Changes in Subjective Age During COVID-19

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Funding: None

Conflict of interest: None

Abstract

Background and Objectives. To examine change in subjective age with the emergence of coronavirus disease 2019 (COVID-19). Two competing hypotheses were tested: (a) people felt increasingly older due to the stress generated by the pandemic; (b) people felt increasingly younger due to psychological distancing from older age, a vulnerability to COVID-19.

Research Design and Methods. An age and sex stratified sample of adults from across the United States (baseline N = 3,738) was assessed on three occasions: before the COVID-19 outbreak in late-January/early-February and during the outbreak in late-March and again in late-April. Multilevel modeling analysis examined change in subjective age and tested potential moderators of individual differences in the trajectory of subjective age.

Results. The average trajectory of subjective age followed a concave curve, with a nadir (feeling younger) during the second assessment in late-March. Older age, negative expectations about aging, absence of pre-existing conditions, and less stress during COVID-19 were associated with feeling younger but did not predict the rate of change. The only significant predictor of change in subjective age was the belief that the "coronavirus is only a threat to older adults": The more individuals agreed with this statement, the more likely it was that they felt increasingly younger at follow-up.

Discussion and Implications. Subjective age changed during a global health crisis, with people feeling younger with the emergence COVID-19. The findings support the hypothesis that subjective age partly reflects a coping process of psychological distancing from older age, the age group most vulnerable to COVID-19.

Keywords: SARS-CoV-2; Coronavirus; Age identity; Longitudinal; Multilevel Modeling.

Introduction

The impact of the coronavirus disease 2019 (COVID-19) pandemic (World Health Organization, 2020) is evident in all age groups and at every age there are large individual differences, but the risk of severe health consequences and death from COVID-19 has been particularly high for older adults, as well as individuals with underlying health conditions, males, and people from racial and ethnic minorities and low-income communities (Garg et al., 2020; Onder, Rezza, & Brusaferro, 2020; Richardson et al., 2020). In the United States, for example, the Centers for Disease Control and Prevention (CDC) reports that the rate of hospitalizations and fatality from COVID-19 increase dramatically with age and are highest among adults older than 85 years (CDC COVID-19, 2020; Garg et al., 2020). Further, the White House "15 Days to Slow the Spread" guidelines explicitly recommended that "If you are an older American, stay home and away from other people" (White House, 2020). As such, discussions about age have been at the forefront during the COVID-19 pandemic. The present study examined changes in how people perceived their own aging in the context of the COVID-19 pandemic. Specifically, we tested whether subjective age, that is how old or young individuals feel relative to their chronological age, changed with the emergence of the COVID-19 crisis in the United States. Examining potential changes in age identity is particularly relevant during this global health disaster because COVID-19 poses disproportionate risks for older adults and because gerontologists have raised the alarm that "with the pandemic there has been a parallel outbreak of ageism" (Ayalon et al., 2020).

Subjective age is conceptualized as a biopsychosocial marker of aging that is sensitive to biological, clinical, and psychological changes (Barrett & Gumber, 2020; Bellingtier, Neupert, & Kotter-Grühn, 2017; Stephan, Sutin, & Terracciano, 2015a; Thyagarajan et al., 2019). A growing literature indicates that individuals who report feeling younger tend to

perform better on physical and cognitive measures, have fewer depressive symptoms and less negative affect, have more favorable ratings of health and functional status, and live longer (Barrett & Gumber, 2020; Bellingtier et al., 2017; Rippon & Steptoe, 2018; Thyagarajan et al., 2019). A younger felt age may also reflect a self-protective strategy that is used to distance and protect oneself from negative information and stereotypes about aging (Kornadt, Hess, Voss, & Rothermund, 2018; Montepare & Lachman, 1989; Weiss & Lang, 2012). The dynamic, developmental processes that determine one's felt age are likely to incorporate external societal influences with internal evaluations of one's aging (Barrett & Montepare, 2015; Hess et al., 2017; Westerhof, Whitbourne, & Freeman, 2012). While there is a growing literature on the factors that moderate how old individuals feel, there has been relatively less experimental work or natural experiments, such as changes in the trajectory of subjective age with the exposure to a major stressor. There is, however, evidence on the malleability of subjective age.

