THE GERONTOLOGICAL SOCIETY OF AMERICA®

Journals of Gerontology: Psychological Sciences
cite as: *J Gerontol B Psychol Sci Soc Sci*, 2020, Vol. 75, No. 1, 30–41
doi:10.1093/geronb/gbz012
Advance Access publication January 21, 2019

OXFORD

Original Research Report

Parental Holocaust Exposure, Related PTSD Symptoms and Subjective Aging Across the Generations

Amit Shrira, PhD*

The Interdisciplinary Department of Social Sciences, Faculty of Social Sciences, Bar-Ilan University, Ramat-Gan, Israel.

*Address correspondence to: Amit Shrira, PhD, The Interdisciplinary Department of Social Sciences, Faculty of Social Sciences, Bar-Ilan University, Ramat-Gan 52900. E-mail: amit.shrira@biu.ac.il

Received: October 10, 2018; Editorial Decision Date: January 15, 2019

Decision Editor: Shevaun Neupert, PhD

Abstract

Objectives: Traumatic exposure and posttraumatic stress disorder (PTSD) are related to less favorable perceptions of aging. The current study examined parental PTSD and perceptions of aging among old Holocaust survivor (HS) parents and their middle-aged offspring.

Method: Parents (mean age = 81.79) and their offspring (mean age = 55.41) reported PTSD symptoms, attitudes toward aging and subjective age. Offspring also rated how they perceive both their parents' aging and subjective age. Dyads were divided into three groups: HS with probable PTSD (n = 21 dyads), HS without probable PTSD (n = 65 dyads), and comparison parents without probable PTSD (n = 57 dyads).

Results: Relative to parents and offspring from other groups, HS parents with probable PTSD and their offspring had both less favorable attitudes toward their own aging as well as reporting feeling older. Offspring of posttraumatic HS also held less favorable attitudes toward parents' aging and perceived their own parents as being older. Serial mediation models showed that the effect of parental PTSD on offspring's subjective aging was serially mediated by parental subjective aging and offspring's perception of parents' aging.

Discussion: The study provides the first evidence that posttraumatic distress is related to less favorable perceptions of aging across generations in HS families. Possible mechanisms for such intergenerational effect and the implication for interventions are discussed.

Keywords: Attitudes toward aging; Intergenerational transmission; PTSD; Subjective age

Previous research on subjective aging, including individuals' perceptions regarding aging in general as well as how they perceive their own aging process, has gathered substantial momentum in recent years. Additionally, numerous studies have also shown that the ways individuals perceive aging influence their own physical and biological aging (for reviews, see Diehl et al., 2014; Stephan, Sutin, & Terracciano, 2018; Wurm, Diehl, Kornadt, Westerhof, & Wahl, 2017). Stressful and traumatic experiences as well as the typical ensuing symptoms, such as posttraumatic stress disorder (PTSD) have also been shown to associate with less favorable perceptions of aging (e.g., Avidor, Benyamini, & Solomon, 2016; Bellingtier, Neupert, & Kotter-Grühn, 2015; Bodner, Hoffman, Palgi, & Shrira, 2018; Shrira, Palgi, Ben-Ezra, Hoffman, & Bodner, 2016). However, it is relatively unknown whether the original traumatic exposure and its psychological aftereffects, which were experienced by the first generation, can transmit to the second generation and influence their aging experience. Such intergenerational transmission of unfavorable perceptions of aging may be expected for several reasons, for example, old parents commonly provide an important role model of aging for their offspring (Jopp, Jung, Damarin, Mirpuri, & Spini, 2016; Jung & Jopp, 2018), following, this was the aging

process that the second generation was exposed to as offspring. Therefore, the aim of the current study was to assess whether parental traumatic exposure to the Holocaust and related PTSD are linked to subjective aging both among the traumatized parents and among their offspring.

Subjective Aging

Subjective aging refers to the ways individuals experience their own aging process and the state of being old. It is a superordinate construct that includes self-perceptions of aging and the feeling of subjective age (e.g., how old one feels, Wurm et al., 2017). Subjective aging is likely shaped across the lifespan, for example, the stereotype embodiment theory (Levy, 2009) maintains that individuals gradually internalize general attitudes about old people and aging into their self-concept. In later adulthood, age-related self-representations become an integral part of the psychological process (Diehl et al., 2014). These subjective age representations are also highly important to one's health via multiple pathways, such as stress-related physiological modification, motivation, control, self-efficacy, and health promoting behaviors (Wurm et al., 2017).

This study considered attitudes toward aging and subjective age—two key aspects of subjective aging that received much attention in contemporary research (Wurm et al., 2017). Attitudes toward aging include general attitudes toward older adults and their aging, as well as toward the process of aging as a personal experience (Diehl et al., 2014). Subjective age specifically refers to how old (or young) an individual feels (Stephan et al., 2018). A large body of research found that both an older age identity and negative aging attitudes separately predict worse physical and mental outcomes, as well as with increased mortality risk (Stephan et al., 2018; Wurm et al., 2017), thereby establishing the importance of these perceptions.

Subjective Aging Among Trauma Survivors

Recent findings documented the effects of adverse life events (Bellingtier et al., 2015), traumatic exposure (Avidor et al., 2016), and ensuing PTSD (Avidor et al., 2016; Bodner et al., 2018; Shrira et al., 2016) on one's subjective aging. These links were found across various traumatized groups, such as older adult ex-POWs (Avidor et al., 2016), older civilians who experienced continuous missile attacks (Shrira et al., 2016) and older adults exposed to various adverse life events (Bodner et al., 2018).

Moreover, echoing earlier findings from the general population (e.g., Stephan et al. 2018), subjective aging was also found to be associated with accelerated biological aging of traumatized individuals. Namely, in a sample of older ex-POWs, having an older subjective age mediated the effect of depression on shorter telomere length—a marker of cellular senescence (Lahav, Avidor, Stein, Zhou, & Solomon, 2018). Following, it was suggested that less favorable perceptions of aging may reflect accelerated physical aging generally seen among traumatized individuals, especially among those suffering from PTSD (e.g., Solomon et al., 2014). Due to greater age-related worries, these less favorable aging perceptions can further dwindle physical and psychological resources, and in turn decrease both efficacy beliefs and health preserving behaviors (Lahav et al., 2018).

Despite accumulating evidence about less favorable subjective aging among trauma survivors, it is unknown whether trauma further extends its effect on subjective aging of subsequent generations in families of traumatized older adults. Nevertheless, there are some initial findings regarding the role of parents in determining offspring subjective aging.

