Is there an ‘end of history illusion’ for life satisfaction? Evidence from a three-wave longitudinal study

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**Abstract**

According to the ‘end of history illusion’ (EOHI) individuals underestimate the amount of future change they will experience. Using results from a three-wave longitudinal study of American adults (N = 2390, mean age = 55.31 years, 56% female), we examined ratings of recollected past (10 years prior), current, and anticipated future (10 years later) life satisfaction at Wave 2, as well as current life satisfaction at Wave 1 (nine years earlier) and at Wave 3 (nine years later). Younger adults typically underestimated their past and overestimated their future LS, whereas older adults tended to underestimate their future LS. Contrary to the EOHI, most individuals either were accurate or anticipated too much change into the future, rather than too little.

**Keywords:** End of history illusion, Life satisfaction, Longitudinal

**1. Introduction**

Individuals' beliefs about their past, current, and anticipated future selves have important implications for self-identity, self-evaluation, and self-regulation (Peetz & Wilson, 2008). The present study provides new insights concerning individuals' perceptions of their recollected past, current, and anticipated future lives. Drawing on results from a large-scale longitudinal study of American adults spanning two decades, we examined competing notions concerning how individuals view their lives to be unfolding over time versus how their lives actually unfold. We determined whether individuals perceive too little or too much change in their lives, and how such biases vary across the adult lifespan.

According to the ‘end of history illusion’ (EOHI; Quoidbach, Gilbert, & Wilson, 2013), people underestimate the amount of future change they will experience. Despite reporting that they have undergone substantial personal change from the past to the present, individuals anticipate too little change into the future. Evidence of the EOHI comes from several studies comparing groups of individuals between 28 and 68 years of age who were randomly assigned to either (a) report how much their personalities, values, or preferences had changed from 10 years in the past to the present, or (b) predict how much they would change over the following 10 years. The amount of predicted future change among individuals aged X years was smaller than the amount of reported past change among individuals aged X + 10 years. This effect was observed among adults of all ages, although the magnitude was larger among younger (vs. older) adults.

In the present work, we examine the EOHI based on individuals' evaluations of their recollected past, current, and anticipated future life satisfaction. In doing so, we determine whether the EOHI captures how individuals perceive their lives overall to be unfolding over time, as reflected in evaluations of their life satisfaction, rather than their personality, values, or preferences (as in Quoidbach et al., 2013). Life satisfaction (LS) refers to an individual's global evaluation of his/her life and is a key component of subjective well-being (Diener, 1984). Research on LS typically focuses on individuals' assessments of their current lives or their lives overall (Busseri & Sadava, 2011). A related line of inquiry examines LS from a subjective temporal perspective, based on individuals' evaluations of their past, current, and anticipated future lives (Pavot, Diener, & Suh, 1998). Many individuals view their lives as becoming more and more satisfying over time (Busseri, Choma, & Sadava, 2009; Lachman, Rocke, Rosnick, & Ryff, 2008). This inclining ‘subjective trajectory’ pattern is typical across much of the adult lifespan. Past the age of 65 years, however, individuals typically anticipate that their lives will become increasingly less satisfying (Röcke & Lachman, 2008; Staudinger, Bluck, & Herzberg, 2003).

Yet longitudinal research has shown that life does not become consistently more and more satisfying across adulthood (on average), nor does it become increasingly less satisfying during old age. Rather, for most individuals LS is stable, particularly over long
periods of time (Cummins, 2014; Fujita & Diener, 2005). As a result, individuals’ perceptions concerning how their lives are changing over time tend to be biased. Younger adults tend to report too much improvement from the past and anticipate too much improvement into the future; older adults tend to anticipate too much decline into the future (Busseri et al., 2009; Lachman et al., 2008; Röcke & Lachman, 2008). With respect to the EOHI, therefore, research suggests that individuals of all ages tend to anticipate too much future change, rather than too little.

