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# The experience of aging before one's time during the coronavirus pandemic among war veterans in Israel

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## ABSTRACT

Subjective age, the personal sense of how old one feels, is an important concomitant of posttraumatic outcomes in the second half of life. The present study aims to disentangle the interrelationships between posttraumatic stress disorder symptoms (PTSS) and subjective age, during the COVID-19 pandemic, among a sample of Israeli older adults who are veterans of the 1973 Yom Kippur War. Participants were interviewed in 2015 (T1;  $N = 259$ ; mean age = 65.23,  $SD = 5.32$ ) and in 2020, during the COVID-19 outbreak in Israel (T2). We assessed subjective age, PTSS, fear of COVID-19, self-rated health, and COVID-19 related accelerated subjective aging. A cross-lagged path analysis showed that while higher PTSS at T1 were associated with an increase in subjective age from T1 to T2, subjective age at T1 was not associated with PTSS at T2. PTSS at T1, but not subjective age, were associated with higher COVID-19 related accelerated subjective aging at T2. Older adults with continued PTSS due to past traumas, might be susceptible to the stressors of COVID-19 expressed in the personal subjective experience of having aged quickly in a short period of time. Our findings also suggest that in the context of stress and trauma, subjective age is more appropriately conceived as an outcome variable rather than a predictor of PTSS.

## 1. Introduction

### 1.1. Stress among older adults during the COVID-19 outbreak

The SARS-CoV-2 (COVID-19) is an ongoing global pandemic, with a mortality rate reaching as high as 20% for people over 80 years of age, and even higher among those with additional risk factors (Onder et al., 2020). It has thus had a significant effect on the lives of older adults all over the world. The threatening nature of the virus has posed an existential threat potentially leading to posttraumatic stress-disorder symptoms (PTSS) among some of the population (WHO, 2021). Some studies have shown that the preventive measures to contain the virus (lockdowns, social isolations, and quarantines) have also been associated with negative outcomes for those who are older and more susceptible to the effects of COVID-19 (e.g., Shrira et al., 2020). However, these associations are not uniform and it appears that some older adults have experienced worse mental health during the pandemic while others do not (Vindgaard and Benros, 2020). The present work therefore explores the interrelationships of posttraumatic stress symptoms and subjective

age as possible predictors of susceptibility to the stressors of COVID-19 among older adults.

### 1.2. Subjective age and accelerated aging

Perceptions of aging, also termed subjective aging, play an important role in understanding the coping of older adults in the face of adversity. Subjective aging is an overarching concept that includes different types of aging-related perceptions that an individual may hold regarding one's age and one's aging process (Wurm et al., 2017). One of the most prominent components of subjective aging is subjective age (SA; how old one feels, as opposed to one's chronological age; Kastenbaum et al., 1972). Subjective accelerated aging is another distinct component of subjective aging, that reflects the sense that one has aged rapidly in a short span of time (Palgi, 2020). Thus, SA refers to the more static state of feeling a certain age at a given point in time, and accelerated subjective aging reflects the experience of an increased pace of one's aging process (Palgi, 2020). It is possible therefore that one may feel younger than their age and yet that the rate of their aging is fast, or alternatively,

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to feel that the rate of one's aging is slow and yet to feel older than their chronological age. The different manifestations of subjective aging are all highly relevant concomitants of traumatic experiences and their long-term consequences (Hoffman et al., in press). This is due to the fact that stressful or traumatic events involve an overwhelming burden on an individual's coping mechanisms, often leading to a sense of 'aging before one's time' (Foster et al., 2008). Although both SA and subjective accelerated aging were found to be higher among those exposed to traumatic events (Palgi, 2020), their interrelations have not been measured in the past and it is therefore of importance to further learn about them.

Subjective aging, and SA in particular, have been found to be important correlates, and even predictors, of physical and mental health throughout the second half of life over and above chronological age (Diehl and Wahl, 2015). It is not surprising, then, that subjective aging phenomena have been found to play a central role in predicting important outcomes during the current pandemic. For example, studies that were conducted during the COVID-19 outbreak revealed that older adults who felt older, showed higher levels of psychological distress (Avidor et al., 2020; Shrira et al., 2020). In another study, it was found that negative perceptions of age were positively associated with anxiety symptoms and this association was even stronger among individuals with higher levels of health worries (Bergman et al., 2020).