Subjective Aging Across the Generations

Parents may be an important source of knowledge about old age to their offspring. According to the stereotype embodiment theory (Levy, 2009), the internalization of perceptions of aging begins at childhood. Therefore, it is probable that such perceptions are also influenced by parental messages and worldviews. Offspring perception of aging can be further shaped by parental behavior in later stages of life, when offspring observe the aging parent, and thereby learn how an old person should behave and react (cf. Bandura, 1986). Due to genetic similarities between parents and offspring, the latter may be especially sensitive to the way parents are aging when formulating their expectations regarding their own aging. Furthermore, discussion between older adult parents and adult offspring of aging issues is another important source of general knowledge about old age (Jung & Jopp, 2018).

In view of the above, it is surprising that few studies have looked at the link between parents' physical aging and the subjective aging of offspring. Qualitative works showed that offspring who provided care for disabled or ill parents were preoccupied with fears and worries about growing old and finitude, but also absorbed efficient ways to cope with late-life challenges (e.g., Pope, 2013). Quantitative studies with life span samples found that most offspring saw in a close family member (mostly a parent or grandparent) a model for their own successful aging; having such a familial role model was related to less negative views on aging (Jopp et al., 2016). In addition, offspring who considered their parents to age successfully held more favorable views of aging and perceived themselves as aging successfully (Jung & Jopp, 2018).

The abovementioned intriguing findings allude to the possibility that not only the physical aging of parents, but also their subjective aging, should relate to the way their offspring view aging. Still, to support such claims the covariance between parents' subjective aging and that of their offspring has to be assessed within a cross-generational design. To the best of my knowledge, such an endeavor was not undertaken thus far, much less so in families who survived trauma.

Subjective Aging Among Holocaust Survivors and Their Offspring

In attempting to capture subjective aging across generations within trauma survivor families, this study focused on Holocaust survivors (HS) and their offspring. The extreme nature of the Holocaust, and the fact that all HS are in advanced old age whereas an increasing number of their offspring have also begun to cope with the aging process, make the study of these groups pertinent to cardinal questions regarding effects of trauma and its transmission on subjective aging (Shrira et al., 2017).

The literature generally attests to the resilience and the strength of most HS and offspring. Despite the horrendous experiences survivors endured, many of them have managed to rehabilitate their lives, establish families, develop careers, and reach old age (Barel, Van IJzendoorn, Sagi-Schwartz, & Bakermans-Kranenburg, 2010; Elran-Barak, Barak, Lomranz, & Benyamini, 2018; Kahana, Harel, & Kahana, 2005; O'Rourke et al., 2015). Moreover, many HS have succeeded in reducing the intergenerational transmission of their trauma to a tolerable or even minimal level, as corroborated by the substantial empirical evidence on normal functioning and wellbeing among their offspring (Lehrner & Yehuda, 2018; Shmotkin, Shrira, Goldberg, & Palgi, 2011; Van IJzendoorn, Bakermans-Kranenburg, & Sagi-Schwartz, 2003). These findings led scholars (Danieli, Norris, & Engdahl, 2017; Kellermann, 2009) to propose that research efforts should be allocated from the general question of whether HS and offspring are more vulnerable relative to comparison groups, to more specific questions, such as; In which families and via which mechanisms should we see signs of trauma and its intergenerational transmission.

Indeed, in the context of subjective aging, some HS perceived their aging as more difficult due to resources lost in the Holocaust, while others maintained that their aging was not affected by the trauma in any substantial way. Others still believed their aging is more favorable due to hardiness and growth related to the trauma (Kahana, Kahana, Harrel, King, & Seckin, 2007). Similarly, among offspring of HS, Shrira (2016) found that those with high secondary traumatization symptoms were more afraid of aging, perceived themselves as aging less successfully, and perceived themselves as older relative to offspring of HS with low secondary traumatization or comparisons whose parents did not undergo the Holocaust. Still, these studies do not clarify whether perceptions of aging actually transferred from HS to offspring. The current study aimed at tackling this very issue.

The Current Study's Hypotheses

The study compared subjective aging among HS and comparison parent–offspring dyads (including parents without exposure to the Holocaust or PTSD). HS parent–offspring dyads were further divided according to parental PTSD (HS with- and without probable PTSD). Comparisons between these three groups will enable the capture of potential relationships between parental Holocaust exposure per se and subjective aging, as well as the more specific role PTSD, that is, the relationship between parental Holocaust-related PTSD and subjective aging.

The first hypothesis was that relative to the other dyads (comparison and HS without PTSD), HS with probable PTSD and their offspring would report less favorable attitudes toward aging and will feel older. Offspring of HS with probable PTSD would also perceive their parents as aging less well. This hypothesis was based on previous findings showing that possible effects of the Holocaust on the aging of survivors and their offspring are not an inevitable consequence of exposure per se, but rather are the outcome of an unresolved attempt to cope with the trauma manifest mainly by parental PTSD (Shrira et al., 2017; Yehuda, Bell, Bierer, & Schmeidler, 2008).

The second hypothesis maintained that the relationship between parental PTSD and offspring's subjective aging will be mediated by parents' subjective aging and the way their offspring perceive their parents' aging. Such mediation effects follow the notion that offspring subjective aging may have been transmitted from their parents (Jung & Jopp, 2018) and can be traced back to parents' post-trauma reactions (Shrira, 2016).

Participants and Procedure

A convenience sample included 286 community-dwelling participants, who consisted 143 dyads of parents and adult offspring. All parents were Jewish of European origin born before 1945. The offspring in this study were born after 1945 and had two parents who were alive during World War II. Eighty-six dyads included HS and their offspring, and 57 dyads included comparison parents without a Holocaust background and their offspring. Holocaust background was determined by parents' presence under Nazi or pro-Nazi occupation or domination during World War II.

Next, the dyads were divided according to probable parental PTSD (for more details, see the Measures section). There were 21 Holocaust dyads with a parent suffering from probable PTSD, 65 Holocaust dyads with a parent without PTSD, and 57 comparison dyads (all of them with parents without PTSD).

Table 1 presents the background characteristics of the study groups. Parents with probable PTSD had lower education level, rated their economic status as lower than both other groups, and had more medical conditions (marginally significant). The groups did not significantly differ in parental age, gender, and marital status. The offspring groups were matched in all background characteristics.