This contradiction may reflect important differences between LS and the self-related constructs examined by Quoidbach et al. (2013); we consider this issue further in the Discussion section. The contradiction may also stem from the methodological approach employed by Quoidbach et al. (2013). First, these authors used individuals’ retrospective reports of personal change (i.e., from 10 years in the past to the present) to gauge how much participants actually changed during this period. However, in order to determine whether individuals indeed underestimate the amount of future change, it would be necessary to track individuals’ self-evaluations over time using a longitudinal design. Ideal for such purposes would be a three-wave longitudinal design in which individuals’ reports of their recollected past (10 years ago), present, and anticipated future lives (10 years hence) at a given time point were compared with evaluations of their current lives both at previous (10 years in the past) and subsequent (10 years in the future) time points. Such an approach would allow for comparisons between (i) individuals’ reports of how much they had changed over the past 10 years with the actual amount of change they had experienced over that period, and (ii) their predictions of how much they would change over the next 10 years with the actual amount of change they end of experiencing over that subsequent period.

Second, to assess reported and predicted change, Quoidbach et al. (2013) computed the absolute value of the difference between individuals’ ratings of (a) their past and present selves, and (b) their present and future selves. This issue is particularly relevant when examining age-related differences in beliefs concerning LS since, as noted above, younger adults tend to perceive too much improvement, whereas older adults tend to anticipate too much deterioration. Absolute change scores would mask such age-related differences in the direction of perceived change. An alternative approach would be to examine reported change from the past (i.e., present minus past) and into the future (i.e., future minus present) without conversion to absolute values. Such an approach would provide information concerning the direction and magnitude of perceived change.

To address these issues, in the present work we evaluated the EOHI with respect to individuals’ beliefs concerning how their lives overall were unfolding over, as reflected in their evaluations of their recollected past, current, and anticipated future LS. We examined both the direction of perceived change and the accuracy of individuals’ beliefs using a three-wave longitudinal study. This approach also allowed to examine the degree to which individuals from across the adult lifespan underestimated or overestimated past and future changes in their lives. According to the EOHI, individuals of all ages should mistakenly anticipate too little change into the future, despite reporting personal change from the past. In contrast, based on previous LS research, we predicted that younger adults would be overly negative about the recollected past and overly positive about the anticipated future, such that they would mistakenly perceive too much improvement from the past and anticipate too much improvement into the future. Furthermore, we expected that older adults would be overly negative about the anticipated future, such that they would mistakenly anticipate too much decline into the future.

### 2. Method

#### 2.1. Participants and procedure

Data were drawn from the MIDUS study (Brim, Ryff, & Kessler, 2004), a three-wave longitudinal survey of American adults. Participants were selected using a random digit dialing procedure. At Wave 1, participants (all of whom provided informed consent) completed a telephone survey and a self-administered questionnaire. Wave 2 and Wave 3 were conducted using the same procedure, with roughly nine years between adjacent waves. The present analysis is based on the 2390 participants who completed all relevant ratings from the three waves (described below). At Wave 2 (the focal period for the present analysis), these participants had a mean age of 55.31 years (SD = 11.07; range = 30–84); 55.5 were female; 72.9% were married; 71.1% completed at least some post-secondary education; 93.4% identified their race as White (2.8% Black and/or African American, 1.3% Native American or Aleutian Islander/Eskimo, 0.5% Asian or Pacific islander, 1.18% other); median household income was $63,500 USD.

Note that the MIDUS data has been used in previous studies examining subjective temporal evaluations of LS based on results from Wave 1 and/or Wave 2 (e.g., Lachman et al., 2008; Staudinger et al., 2003). However, the present work is the first to examine these evaluations at all three waves. Participant numbers were determined by the MIDUS administrators, not the present authors. The present sample size provided high power (>0.99) to detect even a small effect size at $\alpha = 0.05$, two-tailed.

