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## Double Jeopardy: The Effect of Multiple Secondary Trauma Exposure on Subjective Age

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### ABSTRACT

The present study investigates whether secondary traumatization (i.e., family history of Holocaust survival and secondary exposure to captivity) is implicated in subjective age. Women exposed to different levels of secondary traumatization ( $N=177$ ) were assessed. Analyses of variance (ANOVAs) revealed that a Holocaust background and husband's captivity had a marginally significant positive effect on age appearance. Women with a Holocaust background whose husbands were held captive reported older interest age, indicating double jeopardy for older subjective age when two sources of secondary traumatization are present. A similar trend existed for behavior age. Possible explanations for these complex findings of risk and resilience are discussed.

### ARTICLE HISTORY

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### KEYWORDS

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Holocaust survivors;  
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transmission; cognitive age

Whereas one's objective or chronological age refers to the time elapsed since birth, measured in months and years, one's subjective age is a more idiosyncratic concept that captures how old one feels (Kotter-Gruhn, Kornadt, & Stephan, 2015). Subjective age is considered a multidimensional construct with several facets that represent how old a person feels (felt age), how old a person thinks he or she looks (look age), to what age a person's areas of interest correspond (interest age), and to what age a person's daily activities may match (behavior age; e.g., Barak & Schiffman, 1981). Research has shown that objective and subjective age are rarely concurrent: Younger people have a tendency to perceive themselves as older than their chronological age, though starting from about midlife, this trend reverses and individuals perceive themselves to be younger than their chronological age (e.g., Westerhof & Barrett, 2005). This tendency is assumed to be a strategy of disengaging from negative age stereotypes, stigmas, and age-related fears (e.g., Barrett & Montepare, 2015; Weiss & Lang, 2012).

Among older adults, subjective age is related to various indicators of successful aging. Feeling younger than one's chronological age is implicated in better physical health and longer life expectancy in older age (e.g., Westerhof et al., 2014), less cognitive decline (Stephan, Caudroit, Jaconelli, & Terracciano, 2014; Stephan, Sutin, Caudroit, & Terracciano, 2016), and better mental health (e.g., Spuling, Miche, Wurm, & Wahl, 2013). Given the significance of subjective age for health and well-being in older adulthood, the current study aims to investigate whether secondary exposure to traumatic events is implicated in higher subjective age.

### **Trauma and subjective age**

To date, studies focusing on the association of trauma and the subjective experience of aging are scarce. Schafer (2009) proposed that subjective age stems from lifelong developmental experiences and showed that the loss of one's mother during childhood was associated with higher subjective age in a sample of adults aged 25 to 74 years. Another study reported that adolescent girls who had experienced sexual abuse in childhood experienced older subjective age than their nonabused counterparts (Turner, Runtz, & Galambos, 1999). Finally, a study of former prisoners of war (ex-POWs) reported higher subjective age than comparable combat veterans who did not fall into captivity (Avidor, Benyamini, & Solomon, 2016). The authors proposed a vicious circle whereby trauma negatively affects self-perception and negative self-perception in turn may be implicated in higher subjective age.

### **Study aims**

The current study assessed the effects of secondary traumatization on subjective age in wives of Israeli veterans from the Yom Kippur War. It investigated whether (a) a family history of Holocaust is implicated in subjective age, (b) secondary exposure to war captivity is implicated in subjective age, and (c) second-generation Holocaust survivors (SGHS) are at a double jeopardy for higher subjective age when further secondary exposure to trauma occurs (i.e., war captivity of husband). It was hypothesized that secondary exposure to Holocaust trauma and war captivity both are independently implicated in subjective age (main effects) and that the presence of both risk factors creates a double jeopardy (interaction effect).

