On the edge: The association between extreme values of proportional felt-age and functioning

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The main aim of this study, then, is to explore whether extremely old or young felt-age values represent authentic, deliberately exaggerated values that researchers should refer and inquire into.

1.1. Extreme values of felt-age

From a statistical viewpoint, outliers are traditionally considered as erroneous, anomalous observations, that one should consider removing from the data (Hodge and Austin, 2004). To the best of our knowledge, the outliers of felt-age were always treated as extraneous data and in most studies these participants were excluded from analyses (e.g., Stephan et al., 2015). Contrary to outliers, extreme values are considered as valid evaluations that are either very high or low. In line with the literature (Field, 2017; Hodge and Austin, 2004; Stephan et al., 2015) we decided to differentiate outliers from extreme values by referring to outliers as an anomalous observation which signifies an error, and to extreme values as a legitimate part of the distribution which may be explained by other mechanisms. In other words, we wanted to examine if participants with extreme values of felt-age differ from participants with normal values of felt-age in terms of the study’s dependent variables. Thus, in the present study we have chosen to examine extreme values of felt-age, and not to take them for arbitrary or mistaken outlying data, but rather as an authentic evaluation that is within the distribution of the data. Furthermore, it is assumed that individuals who report these values do so intentionally, and not due to other causes, such as cognitive deterioration (Field, 2017). Therefore, we explore the extreme evaluations of felt-age, and attempt to consider the consequences of the seemingly inflated or exaggerated evaluations of those who, in their seventies report feeling as if they are in their twenties or, conversely, as if they are centenarians.

While the motivations behind these extreme evaluations are unknown, one cannot assume that they are inherently similar to the more normative, often-found reports of felt-age that deviate from one’s chronological age by smaller increments. Thus, we suggest the possibility that these phenomena of extreme values in felt-age scores may consist of two different mechanisms. An extreme younger felt-age may result from the denial of one’s aging, due to internalized stereotypes related to older adults. While participants with an extremely younger felt-age may base their evaluations on good physical health, their drastically young subjective evaluation of their age may reflect poorer mental health and/or worse social functioning (e.g., more loneliness) as compared to those with a normal-young felt-age. An extreme older felt-age, on the other hand, may be an indication of physical or psychological accelerated aging processes and therefore is expected to be related to worse physical and mental health, physical functioning limitations and disabilities, and worse social functioning.

1.2. Physical health, mental health, physical functioning and social functioning

Older adults have to cope with changing and often deteriorating physical health, which might also have mental and social implications (Alpass and Neville, 2003). Indeed, it has been found that when older adults cannot avoid a negative change in their experienced physical health or in their emotions they tend to report an older felt-age (Kotter-Grühn et al., 2015; Palgi et al., 2017). It has also been found that physical limitations and disabilities were associated with feeling relatively older (Infurna et al., 2010; Shrira et al., 2014). Additionally, feeling older might be related to experiencing a greater risk for social isolation and loneliness (Ayalon et al., 2016), and to suffering from the negative psychological aspects of feeling alone, which are associated with a sustained decrease in well-being (Shankar et al., 2015). However, older adults can cope effectively with these risks if they accept to a considerable degree the deterioration in their physical and mental health and in their physical functioning (i.e., feel only slightly younger than their actual age – about a decade younger, which is within normal range; Rubin and Berntsen, 2006). In this way they may prepare themselves to spend more time by themselves, or by adjusting to changes in their social network. Thus, coming to terms with one’s older age may lead to better preparedness and adjustment in the face of age-related losses (Segel-Karpas and Palgi, 2018). A felt age that is considerably younger or older, on the other hand, might hinder one’s ability to adjust to age-related changes.

The present study examines those who deviate by extreme scores in their self-perceptions of felt-age, perhaps due to difficulties in adaptively accepting the changes that occur throughout their aging process. We specifically refer to individuals who report feeling extremely younger or older in proportion to their chronological age. Drawing on the literature on the psychological notions of denial, self-deception, or positive illusions, we see the variations in felt-age as resulting from a favorable mechanism that helps the individual to better adapt to the environment, unless it is used in an extreme manner (Kortte and Wegener, 2004). Therefore, our first hypothesis is that individuals who evaluate their proportional felt-age as extremely younger or older, will report poorer outcomes relating to physical and mental health, physical limitations and disabilities, as well as greater loneliness. Our second hypothesis is that these effects of extreme felt-age will predict lower functioning over a period of four years.