Conversely, studies that have focused on chronological age as opposed to subjective aging, tend to point to higher resilience of older adults during the pandemic (Sterina et al., 2021). In one study that focused on longitudinal changes to SA, it was even found that people reported feeling younger, possibly due to defensive distancing from older age (Terracciano et al., 2021). Thus, the responses to the coronavirus pandemic among the older adult population have not been straightforward or uniform (Garcia-Portilla et al., 2021) and it is important to understand what may underlie and explain the varied outcomes. An important course of consideration in this context is that older adults with a traumatic past who experience posttraumatic stress symptoms (PTSS), may experience an exacerbation and or reactivation of previous traumas (Maytles et al., 2021).

### 1.3. Trauma and old age

Aging with a personal history of trauma involves a continuous effort to maintain a biological and psychological equilibrium (Solomon and Ohry, 2010). This is particularly true for those who have been exposed to trauma and suffer from psychopathology following those experiences (namely PTSS; Jakel, 2018). The aging process of older adults with continued PTSS is also hampered by a higher occurrence of age-related diseases (such as diabetes, high blood pressure, and cancer, for example) and even earlier mortality (Solomon et al., 2014). Termed accelerated aging (Jakel, 2018), these experiences illustrate the toll of coping with posttraumatic outcomes in the second half of life.

Posttraumatic alterations to the aging process can also manifest themselves on a psychological level, regarding experiences such as subjective aging. It has been shown, for example, that veterans with PTSD reported an older SA than those without PTSD (Solomon et al., 2009), suggesting that trauma can accelerate one's inner psychological clock. Moreover, studies have shown that for older adults who have experienced trauma in the past, measures of a younger SA can act as a form of protective buffer against the detrimental effects of PTSS in the second half of life (Palgi et al., 2018). These findings have been replicated with different measures of subjective aging (such as more negative attitudes toward age; Avidor et al., 2021), revealing that subjective aging is a consistent concomitant of growing older in the shadow of trauma. Thus, the reciprocal associations between posttraumatic outcomes and subjective aging have been well established through diverse forms of longitudinal research (Hoffman et al., 2022). These processes regarding subjective aging following trauma can be understood in light of the weathering hypothesis, which posits that earlier life stressors lead

to a cycle of losses and influence development through a subjective sense of growing older before one's time. Thus, having to adapt to stress or trauma can "wear out" one's age identity, expressed in an older SA (Foster et al., 2008).

### 1.4. The reciprocal relations between subjective aging and trauma

Although some of the studies on subjective aging and trauma were based on longitudinal data, questions remain regarding the directionality of the interrelations between subjective aging and traumatization, such as PTSS. For example, PTSS following trauma lead to physical conditions and poorer health (Solomon et al., 2014). The bodily processes of 'wear and tear' may then, in turn, underlie the sense of feeling older and a more negative experience of aging. It is also possible, however, that SA may impede one's resilience in the face of stress or trauma, leading to a higher risk of PTSS. In one of the single studies, to our knowledge, that have examined this question regarding the interrelations between subjective aging and PTSS, a cross-lagged panel analysis revealed that PTSS predicted subjective aging in the form of SA, but SA did not predict PTSS, in a prospective sample of older adults living in the south of Israel (Palgi et al., 2018). However, the question of precedence in the effects of PTSS and subjective aging has not been previously examined in the context of a crisis such as the current COVID-19 pandemic, with its particular significance and unique risks for older adults. The uncertainty and stressful nature of the pandemic for some individuals may exacerbate and reactivate previous traumas, as well as negative views of aging, making this a unique context for examining the long-term connections between past traumas, and subjective aging processes.

Of interest however, is not only the degree to which one may feel older in relation to one's chronological age at any given moment in time. We contend that assessing the inner experience of the pace of aging – whether it has been subjectively accelerated, leading one to feel as though they have aged rapidly in a certain span of time – is important in itself. Thus, one of the reactions older people might experience in the face of the pandemic is the sense that one has "aged before one's time", whether due to social isolation, stress, or aging-related cues that have arisen surrounding susceptibility to COVID-19 for older adults (Greenblatt-Kimron et al., 2021; Palgi, 2020). In the present study, we examine this notion with regards to the ongoing coronavirus pandemic, and attempt to assess whether individuals who have been exposed to trauma in the past and have had continuous PTSS experience the sense of aging more rapidly due to the continuous stress of the pandemic. Tapping into varied notions relating to subjective aging is in line with recent calls for its wider conceptual consideration, including diverse components that make up the subjective experience of aging (Palgi et al., 2021).

