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## People over Forty Feel 20% Younger than their Age: Subjective Age across the Lifespan

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### Abstract

Subjective age – the age people think of themselves as being – is measured in a representative Danish sample of 1470 adults between 20 and 97 years old through personal in-home interviews. On the average, adults younger than 25 have older subjective ages, and those older than 25 have younger subjective ages, favoring a lifespan-developmental view over an age denial view of subjective age. When the discrepancy between subjective and chronological age is calculated as a proportion of chronological age, no increase is seen after age 40; older respondents feel 20% younger than their actual age. Demographic variables (gender, income and education) accounted for very little variance in subjective age.

### Keywords

subjective age; felt age; aging; gender

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Research has shown that most adults think of themselves as younger than their actual chronological age (e.g., Kastenbaum, Derbin, Sabatini, & Artt, 1972; Öberg & Tornstam, 2001). Cross sectional studies of self-perceived or subjective age across the lifespan show an increasing discrepancy between subjective age and actual age as people grow older (e.g., Goldsmith & Heiens, 1992; Kastenbaum, et al., 1972; Öberg & Tornstam, 2001). This discrepancy is generally regarded as a denial of aging that is most pronounced in old age (e.g., Barak, Mathur, Lee, & Zhang, 2001; Peters, 1971; Ward, 1977). Montepare and Lachman (1989) summarize this view: “Theorists in the aging field have suggested that the tendency of aging adults to maintain younger subjective age identities is a form of defensive denial by which they can dissociate themselves from the stigma attached to growing old” (p. 73). Following this age-denial view, a youthful subjective age is an indicator of successful aging (e.g., Uotinen, Suutama, Ruoppila, 2003), which is consistent with studies showing that subjective age is a better predictor of psychological and physical functioning in old age than is chronological age (e.g., Barak & Stern, 1986; Markides & Boldt, 1983; Peters, 1971; but see Knoll, Rieckmann & Scholz, 2004). Under this age-denial view, there is no reason to suspect a discrepancy between subjective and chronological age in childhood and early adulthood, but the discrepancy should accelerate with older ages.

An alternative view incorporates changes over the entire lifespan. Under this view and using purposely vague terms that we will clarify, people younger than ‘a certain age’ want to be ‘a bit’ older and people older than that age want to be ‘a bit’ younger. Thus, under what we

term a lifespan-developmental view, a discrepancy between chronological age and subjective age is not primarily an aging phenomenon (e.g., Galambos, Kolaric, Sears, & Maggs, 2000; Montepare, 1996). To make sense of this, we have to specify the terms 'a certain age' and 'a bit'. A review of the subjective age literature converges on the observation that 'a certain age,' which we term, an attractor age, is somewhere in early adulthood (Montepare, 1996), a period that has the highest density of normative transition events (Berntsen & Rubin, 2004; Neugarten, Moore, & Lowe, 1965; Rubin & Berntsen, 2003), is important to identity and its effects on cognition (Conway & Pleydell-Pearce, 2000; Schulster, 1996), and has the most available autobiographical memories (Rubin, Rahhal, & Poon, 1998). Here we take an empirical approach and let the data determine the exact attractor age. The term 'a bit' might have two meanings: a discrepancy or a proportional discrepancy. For example, a 75-year-old person may feel 'a bit' younger if they feel 20%, or 15 years, younger. A 30-year-old person may feel 'a bit' younger if they feel 20%, or 6 years, younger. In contrast, a 30-year-old person who feels the same 15 years younger as did the 75-year-old person, appears to feel more than 'a bit' younger. Thus, for an entire lifespan a proportional view may be more reasonable. Here we turn the lifespan-developmental view into a quantitative statement by assuming that people of all ages will tend to have a subjective age that is closer to an empirically determined attractor age in early adulthood and that the further they are from the attractor age the greater their proportional discrepancy will be up to a maximum amount, which we will also determine empirically.