In the total sample, 13.3% of parent–offspring dyads were father–son dyads, 21.0% were father–daughter dyads, 23.1% were mother–son dyads, and 42.7% were

Table 1. Background Characteristics of the Study Groups

	Holocaust survivors with probable PTSD dyads	Holocaust survivors without PTSD dyads	Comparison dyads	Comparison tests
n	21	65	57	
Parents				
Mean age (*SD*)	81.71 (5.09)	82.63 (5.28)	80.85 (5.46)	$F(2, 140) = 1.68$, $p = .19$
Gender (%)				$\chi^2(2) = 0.82$, $p = .66$
Woman	57.1	67.7	66.7	
Man	42.9	32.3	33.3	
Education (%)				$\chi^2(4) = 23.64$, $p < .0001$, $\varphi_c = 0.28$
Below high school	66.7	36.9	16.1	
Full high school	23.8	32.3	26.8	
Above high school	9.5	30.8	57.1	
Marital status (%)				$\chi^2(8) = 6.76$, $p = .56$
Married	42.9	52.3	57.9	
Widowed	52.4	38.5	38.6	
Divorced	0.0	6.2	3.5	
Single	4.8	1.5	0.0	
Partner	0.0	1.5	0.0	
Mean self-rated economic status (SD)	2.95 (0.80)[a]	3.57 (0.75)[b]	3.71 (0.82)[b]	$F(2, 138) = 7.25$, $p = .001$, $\eta^2 = .09$
Mean medical conditions (SD)	2.19 (1.12)	1.49 (1.21)	1.73 (1.28)	$F(2, 140) = 2.61$, $p = .07$
Offspring				
Mean age (SD)	56.04 (6.61)	55.90 (6.17)	54.63 (5.72)	$F(2, 140) = 0.80$, $p = .44$
Gender (%)				$\chi^2(2) = 2.22$, $p = .32$
Woman	76.2	58.5	64.9	
Man	23.8	41.5	35.1	
Education (%)				$\chi^2(4) = 1.09$, $p = .89$
Below high school	4.8	1.5	3.5	
Full high school	28.6	24.6	22.8	
Above high school	66.7	73.8	73.7	
Marital status (%)				$\chi^2(7) = 7.12$, $p = .52$
Married	85.7	79.7	85.7	
Widowed	0.0	0.0	3.6	
Divorced	14.3	14.1	8.9	
Single	0.0	3.1	1.8	
Partner	0.0	3.1	0.0	
Mean self-rated economic status (*SD*)	3.76 (0.76)	3.86 (0.84)	3.85 (0.89)	$F(2, 140) = 0.11$, $p = .88$
Mean medical conditions (*SD*)	0.76 (1.22)	0.60 (0.80)	0.68 (0.86)	$F(2, 140) = 0.29$, $p = .74$

Note. Means that do not share letters significantly differ from each other in a post hoc Bonferroni test.

mother–daughter dyads. The ratio of the dyad types did not significantly differ across the three study groups, $\chi^2(6) = 3.87$, $p = .69$.

Holocaust-related experiences (e.g., being in concentration camp, work camp, ghetto, hiding, living with partisans, having been exposed to hunger, extreme weather conditions, and extreme physical abuse) were documented among HS. Compared with survivors without PTSD, a significantly greater number of survivors with probable PTSD were in concentration camps [23.8% vs 7.7%, $\chi^2(1) = 4.01$, $p = 0.04$], were exposed to hunger [66.7% vs 40.0%, $\chi^2(1) = 4.53$, $p = 0.03$], and to extreme weather conditions [61.9% vs 33.8%, $\chi^2[1] = 5.17$, $p = 0.02$]. Significantly more survivors without PTSD reported to have been in hiding than survivors with probable PTSD [60.0% vs. 23.8%, $\chi^2(1) = 8.32$, $p = 0.004$]. As some HS were married to HS and some were married to individuals not exposed to the Holocaust, offspring of HS without and with probable PTSD were compared in the number of HS parents (52.3% vs 61.9% had two HS parents, respectively), but the difference was non-significant [$\chi^2(1) = 0.59$, $p = 0.44$].

The study took place in January–April 2017. Undergraduate student research assistants approached potential participants available in their surroundings (e.g., neighborhoods, large workplaces) and asked them to take

part in the study. Research assistants were instructed to interview one available parent. When there were more than one offspring, assistants were instructed to interview the eldest offspring. In case the eldest offspring declined or was unavailable, assistants approached the next offspring in line. Assistants were further guided to maintain equal proportion of women and men in both generations, as much as possible. In cases where one part of the dyad declined to participate (due to various reasons, such as lack of interest, lack of time, poor health, etc.), both potential participants were excluded from the study. Participants read and signed an informed consent form, which also noted that the questionnaire includes queries regarding aging, various difficult life events and the Holocaust. Following that, participants, mostly offspring, accessed an online questionnaire via a link sent to them. The research assistants interviewed participants, mostly parents, who could not complete the online questionnaire themselves. Participants were interviewed in their homes or other places convenient to them. The participants' confidentiality was guaranteed, as their names were not noted on the questionnaire. The study received approval by Bar-Ilan University ethic committee.

Measures

PTSD Symptoms

Parents completed the DSM-5 20-item PTSD Checklist (Weathers et al., 2013). Previous studies have used the Hebrew version of the PTSD Checklist for DSM-5 (e.g., Shrira et al., 2017). In rating their symptoms, HS were asked to refer to the Holocaust, whereas comparison parents were asked to refer to the most traumatic event they experienced, which is also known to their offspring.[Some parents could have concealed other traumatic events from their offspring. In view of this possibility, parents were asked whether they had been exposed to other events unknown to their offspring. Only five comparison parents (8.8%) noted that they did. Some respondents also briefly depicted that event. These events included sexual assault as well as anti-Semitic physical attacks. Interestingly, 12 HS parents also acknowledged such events (13.9%). In their depictions, they mainly mentioned specific highly traumatic events during the Holocaust. Neither the existence of parental trauma unknown to offspring nor its interaction with Holocaust exposure had any significant association with the study variables (p ranged .17–.80). Accordingly, parental tendency to hide major traumatic events from offspring was both relatively rare, and it had no significant implications for the main variables.] When reporting their most traumatic event, close to a third of the comparison parents (28.3%) referred to a sudden loss of a loved one, 13.2% referred to a life-threatening event occurring to a loved one, 11.3% referred to warfare exposure, 7.5% referred to physical assault, 5.7% referred to a serious accident, and 3.8% referred to life-threatening illness. Close to another third (30.2%) mentioned exposure to other life-threatening events, such as a natural disaster or physical/sexual abuse. Respondents were asked to rate how much they were bothered by each symptom in the last month on a scale ranging from 0 (*not at all*) to 4 (*extremely*). The PTSD items were summed, with higher values indicating higher PTSD symptom level. Cronbach's α in the current study was .91.