In sum, the current ongoing pandemic is a particularly adequate context to study those who are most susceptible to its deleterious outcomes. Older adults with a history of trauma who suffer from PTSS have shown increased vulnerability to the effects of the coronavirus pandemic, as its threatening context may trigger stressful traumatic memories (Solomon et al., 2021). Given the associations between previous traumatic exposure and PTSS, with negative shifts in SA perceptions (i.e., Avidor et al., 2020), the stress of the COVID-19 pandemic may potentially accelerate the subjective sense of aging of older adults with PTSS. However, the directionality of these associations is not clear, and the present study aims to disentangle the interrelationships between the effects of previous trauma, and of previous levels of subjective aging, in predicting the personal sense that one's aging has accelerated due to the pandemic, among a sample of Israeli older adults who are veterans of the 1973 Yom Kippur War. The hypotheses of present study are: (1) Do previous levels of PTSS predict current SA?; (2) Do previous levels of PTSS predict current subjective accelerated aging (a unique outcome variable created specifically for this study) in the context of the pandemic (COVID-19 accelerated subjective aging)?; and, concurrently (3) Do previous levels of SA predict current levels of PTSS, as well as

COVID-19 accelerated subjective aging? These associations will be tested controlling for chronological age, self-rated health, fear of COVID-19 and risk of medical complications due to COVID-19.

## 2. Methods

### 2.1. Participants and procedure

The present study is based on a larger, longitudinal study focusing on the psychological implications of war among male combat veterans and ex-POWs from the 1973 Yom Kippur War in Israel (for full details, see Solomon et al., 2021 [masked for review]). The current data were drawn from a wave of interviews conducted in 2015, and on the most recent data collection in the large-scale study, gathered in 2020, during the pandemic. To locate the veterans, we used the Israel Defense Forces (IDF) records. Questionnaires were administered in their homes or at another location of their choice. Before filling out the questionnaires, participants signed an informed consent form. This study was approved by the Institutional Review Board of Tel Aviv University [masked for review].

Two hundred and forty Israeli ground-force soldiers were captured during the 1973 Yom Kippur War. In this study, 164 of these ex-prisoners of war (ex-POWs) participated in 1991, 183 at 2008 (29 could not be located/refused, 20 had died, and six could not participate due to mental deterioration), and 158 at 2015 (49 could not be located/refused, 30 had died, and three suffered from physical or mental problems). One hundred and twenty of these ex-POWs participated in the 2020 assessment conducted during the COVID-19 outbreak (66 could not be located/refused, 36 had died, and 18 could not participate due to mental deterioration).

In addition, 280 veterans were sampled from the Israel Defense Forces (IDF) computerized database. These individuals also participated in the Yom Kippur War on the same fronts, but were not taken captive, and were matched to ex-POWs on military background and socio-demographic variables. Among them, 185 participated in 1991, 118 took part at 2008 (20 could not be located/refused, and five had died), and 101 participated at 2015 (34 declined to participate, 14 could not be located, 2 did not return the questionnaire, 1 was abroad, and 18 had died). In the last wave of data collection in 2020, the target group included 136 controls; of those, 65 participated in the study (65 could not be located/refused, 3 had died, and 3 could not participate due to mental deterioration). The veterans who dropped out of the study did not differ significantly in their chronological age, education, or levels of PTSS.

The present study was only based on data gathered in 2015 (here referred to as Time 1; T1), which included a total of 259 veterans. One-hundred and eighty-five of these veterans participated in the assessment conducted during the first wave of the COVID-19 outbreak in Israel, in the spring and summer of 2020 (Time 2; T2, of the present study). During these months, the Israeli government imposed a national lockdown, and people were mostly confined to their homes. The following descriptive data concern participants included in the final analysis: The veterans' mean age was 65.23 years at T1 ( $SD = 5.32$ , range = 60–91 years) and 69.00 years at T2 ( $SD = 3.96$ , range = 65–82, and 1 participant who was 90). The level of veterans' education was  $M = 13.75$  years,  $SD = 3.85$ , and ranged from 8 to 25 years. At T1, 43.75% of the veterans worked full-time, 10.50% worked part-time, and 39.10% were not working, while 41.6% were working in T2.