Subjective age, for example, has been found to change in the short term in experimental studies (Hughes, Geraci, & De Forrest, 2013; Stephan, Chalabaev, Kotter-Grühn, & Jaconelli, 2013), as well as over long periods in longitudinal observational studies (Kornadt et al., 2018; Ward, 2013). To our knowledge, there are no published studies that have examined changes in subjective age with the emergence of a health disaster that is life-threatening and has brought significant social and economic changes. We had two competing theoretically-informed hypotheses for how subjective age might change with the emergence of COVID-19.

First, a stress-related hypothesis predicts that individuals will feel older over time in response to the stress and losses due to COVID-19. Even on a day-to-day basis, research based on daily diary design indicates that older adults report feeling older on days when they experience more stressors or negative affect (Kotter-Grühn, Neupert, & Stephan, 2015). Over

time, family adversity and health-related stressors can erode psychological resources, increase psychological distress, and contribute to an older subjective age (Bellingtier et al., 2017; Foster, Hagan, & Brooks-Gunn, 2008; Keyes & Westerhof, 2012; Schafer & Shippee, 2010). Prolonged exposure to stressful conditions or traumatic experiences have also been associated with accelerated subjective aging (Avidor, Benyamini, & Solomon, 2016; Kotter-Grühn, Kornadt, & Stephan, 2016; Palgi et al., 2019). Building upon the "weathering" hypothesis (Geronimus, 1992), Palgi (2016) has argued that an older subjective age may emerge when exposure to stressful or traumatic conditions demand cognitive, social, physical, and mental resources that are beyond the person's current resources. For example, research on individuals living in areas exposed to ongoing rocket attacks found that post-traumatic stress syndrome is related to an older subjective age (Avidor et al., 2016; Palgi et al., 2019).

Second, a distancing hypothesis predicts that people will feel younger over time because they may psychologically distance themselves from older adulthood, an age group at higher risk of COVID-19. This hypothesis is based on a conceptualization of a younger subjective age as a self-protective strategy that defends against the risks and stigma associated with growing older (Kornadt et al., 2018; Weiss & Lang, 2012). Experimental research found that when individuals are exposed to negative age-related information, they react by distancing themselves from their age-group and their chronological age, resulting in a younger subjective age (Weiss & Freund, 2012; Weiss & Lang, 2012). Furthermore, individuals feel increasingly younger over time in domains in which age stereotypes are negative and prevalent, such as in the health domain (Kornadt et al., 2018). At a time when people are reminded that older adults are particularly vulnerable to COVID-19, individuals may be more inclined to distance themselves from this negative information about aging, resulting in a younger subjective age.

The primary scope of the study was to examine the trajectory of subjective age in the context of COVID-19 with longitudinal data from a nation-wide sample of Americans aged 18 to 100 years. We assessed participants before and during the outbreak of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) in the United States with three waves of data collection from late January to late April. We tested two competing hypotheses (a) that the COVID-19 related stress will lead people to feel older, and (b) that the distancing from aging as a vulnerability to COVID-19 will lead people to feel younger. To further understand the impact of COVID-19 and test the two competing hypotheses, we examined five individual-level predictors that may moderate the direction and rate of change in subjective age. The first moderator was a measure of stress during the pandemic. Consistent with the stress-related hypothesis (Avidor et al., 2016; Kotter-Grühn et al., 2016; Kotter-Grühn et al., 2015; Palgi et al., 2019), we expected that individuals who reported more stress would experience larger changes in the direction of feeling older compared to people who report less stress. The second and third moderators were negative expectations about aging and the belief that the coronavirus is only a threat to older adults. Consistent with the distancing hypothesis (Weiss & Freund, 2012; Weiss & Lang, 2012) we expected that more negative views of aging and belief that threat of COVID-19 was limited to older adults would lead to greater distancing and therefore larger changes in the direction of a younger subjective age. Because federal guidelines indicate that older adults and individuals with pre-existing conditions are at higher risk for COVID-19, we tested chronological age and disease burden as two additional moderators. In terms of magnitude, we expected changes in subjective age will be larger in older and less healthy participants. Regarding the direction of change, being a member of a group identified as having increased vulnerability to COVID-19 (CDC COVID-19, 2020; Garg et al., 2020) could lead to either heightened stress and an older subjective age or to greater distancing and a younger subjective age. Besides testing chronological age as a

potential moderator, we conducted a sensitivity analysis by excluding individuals younger than 50 years because subjective age could be less salient for some younger individuals and they may confound the pattern of changes in older adults. While COVID-19 could have more detrimental effect on older adults, a recent systematic review indicates that older adults do as well as younger populations on health outcomes after disaster exposure (Bell, Horowitz, & Iwashyna, 2019).