#### 2.2. Measures

The self-anchoring scaling approach (Kilpatrick & Cantril, 1960) was utilized to assess individuals’ recollected past, present, and anticipated future life satisfaction (LS) at each wave. Participants were asked: “How would you rate your life overall these days”, “Looking back ten years ago, how would you rate your life overall at that time”, and “Looking ahead ten years into the future, what do you expect your life overall will be like at that time”. Items were rated on an 11-point scale ranging from 0 (worst life possible) to 10 (best life possible) such that higher scores indicated greater LS. All three Wave 2 ratings were examined in the present work, along with ratings of current LS at Wave 1 and Wave 3. Descriptive statistics are shown in Table 1. Although the MIDUS dataset contains a

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<tr>
<td>1. W2 age</td>
<td>55.31</td>
<td>11.07</td>
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<td>2. W1 – current LS</td>
<td>7.91</td>
<td>1.44</td>
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<td>3. W2 – past LS</td>
<td>7.45</td>
<td>1.79</td>
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<td>4. W2 – current LS</td>
<td>7.98</td>
<td>1.41</td>
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<td>6. W3 – current LS</td>
<td>7.94</td>
<td>1.56</td>
<td>.15</td>
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large number of variables, only the measures described above were examined for the present study.

3. Results

3.1. Subjective trajectories

We first examined individuals’ beliefs at Wave 2 concerning how their LS was changing over time, from 10 years in the past to 10 years into the future, as reflected in the mean-level trends for the subjective trajectories. To do so, a mixed-model ANOVA was computed in which subjective temporal period (STP; recollected past, present, anticipated future LS) was a within-subjects variable and participant age (in years) was a continuous between-subjects variable. The main effect of STP was statistically significant, indicating that individuals (on average) viewed their LS as improving over time; $F(2,4776) = 374.41, p < .001, \eta_p^2 = 0.14$. The main effect of age was also statistically significant, indicating that LS varied as a function of participant age; $F(1,2388) = 35.49, p < .001, \eta_p^2 = 0.02$. Most relevant, the interaction between STP and age was statistically significant, indicating that the mean subjective trajectories varied by age; $F(2,4776) = 285.67, p < .001, \eta_p^2 = 0.11$. To examine these findings further, participants were categorized into one of three age groups based on a tripartite split: younger (ages 30–49, $n = 776$), middle-aged (ages 50–59, $n = 767$), or older adults (ages 60 to 84, $n = 847$). As illustrated by the mean-level trends shown in Panel A of Fig. 1, on average linear and inclining subjective trajectories for LS were typical for younger adults, as were non-linear and inclining subjective trajectories for middle-aged adults, and non-linear and declining subjective trajectories for older adults.

3.2. Longitudinal trajectories

Next, we examined how individuals’ LS actually changed over time (on average), as reflected in the mean-level longitudinal trajectories in current LS at Wave 1, Wave 2, and Wave 3. To do so, a mixed-model ANOVA was computed using ratings of current LS, in which wave (Wave 1, Wave 2, Wave 3) was treated as a within-subjects variable and participant age was a continuous between-subjects variable. The main effect of wave was not statistically significant, indicating that mean LS did not vary (on average) over time; $F(2,4776) = 0.19, p = .83, \eta_p^2 < 0.01$. The main effect of age was statistically significant, indicating that average LS levels varied by age; $F(1,2388) = 104.05, p < .001; \eta_p^2 < 0.04$. Furthermore, the interaction between wave and age was not statistically significant, indicating that the mean-level trajectories did not vary (on average) by age; $F(2,4776) = 0.21, p = .81, \eta_p^2 < 0.01$. As illustrated by the mean-level trends in Panel B of Fig. 1, actual LS trajectories were stable over time (on average) and slightly higher for older than younger adults.