### 2.2. Measures

Veterans completed scales tapping SA and PTSS at both T1 and T2, and self-rated health, fear of COVID-19 and COVID-19 accelerated subjective aging at T2. Chronological age and risk of medical complications due to COVID-19 (measured by asking participants whether they were susceptible to any complications stemming from COVID-19 due to

age or their health; yes/no) were tested as covariates.

#### 2.2.1. Subjective age

Drawing on Kastenbaum et al. (1972) suggestions and Barak and Schiffman's (1981) subjective age (SA) measure, SA was assessed via four items concerning subjective perceptions of age (felt age; age appearance; age-related behavior; and age-related interests). Veterans responded to each of these items using a 6-point, ascending decade-wise scale, ranging from 30 s to 80 s. We subtracted participants' chronological age from their SA rating for each item to represent a SA score. This was done in order to account for chronological age. In the current sample, Cronbach  $\alpha$ 's for the four items were adequate for both at T1 and T2 (0.83, 0.90 respectively). Therefore, we computed a total SA score by averaging the four items. Higher scores reflected older SA as compared to chronological age.

#### 2.2.2. PTSS

PTSD symptom (PTSS) severity, in regards to the 1973 Yom Kippur War, was assessed at T1 and T2 with the PTSD Inventory (Solomon et al., 2021). The scale consists of 17 items tapping the 17 PTSD symptoms listed in the DSM-4 (American Psychiatric Association, 2010), in order to correspond with the earlier waves of the larger study. Veterans were asked to rate how often they suffered from each symptom during the previous month on a 5-point scale ranging from 0 (*not at all*) to 4 (*almost always*). We computed a PTSS intensity score by counting the number of items scored as 3 or 4. In the current sample, Cronbach  $\alpha$ 's was high both at T1 and T2 (0.91, 0.92, respectively).

#### 2.2.3. Self-rated health (SRH)

SRH was assessed at T2 by a single-item question: "How would you define your physical health status in general?" Responses were given on a 5-point scale from 1 (*Excellent*) to 5 (*Bad*), with higher scores reflecting worse health. SRH is a widely used tool in health studies, with an independent contribution to prospective health outcomes, including mortality (Idler and Benyamini, 1997).

#### 2.2.4. COVID-19 related fear

Fear of COVID-19 was rated with a single item that tapped one's sense of fear related to being infected or affected by the current virus. Answers were rated on a 7-point scale ranging from 1 (*completely disagree*) to 7 (*agree very much*).

#### 2.2.5. COVID-19 related accelerated subjective aging

Our measure of COVID-19 related accelerated aging consisted of four items, tailored for assessing accelerated subjective aging in the context of the current pandemic. The items were based on a single measure developed and reported in a previous study of accelerated subjective aging (Palgi, 2020). This measure was adapted for the current study, and was expanded to include four measure that would tap into different facets of SA. It included questions such as: I have been feeling younger and more vital in the past month (reverse coded); I feel as though I have become a few years older over the past month; ever since the outbreak of the coronavirus I look older than my age; in the last month I have been feeling less vital/less active. Answers were rated on a 7-point scale ranging from 1 (*completely disagree*) to 7 (*agree very much*). Cronbach's  $\alpha = 0.75$ .

### 2.3. Data analysis

We anchored the data to include only the 185 veterans who participated in the 2020 measurement (T2). Missing data at T1 were 14.5%. Little's (1988) Missing Completely at Random test (MCAR) revealed that the data were missing completely at random,  $\chi^2(34) = 48.11$ ,  $p = .055$ . Data were analyzed using IBM SPSS Statistics (Version 25). Throughout all analyses we adopted  $\alpha = 0.05$ , two-tailed criterion significance. In the first step, bivariate Pearson's correlations were computed for all



study variables. To examine the complex system of associations of veterans' PTSS and SA at T1 and T2, and perceived aging and self-rated health at T2, while controlling for chronological age, we conducted a path analysis using AMOS 25 (Arbuckle, 2017a). We employed a maximum-likelihood (ML) estimation procedure for handling missing data (Arbuckle, 2017b). In this method, we used all the available data to increase the likelihood of optimal estimation (Collins et al., 2001).