The offspring participants were asked to refer to the most traumatic event they underwent and to rate their own PTSD symptoms in the last month using the same measure as parents. Cronbach's α in the current study was .93. When reporting their most traumatic event, close to a quarter of the offspring (23.0%) referred to a sudden loss of a loved one, 19.5% referred to a life-threatening event that occurred to a loved one, 11.4% referred to exposure to warfare, 9.2% referred to a serious accident, and 4.6% referred to a life-threatening illness. Close to another third (32.1%) referred to exposure to other life-threatening events, such as physical assault or physical/sexual abuse. Probable PTSD for both parents and offspring was determined by a cut-off score of 33 or higher (cf. Weathers et al., 2013).

Attitudes Toward Aging

Attitudes toward aging was assessed with the Attitudes to Aging Questionnaire (AAQ; Laidlaw, Power, Schmidt, & The WHOQOL-Old Group, 2007). The Hebrew version of the AAQ was previously used (Shrira et al., 2017). This 24-item questionnaire assesses negative (i.e., psychological loss) and positive (i.e., psychological growth and physical change) attitudes toward aging using a Likert scale ranging from 1 (*completely disagree*) to 5 (*completely agree*). Psychological loss refers to primarily seeing old age as a negative experience, involving psychological and social losses ("Old age is a depressing time of life"). Psychological growth refers to positive gains in relation to one's self and others ("There are many pleasant things about growing older"). Physical change focuses on health and exercise in the context of aging ("Growing old has been easier than I thought"). The psychological loss items were recoded such that higher scores reflected more favorable attitudes toward aging. The Cronbach α's in the current study were respectively 0.92 and 0.90 for parents and offspring. An average score of all items was computed.

Subjective Age

Subjective age was assessed by a single item asking participants how old they felt most of the time (Stephan et al., 2015). The subjective age score was computed by subtracting respondents' felt age from their chronological age and dividing this outcome by one's chronological age. Higher subjective age values reflect a younger age identity, such that the deviation from the chronological age is expressed in percentiles. For example, a 50-year-old respondent who feels 45 has a subjective age score of 0.1 indicating that

she/he feels 10% younger than her/his chronological age (cf. Stephan et al., 2015). In line with previous studies (e.g., Stephan et al., 2015), responses 3 *SD*s above or below the mean were considered outliers, leading to the exclusion of four and three participants from the parents and offspring group, respectively.

Perceived Parental Aging

The offspring participants rated how they perceive their parents' aging using the adapted three-item successful aging measure (e.g., "My parent is aging well") (Pruchno, Wilson-Genderson, & Cartwright, 2010). The Hebrew version of this measure was previously used whereby individuals rated themselves (Shrira, 2016). Perceived parental aging was previously assessed in a similar way albeit with a single item, and was found to be correlated with offspring views on their own aging (Jung & Jopp, 2018). The offspring participants were instructed to rate the parent who participated in the study. Each item was rated on a 4-point scale ranging from 1 (*completely disagree*) to 4 (*completely agree*). The score was the respondent's mean rating. The Cronbach α in the current study was .95.

Perceived Parental Subjective Age

Offspring participants rated how they perceive their parents' subjective age using the abovementioned single item (e.g., how old they felt most of the time). Again, offspring were instructed to rate the parent who participated in the study. In previous studies, offspring participants were rarely asked to rate how they perceive their parent's age, and in the few cases that this was examined, perceptions of parents' age identity were associated with offspring age identity (Zola, 1962). A perceived parental subjective age score was computed by subtracting offspring rating of parental felt age from parent's chronological age and dividing the outcome by the parent's chronological age. Four participants with outlier values (3 ± *SD* from the mean) were excluded from the analysis.

Background Characteristics and Medical Conditions

Respondents reported their age, gender, marital status, education level (0 = no formal education, 5 = academic degree), and subjective economic status ("As a whole, how do you rate your economic status?" 1 = *not good at all* to 5 = *very good*). Respondents also reported whether they were diagnosed with chronic medical conditions from a list of nine conditions (e.g., hypertension, stroke, diabetes, cancer).

Data Analysis

Group differences in subjective aging indices (i.e., attitudes toward aging and subjective age) were assessed with a series of univariate analyses of variance (ANOVA) and covariance (ANCOVA). As parental education level and subjective economic status significantly differed between the parent groups, these variables were controlled for in the analyses involving parents. Likewise, medical conditions also showed a trend toward a group difference and were thus also controlled for. As parental PTSD has been found to be associated with offspring PTSD (Yehuda et al., 2008), I controlled for offspring PTSD in analyses involving offspring. Probable PTSD was evident in 9.2% of the offspring. All abovementioned covariates were used when assessing offspring group differences in perceptions of their parents subjective aging.

The PROCESS macro (Hayes, 2013) was applied to test the hypotheses regarding the mediation effects. The multicategorical independent variable (study groups) was coded into two dummy indicator variables, D_1 and D_2, denoting Holocaust exposure without probable PTSD and with probable PTSD, respectively, leaving the comparison participants as the reference group. When predicting offspring attitudes toward aging I used both their parents' attitudes toward aging as well as the perception of offspring regarding parental aging as two mediators, M_1 and M_2, respectively. When predicting the subjective age of offspring I used the parents' subjective age and the offspring's perception of parental subjective age as two mediators, M_1 and M_2, respectively. Possible mediation paths were assessed in a serial mediation analyses using a bias-corrected bootstrap with 5000 resamples. The serial mediation analyses controlled for all the abovementioned covariates (i.e., parents' education level, subjective economic status, medical conditions, and offspring's probable PTSD).

Across variables with missing values, 0%–9.1% cases were missing. Little's missing completely at random test revealed that the data were missing completely at random, $\chi^2(256) = 272.54$, $p = .228$, and the same across groups, $\chi^2(2) = 3.69$, $p = .158$.

Results

Correlations Among Subjective Aging Indices

Correlations within each generation showed that favorable attitudes toward aging were positively related to feeling younger than one's age ($r = .54$ and $.32$, $p < .0001$, for parents and offspring, respectively). Among offspring participants, favorable attitudes toward their own aging and feeling younger were related to perceiving their own parents as aging successfully as well as perceiving their parents as feeling young (r ranged .22–.56, p ranged .010–.0001). Correlations across generations showed that parents and offspring participants favorable attitudes toward aging ($r = .31$, $p < .0001$) and subjective age ($r = 0.35$, $p < .0001$) were positively linked. Parents who held favorable attitudes toward aging were perceived by their offspring to both age successfully ($r = .50$, $p < .0001$) and to feel young ($r = .36$, $p < .0001$). Similarly, parents who felt young were

perceived by offspring both to age successfully (r = 0.32, p < .0001) and to feel young (r = 0.48, p < .0001; for correlation tables, see Supplementary File).