2. Methods

2.1. Participants and procedure

We used data from the 2008 and 2012 Leave-behind Questionnaire (LB) of the Health and Retirement Study (HRS). The HRS is a biannual survey of health, assets, employment, and retirement administered to a representative sample of US citizens over the age of 50. The LB Questionnaire addresses psychosocial aspects including attitudes and beliefs. It is administered as a self-completion measure to half the sample every other wave, so that every four years, the same half-sample completes the LB questionnaire.

A total of 8269 respondents were eligible to complete the LB in 2008. Of these, 6857 completed and returned the questionnaire by mail and 100 returned it by phone. Using $\chi^2$ analyses, those who completed the LB were more likely to be men (40.3% vs. 32.1%, $\chi^2(8267, 1) = 33.27, p < 0.01) and married (65.2% vs. 54.0%, $\chi^2(8267, 1) = 61.23, p < 0.001) compared with those who did not complete the LB. The present study concerns those individuals who responded to the question about their felt-age ($N = 5454$). As cognitive disorders may impair one’s evaluation of felt-age, we first compared those who reported on cognitive decline or problems (reported memory loss or memory-loss related prescriptions in 2008, and dementia or Alzheimer’s disease in 2012; $N = 355$) to the rest of our sample. These comparisons showed that they did not differ in their gender (60.6%women vs. 57.5%women, $\chi^2(5454, 1) = 1.36, p = 0.133$), but were significantly older ($M[SD] = 73.74 [10.66]$ vs. $M[SD] = 67.52 [9.52], t[5452] = 11.80, p < 0.001), fewer of them were married (64.6% vs. 50.7%, $\chi^2(5454, 1) = 27.55, p < 0.001$), had a lower education level ($M[SD] = 1.77 [1.50]$ vs. $M[SD] = 2.24 [1.52], t[5437] = 5.97, p < 0.001) and had a lower proportional felt-age ($M[SD] = 0.10 [0.21]$ vs. $M[SD] = 0.16 [0.18], t[5452] = 5.97, p < 0.001) compared with those without reported cognitive disease or problems. Therefore, we decided to omit participants who reported on cognitive disease or problems from our sample. After omitting those who reported having cognitive disease or problems, as well as those who were under the age of 50 ($N = 105$), we were left with 4994 participants. In the next step we omitted those who were statistically considered outliers (Honglin and Iglewicz, 1987). In our data we located 56 outlier observations in total, as will be further elaborated in the description of data analyses. After omitting these data, we were left with 4,938 participants. In order to have enough participants with extreme values we used the broad definition for the upper and lower 5% as extreme values.
Demographic and covariate characteristic of the study groups in 2008.

Table 1 (see, Field, 2017). Following these steps, we created four research groups:

1) Those classified as having an extremely younger proportional felt-age (upper 5% proportional felt-age; n = 242), with an average proportional felt-age of 0.50, meaning they perceived themselves as 50% younger than their age and their average felt-age was $M = 32.79$, $SD = 6.37$.

2) Those classified as normative-young subjective age group, between the median and the upper 5% (n = 2229), with an average proportional felt-age of 0.26, meaning they perceived themselves as 26% younger than their age, and their average felt-age was $M = 50.07$, $SD = 7.94$ in the first wave.

3) Those classified as normative-old subjective age group, between lower 5% and the median, with an average proportional felt-age of 0.07 (n = 2226), meaning they perceived themselves as 7% younger than their age, and their average felt-age was $M = 64.79$, $SD = 6.20$ in the first wave.

4) The remaining respondents were classified as having an extremely older proportional felt-age (lower 5% proportional felt-age; n = 241) with an average proportional felt-age of −0.16, meaning they perceived themselves as 16% older than their age, and their average felt-age was $M = 73.58$, $SD = 11.09$ in the first wave.

Detailed information regarding the distribution of covariates and demographic variables is presented in Table 1.

2.2. Measures

2.2.1. Felt-age

Respondents were asked ‘what age do you feel? Participants’ replies were within the range of 0 and up to 165 with an average felt-age of $M = 56.97$, $SD = 13.72$. After omitting outliers and those with self-reported cognitive disease or problems, participants’ felt-age ranged between 16 and 100 with an average felt-age of $M = 57.01$, $SD = 12.93$.