Only one model was fitted to the data. The use of path analysis to examine structures among continuous variables is established. There are several advantages to path analysis that account for its continuing popularity: (a) It provides a graphical representation of a set of relationships among variables that concisely and visually summarizes those relationships; this lower Type 1 error compared to analyses that focus on single sets of associations. Moreover conducting multivariate associations is extremely more convenient and recommended; (b) it allows researchers to not only examine the direct impact of a predictor on a dependent variable, but also see other types of relationships, including indirect and spurious relationships; The relationships taking others into account allow examination of covariates; (c) it indicates, at a glance, which predictors appear to have stronger, weaker, or no relationships with the dependent variable.

Several indices were employed to determine whether the hypothesized models fit the data. A good model fit is indicated by a) a non-significant chi-square (b) comparative fit index (CFI) and Tucker-Lewis index (TLI) > 0.95, (c) root-mean-square error of approximation (RMSEA) < 0.06 (Hu and Bentler, 1999). RMSEA that ranged <0.06 to 0.08 is considered acceptable.

### 3. Results

Bivariate associations, means and standard deviations are presented in Table 1. The difference between T2 and T1 SA was significant  $F(1, 184) = 22.38, p < .001$ , and the difference between T2 and T1 PTSD was also significant  $F(1, 184) = 109.98, p < .001$ , with PTSS higher at T1 compared to T2. There were no significant differences between other measures at the two time points.

The analysis resulted in an excellent model fit,  $\chi^2(9) = 8.74, p = .462$ , CFI = 1.000, TLI = 1.003, RMSEA = 0.000 (CI 90% 0.000, 0.080). Fig. 1 presents the estimate coefficients. Both lagged associations were significant. In other words, higher PTSS at T1 was associated with higher PTSS at T2, and higher SA at T1 was associated with higher SA at T2, above and beyond chronological age. That is, both PTSS and SA were stable over time. The path analysis showed a unidirectional cross-relationship between PTSS and SA over time. While higher PTSS at T1 was associated with an increase in SA from T1 to T2, SA at T1 was not associated with PTSS at T2. Moreover, PTSS at T1 was associated with worse self-rated health at T2 (during COVID-19 pandemic as well as with higher COVID-19 related accelerated subjective aging at T2.) SA at T1 was associated with worse self-rated health at T2. Risk of medical complications related to COVID-19 was not associated with either of the outcome variables at T2. Fear of COVID-19 was also controlled for its

associations with PTSS and SA at T2.

### 4. Discussion

The present study sought to test a model for determining the longitudinal interrelations between PTSS and SA in predicting COVID-19 related accelerated subjective aging in the context of the pandemic (COVID-19 related accelerated subjective aging) among a sample of veterans of the 1973 Yom Kippur War in Israel. The path analysis we conducted revealed that, after controlling for chronological age, risk for COVID-19 and fear of COVID-19, PTSS at T1 (in 2015) significantly predicted an increase in SA between T1 and T2 (during the pandemic, in 2020). SA at T1, however, did not show a similar cross-relationship with PTSS at T2. Lastly, PTSS at T1, but not SA, predicted higher COVID-19 related accelerated subjective aging at T2. We next discuss these findings and their possible interpretations.

#### 4.1. The paths between SA and PTSS between T1 and T2

It was found that only T1 PTSS predicted the association between SA at T1 and SA at T2, as well as COVID-19 related accelerated subjective aging, but SA did not predict the paths from PTSS at T1 and at T2, or COVID-19 related accelerated subjective aging. Thus, our exploration points to the lasting effects of trauma for those who suffer from PTSS in later life, in the form of a negative impact in the way that older veterans perceived their aging process over time (older SA) and specifically during the pandemic (COVID-19 related accelerated subjective aging). While it is surprising that the latter was not predicted by SA as well, since they both tap into subjective aging, it raises interesting questions regarding the interplay between PTSS and facets of subjective aging.

Firstly, the reciprocal associations we found over time in the present model, are similar to those revealed in a similar study that found that T1 PTSS predicted an older SA at T2, whereas T1 SA to T2 PTSS was non-significant (Palgi et al., 2018). As interpreted by Palgi et al. (2018), the present findings underscore the negative association between PTSS and subjective aging (i.e., Solomon et al., 2009). As trauma that brings about symptomatology in the second half of life takes its toll on one's body and mind, it stands to reason that this would also be reflected in feeling older and in experiencing old age as a time of loss and hardship (Avidor et al., 2014).