Few studies have systematically examined how subjective age varies with the age of the participant over the adult lifespan. Öberg and Tornstam, (2001) found an increasing discrepancy between subjective and chronological age measured in years with increasing chronological age in a study with 1250 Swedes. However, no detailed analyses were conducted on this distribution. Goldsmith and Heiens (1992) showed that with increasing chronological age, an increasing number of participants in the USA judged their subjective age to be younger than their actual age. However, this study involved few participants at the oldest ages and did not measure subjective age in years. Other studies using smaller convenience samples have presented similar findings (e.g., Barness-Farrel & Piotrowski, 1989; Kaliterna, Larsen & Brkljadic, 2002; Kastenbaum et al., 1972; Montepare and Lachman, 1989). In the present study we provide detailed, quantitative descriptions and systematic analyses of how subjective age varies with the age of the participant over the adult lifespan by using a representative sample of a large number of adults.

Subjective age has been operationalized differently across different studies (see Barak & Stern, 1986, for a review). In most studies, participants have described their subjective age in terms of decades, i.e., "I feel as though I am in my twenties". Some studies have used a compound score for subjective age by averaging people's answers to questions addressing how old they look, feel, and appear to be in terms of their interests and activities whereas other studies have treated such measures separately. In some studies only comparative age has been assessed – that is, participants are asked to assess whether they feel older, younger or the same as their current age. Other studies have measured felt age by asking participants to estimate in years how old they feel inside. This measure is continuous and allows mathematically more sophisticated analyses to be conducted on the relation between subjective age and chronological age. We ask our respondents both their comparative age and their felt age to allow an analysis of both measures. From the comparative question we find the attractor age, at which there are as many people feeling younger as older. From the felt-age question we calculate three measures: felt age (FA), the discrepancy between felt age and chronological age (FA – CA), and proportional discrepancy which is the discrepancy divided by age or (FA – CA)/CA. The last measure is a variant of what Barak and Rahtz (1999), working within the age denial view, call perceived youth, but proportional discrepancy is more theoretically neutral and applicable to younger ages.

Because past research on individual differences related to subjective age is characterized by conflicting findings and because we have a large, fairly representative sample of the Danish population, we also investigated the individual differences measures of gender, income, education, and social economic status to try to help clarify this situation. For instance, some studies have found an inverse relation between subjective age and education and income (see Barak & Stern, 1986, for a review), whereas other studies have been unable to replicate these findings (Henderson, Goldsmith & Flynn, 1995). Some studies have found that women perceive themselves as younger than men (e.g., Montepare & Lachman, 1989), some have found no gender differences (e.g., Barak, et al., 2001; Henderson et al., 1995), and some have found that men perceive themselves as younger than women (e.g., Cooper, Thomas, & Stevens, 1981).

Thus, we ask three different kinds of questions about subjective age. First, what is the distribution of subjective age over the lifespan and does it better support the age-denial or lifespan-development view. The age-denial view predicts no discrepancies in early adulthood and accelerated discrepancies in old age. In contrast the lifespan-developmental view predicts that discrepancies should be in the direction of an attractor age no matter what the age of the participant. Second, what is the relation between the comparative age and felt age questions used in the subjective age literature. Third, are individual differences in subjective age related to individual differences in gender, social economic status, income, and education.

## Method

A representative sample of 1,485 Danes (aged 20 to 97) participated as part of an omnibus survey by Gallup Public, Denmark, of which 1,470 provided answers to the questions asked here. In each household, 1 or 2 respondents were randomly selected via a combined criterion based on number of household members above age 16 and their birthdays. Response rates for the entire omnibus survey were 58%. Questions about when emotional events occurred were also included and reported in Berntsen and Rubin (2004).

The data were collected by 78 interviewers via face-to-face interviews in the respondents' homes. The interviewers recorded responses on a laptop computer. To ensure understanding, each question and the response options for each questions were printed on a demonstration card which was shown to the respondent while the question was being asked. Or if the respondent preferred, he or she could read the questions and response options directly from the computer screen. In addition to general questions about age, gender, education, income, and occupation, which were part of the omnibus survey, two questions are analyzed here. The first addressed comparative age: "This question is about how old you feel inside. Some people feel either older or younger inside than their actual age. Other people do not feel older or younger than their actual age. How old do you, yourself, feel inside?" The question had three possible answers: "I feel younger, I feel older, I feel neither older or younger." If the response was either I feel younger or older, then the second question addressing felt age was asked. "You feel that you are a different age inside than the one from your birth certificate. What age do you feel you are inside?" The question had a response of the form "Inside I feel around \_\_\_years old."