## Method

### Participants and procedure

The current cross-sectional study is part of a multicohort longitudinal study of Israeli veterans of the 1973 Yom Kippur War and their spouses (Solomon, Horesh, Ein-Dor, & Ohry, 2012). The present data were collected by administering questionnaires to wives of ex-POW and combat veterans 37 years (2010–2011) after the war (see Greene et al., 2014, for a description of the longitudinal study). Following the Israel Defense Forces' (IDF) and the Tel Aviv University Review Board's approval, participating wives were contacted and provided written informed consent. The questionnaires were administered at their home or at another location of their choice.

### Wives of ex-POWs

According to the IDF, 240 combat veterans from the Israeli infantry were captured during the war and held in Egypt or Syria for between 1 and 8 months. In 2008, 147 of the ex-POWs were married and 116 wives participated in the current study (78.9%).

### Wives of combat veterans

Combat veterans' wives were sampled from IDF computerized data banks. Their husbands belonged to the same units as the ex-POWs and were matched to the ex-POWs for personal and military background characteristics. In 2008, 103 combat veterans were married or had a partner (88.8%). Of these, 61 of their wives participated in the current study at T2 (59.2%).

Ex-POWs' and combat veterans' wives did not differ significantly in demographic variables (see Table 1). Twenty-five percent ( $n = 27$ ) of the ex-POWs' wives were SGHS. Thirty-nine percent ( $n = 23$ ) of the combat veterans' wives were SGHS. Wives of ex-POWs, wives of combat veterans,

**Table 1.** Means, standard deviations, and univariate  $t$ -tests of group differences on demographic variables.

	Wives of ex-POWs ( $n = 90$ ) <i>M (SD)</i>	Wives of CVs ( $n = 47$ ) <i>M (SD)</i>	SGHS ( $n = 48$ ) <i>M (SD)</i>	Non- SGHS ( $n = 89$ ) <i>M (SD)</i>	Effect captivity <i>F (df, p)</i>	Effect Holocaust <i>F (df, p)</i>	Interaction effects Holocaust* <i>F (df, p)</i>
Age	57.96 (6.61)	57.80 (4.46)	59.90 (4.93)	58.30 (6.25)	$F(1,151) = .01$ $p = .90$	$F(1,151) = .01$ $p = .90$	$F(1,151) = .01$ $p = .94$
Years of education	14.15 (3.29)	15.51 (3.20)	15.53 (2.47)	14.27 (3.55)	2.32 (1, .131)	2.09 (1, .151)	.33 (1, .569)
Number of children	3.19 (.90)	3.27 (1.33)	3.19 (.79)	3.23 (1.15)	.23 (1, .634)	.01 (1, .910)	.13 (1, .720)

Note. \* $p < .05$ ; Wives of ex-POWs = wives of former prisoners of war, wives of CVs = wives of combat veterans, SGHS = second-generation Holocaust survivors, non-SGHS = no Holocaust background.

and those with and without a Holocaust background did not differ significantly in demographic variables (see [Table 1](#)).

### ***Handling missing data***

Across variables and partners, there were 26–40 (15–23%) missing values in demographic factors and 11–18% in the subjective age (SA) factor. Data were complete regarding the Holocaust background of the combat veterans' wives, but there were missing values for the ex-POWs' wives (7 missing values, 6%). Only wives who had complete data of Holocaust background were included. Little's (1988) Missing Completely at Random test (MCAR), aimed at examining potential bias due to SA missing data, revealed that the data were missing completely at random, chi square (12) = 8.92,  $p = .71$ . Supplementary *t*-tests supported this evidence, as all were nonsignificant. Missing data were replaced with maximum likelihood (ML) when running models in SPSS 24. This method uses all available data for each participant to recover missing information (Collins, Schafer, & Kam, 2001). The final sample consisted of 172 wives.

### ***Measures***

#### ***Subjective age***

Subjective age was assessed using Barak and Schiffman's (1981) conceptualization, consisting of four items that assess subjective perceptions of age: felt age ("How old do you feel?"), age appearance ("How old do you think you look?"), interest age ("My areas of interest are as from someone who is aged ..."), and behavior age ("My daily activities are as from someone who is aged ..."). For these items, participants rated their subjective age on an ordinal five-point scale, ascending decade-wise from 30s to 80s. Using the four-item scale allowed for a more comprehensive measure of subjective age, which is usually assessed as a single item only (e.g., Westerhof & Barrett, 2005).