Group Differences in Subjective Aging

Table 2 presents the ANOVA and ANCOVA results. HS with probable PTSD reported less favorable attitudes toward aging and felt older relative to the two other groups. These differences remained significant after controlling for covariates. [In supplementary analyses, I accounted for the sum of Holocaust-related experiences that differed among the two HS groups. The group difference in subjective aging remained significant after adjusting for Holocaust-related experiences in addition to the other covariates [for attitudes toward aging: $F(2, 132) = 4.46$, p=.013, $\eta_p^2 = .06$; for subjective age: $F(2, 124) = 3.78$, $p = .025$, $\eta_p^2 = .05$].]

Offspring of HS with probable PTSD reported less favorable attitudes toward aging relative to the two other groups, as well as feeling older relative to comparisons.[In supplementary analyses, I assessed group differences in each of the three attitudes toward aging components (psychological loss, psychological growth, and physical change). These analyses showed that the parent groups significantly differed in psychosocial loss [$F(2, 137) = 20.94$, p < .0001, η^2 = .23], but not in physical change [$F(2, 137) = 1.80$, $p = .16$), and that there was a marginally significant difference in psychological growth [$F(2, 136) = 2.63$, $p = .07$]. Post hoc Bonferroni tests showed that HS with probable PTSD reported higher psychosocial loss (M = 3.50, SD = 0.83) than the two other parental groups (M = 2.15, SD = 0.86, and M = 2.05, SD = 0.94, for HS without PTSD and comparisons). The group differences in psychosocial loss remained significant after adjusting for covariates [$F(2, 134) = 19.18$, p < .0001, $\eta_p^2 = .22$]. Likewise, among offspring, there were also significant group differences in psychosocial loss [$F(2, 136) = 12.98$, p < .0001, $\eta^2 = .16$], but not in psychological growth [$F(2, 134) = 0.65$, $p = .52$], or physical change [$F(2, 133) = 0.98$, $p = .37$]. Follow-up post hoc Bonferroni tests showed that offspring of HS with probable PTSD reported higher psychosocial loss (M = 2.96, SD = 1.07) than the two other offspring groups (M = 2.07, SD = 0.97, and M = 1.75, SD = 0.81, for offspring of HS without PTSD and offspring of comparisons). The group difference in psychosocial loss remained significant after adjusting for covariates [$F(2, 123) = 7.78$, $p = .001$, $\eta_p^2 = .11$].] Moreover, they perceived their parents' aging as less favorable and perceived their parents as older, relative to the two other groups. After controlling for covariates, significant group differences remained between the offspring of HS with probable PTSD and comparison offspring. All group differences were in the range of medium to large effect size. When adjusting for multiple comparisons using the false discovery rate method (Benjamini & Hochberg, 1995), all group effects (adjusted for covariates) remained significant (p ranged .0002 to .003 for parents, and ranged .034 and .024 for offspring).

Serial Mediation Analyses Predicting Offspring Subjective Aging

Tables 3 and 4 present the findings from the serial mediation analyses to examine if the link between parental PTSD and offspring's subjective aging is mediated by parents' subjective aging and by the way their offspring perceive their parents' aging. When performing serial mediation

Table 2. Results of Univariate Analyses of Variance and Covariance Comparing Groups on Subjective Aging Indices

Generation	Variable	Holocaust survivors with probable PTSD dyads M (SD)	Holocaust survivors without PTSD dyads M (SD)	Comparison dyads M (SD)	Without covariates F (df)	p	η_p^2	With covariates F (df)	p	η_p^2
Parents	Attitudes toward aging	2.78 (0.78)[a]	3.39 (0.71)[b]	3.57 (0.71)[b]	8.65 (2,136)	<.0001	.11	8.16 (2,133)	<.0001	.10
	Subjective age	0.00 (0.11)[a]	0.08 (0.10)[b]	0.11 (0.13)[b]	6.16 (2,128)	.003	.08	6.09 (2,125)	.003	.08
Offspring	Attitudes toward aging	3.22 (0.77)[a]	3.65 (0.57)[b]	3.87 (0.60)[b]	8.21 (2,133)	<.0001	.11	4.74 (2,121)	.010	.07
	Subjective age	0.04 (0.12)[a]	0.11 (0.10)[a,b]	0.13 (0.12)[b]	4.32 (2,130)	.015	.06	3.53 (2,117)	.032	.05
	Perceived parental aging	3.11 (1.13)[a]	3.80 (0.99)[b]	4.09 (0.88)[b]	7.76 (2,140)	.001	.10	4.58 (2,123)	.012	.06
	Perceived parental subjective age	0.00 (0.08)[a]	0.07 (0.09)[b]	0.09 (0.11)[b]	5.24 (2,134)	.006	.07	3.48 (2,118)	.034	.05

Note. Covariates in analyses involving parental ratings included education level, self-rated economic status, and medical conditions. Covariates in analyses involving offspring's ratings (regarding themselves) included offspring PTSD symptom level. Covariates in analyses involving offspring's perception of parents included parental education level, parental self-rated economic status, parental medical conditions and offspring PTSD symptom level. Means that do not share letters significantly differ from each other in a post hoc Bonferroni test. In analyses including covariates, post hoc comparison findings were similar for parents' ratings, but differences in offspring ratings (regarding themselves and their parents) were significant when comparing offspring to Holocaust survivors with probable PTSD and comparisons only.

analysis predicting less favorable attitudes toward aging among offspring (Table 3), parental PTSD (D_2) predicted less favorable attitudes toward aging among offspring (Y). As the other dummy variable (D_1) was not significant, the group difference reflected less favorable attitudes among offspring with probable PTSD relative to comparisons only. Moreover, parental PTSD (D_2) predicted less favorable attitudes toward aging among parents (M_1). When both parental PTSD (D_1) and parents' aging attitudes (M_1) were included as predictors of perceived parental aging by their offspring (M_2), only the latter, significantly predicted the outcome. Finally, when parental PTSD (D_2) alongside both mediators—parents' attitudes toward aging (M_1) and perceived parental aging (M_2)—were included as predictors of offspring attitudes toward their own aging (Y), only perceived parental aging (M_2) significantly predicted the outcome (Y).

Similar findings appeared in serial mediation analysis predicting offspring subjective age. Parental PTSD (D_2) predicted older subjective age among offspring (Y; Table 4). Again, the group difference reflected an older subjective age among offspring of HS with probable PTSD relative to comparisons only. Moreover, parental PTSD (D_2) predicted an older subjective age among parents (M_1). When both parental PTSD (D_1) and parents' subjective age (M_1) were included as predictors of perceived parental subjective age (M_2), both significantly predicted the outcome. Finally, when parental PTSD (D_2) alongside both mediators—parents' subjective age (M_1) and perceived parental subjective age (M_2)—were included as predictors of offspring's subjective age (Y), only perceived parental subjective age (M_2) significantly predicted the outcome.