2.2.2. Proportional felt-age

Felt-age was subtracted from respondents’ chronological age and divided by their chronological age to generate an overall estimate of proportional felt-age (see Iaconelli et al., 2017). Using this procedure, we could control for chronological age variance. A higher score indicates a younger felt-age and vice versa.

2.2.3. Reported chronic physical conditions

Respondents were asked whether or not a physician had told them that they suffered from one or more of eight chronic conditions (e.g., arthritis, diabetes, heart condition, cancer, lung disease). The sum of all possible physical conditions was calculated to indicate the number of chronic medical conditions, with a higher score indicating more physical health problems (Bohdner et al., 2017).

2.2.4. Mental health functioning

Mental health was measured by a nine-item version of depressive symptoms from the Center for Epidemiologic Studies Depression (CES-D; Geisser et al., 1997). The CES-D was administered as part of the core interview to assess depressive symptoms over the past week, (1 = yes/0 = no for the experience of a depressive symptom). We calculated a total score after reverse-coding appropriate items. The score ranged between 0 and 9, such that higher scores indicated greater depressive symptoms. Kuder–Richardson’s $p$ was 0.80 and 0.79 in 2008 and 2012 respectively.

2.2.5. Loneliness

Eleven items were used to assess loneliness (Hughes et al., 2004). Respondents were asked about the portion of the time they felt a lack of companionship, left out, isolated from others etc., using a three-point response scale. Responses were averaged so that a higher score represents greater loneliness. Cronbach’s alpha was 0.88 and 0.87 in 2008 and 2012 respectively.

2.2.6. Mental health functioning

"Difficulties in activities of daily living (ADL), were measured by counting the sum of difficulties (dichotomized into 1 = not having difficulties, vs. 2 = having difficulties) in basic activities of daily living (ADL; adapted from Katz et al., 1970). Participants reported on difficulties in six activities: dressing, crossing a small room, bathing, getting in or out of bed, eating, and toileting. Higher scores represented more difficulties in ADL. Internal reliability for ADL measured by Kuder–Richardson’s $p$ was 0.63 and 0.70 in 2008 and 2012 respectively.

"Difficulties in instrumental activities (IADL), were measured by counting the sum of difficulties (dichotomized into 1 = not having difficulties vs. 2 = having difficulties) in instrumental activities of daily living (IADL; Lawton and Brody, 1969). Participants reported on difficulties in seven instrumental activities which included difficulties in using a map, preparing meals, daily shopping, using the telephone, taking medications, doing housework, and handling personal finances. Internal reliability for IADL according to Kuder–Richardson’s $p$ was 0.58 and 0.65 in 2008 and 2012 respectively.

Functional limitations were assessed by an adaptation of Nagi’s (1976) instrument. This measure consists of twelve items (dichotomized into 1 = not having difficulties vs. 2 = having difficulties) describing physical activity. The participants reported if they are able to perform tasks such as walking 1 mile, pulling or pushing heavy objects.

Table 1

Demographic and covariate characteristic of the study groups in 2008.

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<tr>
<td>Age, M (SD)</td>
<td>66.60 (8.45)</td>
<td>67.40 (8.65)</td>
<td>69.33 (9.13)</td>
<td>63.51 (8.81)</td>
<td>F(4934, 3) = 42.70</td>
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<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 = 3*, 4`; 2 = 3, 4&quot;; 3 = 4&quot;</td>
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<tr>
<td>Marital status</td>
<td></td>
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<td></td>
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<td>$\chi^2$(N=4938, 3) = 6.77,</td>
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<tr>
<td>Education</td>
<td>2.12 (1.53)</td>
<td>2.38 (1.51)</td>
<td>2.17 (1.53)</td>
<td>1.85 (1.44)</td>
<td>F(4921, 3) = 12.31</td>
</tr>
<tr>
<td>Immediate recall</td>
<td>5.44 (1.84)</td>
<td>5.69 (1.65)</td>
<td>5.33 (1.73)</td>
<td>5.17 (2.04)</td>
<td>F(4934, 3) = 19.94</td>
</tr>
<tr>
<td>Serial 7</td>
<td>3.55 (1.53)</td>
<td>3.93 (1.33)</td>
<td>3.93 (1.31)</td>
<td>3.68 (1.44)</td>
<td>F(4488, 3) = 7.09</td>
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Note: $N=4938$. PFA = proportional felt age.

* $p < 0.05$,
** $p < 0.01$,
*** $p < 0.001$. 