Design and Methods

Participants

Participants were adults aged 18 years or older living in the United States. They were recruited through Dynata (www.dynata.com) and asked to complete an online Qualtrics survey administered by Florida State University. The sample was stratified for age and sex and included individuals across all 50 States as well as Washington DC and Puerto Rico. Respondents were compensated for their participation, with an additional incentive of 50% and 75% at wave 2 and 3, respectively, to enhance retention.

Respondents were excluded from the analyses if they did not consent to the study, took less than 5 minutes to complete the survey (the overall survey took approximately 25 minutes), for evidence of careless responding (e.g., demographics did not match across assessments or gave the same answers across all items of questionnaires), had missing data on subjective age, or had answers more than three standard deviations above and below the mean on subjective age.

Pre-registration of data collection can be found at https://osf.io/vqnh8. The pre-registration did not include the wave 3 assessment or the analyses reported in this manuscript.

Study design and timing of assessments

The longitudinal study design consisted of three assessment waves. The aim of the first wave of data collection was unrelated to COVID-19. The second and third waves sought to address COVID-19 research questions. The first wave of data collection occurred between January 31 and February 10, 2020 when the known spread of SARS-COV-2 in the United States was limited. The second wave occurred between March 18 and March 29, 2020 when the number of SARS-COV-2 positive cases increased exponentially. Our wave 2 assessment was also during the White House's '15 Days To Slow the Spread' (White House, 2020) campaign that aimed to reduce the spread of SARS-COV-2, especially among vulnerable groups. Our wave 3 assessment occurred between April 23 and April 29, when the number of SARS-COV-2 positive cases appeared to have reached a plateau in the United States (CDC, 2020a). During wave 3, the federal guidelines were still in effect and most states and local governments had issued stay-at-home orders.

Measures

Subjective age. At each wave, individuals were asked to indicate how old they feel in years ("Many people feel older or younger than they actually are. What age do you feel?"). Participants could select an age from a scroll down list. A proportional discrepancy score was computed as *(felt age - chronological age)/chronological age* (Rubin & Berntsen, 2006; Stephan, Sutin, Caudroit, & Terracciano, 2016). To provide more precise coefficient estimates, we multiplied the proportional discrepancy by 100. A negative value indicated a younger subjective age, whereas a positive value indicated an older subjective age.

Time. Time from the first wave was computed in days and divided by 40 (the average time across waves).

Moderators. At waves 2 and 3, the items "I am feeling a lot of stress right now" and "the coronavirus is only a threat to older adults" were assessed on a scale from 1= Strongly disagree to 5 = Strongly agree.

At wave 2, negative expectations about aging were assessed using four items from the Expectations Regarding Aging Survey (Sarkisian, Steers, Hays, & Mangione, 2005). The instructions stated: "The following questions are about what you expect about aging. Please select the response below that best corresponds with how you feel about each statement" with the following items: "When people get older, they need to lower their expectations of how healthy they can be", "I expect that as I get older, I will spend less time with friends and family", "Being lonely is just something that happens when people get old", and "As people get older, they worry more". Response options were 1 = Definitely true to 4 = Definitely false; the alpha was 0.71.

Disease burden was assessed at wave 1. Participants were asked (yes/no) "has a doctor ever told you that you have: asthma, chronic respiratory disease, diabetes, high blood pressure, heart conditions, kidney disease, liver disease". Participants also reported their weight and height, which was used to derive Body Mass Index (BMI) and obesity (BMI ≥ 30). Consistent with CDC reports, having one or more of these conditions increases risk for severe complications of COVID-19 (CDC, 2020b). Those with 1+ condition(s) were compared to those with no conditions.

Demographic covariates. The demographic covariates included age in years and gender coded as -.5 for male and .5 for female. Education was assessed on a scale from "less than high school" to "PhD or equivalent" and was coded into years of education. Self-identified race and ethnicity were coded with three dummy variables for African Americans, Latinx, and others (others included Asian and Pacific Islanders, individuals who reported other race, "Prefer not to answer", or had missing data); White respondents were the reference group.