#### ***Sociodemographic measurements***

Assessment included age, years of education, and number of children. In addition, wives were asked about their family's Holocaust background, with regard to both of their parents.

### ***Results***

A series of four two-way analyses of variance (ANOVA) was performed on the four subjective age variables (felt age, age appearance, behavior age,

**Table 2.** Means and standard deviations of the main effects of captivity and SGHS on the outcome variables.

	Wives of ex-POWs ( <i>n</i> = 107) <i>M</i> ( <i>SD</i> )	Wives of CVs ( <i>n</i> = 59) <i>M</i> ( <i>SD</i> )	SGHS ( <i>n</i> = 48) <i>M</i> ( <i>SD</i> )	Non-SGHS ( <i>n</i> = 118) <i>M</i> ( <i>SD</i> )
Felt age	45.70 (11.58)	42.71 (9.80)	43.54 (10.82)	45.09 (11.15)
Age appearance	11.17 (6.93)	13.14 (6.46)	10.63 (6.92)	12.37 (6.73)
Behavior age	14.58 (9.36)	18.22 (9.05)	16.85 (8.87)	15.48 (9.59)
Interest age	13.20 (9.47)	16.39 (10.77)	14.43 (9.79)	14.28 (10.17)

Note. Wives of ex-POWs = wives of former prisoners of war, wives of CVs = wives of combat veterans, SGHS = second-generation Holocaust survivors, non-SGHS = no Holocaust background.

**Table 3.** Means and standard deviations of the combined effect of captivity and SGHS on outcome variables.

	Non-SGHS wives of CVs ( <i>n</i> = 36) <i>M</i> ( <i>SD</i> )	SGHS wives of CVs ( <i>n</i> = 23) <i>M</i> ( <i>SD</i> )	Non-SGHS wives of ex-POWs ( <i>n</i> = 82) <i>M</i> ( <i>SD</i> )	SGHS wives of ex- POWs ( <i>n</i> = 25) <i>M</i> ( <i>SD</i> )
Felt age	43.04 (9.26)	41.43 (10.69)	46.67 (11.36)	45.00 (10.87)
Age appearance	13.97 (5.96)	11.83 (7.11)	11.67 (6.96)	9.52 (6.70)
Behavior age	19.25 (9.55)	16.55 (8.11)	13.80 (9.18)	17.12 (9.65)
Interest age	18.59 (9.60)	13.13 (11.76)	12.47 (9.91)	15.67 (7.49)

Note. Wives of ex-POWs = wives of former prisoners of war, wives of CVs = wives of combat veterans, SGH = second-generation Holocaust survivors, non-SGH = no Holocaust background.

and interest age) to examine the effects of husbands' captivity (ex-POWs vs. combat veterans) and Holocaust background (SGHS vs. non-SGHS), as well as the interaction between them. Means and standard deviations of group differences are summarized in [Tables 2 and 3](#).

### **Felt age**

No significant group differences were found (captivity:  $F[1,162] = 2.38$ ,  $p = .13$ ; Holocaust:  $F[1,162] = .34$ ,  $p = .56$ ; captivity\*Holocaust:  $F[1,162] = .06$ ,  $p = .81$ ).

### **Age appearance**

Marginally significant main effects were found for captivity ( $F[1,162] = 3.79$ ,  $p = .05$ ) and Holocaust ( $F[1,162] = 3.29$ ,  $p = .07$ ). Wives who were SGHS and spouses of ex-POWs reported looking younger compared to wives without Holocaust background and spouses of combat veterans, respectively. The interaction effect was not significant ( $F[1,162] = .00$ ,  $p = .99$ ).

