2.12	2.14 (0.87)		7.65**	.021
Subjective reading	4.20	4.20 (0.95)	4.16	4.16 (0.89)		0.12	.000
Subjective writing	4.12	4.12 (1.00)	4.10	4.10 (0.90)		0.02	.000
Social exchange					.98 (1,313)		
Conflicts inside family	2.12	2.12 (0.51)	2.13	2.12 (0.54)		0.00	.000
Conflicts outside family	2.97	2.97 (0.71)	3.11	3.12 (0.73)		3.36	.011
Feeling rewarded	3.73	3.73 (0.73)	3.79	3.79 (0.70)		0.54	.002
Cumulative life-event distress					.98 (1,358)		
Self-oriented adversity	0.56	0.55 (0.99)	0.54	0.54 (1.30)		0.01	.000
Other-oriented adversity	1.72	1.72 (1.46)	1.38	1.38 (1.79)		4.22*	.012

*Note.* The original groups' *n*s are 215 and 149 for OHS and comparison, respectively (total *N* = 364). Data were missing for 0-37 cases in particular variables. All results are controlled for age, gender, and origin. Adj. = adjusted; ACES-D = Adapted version of the Center for Epidemiological Studies-Depression Scale; EURO-D = European Depression Scale; CASP = Control, Autonomy, Self-realization, Pleasure.

<sup>a</sup>OHS = Offspring of Holocaust survivors.

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

Table 4

## Discriminant Analysis of the Study Groups

Variables and discriminant statistics	Discriminant function
<i>Standardized discriminant coefficients<sup>a</sup></i>	
Age	<b>-0.44</b>
Gender <sup>b</sup>	<b>-0.36</b>
Origin <sup>c</sup>	0.27
No. of major health problems	<b>0.32 (0.76)</b>
No. of physical symptoms	0.29
No. of medications	0.14
Life satisfaction	<b>0.34 (0.81)</b>
Quality of life (CASP)	0.23
Optimism and hope	<b>0.30</b>
Arithmetic	-0.29
Other-oriented adversity	0.23
<i>Discriminant function information</i>	
Canonical correlation	.30
Significance of function	.001
Centroids of:	
OHS group <sup>d</sup>	0.26
Comparison group	-0.39

Note.  $N = 336$  after a listwise deletion of cases with missing data. Entries present results of a simultaneous solution. In parentheses: coefficients of a stepwise solution that included only variables entered at the .05 significance level. CASP = Control, Autonomy, Self-realization, Pleasure.

<sup>a</sup> Coefficients equal to or higher than 0.30 appear in bold.

<sup>b</sup> Coded 1 = Man, 2 = Woman.

<sup>c</sup> Coded 1 = Israeli-born, 2 = Born outside of Israel (Europe/America or former Soviet Union).

<sup>d</sup> OHS = Offspring of Holocaust survivors.