Data analysis

Means and percentages were used to provide basic descriptive statistics. For attrition analyses, we used t-tests or ANCOVA for continuous variables and χ^2 for categorical variables to compare individuals with and without follow-up data. Multilevel modeling (MLM), also known as hierarchical linear modeling or mixed-effects models (Grimm, Ram, & Estabrook, 2016; Raudenbush, Bryk, & Congdon, 2004), was used to determine the trajectory of subjective age across the three waves. MLM is a flexible approach for longitudinal analyses that uses all available data. The MLM analytic framework uses the Full Information Maximum Likelihood (FIML) estimation procedure. Instead of imputing missing data, FIML estimates population parameters that maximizes the likelihood function based on the incomplete longitudinal data. For instance, participants with data from less than three waves were included in the analyses. Continuous variables were grand mean centered. The models estimated both fixed effects (sample means) and random effects (individual deviations from the means). We tested both a linear and a quadratic model to identify the overall trajectory of subjective age. We then tested the moderators as predictors of individual differences in the intercept and slope of subjective age, accounting for demographic covariates. All predictors were entered simultaneously. In sensitivity analyses we excluded individuals younger than 50. In an additional sensitivity analysis, we used inverse probability weighting to examine the impact of attrition, which is particularly likely in a sample that was not originally recruited for a longitudinal study. The probability of being a complete case (those with follow-up data) was generated from a logistic regression using the demographic variables as predictors. The inverse of the probability was then used as a weight in MLM, so that individuals who were likely to drop out were weighted more and individuals who

provided follow-up data were weighted less. The analyses were performed using linear mixed models in SPSS 26.

Results

The sample characteristics at each wave are shown in Table 1. A total of 3,738 participants had valid subjective age data at baseline and 2,064 and 1,715 provided valid data again at waves 2 and 3, respectively, for a total of 7,517 observations. Attrition analyses compared individuals with at least one follow-up assessment (n = 2,215; 59.3%) to those without any follow-up assessment (n = 1,523; 40.7%). Individuals without follow-up data were significantly younger [M = 34.56 vs M = 51.44, t(3736) = 30.51, p < .001], more likely to be women [60.1% vs 48.5%, $\chi 2(1) = 55.27$, p < .001], and from a minority group [African Americans: 26.5% vs 16.3%, $\chi 2(1) = 58.58$, p < .001; Latinx: 22.1% vs 10.7%, $\chi 2(1) = 89.76$, p < .001], and fewer years of education [M = 13.92 vs M = 14.80, t(3736) = 9.70, p < .001]. After accounting for demographic differences, attrition was unrelated to subjective age [M = -9.47 vs M = -9.37, F(1, 3730) = 0.16, p = .90].

The basic descriptive statistics are reported in Table 1 and the correlations between baseline subjective age and the five moderators assessed at either wave 1 or 2 are reported in Table 2. The mean values reported in Table 1 indicated a decline in subjective age discrepancy between wave 1 and 2 (i.e., a younger subjective age at wave 2); there was little difference between wave 2 and 3. A decline in subjective age was also found in the basic MLM model predicting subjective age with just time (β = -1.06, SE = 0.21, p < .001). The random effects from the unconditional model (-2 Log Likelihood = 66,290) indicate that there was significant within- (variance = 176.75, SE = 4.22, p < .001) and between- (variance = 382.46, SE = 11.95, p < .001) subject variance, suggesting significant variability in the trajectories of subjective age. The intraclass correlation [382.46/(382.46 + 176.75)] indicates