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and climbing stairs. The sum score ranged from 0 to 12, with a higher score indicating better functioning. Kuder-Richardson’s ρ was 0.67 and 0.67 in 2008 and 2012 respectively.

2.2.6. Demographic data

Age, gender, marital status (married/partnered vs. not) and education (classified to seven categories: 0 = preprimary education, 1 = primary education, 2 = lower secondary education, 3 = upper secondary education, 4 = post-secondary education, 5 = first tertiary education, and 6 = second stage tertiary education; ISCED-97, United Nations Educational, Scientific and Cultural Organization, 1997), were gathered based on self-report.

2.2.7. Covariates

In addition, we controlled for memory and executive cognitive functioning measures, immediate recall and serial 7. The immediate recall test examines a recall of 10 words. The serial 7 s test requires participants to subtract 7 from 100, 93, 86 and so on, testing their working memory. Every subtraction adds one point up to 5. Higher scores on these measures were associated with a lower likelihood of cognitive impairment (Crimmins et al., 2011). For further information see Table 1.

Table 2

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<tbody>
<tr>
<td>Chronic physical health</td>
<td>2.42(1.22)</td>
<td>2.77(1.18)</td>
<td>2.31(1.21)</td>
<td>2.47(1.22)</td>
<td>2.95(1.36)</td>
</tr>
<tr>
<td>Depressive symptoms</td>
<td>1.94(2.14)</td>
<td>1.56(1.82)</td>
<td>1.63(1.97)</td>
<td>2.01(2.11)</td>
<td>3.78(2.65)</td>
</tr>
<tr>
<td>Loneliness</td>
<td>1.51(0.42)</td>
<td>1.50(0.41)</td>
<td>1.46(0.41)</td>
<td>1.52(0.42)</td>
<td>1.82(0.48)</td>
</tr>
<tr>
<td>ADL</td>
<td>0.25(0.69)</td>
<td>0.21(0.63)</td>
<td>0.17(0.56)</td>
<td>0.29(0.73)</td>
<td>0.59(1.02)</td>
</tr>
<tr>
<td>IADL</td>
<td>0.12(0.45)</td>
<td>0.07(0.25)</td>
<td>0.07(0.34)</td>
<td>0.13(0.49)</td>
<td>0.40(0.74)</td>
</tr>
<tr>
<td>NAGI</td>
<td>3.78(2.35)</td>
<td>3.43(2.35)</td>
<td>3.37(2.17)</td>
<td>3.93(2.36)</td>
<td>5.65(2.43)</td>
</tr>
</tbody>
</table>

Note: N = 2891. PFA = proportional felt age. Multivariate analysis of covariance (MANCOVA) was calculated to assess differences across the four categories of felt age. The results are controlled by age, gender, marital status, education, immediate recall and serial 7 covariates. The multivariate statistic of Wilks Lambda for proportional felt age groups was Λ = 0.90, F = 16.80***

* p < 0.05,
** p < 0.01,
*** p < 0.001.

3. Results

3.1. Preliminary results

There was a strong correlation between one’s proportional felt-age in 2008 and 2012, r = 0.53, p < 0.001. Moreover, comparing the proportional felt-age groups measured in 2008 shows significant differences between all groups and their continuous level of proportional felt-age in 2012. Those who reported a normative-old proportional felt-age in 2008 (M = −0.18, SD = 0.43), reported significantly older proportional felt-age in 2012, than the normative-young and the extreme-young proportional felt-age (M = 0.22, SD = 0.46; M = 0.61, SD = 0.66, respectively) and younger than the extreme older proportional felt-age group (M = −0.54, SD = 0.54; F(3, 3946) = 392.54, p < 0.001).

Participants from the extreme-older proportional felt-age group in 2008, were younger than the normative-old, normative-young and the extreme-younger proportional felt-age group. For further information see Table 1.

Note: N = 2891. PFA = proportional felt age. Multivariate analysis of covariance (MANCOVA) was calculated to assess differences across the four categories of felt age. The results are controlled by age, gender, marital status, education, immediate recall and serial 7 covariates. The multivariate statistic of Wilks Lambda for proportional felt age groups was Λ = 0.90, F = 16.80***

* p < 0.05,
** p < 0.01,
*** p < 0.001.
### 3.2. Main results

In order to examine the first hypothesis, we conducted a cross-sectional analysis regarding the characteristics of the sample in 2008. Table 2 shows that, supporting the hypothesis, compared to the three other groups, the extreme-younger proportional felt-age group had more chronic physical health problems, more depressive symptoms, felt lonelier, had higher levels of ADL, IADL and more physical limitations.