Table 5 presents the bootstrap analyses estimating the indirect effects of study group on offspring subjective aging indices. For offspring attitudes towards aging, the only significant indirect effect was as hypothesized; meaning, parental PTSD was related to less favorable attitudes toward aging among parents, which in turn were associated with less favorable perceptions of parents' aging by their offspring, which was associated with less favorable attitudes toward personal aging among the offspring themselves.

For offspring's subjective age, there were two significant indirect effects: one connecting parental PTSD to an older age identity among offspring through perceived parental subjective age, and the second connecting parental PTSD to an older age identity among offspring through both mediators—parents' subjective age and perceived parental subjective age.

Discussion

The current study showed that HS suffering from probable PTSD had less favorable attitudes toward their own aging and indeed felt older than both HS without PTSD and comparison parents who were not HS. Moreover, offspring of posttraumatic HS had less favorable attitudes toward aging and felt older than comparison offspring. They also perceived their parents as older as well as aging less well, relative to comparison offspring. Finally, serial mediation models showed that the relationship between parental PTSD and offspring's subjective aging was mediated both by parental subjective aging and the offspring's perceptions of their parents' aging. I now turn to discuss these findings in more detail.

Corroborating the first hypothesis, subjective aging was less favorable both among HS with probable PTSD and their offspring relative to other parent–offspring dyads. It should be noted that parental PTSD had a unique effect on the offspring's subjective aging beyond offspring PTSD. These findings further extends previous evidence linking PTSD and subjective aging (e.g., Avidor et al., 2016; Bodner et al., 2018; Shrira et al., 2016), as they show that Holocaust-related PTSD can

Table 3. Estimated Unstandardized Coefficients (Coeff.) for the Effect of Study Group (D_1 and D_2) on Offspring Attitudes Toward Aging (Y), Mediated by Parents' Attitudes Toward Aging (M_1) and Perceived Parental Aging (M_2)

	Outcome							
	Parents' attitudes toward aging (M_1)		Perceived parental aging (M_2)		**Offspring attitudes toward aging (Y)**			
					Mediated		Unmediated	
	Coeff.	*p*	Coeff.	*p*	Coeff.	*p*	Coeff.	*p*
Predictors								
Holocaust survivors without PTSD (D_1)	−0.20	.141	−0.16	.336	−0.11	.294	−0.19	.103
Holocaust survivors with probable PTSD (D_2)	−0.68	.0008	−0.28	.249	−0.29	.066	−0.49	.004
Parents attitudes toward aging (M_1)	—	—	0.53	<.0001	0.006	.931	—	—
Perceived parental aging (M_2)	—	—	—	—	0.28	<.0001	—	—
R^2	0.19		0.37		0.37		0.20	
F(df)	4.52 (6,116)		9.77 (7,115)		8.36 (8,114)		5.11 (6,116)	
p	.0004		<.0001		<.0001		<.0001	

Note. These analyses controlled for parent's education level, self-rated economic status, medical conditions and offspring PTSD symptom level.

Table 4. Estimated Unstandardized Coefficients (Coeff.) for the Effect of Study Group (D_1 and D_2) on Offspring Subjective Age (Y), Mediated by Parents' Subjective age (M_1) and Perceived Parental Subjective Age (M_2).

	Outcome							
	Parents' subjective age (M_1)		Perceived parental subjective age (M_2)		Offspring subjective age (Y)			
					Mediated		Unmediated	
	Coeff.	p	Coeff.	p	Coeff.	p	Coeff.	p
Predictors								
Holocaust survivors without PTSD (D_1)	−0.03	.097	−0.02	.149	0.003	.899	−0.02	.404
Holocaust survivors with probable PTSD (D_2)	−0.10	.002	−0.05	.039	−0.04	.258	−0.10	.007
Parents subjective age (M_1)	—	—	0.32	<.0001	0.16	.145	—	—
Perceived parental subjective age (M_2)	—	—	—	—	0.46	.0005	—	—
R^2	0.22		0.32		0.27		0.10	
$F(df)$	4.73 (6,99)		6.59 (7,98)		4.55 (8,97)		1.95 (6,99)	
p	.0003		<.0001		.0001		.079	

Note. These analyses controlled for parent's education level, self-rated economic status, medical conditions, and offspring PTSD symptom level.

Table 5. Estimated Indirect Effects of Study Group (D_1 and D_2) on Offspring Subjective Aging Indices

	Offspring attitudes toward aging (Y)				Offspring subjective age (Y)			
	Effect	SE	95% LCI	95% UCI	Effect	SE	95% LCI	95% UCI
Holocaust survivors without PTSD (D_1)								
$D_1 \rightarrow M_1 \rightarrow Y$	−0.001	0.02	−0.04	0.03	−0.006	0.006	−0.02	0.003
$D_1 \rightarrow M_2 \rightarrow Y$	−0.04	0.05	−0.15	0.04	−0.01	0.01	−0.03	0.003
$D_1 \rightarrow M_1 \rightarrow M_2 \rightarrow Y$	−0.03	0.02	−0.08	0.009	−0.006	0.004	−0.01	0.0009
Holocaust survivors with probable PTSD (D_2)								
$D_2 \rightarrow M_1 \rightarrow Y$	−0.004	0.05	−0.13	0.10	−0.01	0.01	−0.04	0.005
$D_2 \rightarrow M_2 \rightarrow Y$	−0.08	0.08	−0.25	0.06	**−0.02**	**0.01**	**−0.06**	**−0.004**
$D_2 \rightarrow M_1 \rightarrow M_2 \rightarrow Y$	**−0.10**	**0.04**	**−0.21**	**−0.02**	**−0.01**	**0.009**	**−0.03**	**−0.002**

Note. Values in bold denote significant effects ($p < .05$). These analyses controlled for parent's education level, self-rated economic status, medical conditions, and offspring PTSD symptom level. For offspring's attitudes toward aging, M_1 and M_2 included parents' attitudes toward aging and perceived parental aging, respectively. For offspring's subjective age, M_1 and M_2 included parents' subjective age and perceived parent's subjective age, respectively.

associate with less favorable subjective aging not only among the trauma survivors themselves, but also among their adult offspring. Additional studies should further explore whether parental PTSD due to events other than the Holocaust produces similar results. These findings also strengthen the notion that many detrimental effects of the Holocaust are not related to trauma exposure per se, but rather to the parental and offspring actual reaction to the traumatic exposure, as manifested in parental PTSD or offspring secondary traumatization. Such findings are in line with earlier findings demonstrating that parental PTSD (Shrira et al., 2017) or high secondary traumatization among HS offspring (Shrira, 2016) are related to less successful aging among HS offspring. Yet, the aging in offspring of survivors without PTSD or offspring with low secondary traumatization is generally more similar to that of comparisons.