3.3. Accuracy of subjective trajectories

To evaluate the accuracy of individuals’ perceptions concerning changes in their LS, we computed an additional pair of mixed-model ANOVAs. The first model compared ratings of Wave 2 recollected past LS with Wave 1 ratings of current LS; age was treated as a continuous between-subjects factor. The repeated-measures comparison was statistically significant, indicating that participants’ ratings of their recollected past LS at Wave 2 were lower (on average) than their current LS at Wave 1; $F(1,2388) = 91.43, p < .001; \eta_p^2 = 0.04$. The main effect of age was also statistically significant; $F(1,2388) = 203.19, p < .001; \eta_p^2 = 0.08$. In addition, the interaction between the repeated-measures comparison and age was statistically significant; $F(1,2388) = 52.53, p < .001; \eta_p^2 = 0.02$. As is apparent from the means presented in Fig. 1, on average at Wave 2 younger and middle-aged adults tended to underestimate their past LS whereas older adults had a more accurate view of their past LS.

The second model compared ratings of Wave 2 anticipated future LS with Wave 3 ratings of current LS; age was treated as a continuous between-subjects factor. The repeated-measures comparison was statistically significant, indicating that participants’ ratings of their anticipated future LS at Wave 2 were greater (on average) than their current LS at Wave 3; $F(1,2388) = 285.76, p < .001; \eta_p^2 = 0.11$. The main effect of age was not statistically significant; $F(1,2388) = 2.65, p = .10; \eta_p^2 < 0.001$. In addition, the interaction between the repeated-measures comparison and age was statistically significant; $F(1,2388) = 247.76, p < .001; \eta_p^2 = 0.09$. As shown in Fig. 1, on average at Wave 2 younger and middle-aged adults tended to overestimate their future LS, whereas older adults tended to underestimate their future LS.

3.4. Results based on an individual differences approach

Concern might be raised that results presented above based on mean-level trends may have obscured important individual differences with respect to the subjective trajectories, actual trajectories, and/or the accuracy of the subjective trajectories. We thus undertook an additional series of analyses to inform such issues using an
individual differences approach. Details are provided in the Supplemental Results file. First, with respect to the overall Wave 2 subjective LS trajectory (i.e., recollected past to anticipated future), as shown in Supplemental Table 1, perceived incline was most common (48.2%), followed by stability (32.9%) and, least commonly, decline (18.9%). Such results varied by age-group: Among younger and middle-aged adults, the most common perception concerning the overall subjective trajectory was incline (64.6% and 53.6%, in younger and middle-aged adults respectively), followed by stability (28.1%, 30.4%) and decline (7.3%, 16.0%); in contrast, among older adults, perceived stability (39.7%) or decline (32.0%) were more common than incline (28.3%).

Second, with respect to the actual overall longitudinal trajectories in current LS (i.e., from Wave 1 to Wave 3), as shown in Supplemental Table 2, individuals were roughly evenly divided into inclines (35.6%), stability (34.5%), and declines (29.9%). Such results were consistent among younger and older adults; among middle-aged adults, inclines (40.3%) were more common than stability (34.8%) or declines (24.9%).

Third, with respect to the accuracy of the subjective trajectories in terms of Wave 2 ratings of recollected past LS, as shown in Supplemental Table 3, underestimation (43.5%) was more common than accuracy (32.4%) or overestimation (24.1%). Such results were consistent among younger and middle-aged adults; among older adults, however, accuracy (39.6%) was more common than underestimation (33.5%) or overestimation (26.9%). With respect to the accuracy of the Wave 2 ratings of anticipated future LS, overestimation (41.3%) was more common than accuracy (31.6%) or underestimation (27.1%). Such results were consistent among younger and middle-aged adults; among older adults, however, underestimation (40.4%) was more common than accuracy (32.0%) or overestimation (27.6%). We also examined individual differences in the accuracy of the Wave 2 subjective trajectories in terms of the absolute amount of perceived change (i.e., past-current, current-future, past-future; see Supplemental Table 4). Of particular relevance to the EOHI, with respect to anticipated change between current and future LS, 37.7% of all participants were accurate and 26.4% perceived too much change, whereas 35.9% perceived too little change (primarily individuals who erroneously anticipated no change into the future) – as did 31.8% of younger adults, 37.0% of middle-aged adults, and 38.7% of older adults.