## Results

For the analyses shown in Figures 1, 2, and 3, the respondents were grouped into bins of 5 years up to age 64 and bins of about ten years for older ages where there were fewer respondents. The number of respondents in each bin along with their mean age and demographic variables are given in Table 1. As these variables were defined by Gallup,

education ranged from 1 (seven years or less of schooling) to 5 (basic vocational training) to 7 (more than three years of higher education); income ranged from 1 (less than 100,000 kroner p.a.) to 5 (400,000 to 500,000 kroner p.a.) to 8 (more than 700,000 kroner p.a.); and social group was a three-point scale with 1 being the highest class.

The proportion of respondents who replied that their subjective age was younger than, the same as, or older than their current age is shown in Figure 1. Consistent with the lifespan-developmental view, with increasing age up to age 40, the proportion of older subjective-age responses drops to about .02. With increasing age up to age 40, the proportion of younger subjective-age responses increases to about .70. The proportion of respondents who said that their subjective age is equal to their chronological age was highest for the youngest respondents and dropped to about .30. The crossover where the same proportion of people feel younger and older is at about 25 years old, our empirical determination of the attractor age.

Figure 2 shows the distribution of felt age as a function of respondents' chronological age. A theoretical line of felt age equal to chronological age is also shown. Consistent with the lifespan-developmental view and Figure 1, up to age 25, felt age is higher than chronological age after which point felt age become lower than chronological age. Measured in years, it appears that the discrepancy between felt and chronological age increases as our respondents become older, consistent with previous studies (e.g., Öberg and Tornstam, 2001), which has led to the discrepancy being viewed as most pronounced in older adults (e.g., Barak et al., 2001; Goldsmith & Heiens, 1992; Kaliterna et al., 2002). However, as illustrated by Figure 3 when proportional discrepancy was plotted, no increase was seen after age 40; after age 40, respondents across all age groups reported that they felt roughly 20% younger than their actual age. If the 30% of the respondents who reported no discrepancy were included the value would be about 14%.

Our data suggest that choosing to say one feels a different age and estimating that age are different psychological processes. As shown in Figure 1, about 30% of the respondents answered that they felt no age discrepancy. If these respondents were simply estimating their felt age and determining that it equaled their chronological age then we would expect a substantial proportion of felt age responses near to people's chronological age. That is, we would expect a normal distribution centered around the respondents chronological age for a good percentage of our respondents. But this is not what we observe. If only the 955 respondents over age 39 are included, 70% of the respondents said they felt younger, 27% said they felt exactly the same age, but only 2% said they felt older. If respondents were making comparative age judgments based on felt age, one might expect greater than 2% to have responses slightly older than their age given 27% had zero discrepancies. Among the respondents over age 39, the 694 who felt younger or older had a mean discrepancy of -12.32 years (SD = 10.52), and so the mean of their distribution could not be a zero discrepancy ( $t(693) = 30.83, p < .0001$ ). Yet 27% of this age group reported a zero discrepancy when they reported that they felt their chronological age.

Individual differences analyses investigated the effects of gender and social economic status measures. To see whether respondents who responded that they felt an age other than their chronological age were different from those who did not, we used comparative age judgments to divide our respondents into those who reported subjective ages equal to their actual age ( $n = 475$ ) and those who reported either younger or older ages ( $n = 995$ ). ANOVA's performed using this split with the dependent variables of education, and income were not significant ( $F(1, 1463) = 0.00, p = .97$  and  $F(1, 1307) = 1.95, p = .16$ , respectively). Chi-square analyses for the dichotomous gender and the three-level social group variables were also not significant ( $\chi^2(1, N = 1470) = 0.25, p = 0.62$  and  $\chi^2(2, N = 1369) = 3.82, p =$

0.15, respectively). There was an effect of chronological age ( $F(1, 1468) = 27.33, p < .0001$ ), which as shown in Figure 1, was due to the proportion of people who reported subjective ages equal to their chronological age decreasing with age. Having found no individual differences other than age in whether respondents did or did not report a subjective age with a discrepancy, we next examined responses of those respondents who did.