Although posttraumatic HS and their offspring found it harder to reconcile with age-related losses, they could cope in ways that preserve functioning or promoted growth, as indicated in supplementary analyses. Meaning that while they were more focused on frailty, loneliness, and the imminent threat of death, they could still account for positive aspects, possibly by considering the accumulation of life experience and wisdom, and the opportunity to share their insights with younger generations (O'Rourke et al., 2015). Similarly, although relative to the other groups HS with probable PTSD and offspring felt older, a substantial number of individuals in this dyad type actually felt younger than their chronological age (45.0% among HS, 71.4% among their offspring, and 50.0% of the offspring perceived their parents' subjective age to be younger than parents' chronological age). These findings stand as proof of the unique strengths of many HS (Elran-Barak et al., 2018; Kahana et al., 2005), evidently even among those who suffer from high level of mental distress can nevertheless successfully compartmentalize the aftereffects of the trauma (Shmotkin et al., 2011).

Supporting the second hypothesis, parental subjective aging and offspring's perceptions of parents' aging mediated the association between parental PTSD and offspring's subjective aging. These findings add to earlier studies that exclusively relied on offspring perceptions of parents' aging (Jung & Jopp, 2018; Pope, 2013) by exhibiting a direct association between parental subjective aging, offspring's perception of parents' aging and offspring's appraisal of their own subjective aging in a cross-generational design.

As parental PTSD was eventually linked to less favorable subjective aging among offspring through parental subjective aging and offspring's perception of their parents' aging, it would be informative to examine more specific mechanisms underlying these effects. Such potential mechanisms may include parents' messages and worldviews regarding physical morbidity, frailty, and loneliness (Shrira, 2016). Such messages could have been transferred to their offspring early in life, molding their general perceptions of old age (Levy, 2009). Late-life parent–offspring relationship probably further influenced offspring's subjective aging. Another possible mechanism may be related to the idea that posttraumatic HS could feel ill-equipped to deal with ongoing age-related challenges, may be more pessimistic due to posttraumatic negative perceptions or accompanying depressive symptoms (cf. Lahav et al., 2018), and more preoccupied with their own finitude due to the collapse of mechanisms that manage the terror of death (Shrira, 2016). Such parents may present unique demands of their offspring who care for them not only due to greater parental psychological distress, but also because PTSD is associated with health-risk behaviors and increased physical morbidity (Solomon et al., 2014).

Third possibility is the well-known notion that in HS families, parental PTSD is associated with symbiotic parent–offspring relationship (Kellermann, 2009; Shmotkin et al., 2011). Offspring in such families show a strong identification with the suffering parent and role reversal dynamics develop, in which the offspring's may totally dedicate themselves to care for the traumatized parent. As the offspring fail to alleviate their parents' suffering, they develop higher anxiety with regard to their caregiving role (Shrira, Menashe, & Bensimon, 2018). Such identification and anxiety may further augment negative views of aging. Future research should assess the existence of these processes and their relationship with perceptions of aging in families of survivors of other traumatic events.

The findings should be viewed in light of the study's limitations. First, the use of cross-sectional data precluded firmer conclusions regarding the temporal order of the variables. Therefore, longitudinal designs are needed to further establish the way in which subjective aging is passed through generations. Second, the sample relied on convenience sampling, and was biased toward high-educated individuals, especially among offspring. However, contrary to many past works, the current study did not specifically select participants from Holocaust-related organizations or gatherings. This is of high importance, as studies that target participants from such organizations are biased to produce larger effects of the Holocaust and its transmission (van IJzendoorn et al., 2003). Third, the sample was not large enough to enable comparisons of paternal and maternal PTSD, which may have different effects on offspring (cf. Yehuda et al., 2008), so gender-based differences should be assessed in future studies. Fourth, the current quality of parent–offspring relationship was not examined. This is another important avenue for future projects, as initial evidence suggests that ambivalent feelings toward the parent and parental support are factors associated with offspring's subjective aging (Jung & Jopp, 2018). Fifth, it was not possible to assess PTSD in both parents, and to do so future studies should collect samples with sufficient cases where both parents are alive or healthy enough to participate. Lastly, PTSD was assessed based on self-reports. Therefore, future studies should try to capture PTSD in both parents and include psychiatric evaluations.

Aside from these limitations, the current study provides novel evidence that parental PTSD is related to less favorable perceptions of aging across generations in families of HS. In view of the fact that perceptions of aging may shape the way individuals cope with age-related losses (Stephan et al., 2018; Wurm et al., 2017), interventions with HS families should address such perceptions. Negative perceptions of aging may be ameliorated by discussing issues revolving frailty, aging, and death. Interventions could promote more complex, differentiated perceptions of aging that can increase the sense of self-efficacy and help in the preservation of physical health among HS and their offspring.

Supplementary Material

Supplementary data is available at *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences* online.

Conflict of Interest

None reported.

References

Avidor, S., Benyamini, Y., & Solomon, Z. (2016). Subjective age and health in later life: The role of posttraumatic symptoms. *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences,* **71**, 415–424. doi:10.1093/geronb/gbu150

Bandura, A. (1986). *Social foundations of thought and taction: A social cognitive theory*. Englewood Cliffs, NJ: Prentice Hall.

Barel, E., Van IJzendoorn, M. H., Sagi-Schwartz, A., & Bakermans-Kranenburg, M. J. (2010). Surviving the Holocaust: A meta-analysis of the long-term sequelae of a genocide. *Psychological Bulletin*, **136**, 677–698. doi:10.1037/a0020339

Bellingtier, J. A., Neupert, S. D., & Kotter-Grühn, D. (2015). The combined effects of daily stressors and major life events on

daily subjective ages. *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences,* **72**, 613–621. doi:10.1093/geronb/gbv101

Benjamini, Y., & Hochberg, Y. (1995). Controlling the false discovery rate: A practical and powerful approach to multiple testing. *Journal of the Royal Statistical Society, Series B (Methodological),* **57**, 289–300. doi:10.2307/2346101

Bodner, E., Hoffman, Y., Palgi, Y., & Shrira, A. (2018). A light in a sea of darkness: The moderating role of emotional complexity in the PTSD symptoms-successful aging association. *Aging & Mental Health,* **22**, 826–833. doi:10.1080/13607863.2017.1317332

Danieli, Y., Norris, F. H., & Engdahl, B. (2017). A question of who, not if: Psychological disorders in Holocaust survivors' children. *Psychological Trauma: Theory, Research, Practice, and Policy,* **9**, 98–106. doi:10.1037/tra0000192

Diehl, M., Wahl, H., Barrett, A. E., Brothers, A. F., Miche, M., Montepare, J. M., … & Wurm, S. (2014). Awareness of aging: Theoretical considerations on an emerging concept. *Developmental Review,* **34**, 93–113. doi:10.1016/j.dr.2014.01.001

Elran-Barak, R., Barak, A., Lomranz, J., & Benyamini, Y. (2018). Proactive aging among Holocaust survivors: Striving for the best possible life. *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences,* **73**, 1446–1456. doi:10.1093/geronb/gbw136

Hayes, A. F. (2013). *An introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. New York, NY: Guilford Press.