that 68% of the total variance in subjective age was between persons. Next, we added a quadratic term to the model (-2 Log Likelihood = 66,272) and found that time (β = -4.10, SE = 0.75, p < .001) and time*time (β = 1.62, SE = 0.38, p < .001) were both significant predictors (random effects: within-subject variance = 176.13, SE = 4.21, p < .001; between-subject variance = 382.20, SE = 11.93, p < .001). These coefficients indicate that subjective age followed a concave curve (Figure 1), with an estimated subjective age discrepancy of -9.32 at wave 1 (January/February), -11.80 at wave 2 (late-March), and -11.03 at wave 3 (late-April). As reported in Table 3 (Model 1), the linear and quadratic terms remained significant after including the demographic covariates in the model (-2 Log Likelihood = 65,894). Among the covariates, older age, higher education, and African American race were associated with feeling younger. The random effects (within-subject variance = 176.04, SE = 4.20, p < .001; between-subject variance = 336.34, SE = 10.83, p < .001) remained significant and a comparison between the models [(382.2-336.34)/382.2] indicate that the demographic variables explained 12% of the between subject variance in subjective age. We repeated the analysis by restricting the sample to adults older than 50 and found that the linear and quadratic terms remained significant. The sensitivity analysis with inverse probability weighting also found that the linear and quadratic terms remained significant. Overall, the basic descriptive statistics and the MLM model indicate a concave curve with a nadir at wave 2 (feeling the youngest during the COVID-19 crisis in late-March), followed by a slight change toward the baseline level at wave 3.

We next examined potential predictors of individual differences in the trajectory of subjective age. Given that the largest changes occurred between the first two waves, we focused the analysis on change between wave 1 and wave 2. We tested the five moderators (age, disease burden, negative expectations about aging, “coronavirus is only a threat to older adults”, and stress) in one model that included data from the first two waves, the

demographic covariates, and the main effects and interactions with time of the six variables. As reported in Table 3 (Model 2, -2 Log Likelihood = 35,744), the only significant predictor of change in subjective age was the question the "coronavirus is only a threat to older adults": The more individuals agreed with this statement, the more likely it was that they felt increasingly younger at wave 2 compared to wave 1. Although no other variable predicted the rate of change (i.e., the interactions between time and the moderators) in subjective age, significant main effects indicated that on average individuals who were older and with more negative expectations about aging were more likely to feel younger, whereas respondents who reported at least one health condition or more stress were more likely to feel older. Compared to a model without moderators, the model with moderators accounted for 19% of the variance of the slope parameter (i.e., explained 19% of individual differences in the subjective aging trajectory). Because of overlap among the moderators, we repeated the analyses and found that the association of "coronavirus is only a threat to older adults" with the slope of subjective age was confirmed in a model with no other moderators.

Discussion and Implications

This study tested competing hypotheses on the trajectory of subjective age in the context of the COVID-19 pandemic. Compared to an assessment conducted before the outbreak in the United States, we found that respondents felt younger in the midst of the COVID-19 crisis. Specifically, we found a concave trajectory with a nadir (people felt youngest) in late-March, during the acute phase of the COVID-19 crisis and partially revert toward the baseline level in late-April.

We had two hypotheses for how subjective age would change with the pandemic: Either people would feel older due to the stress of the pandemic or people would feel younger as a psychological defense mechanism against old age because it is a risk factor for

complications of COVID-19. The results are more consistent with the distancing hypothesis than the stress-related hypothesis. At the time of the second assessment, there was consistent and pervasive messaging from the media (Garfin, Silver, & Holman, 2020), the CDC (2020b), other public health authorities (United Nations, 2020), and by government guidelines (White House, 2020) that advanced age was a major risk factor for hospitalization and death due to COVID-19. The changes in subjective age may represent a defense mechanism, a self-protective process of psychologically distancing oneself from the vulnerability associated with older age during COVID-19. This interpretation is consistent with past experimental work (Weiss & Freund, 2012; Weiss & Lang, 2012) and was further supported by the finding that the changes were larger for people who believed that the coronavirus was only a threat for older adults. Furthermore, the precautions taken to reduce the risk of COVID-19 could lead to a more age-segregated society with fewer opportunities for intergenerational contacts. Following the recommendations from authorities (White House, 2020), some older adults could be especially isolated, even from friends and family members who want to avoid the risk of infecting their older friends and relatives. While phone or video calls are potentially helpful (Noone et al., 2020), social distancing is likely to reduce the in-person interactions across generations. As suggested by the intergroup contact theory (Allport, 1954), such reduced intergroup contact could result in worse intergroup attitudes and more ageism (Drury, Hutchison, & Abrams, 2016; Lytle & Levy, 2019) that could lead to even more distancing. It is also worth observing that this hypothesized process of *psychological distancing* was occurring at a time when *physical (or social) distancing* was an emblematic and crucial component of the COVID-19 response.