### **Interest age**

A significant interaction effect was found ( $F[1,158] = 6.13$ ,  $p = .01$ ). Spouses of ex-POWs with a Holocaust background reported their areas of

interest to relate to an older age as compared to wives of ex-POWs with no such family history. Among wives of combat veterans, those who were SGHS felt that their areas of interest corresponded to a younger age as compared to non-SGHS. No significant main effects were found for interest age (captivity:  $F[1,158] = 1.05$ ,  $p = .31$ ; Holocaust:  $F[1,158] = .42$ ,  $p = .52$ ).

### **Behavior age**

The ANOVA did not yield significant main effects (captivity:  $F[1,160] = 2.23$ ,  $p = .14$ ; Holocaust:  $F[1,160] = .04$ ,  $p = .85$ ). However, the interaction of captivity and Holocaust background was found marginally significant ( $F[1,160] = 3.41$ ,  $p = .07$ ), pointing toward a double jeopardy for wives of ex-POWs who were also SGHS. No interaction was found in combat veterans' wives regarding Holocaust background.

### **Discussion**

This study investigated whether secondary exposure to the Holocaust and war captivity are implicated in different facets of subjective age and whether SGHS are at a double jeopardy regarding higher subjective age when further secondary trauma exposure occurs. Results show no association of secondary traumatization and felt age. However, regarding age appearance, behavior age, and interest age, a complex picture of risk and resilience was revealed.

Contrary to the hypothesis, a family history of Holocaust had a marginally significant effect on age appearance ( $p = .07$ ), suggesting a tendency for wives who are SGHS to report looking younger compared to wives without a Holocaust background. This finding is in line with a resilience perspective on the intergenerational implications of the Holocaust. In fact, numerous studies have indicated a remarkable resilience of SGHS in several areas of psychosocial functioning, such as long-term adjustment and attachment orientation (Dekel, Solomon, & Rozenstreich, 2013; Sagi-Schwartz et al., 2003; van IJzendoorn, Bakermans-Kranenburg, & Sagi-Schwartz, 2003). The trend toward not only resilience but a positive effect of a Holocaust background on one's self-perception, however, is surprising. A possible explanation may be that attitudes of the Israeli community toward Holocaust survivors and their families are nowadays highly favorable: the survivors' efforts of maintaining dignity and humanity under the most adverse of circumstances are recognized and widely admired (Solomon, 1995). Such societal recognition of parental trauma may be a source of empowerment for the offspring, which ultimately even may result in growth in areas of psychological functioning. This line of argument is

supported by recent research showing that subjective age in part depends on the social context (Hess et al., 2017).

In the same vein, a marginally significant effect for age appearance was found with regard to secondary exposure to war captivity ( $p = .05$ ). Contrary to our hypothesis, wives of ex-POWs reported looking younger compared to spouses of combat veterans. One of the mechanisms shown to lead to a younger subjective age is that of positive social comparison with other members of one's age cohort (Stephan, Chalabaev, Kotter-Grühn, & Jaconelli, 2013). It may be assumed that the spouse is an important social partner with whom such comparisons are made. In the current sample, previous research has shown that husbands who were captives are susceptible to accelerated aging, as implicated in an increased rate of health-related conditions, worse self-rated health, and higher subjective age (Avidor et al., 2016; Solomon et al., 2014). Consequently, wives of ex-POWs may make more favorable comparisons to their husbands regarding age appearance than wives of combat veterans. Social comparison may be particularly pronounced in the domain of age appearance, as external looks allow direct comparisons with others.