The extreme-younger group did not differ in any of the variables from the normal-young group. The normal-younger group functioned better than the normal-old groups in all variables except for chronic physical health problems, where no differences were found between the groups.

Regarding the second hypothesis, similar results were found when predicting the same functional variables four years later in 2012. Table 3 presents the results of six separate univariate ANCOVAs, controlling for demographics, and memory and executive cognitive functioning (immediate memory, and serial 7). In addition, we controlled for health problems, where no differences across the four categories of proportional felt-age. The result presented are after controlling for age, gender, marital status, education, memory and executive cognitive functioning (immediate memory, and serial 7). In addition, we controlled for health problems, where no differences were found between the groups.

Table 3 shows the results of six separate univariate ANCOVAs, controlling for demographics, and memory and executive cognitive functioning, as well as for each dependent variable as measured in 2008.

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<tbody>
<tr>
<td><strong>Chronic physical health</strong></td>
<td>2.39(1.41)</td>
<td>2.11(1.34)</td>
<td>2.24(1.39)</td>
<td>2.51(1.39)</td>
<td>3.11(1.50)</td>
<td>F(3, 4468) = 6.84; $\eta^2_{partial} = 0.01$, $p &lt; 0.05$; 2 $\times$ 4; 3 $\times$ 4***</td>
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<tr>
<td><strong>Depressive symptoms</strong></td>
<td>1.68(2.04)</td>
<td>1.32(1.77)</td>
<td>1.40(1.87)</td>
<td>1.81(2.06)</td>
<td>3.67(2.53)</td>
<td>F(3, 4407) = 22.91; $\eta^2_{partial} = 0.02$, $p &lt; 0.001$; 2 $\times$ 4; 3 $\times$ 4***</td>
</tr>
<tr>
<td><strong>Loneliness</strong></td>
<td>1.48(0.41)</td>
<td>1.50(0.42)</td>
<td>1.42(0.40)</td>
<td>1.51(0.40)</td>
<td>1.75(0.49)</td>
<td>F(3, 3864) = 4.73; $\eta^2_{partial} = 0.004$, $p &lt; 0.05$; 2 $\times$ 3, 4*</td>
</tr>
<tr>
<td><strong>ADL</strong></td>
<td>0.46(0.95)</td>
<td>0.52(1.05)</td>
<td>0.32(0.80)</td>
<td>0.50(0.99)</td>
<td>0.86(1.22)</td>
<td>F(3, 2485) = 7.72; $\eta^2_{partial} = 0.01$</td>
</tr>
<tr>
<td><strong>IADL</strong></td>
<td>0.17(0.57)</td>
<td>0.16(0.52)</td>
<td>0.12(0.48)</td>
<td>0.20(0.60)</td>
<td>0.47(0.86)</td>
<td>F(3, 4663) = 8.90; $\eta^2_{partial} = 0.01$, $p &lt; 0.005$; 2 $\times$ 4; 3 $\times$ 4***</td>
</tr>
<tr>
<td><strong>NAGI</strong></td>
<td>3.11(2.77)</td>
<td>2.49(2.79)</td>
<td>2.69(2.59)</td>
<td>3.38(2.80)</td>
<td>5.31(2.88)</td>
<td>F(3,4466) = 5.96; $\eta^2_{partial} = 0.004$, $p &lt; 0.005$; 2 $\times$ 4; 3 $\times$ 4***</td>
</tr>
</tbody>
</table>

Note: Six separate Univariate Analysis of Variance was calculated to assess differences across the four categories of proportional felt-age. The result presented are after controlling for age, gender, marital status, education, memory and executive cognitive functioning (immediate memory, and serial 7). In addition, we controlled for health problems, where no differences were found between the groups.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

### 4. Discussion

This study examined the phenomenon of extreme evaluations that individuals give regarding their felt-age. The main aim of our investigation was to explore whether these extreme old or young proportional felt-age values that are not statistical outliers, reflect authentic, deliberately exaggerated values that researchers should inquire into. The fact that the proportional felt-age groups in 2008 predicted significant differences in the level of proportional felt age in 2012, suggests that an extreme evaluation of felt-age is conceptually reliable, and represents a coping mechanism the individual holds across time when coping with one’s aging process. Although future studies are needed to better understand this mechanism, the present results offer a first glimpse to the fascinating ways that the entire continuum of age perceptions interrelates with adjustment throughout the second half of life.