In contrast, our findings were not consistent with the competing hypothesis that the COVID-19 related stress would induce people to feel increasingly older during the pandemic. At the individual level, we found that higher stress was associated with an older subjective

age, but the level of stress during the COVID-19 crisis was unrelated to change in subjective age. While there are numerous differences between the current and past studies that make comparisons difficult, our findings were generally not consistent with studies that linked post-traumatic experiences to an older subjective age (Avidor et al., 2016; Palgi et al., 2019). Cross-sectional evidence, however, also suggests no significant association between major life events, such as death of a friend or a close family member, and subjective age (Bellingtier et al., 2017; Schafer & Shippee, 2010). More research is clearly needed to fully understand the similarity and differences on the impact of personal, health-related, and conflict-related stressors and traumas on subjective aging.

We considered two specific hypotheses, but it is likely that other factors may have contributed to our findings, such as social comparison processes. More favorable assessments of one's health relative to others, for example, is related to a younger subjective age over time (Hughes & Lachman, 2018). It is possible that individuals may have felt younger during the pandemic because they may have more favorably re-evaluated their health compared to people affected by COVID-19. Note, however, that we found disease burden related to the intercept but unrelated to the rate of change in subjective age. The life changes brought by the physical distancing measures and stay-at-home orders could be another potential factor that contributes to the trajectory of subjective age. For example, some students had to move back in with their parents, many adults had to work from home in less formal settings, some were suddenly unemployed, and parents had to spend more time with their kids instead of other adults. All these experiences could contribute to feeling younger.

The group-level pattern of changes should be considered along with the heterogeneity of responses to the pandemic, which may vary according to individual differences and the level of exposure to COVID-19 (Aschwanden et al., 2020; Luchetti et al., 2020). Regarding individual differences, we found that the belief of coronavirus being only a threat for older

adults was a significant moderator of the change in subjective age, but other relevant factors were not significant predictors of the slope. Still, and consistent with the broader literature (e.g., Avidor et al., 2016; Rubin & Berntsen, 2006; Stephan, Sutin, & Terracciano, 2016; Weiss & Freund, 2012), we found an older chronological age, more negative age expectations, less stress, and the absence of disease were associated with feeling relatively younger (i.e., effect on intercept). Of course, there are other potential variables that could explain how different groups react to similar situations. Regarding the level of exposure, while the COVID-19 crisis had an impact on the entire population, some people were more directly impacted compared to others, which could contribute to significant differences on the direction and magnitude of the changes in subjective age. For example, people ill with COVID-19 may feel older. Given that subjective age is relatively stable and that many factors contribute to a person's age identity, change in subjective age during the COVID-19 crisis should be relatively modest. It is of note then, that the changes we found over a few weeks were comparable to changes observed over three (Wurm, Wiest, Wolff, Beyer, & Spuling, 2019) to ten years (Stephan, Sutin, & Terracciano, 2015b).

The present study has several strengths, including the longitudinal assessment of subjective age before and during a major health crisis that provides a prospective test of the study hypotheses. While not necessarily representative of the US population, the nation-wide sample was large and stratified by age and sex and oversampled for African Americans. However, like for many longitudinal studies, the attrition may reduce generalizability of the findings. Individuals with follow-up data were more likely to be older, white men with higher education. We cannot exclude that the pattern of change in subjective age during COVID-19 could be different for the groups that were more likely to drop out of the present study, including younger individuals, women, and persons with lower education or from racial and ethnic minorities. However, while we lost to follow-up mostly younger adults, age did not

moderate the rate of change in subjective age. Furthermore, the results were similar in a sensitivity analysis with inverse probability weighting. The findings are also limited to the United States and it remains to be tested whether the response to this pandemic varies across cultures (Krendl & Pescosolido, 2020; Weiss & Zhang, 2020). We used a common measure of subjective age, but age identity is a multidimensional construct (Kastenbaum, Derbin, Sabatini, & Artt, 1972; Kornadt et al., 2018), and response to COVID-19 could be stronger for some facets, such as physical subjective age or subjective age in the health domain. The use of single item measures or a brief scale for the moderators was another limitation of the study. While we focused on the changes in subjective age with the emergence of the pandemic, it is likely that a younger subjective age could function as a "buffer" against the threat of SARS-CoV-2 and reduce the risk for adverse psychological and health outcomes.