### ***Double jeopardy***

A double jeopardy was found for interest age, revealing that wives of ex-POWs with a Holocaust background perceived their areas of interest to pertain to an older age compared to wives of ex-POWs with no such family history. Surprisingly, among wives of combat veterans, the opposite was observed: those who were SGHS felt that their areas of interest corresponded to a younger interest age compared to non-SGHS. Furthermore, regarding behavior age there was a trend toward double jeopardy ( $p = .07$ ). Wives of ex-POWs who are SGHS associated their daily activities with an older behavior age than spouses of ex-POWs without Holocaust background. Among wives of combat veterans, no differences in behavior age were found related to Holocaust background. The present findings indicate that a Holocaust family background appears to pose a double jeopardy for age interest, and potentially also for behavior age in the event of subsequent secondary exposure to severe trauma. However, no double jeopardy manifests when a later exposure pertains to a less grave traumatic experience (e.g., combat). Similar to what was found with respect to age appearance, in case of a lower subsequent stress, a Holocaust background even tended to report positive effects, which may relate to positive societal attitudes about Holocaust survivors (Solomon, 1995). These results propose a dose-response relationship (e.g., Wyler, Masuda, & Holmes, 1971) in the effect of secondary traumatization on interest and behavior age, and are in agreement with van IJzendoorn et al.'s (2003) suggestion that the

combination of earlier adversities with later stressful experiences accumulate to a heightened psychological vulnerability.

The above findings lead to the question of why a double jeopardy was identified only for specific domains of subjective age. It may be easier to admit to an older subjective age regarding the areas of interest and activity age, as it is possible that those domains are more positively connoted than looking older. Having interests associated with an older age cohort possibly creates the positive impression of being more “mature” rather than merely being “old.” Moreover, it is possible that areas of interest and everyday routine behaviors are more stable indicators of subjective age than the question of how old one feels. Indeed, one study has evaluated the stability of felt age (i.e., “How old do you feel today?”) and showed fluctuations on a day-to-day basis in response to situational factors, such as negative affect, physical symptoms, pain, and daily stressors (Kotter-Grühn, Neupert, & Stephan, 2015). However, future research is needed to test whether other facets such as interest and behavior age vary less than felt age.

This study has several limitations. First, the sample size was relatively small, particularly concerning the group of SGHS. This may have manifested in effects of the magnitude of trends rather than full statistical significance. Second, as women were shown to be more sensitive to negative perceptions of age (Barak & Schiffman, 1981), the present results should not be generalized to male populations exposed to secondary traumatization. Third, we investigated secondary trauma exposure in the specific contexts of Holocaust and captivity and effects may differ after secondary exposure to other traumatic events.

These limitations notwithstanding, our findings contribute to the literature on SGHS by showing resilience with respect to subjective age when no further exposure to severe secondary trauma takes place, in which case a domain-specific vulnerability was detected. Future studies should explore whether SGHS are vulnerable for higher subjective age when exposed to primary traumatization later in life. Furthermore, since results strongly varied across the four subjective age items, our findings suggest that subjective age is not one entity but rather a multifaceted concept. More research is needed to clarify the differential effects and possible covariates of its several facets.

## Notes of Contributors

**Rahel Bachem** is a clinical psychologist who received her PhD from the University of Zurich, Switzerland. She is currently working as a postdoctoral researcher at the I-CORE Research Center for Mass Trauma at Tel Aviv University. She is interested in the systemic and intergenerational impact of war trauma in families of veterans, former prisoners of war, and refugees.

**Johanna Scherf**, MSc, obtained her master's degree in clinical psychology at the University of Potsdam, Germany. She currently works as an academic employee at the University of Potsdam. Her research primarily focuses on systemic approaches to war trauma and the intergenerational transmission of trauma-related cognitions.

**Yafit Levin** is a rehabilitation psychologist. She received her PhD from Tel Aviv University, Israel, and is a research fellow in the I-CORE Research Center for Mass Trauma. She has participated in numerous projects that involve couples and triads of parents and children who deal with the aftermath of trauma, and has a particular interest in applying the family systems theory to trauma.

**Zahava Solomon** has been an eminent trauma researcher for the past four decades. Prof. Solomon is currently the head of the I-CORE Research Center for Mass Trauma at Tel Aviv University. She has conducted multifaceted longitudinal studies of combat veterans, Holocaust survivors, and survivors of ongoing terror, their spouses and children.

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