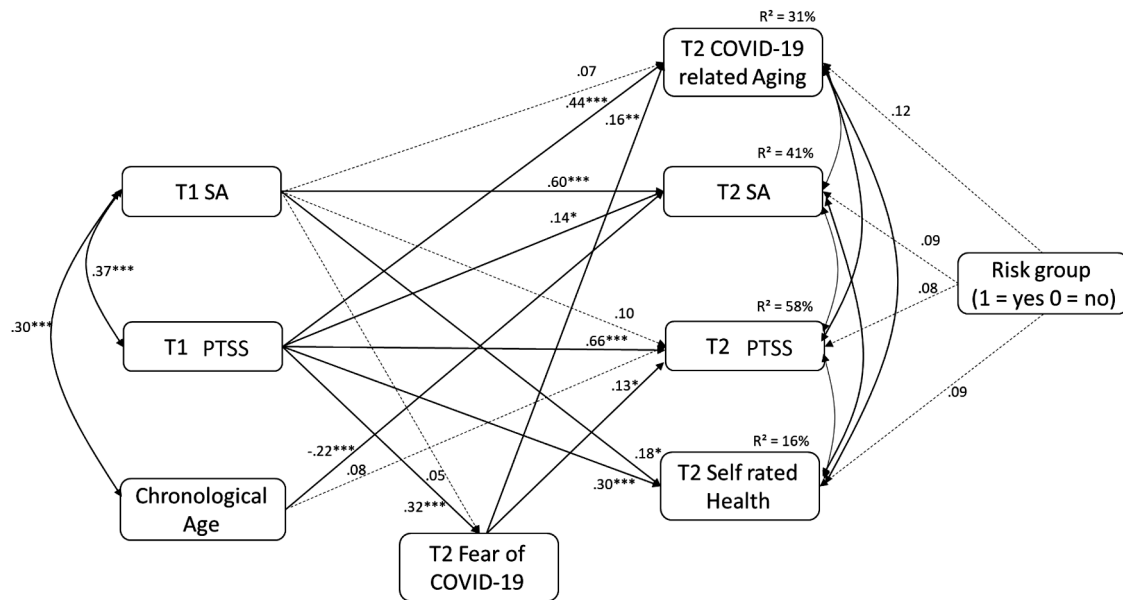
Importantly, longitudinal studies involving SA often reveal that it indeed predicts important outcomes for health, well-being, and functioning (i.e., Uotinen et al., 2005). Furthermore, in a study that also relied on a cross-lagged analysis, SA predicted physical and mental health, whereas health did not predict SA over time (Spuling et al., 2013). This attests to the robust role of SA in preserving functioning and positive health. However, our findings do not lend credence to the hypothesis that an older SA reflects a downward spiral that further increases PTSS over time. Although previous studies have shown that subjective aging plays a moderating, as well as a mediating (i.e., Lahav et al., 2020) role in understanding the long-term negative effects of

**Table 1**  
Bivariate associations.

Variables	Variables M (SD)	1	2	3	4	5	6	7
1.T1 SA	-11.0 (8.08)	-						
2.T2 SA	-13.25 (7.64)	.62***	-					
3.T1 PTSS	7.20 (7.18)	.41***	.33***	-				
4.T2 PTSS	2.09 (0.76)	.42***	.47***	.74***	-			
5.T2 Accelerated Aging	3.11 (1.45)	.26**	.36***	.50***	.58***	-		
6.T2 SRH	2.77 (0.99)	.30***	.52***	.41***	.57***	.42***	-	
7.Fear of COVID-19	4.37 (0.90)	.15	.15	.32***	.37***	.33***	.26**	-
8.Chronological age	68.13 (13.67)	-0.11	-0.10	-0.09	-0.13	-0.06	.05	.06

Note: M (SD) – means and standard deviations; T1 – Time 1, 2015; T2 – Time 2, 2020; SA – subjective age; PTSS – posttraumatic stress symptoms; Accelerated Aging - COVID-19 related accelerated subjective aging; SRH – self-rated health.

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



**Fig. 1.** Path analysis predicting COVID-19 related Aging outcomes combining Auto-Regressive Cross-Lagged between PTSD and SA. Notes: Full lines present significant associations while dashed lines present non-significant paths.