Jopp, D. S., Jung, S., Damarin, A. K., Mirpuri, S., & Spini, D. (2016). Who is your successful aging role model? *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences,* **72**, 237–247. doi:10.1093/geronb/gbw138

Jung, S., & Jopp, D. S. (2018). Adult children's relationship to parent influences their views on aging and attitude toward own aging. *The International Journal of Aging and Human Development*. Advanced online publication. doi:10.1177/0091415018784703

Kahana, B., Harel, Z., & Kahana, E. (2005). *Holocaust survivors and immigrants: Late life adaptations*. New York: Springer.

Kahana, B., Kahana, E., Harrel, Z., King, C., & Seckin, G. (2007). Tfisa rav-memadit al histaglut nizolay hashoha betkufat hahaim hameuheret: Hitmakdut bekshishim nizolay hashoha [A multidimensional view of late life adaptation of trauma survivors: Focus on aged survivors of the Holocaust]. *Gerontology/Gerontologya,* **34**, 19–34.

Kellermann, N. P. F. (2009). *Holocaust trauma: Psychological effects and treatment*. New York: iUniverse.

Lahav, Y., Avidor, S., Stein, J. Y., Zhou, X., & Solomon, Z. (2018). Telomere length and depression among ex-prisoners of war: The role of subjective age. *The Journals of Gerontology: Series B: Psychological Sciences and Social Sciences,* **75**, 21–29. doi:10.1093/geronb/gby006

Laidlaw, K., Power, M. J., Schmidt, S., & The WHOQOL-Old Group. (2007). The attitudes to ageing questionnaire (AAQ): Development and psychometric properties. *International Journal of Geriatric Psychiatry,* **22**, 367–379. doi:10.1002/gps.1683

Lehrner, A., & Yehuda, R. (2018). Trauma across generations and paths to adaptation and resilience. *Psychological Trauma: Theory, Research, Practice, and Policy,* **10**, 22–29. doi:10.1037/tra0000302

Levy, B. (2009). Stereotype embodiment: A psychosocial approach to aging. *Current Directions in Psychological Science*, **18**, 332–336. doi:10.1111/j.1467-8721.2009.01662.x

O'Rourke, N., Canham, S., Wertman, A., Chaudhury, H., Carmel, S., Bachner, Y. G., & Peres, H. (2015). Holocaust survivors' memories of past trauma and the functions of reminiscence. *The Gerontologist,* **56**, 743–752. doi:10.1093/geront/gnu168

Pope, N. D. (2013). Views on aging: How caring for an aging parent influences adult daughters' perspectives on later life. *Journal of Adult Development,* **20**, 46–56. doi:10.1007/s10804-013-9155-9

Pruchno, R. A., Wilson-Genderson, M., & Cartwright, F. (2010). A two-factor model of successful aging. *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences,* **65**, 671–679. doi:10.1093/geronb/gbq051

Shmotkin, D., Shrira, A., Goldberg, S. C., & Palgi, Y. (2011). Resilience and vulnerability among aging Holocaust survivors and their families: An intergenerational overview. *Journal of Intergenerational Relationships,* **9**, 7–21. doi:10.1080/15350770.2011.544202

Shrira, A. (2016). Perceptions of aging among middle-aged offspring of traumatized parents: The effects of parental Holocaust-related communication and secondary traumatization. *Aging & Mental Health,* **20**, 65–73. doi:10.1080/13607863.2015.1013921

Shrira, A., Ayalon, L., Bensimon, M., Bodner, E., Rosenbloom, T., & Yadid, Y. (2017). Parental post-traumatic stress disorder symptoms are related to successful aging in offspring of Holocaust survivors. *Frontiers in Psychology,* **8**, 1099. doi:10.3389/fpsyg.2017.01099

Shrira, A., Menashe, R., & Bensimon, M. (2018). Filial anxiety and sense of obligation among offspring of Holocaust survivors. *Aging & Mental Health*. Advanced online publication. doi:10.1080/13607863.2018.1448970

Shrira, A., Palgi, Y., Ben-Ezra, M., Hoffman, Y., & Bodner, E. (2016). A youthful age identity mitigates the effect of post-traumatic stress disorder symptoms on successful aging. *American Journal of Geriatric Psychiatry,* **24**, 174–175. doi:10.1016/j.jagp.2015.07.006

Solomon, Z., Greene, T., Ein-Dor, T., Zerach, G., Benyamini, Y., & Ohry, A. (2014). The long-term implications of war captivity for mortality and health. *Journal of Behavioral Medicine,* **37**, 849–859.doi:10.1007/s10865-013-9544-3

Stephan, Y., Sutin, A., & Terracciano, A. (2015). How old do you feel? The role of age discrimination and biological aging in subjective age. *PLoS One,* **10**, e0119293. doi:10.1371/journal.pone.0119293

Stephan, Y., Sutin, A. R., & Terracciano, A. (2018). Determinants and implications of subjective age across adulthood and old age. In C. Ryff & R. F. Krueger (Eds.), *The Oxford handbook of integrative health science* (pp. 87–96). New York, NY: Oxford University Press.

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**, 459–469. doi:10.1023/A:1025706427300

Weathers, F. W., Blake, D. D., Schnurr, P. P., Kaloupek, D. G., Marx, B. P., & Keane, T. M. (2013). The clinician-administered PTSD scale for DSM-5 (CAPS-5). Interview available from the National Center for PTSD. Retrieved from www.ptsd.va.gov.

Wurm, S., Diehl, M., Kornadt, A. E., Westerhof, G. J., & Wahl, H-W. (2017). How do views on aging affect health outcomes in adulthood and late life? Explanations for an established connection. *Developmental Review,* **46**, 27–43. doi:10.1016/j.dr.2017.08.002

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**, 1104–1111. doi:10.1016/j.jpsychires.2008.01.002

Zola, I. K. (1962). Feelings about age among older people. *Journal of Gerontology,* **17**, 65–68. doi:10.1093/geronj/17.1.65