4. Discussion

The present work provides valuable new insights concerning the EOHI with respect to individuals’ global evaluations of their lives. Individuals viewed their LS as changing (on average) from the recollected past, to the present, and into the anticipated future. Furthermore, consistent with previous LS research (e.g., Lachman et al., 2008; Röcke & Lachman 2008), the direction of these subjective trajectories varied by age: Younger and middle-aged adults typically saw their lives as improving over time (on average), whereas older adults typically saw their life satisfaction as stable or declining over time. The actual trajectories for current LS were relatively stable over time (on average), regardless of participant age. The stable mean-level trend comprised a roughly even mix of individuals experiencing inclines, stability, and declines over time. And with respect to the accuracy of individuals’ beliefs, both retrospective and prospective biases were observed and were systematically related to age: On average, younger and middle-aged adults were overly negative about their past LS but overly positive about their future LS; older adults were accurate about their past LS, but overly negative about their future LS. Furthermore, some participants did anticipate too little change into the future, as suggested by the EOHI (Quoidbach et al., 2013); however, most individuals were either accurate or anticipated too much change, and the typical direction of this misprediction varied by age.

One possibility is that there is a fundamental difference between how individuals perceive changes in their LS over time, as examined in the present work, versus their personalities, values, and preferences, as examined by Quoidbach et al. (2013). Individuals may hold the implicit belief that LS is more malleable than characteristic traits, and normative beliefs about development may convey a stronger message about changes in LS over time compared to values and preferences. Individuals’ experiences of personal changes in LS may also be more accessible and dramatic than changes in these other aspects of the self. Yet, similar to the present findings, younger adults are willing to derogate their (distant) past personality traits in order to enhance their current self-views (Wilson & Ross, 2001). Such self-enhancement may also apply to how individuals evaluate their anticipated future selves (Kanten & Teigen, 2008). Further, individuals believe that multiple aspects of their selves will improve over time at least until middle/later adulthood, whereas perceptions of declines during older adulthood are common (Fleeson & Heckhausen, 1997; Kornadt & Rothermund, 2011; Mustafić & Freund, 2012). Thus, an important direction for future research is to determine whether the EOHI generalizes across various aspects of the self when examined using a longitudinal design allowing for assessment of recollected and predicted selves (e.g., personalities and LS), alongside actual changes in the same characteristics over time. Further understanding of individual differences beyond participant age would also be valuable as the present findings may not apply to all participants in the same manner.

Also in need of further consideration are the implications of the EOHI. According to Quoidbach et al. (2013), individuals make decisions for their future lives that they frequently end up regretting because they underestimate the amount of future change they will experience (see also Oishi, Whitchurch, Miao, Kurtz, & Park, 2009). Other studies suggest that problematic life outcomes tend to accrue among individuals who anticipate too much personal future, rather than too little (e.g., Busseri et al., 2009; Busseri & Peck, 2015; Keyes & Ryff, 2000; Lachman et al., 2008; Röcke & Lachman, 2008). Further, greater perceived similarity to one’s anticipated future self has been linked to more ethical decisions (Hershfield, Cohen, & Thompson, 2012) and higher life satisfaction (Reiff, Hershfield, & Quoidbach, in press). The present work did not examine the implications of individuals’ beliefs about how their LS is unfolding over time, for example in relation to impactful decisions concerning their personal futures. Further research is thus needed to more fully inform the costs and benefits of perceived personal change, as well as to evaluate whether the present findings generalize to other samples and countries.

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Disclosures

Data used in the present study and the survey codebooks are available for download from the MIDUS website: http://midus.wisc.edu/. Hypotheses and methods were not pre-registered.

Both authors contributed equally to the conceptualization, writing, and analysis of the present study.
Declaration of Competing Interest

None.

Appendix A. Supplementary material

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jrp.2019.103869.

References