T1 – Time 1, 2015; T2 – Time 2, 2020; SA – subjective age; PTSS – posttraumatic stress symptoms; COVID-19 Related Aging - COVID-19 related accelerated subjective aging; Risk group – susceptibility to COVID-19 related complications due to age or health.

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

trauma in later life, many of these studies did not focus on PTSS, but rather on other markers of distress, such as anxiety, or depression. It may be that PTSS are a unique posttraumatic outcome, reflecting a breakdown of one's personal defenses and sometimes also a fracturing of one's very sense of self (Palgi et al., 2018).

#### 4.2. COVID-19 related accelerated subjective aging

Our findings also revealed that levels of PTSS at baseline predicted a stronger sense of COVID-19 related accelerated subjective aging five years later. This was above and beyond other related variables, such as risk for COVID-19, fear of the virus, and chronological age. Of note, it remained significant while T1 SA was also included in the model, and the latter was not a significant predictor of COVID-19 accelerated subjective aging. These findings should be specifically understood in light of military combat trauma, given that the current sample was made up of older male veterans of the Israeli 1973 Yom Kippur War. Combat can involve extreme stress, such as loss of one's peers, injury, and a host of aversive sounds and sights that can last for long stretches of time. Due to this extreme hardship that is unlike any other challenge one faces during quotidian life, war can completely upend one's personal beliefs in the world and in oneself (i.e., Janoff-Bulman, 1992). Although it ended in Israeli victory, the Yom Kippur War is considered one of the most traumatic, intensive, and grueling conflicts in Israeli history due to the bloodshed and high death toll suffered by Israeli society. Indeed, war veterans who experience trauma within military combat have been shown to suffer from several negative outcomes, such as higher symptomatology, lower well-being, substance abuse, and problems within their interpersonal relationships (Renshaw et al., 2009). This has been robustly demonstrated among veterans of the Yom Kippur War (Solomon et al., 2014). Thus, the experiences of risk to their own lives, and witnessing the deaths of their fellow soldiers may have left an indelible imprint on the veterans who took part in this war.

For these veterans in later life, such losses may reverberate when considering the losses of old age, as well as the unique losses and risks posed by COVID-19. Some may have witnessed loved ones suffer from the illness, or even knew people who died as a result of it. Furthermore, simply following news reports regarding the human toll of COVID-19,

could have indirectly triggered distress or the worsening of PTSS, as has happened in the past with large-scale disasters such as the attacks on the World Trade Center (Ahern et al., 2002). It is plausible that the pandemic was experienced as an acute, yet ongoing stressor, perhaps similar to combat, with an invisible "enemy", lasting for an unknown stretch of time, and requiring the mobilization of resources on a societal as well as an individual level. The fact that PTSS in T1 were associated with PTSS in T2 in the present study, alludes to the possibility that COVID-19 may have been perceived as an ongoing, potentially traumatic stressor, reactivating or exacerbating preexisting PTSS among some veterans.

If indeed combat veterans with continued PTSS drew such similarities between their combat experiences and their lives during the pandemic, this may have triggered stressful, unwanted memories that date back to the war. This would be in line with the conception that in later life, veteran combatants face their complicated war-time memories during the life-review process (Davidson et al., 2016). It is reasonable to assume that this process was more forceful and perhaps detrimental during the pandemic, and was expressed in a sense of accelerated aging related specifically to the pandemic.

Generalizing these findings to other samples of individuals in later life, our findings suggest that past traumatization creates a susceptibility for experiencing accelerated subjective aging during the current pandemic, echoing previous findings (Palgi, 2020). This notion is in line with previous literature that points to the heightened vulnerability of individuals who have experienced trauma in the past and suffer from PTSS, during times of stress, such as a major illness, or war (i.e., Fossion et al., 2015). Thus, for those with PTSS in later life, there is a risk for increased symptomatology when facing further stress (Rutherford et al., 2021). PTSS that continue throughout late life can chafe personal resources and the resilience needed to face the current pandemic, which may be experienced as an adverse event by vulnerable individuals (Galea et al., 2020).