We performed regression analyses with felt age, discrepancy, and proportional discrepancy as dependent variables and age, gender, and social economic status as independent variables. In separate analyses we replaced social economic status with two of the scales that contributed to it: years of education and income. In order to look for any possible effects, we performed 12 regression equations produced by crossing our three dependent measures (felt age, discrepancy, and proportional discrepancy) with two samples (including or excluding respondents with subjective age equal to chronological age) with two sets of individual difference variables (either social group or the income and education which are included in it). Because of the nonlinear trend in Figure 2 an age-squared predictor was added. There were effects of chronological age and age squared, as shown in Figures 2 and 3. But even with the large number of respondents and uncorrected multiple comparisons, gender, education, and social economic status did not enter in any of the regressions at the .05 level. Income did enter in all six regression equations in which it was a predictor, adding at most .006 to the r-squared of the regression equation.

Thus, with the exception of the effect on chronological age on comparative age shown in Figure 1, the demographic measures had at most a minor role in accounting for comparative age and all three measures based on felt age, a finding which is consistent with some previous studies (e.g., Barak et al., 2001; Henderson, et al., 1995).

## Discussion

The present study has five main findings. First, the lifespan view provides a better account of the data than the dominant age denial view. The discrepancy between subjective age and chronological age does not simply increase across the lifespan, but rather younger respondents feel older and older respondents feel younger. Second, the attractor age or crossover point between feeling older and feeling younger is 25. Third, when the discrepancy between felt age and chronological age is normalized by dividing it by chronological age, no increase is seen after age 40. After this age, all age groups feel an average 20% younger than their actual age.

Fourth, reporting that you feel younger or older than your actual age and estimating that difference appear to be different kinds of judgments. Too many respondents reported that they felt their own age given the size and consistency of the discrepancies reported by those respondents who felt a different age. Thus, it is problematic to generalize across studies that use measures of comparative age and felt age or to report on felt age without also reporting separately on those respondents who had non-zero discrepancies because these measures appear to probe different assessments.

Fifth, we investigated the effects of gender, social economic status, education, and income on comparative age and three measures of subjective age and found no effects for gender, social economic status, and education, and only minimal effects of income. This is in spite of a large sample size and performing multiple tests without correcting the p-level for multiple comparisons. Although not directly related to the other theoretical points we tried to make here, the lack of gender differences in any of our measures is of note.

Although the dominant view in the study of subjective age has been age denial, we believe that a lifespan-developmental view is needed. Such a view better describes the data, which

should facilitate theoretical advancement as well as serving as a practical description in applied areas such as marketing. In contrast to age denial, we found that people of all ages tend to have a subjective age that is closer to an attractor age of 25 years and that the further they are from this attractor age the greater their proportional discrepancy is up to a maximum of 20%. Future research may revise the estimates of an attractor age of 25 years and the maximum proportional discrepancy of 20% and it is likely that these two parameters will vary with the culture of the populations tested. But we expect that the basic findings shown in Figures 1 and 3 will hold.