In conclusion, the present research provided a rare population-wide test of the effect of a life-threatening crisis on age identity. We found a shift toward a younger subjective age with the outbreak of coronavirus in the United States. In addition to identifying a psychological reaction to the pandemic, the study has implications for gerontological research on the antecedents of age identity (Barak & Stern, 1986; Kotter-Grühn et al., 2016; Stephan et al., 2015a) and extends the evidence that subjective age reflects, in part, a self-protective strategy from negative aging information and stereotypical representation of older adults (Weiss & Lang, 2012). During the early response to the pandemic, feeling younger may reflect a process of distancing from information depicting older adults as vulnerable to COVID-19.

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Table 1. Descriptive Statistics at Each Wave.

	Wave 1	Wave 2	Wave 3
N	3,738	2,064	1,715
Age, years	44.56(18.57)	51.26(16.65)	53.33(15.93)
Female, N(%)	1991(53.3%)	985(47.7%)	793(46.2%)
Education, years	14.44(2.77)	14.78(2.69)	14.91(2.68)
Black, N(%)	764(20.4%)	341(16.5%)	239(13.9%)
White, N(%)	2,314(61.9%)	1,408(68.2%)	1,232(71.8%)
Other race, N(%)	388(10.4%)	217(10.5%)	165(9.6%)
Latinx, N(%)	573(15.3%)	220(10.7%)	171(10.0%)
Subjective age discrepancy	-9.41(24.31)	-13.67(22.28)	-13.45(19.74)
Aging expectations	--	2.66 (0.66)	--
Coronavirus threat older adults	--	2.13(1.21)	1.77(1.21)
Stress	--	2.88(1.34)	2.79(1.34)
Disease burden 1+, N(%)	2,213 (59.2%)	--	--

Note: The values in the Table are means and standard deviations, if not specified as numbers and percentages. At wave 1, the sample included 552 individuals aged 18-20, 512 aged 21-30, 629 aged 31-40, 552 aged 41-50, 625 aged 51-60, 496 aged 61-70, and 372 aged 71-100.

Table 2. Intercorrelations Between Baseline Subjective Age Discrepancy and Five Moderators.

	1	2	3	4	5	6
1.Subjective age discrepancy	--					
2.Chronological age	-.27**	--				
3.Aging expectations	-.13**	.13**	--			
4.Coronavirus threat older adults	.03	-.31**	-.16**	--		
5.Stress	.14**	-.26**	-.24**	.05*	--	
6.Disease burden	.03	.20**	-.05*	-.06*	.02	--

Note. N = 3,738 for subjective age, age, and disease burden that were assessed at wave 1. N = 2,064 for aging expectations, coronavirus threat older adults, and stress that were assessed at wave 2. Spearman rank-order correlation coefficient was used for disease burden and Pearson correlation for the other (i.e., continuous) variables. * p<.05; ** p<.01.

Table 3. Multilevel Modeling Results.

	Model 1		Model 2	
	β (SE)	p-value	β (SE)	p-value
Intercept	-9.53 (0.47)	<.001	-12.37 (0.82)	<.001
Time	-3.18 (0.75)	<.001	-0.87 (0.63)	.17
Time*Time	1.38 (0.38)	<.001	--	--
Age	-6.13 (0.36)	<.001	-6.19 (0.59)	<.001
Female	0.89 (0.71)	.21	-0.15 (0.90)	.87
Education	-1.96 (0.35)	<.001	-2.00 (0.44)	<.001
Black	-5.13 (0.91)	<.001	-2.34 (1.19)	.049
Latinx	-1.58 (1.02)	.12	-2.94 (1.40)	.04
Other race	-0.38 (1.14)	.74	0.44 (1.40)	.75
Aging expectations			-2.04 (0.49)	<.001
Coronavirus threat older adults			-1.31 (0.50)	.008
Stress			1.38 (0.51)	.006
Disease burden			4.08 (0.99)	<.001
Age*time			0.41 (0.48)	.40
Aging expectations*time			0.62 (0.42)	.14
Coronavirus threat older adults*time			-1.39 (0.42)	<.001
Stress*time			0.15 (0.42)	.73
Disease burden*time			-1.33 (0.83)	.11
-2 Log Likelihood	65,894		35,744	

Notes. Model 1 N=7,517 observations across wave 1, 2, and 3. Model 2 N=4,074 observations from wave 1 and 2.

Figure 1. Multilevel modeling estimated changes in subjective age with the emergence of COVID-19.