There is extensive corroboration for the existence of such a depletion of personal resources in the face of hardship, manifested in several ways in old age (Jakel, 2018). During the pandemic, this was also manifested on a psychological level, in a subjective sense of accelerated aging, associated directly with the pandemic. It may very well be that the

psychological distress triggered by the pandemic, with its impact on health and the restrictions and social isolation that it brought in daily life, was experienced as a loss of the outside support that vulnerable older adults depend on in order to cope in this stage in their lives. Having abruptly lost supports such as regularly seeing family and friends, feeling cut off from one's community, clubs, or daily routine, can lead to an overwhelming reaction of anxiety, fear, and heightened loneliness (Ayalon and Avidor, 2021). The context of the early stages of the pandemic, when the discourse was saturated with mention of old age as particularly vulnerable and an age group that must be isolated and protected, may have deepened the feeling that the vulnerability, fear, and social isolation of veterans with PTSS during the COVID-19 pandemic were all an inherent part of their aging process, and not an isolated event that will pass when the pandemic ends.

This can also be explained with the notion of ageist attitudes and their internalization during the pandemic (Ayalon, 2020). The coronavirus is considered a pandemic mostly pertinent to older adults, due to the association between the risk of complications and death due to COVID-19 and age. As such, it has served as an ongoing reminder of the perceived fragility of older age. Such cues serve to aggravate preexisting negative experiences of older age, such as those that may exist for those who are aging with PTSS. Furthermore, it has been shown that older adults with negative perceptions of aging, when faced with stressors such as a major medical diagnosis, or loneliness, tend to attribute it to older age, and discount the possibility that it is a passing phase that they can cope with and overcome (Rothermund et al., 2021). It has also been shown that making such age-related attributions can in turn worsen one's personal experience of subjective aging (Rothermund et al., 2021). This may explain how the particular vulnerability of older adults with PTSS led to more COVID-19 related accelerated subjective aging.

#### 4.3. Limitations

The present study is not without limitations and these should be taken into account. Our data in the present model were based solely on self-report measures, which may have caused biases. As the study was conducted at the height of the pandemic in Israel, during a national lockdown, when people were confined in the homes, their answers may have been influenced by other measures that were not included in the present study (such as family conflict, for example). In the same vein, some of the study participants may have been engaged in ongoing psychological or psychiatric treatments that might have been disrupted during the pandemic, also affecting their mental health and thus their responses in the present study. Another variable that was not taken into account, that also may have had important effects on the present sample, was whether or not participants or someone close to them have had COVID-19 since the outbreak of the pandemic. Furthermore, the present study relied on the former measure of PTSS that conforms to the DSM-IV, for the sake of consistency with previous waves of the longitudinal study. We also relied on some new and therefore not previously validated measures (i. e., fear of COVID-19; subjective accelerated aging), which may have biased our results. Moreover, our sample size of 185 participants can be considered relatively small for cross-lagged analyses. This may have somewhat limited our statistical power and biased our results. Lastly, while one of the strengths of this study is that it is based on a longitudinal sample of older veterans, who had been interviewed face-to-face four times prior to the current study, the last wave of interviews was conducted on-line, following an initial phone conversation, due to COVID-19 restrictions. This may have reduced responsiveness to some of the questions, as on-line questionnaires could perhaps lead to lower cooperation compared with face-to-face encounters. Future studies are needed in order to overcome these limitations.

#### 5. Conclusions

In sum, the current study sought to identify how the interrelations

between the two facets of aging in the shadow of trauma (PTSS and subjective aging) may lead to an accelerated sense of aging during the COVID-19 pandemic. Our findings show, similarly to previous findings (Palgi et al., 2019) that PTSS at T1 predict change in SA over time, but not the other way around. We also demonstrated that within this model, only PTSS and, surprisingly, not SA, served to predict COVID-19 related accelerated subjective aging. This probably attests to the long-term, far-reaching effects of trauma, that may extend beyond PTSS and its comorbid conditions. Our findings suggest, that in the face of a stressful period such as the current pandemic, older veterans might be particularly susceptible due to past traumas, expressed in the personal sense of having aged before one's time during COVID-19. It is therefore plausible that when communicating with older adults who suffer from continued PTSS during the pandemic, framing the stressors that they experience as a passing hardship, and helping them to differentiate them from past traumas, as well as from their own aging process, may help to mitigate the negative outcomes for their subjective aging experiences.

#### Declaration of Competing Interest

The authors have no conflict of interest.

#### Author statement

**Sharon Avidor:** Conceptualization, Writing, original draft preparation. **Yuval Palgi:** Reviewing and editing of the manuscript; conceptualization; supervision. **Zahava Solomon:** Conceptualization of study model, data collection, methodology; Supervision.

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