Feeling extremely older than one's chronological age was related to worse chronic physical conditions, worse mental health, more physical limitations and disabilities and less social functioning. This was found in a cross-sectional analysis, and also in a longitudinal analysis, carried out four years later. Additionally, those who reported extremely older proportional felt-age, were on average chronologically younger than the other felt-age groups. A possible explanation for this finding is that individuals who suffer health-related losses or deteriorations in their social conditions relatively early in life (referred to as ‘off time’ experiences in gerontological research; Neugarten, 1976), perceive their aging process as precipitated. Since these processes are reciprocal in nature, they may in turn enhance the perception of extreme-older proportional felt-age. This effect may represent the accelerated psychological and physical aging process that is a concomitant of an older felt-age (Avidor et al., 2014). Moreover, it might imply that those reporting extreme and relatively unrealistic proportional older felt-age are perhaps aware that they are experiencing the first signs of physical age-related deterioration. Such an awareness of one’s physical deterioration may lead to a pessimistic representation of oneself in the future, as reflected in an extremely older proportional felt-age. This, in turn, drives toward lowered activity levels and resignation, and might even become recursively the reason for negative late-life health behaviors and for health deterioration (Frazier and Hooker, 2006). It is of note that almost all participants in this group had worse functioning than the normal-old proportional felt-age group, suggesting that this group is at higher risk for functional deterioration.

As for extremely young proportional felt-age, our findings show no significant differences between this group and the other normative groups (except for lower depressive symptoms than the normative-old group in the cross-sectional examination). It seems that reporting on extreme-younger felt-age, is not related directly to worsened functioning as hypothesized. With that, these participants did not demonstrate any functioning or health advantages as compared to those reporting normal-young proportional felt-age. This may suggest that feeling younger is not invariably a predictor of more favorable outcomes, such as in the present case of extreme values. Taking the present results...
together, there is likely no place for making the distinction between extremely younger proportional felt-age and normative-young felt-age, as it seems that both groups rely on adaptive psychological mechanisms related to younger felt-age (Shirira et al., 2014). These mechanisms may differ between the two groups, however, and it is possible that the extreme-young proportional felt-age group relies more heavily on psychological denial, but their adaptability is generally similar to the normal-young proportional felt-age group. Finally, and in line with previous studies, those in the normal-old group reported better functioning than those in the normal-old proportional felt-age group. This result is in accordance with similar, often-found patterns reported in the literature (Kornadt et al., 2018).

While the present findings are based on a study with several merits, including the fact that it was longitudinal in nature, and drew on a representative sample of the older population in the US, several caveats should be noted. First, as this is the first time, to the best of our knowledge, that the relationship between extreme values of proportional felt-age and future physical health, mental health, physical limitations, disabilities and social functioning measures were examined, future replications are needed in order to generalize from these results. Furthermore, the study relied on self-report measures, which may have been subject to some response bias. Lastly, while the present study concerned observations of extreme values of felt-age, and omitted other extreme values that were statistical outliers, it is difficult to assess with certainty that some statistical outliers were not also valid, extreme reports of felt-age and vice versa. The deletion of statistical outliers was done as a way of cautious, in order to prevent arbitrary evaluations. Thus, relevant data may have been omitted from the present study while answers that represent measurement errors were included in it. Future studies are needed in order to shed light on the different motivations involved in self-reports of extreme felt-age as opposed to self-reported values that are outliers. A qualitative follow-up study, for example, that is based on interviews could better investigate the motives that underlie people’s reports of extremely older and younger felt-age estimations.

Nonetheless, the findings of the present study contribute to the current literature on felt-age. Our findings suggest that a distinction should be made regarding the direction of extreme values of proportional felt-age. Only an extreme older proportional felt-age is associated with more impairment to one’s adjustment, whereas extreme younger proportional felt-age is as adaptive as normal-young felt-age. More specifically, these findings suggest that the adaptive psychological concomitants of a younger felt-age are not restricted to those who reported normal-younger felt-age and appear also among those with extreme values of younger felt-age, even if they did not reveal any additional positive associations with physical and mental health but rather similar ones. Our findings also suggest the need for a closer inspection of the psychological characteristics and mechanisms of extremely older proportional felt-age, as these can serve as important psychological markers for predicting early signs of accelerated aging.

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