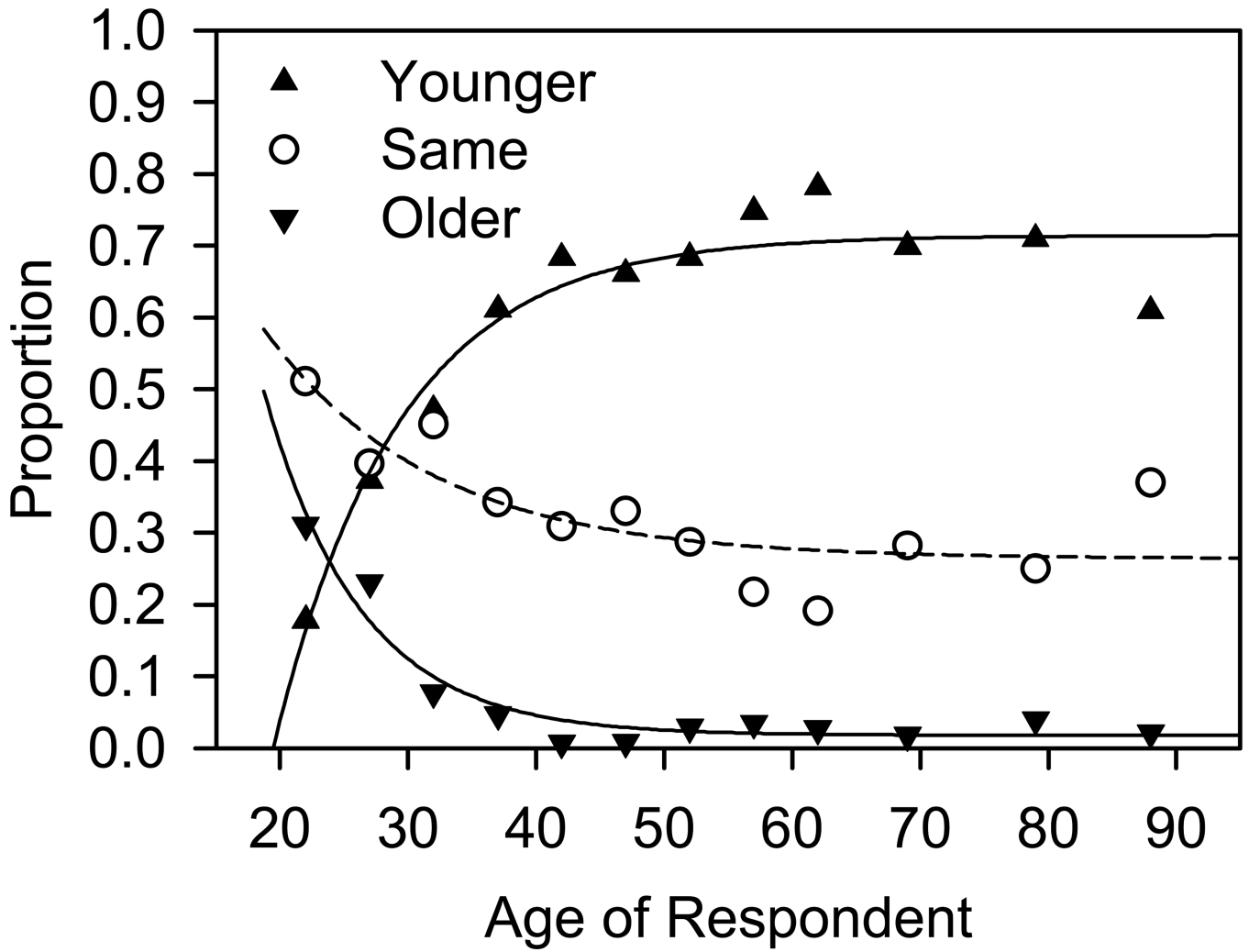
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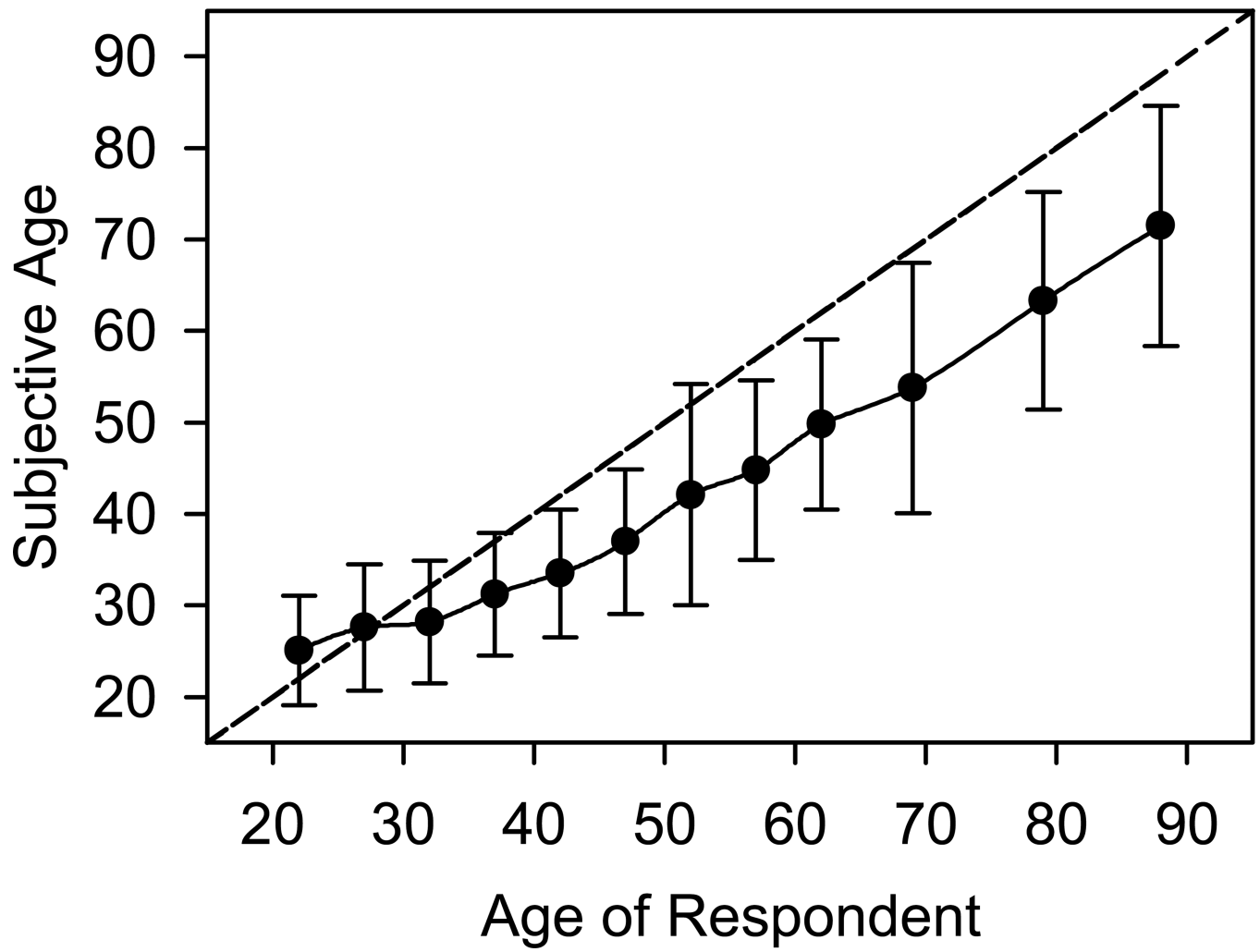
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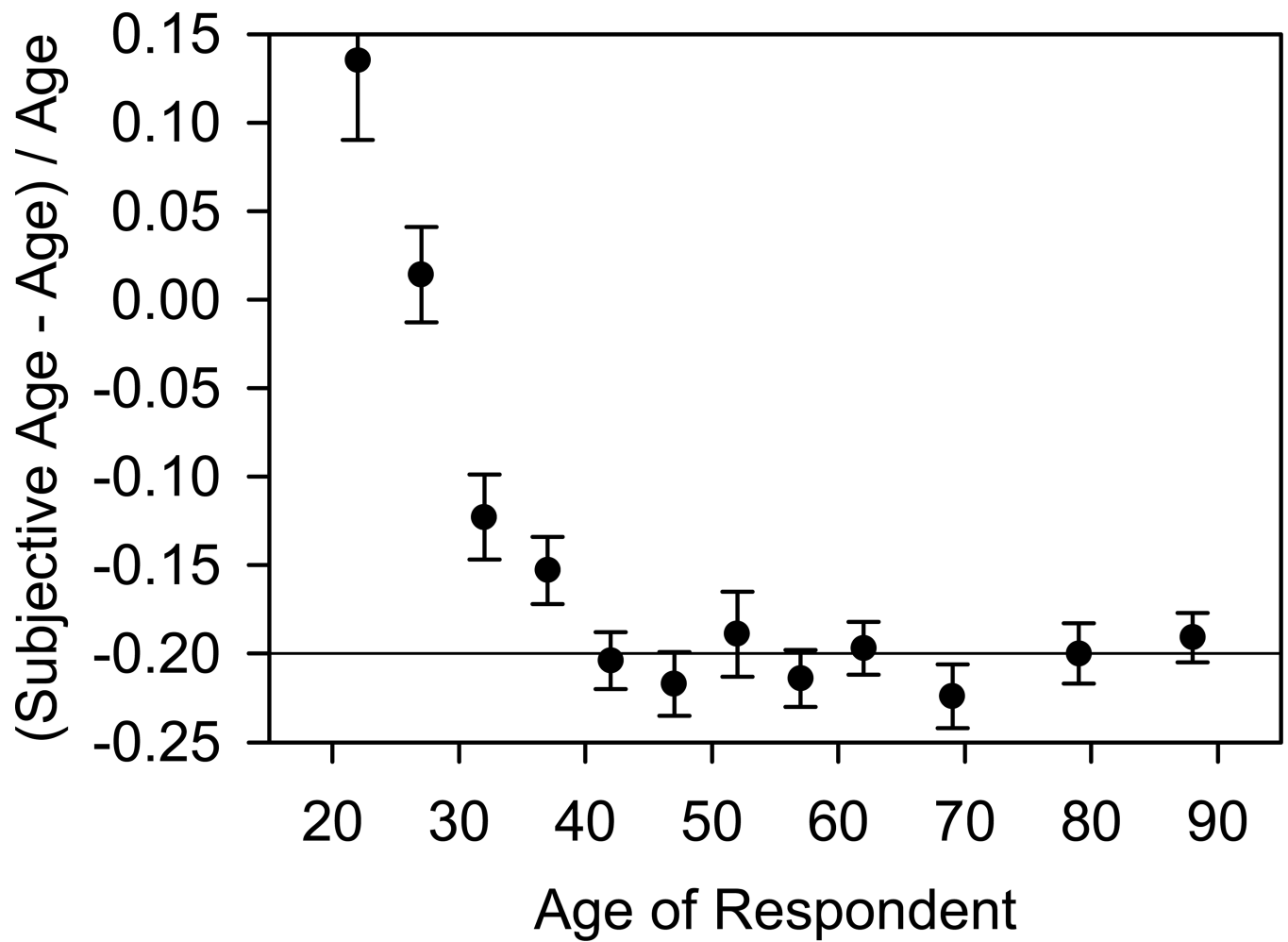


**Figure 1.** Comparative age: The proportion of respondents who reported that they felt as if they were younger, the same, or older than their actual age.





**Figure 2.** Felt age for respondents who reported feeling younger or older than their actual age. Error bars are standard deviations.



**Figure 3.** Age discrepancy as a proportion of age. Error bars are standard errors.

Table 1

## Respondents

Age Range	n	Mean Age	Percent Females	Education	Income	Social Group
20-24	90	22.21	51	4.12	3.19	2.39
25-29	134	27.03	51	5.08	4.05	1.85
30-34	142	32.12	42	5.19	4.94	1.61
35-39	149	36.86	52	5.13	5.28	1.63
40-44	139	41.99	56	5.38	5.20	1.63
45-49	118	47.08	56	5.14	5.12	1.59
50-54	136	52.04	46	5.35	5.23	1.59
55-59	143	57.03	45	4.62	4.74	1.71
60-64	110	61.97	51	4.08	3.58	2.09
65-74	163	69.13	60	3.71	2.78	2.51
75-84	100	79.30	58	3.58	1.98	2.55
85-97	46	88.11	87	2.17	1.67	2.78