Published in final edited form as:
Psychol Sci. 2013 March 1; 24(3): 379–385. doi:10.1177/0956797612459658.

Cohort Effect on Well-Being: The Legacy of Economic Hard Times

Angelina R. Sutin, **Antonio Terracciano**, **Yuri Milaneschi**, **Yang An**, **Luigi Ferrucci**, and **Alan B. Zonderman**
National Institute on Aging

Abstract

The present research examines the effect of age, cohort, and time of measurement on well-being across adulthood. Cross-sectional and longitudinal analyses of two independent samples – one with >10,000 repeated assessments across 30 years (Assessments per participant: M=4.44, SD=3.47) and one with nationally representative data – suggested that well-being declines with age. This decline, however, reversed when we controlled for birth cohort. That is, once we accounted for the fact that older cohorts had lower levels of well-being, all cohorts increased in well-being with age relative to their own baseline. Participants tested more recently had higher well-being, but this time of measurement effect did not change the shape of the trajectory as did cohort. Although well-being increased with age for everyone, cohorts that lived through the economic challenges of the early 20th century had lower well-being than those born during more prosperous times.

Psychological well-being is associated with what most people typically strive for in life. People with higher well-being, for example, tend to have more successful careers (Judge & Larsen, 2001; Graham, Eggers, & Sukhtankar, 2004), longer-lasting and more satisfying relationships (Diener, Gohm, Suh, & Oishi, 2000; Stutzer & Frey, 2006), and better physical health (Ong, 2010). Well-being may even contribute to longevity: Happier people tend to live longer (Chida & Steptoe, 2008).

Given its importance for aging, there is considerable interest in how well-being changes across adulthood. The relation between well-being and age, however, is complex. Cross-sectional and longitudinal findings have suggested that well-being-related constructs tend to be fairly stable (Diener & Suh, 1998; Kurland, Gill, Patrick, Larson, & Phelan, 2006) or decline slightly across adulthood with relatively steeper declines in old age (Baird, Lucas, & Donnellan, 2010; Charles, Reynolds, & Gatz, 2001; Gerstorf et al., 2010; Holahan, Holahan, Velasquez, & North, 2008; Ostir, Markides, Peek, & Goodwin, 2001; Stacey & Gatz, 1991). Others have found, however, that measures of well-being increase with age (Keyes, Shmotkin, & Ryff, 2002; Mroczek & Kolarz, 1998) and that daily positive emotional experiences increase across adulthood, with a slight decline in old age (Carstensen et al., 2011). Still others have found well-being-related measures to be u-shaped, with higher levels of well-being at the beginning and end of adulthood than in the middle (Blanchflower & Oswald, 2008; Stone, Schwartz, Broderick, & Deaton, 2010). Thus, a clear picture of how well-being may change with age has yet to emerge.

Changes in well-being with age – or any other psychological variable – may be due to maturational processes that are relatively invariant across time and/or population or they

Address correspondence to: Angelina R. Sutin, Ph.D., National Institute on Aging, NIH, DHHS, 251 Bayview Blvd., Baltimore, MD 21224, Phone: 410-558-8691, Fax: 410-558-8690, sutina@mail.nih.gov.

may reflect differences in the social milieu that are unique to different cohorts (Twenge & Campbell, 2001). That is, 70-year-olds may be less optimistic than 50-year-olds because of the effect of aging, because they were tested in a different historical time, because they belong to different birth cohorts, or a combination of these factors. Any given cohort may have had unique experiences (e.g., differences in economic prosperity, medical care, educational opportunities, nutrition, etc.) that shape the way in which they evaluate their happiness and optimism, experiences that do not color other cohorts' evaluations in the same way. It is impossible to disentangle cohort from age effects using cross-sectional data because the two are confounded: a 70-year-old belongs to the same age group and cohort. Longitudinal studies, particularly studies in which participants entered the study at different ages and in different years, are necessary to disentangle potential differences across cohorts from normative aging effects.

The present research examines age-related changes in well-being and tests for an effect of cohort using two longitudinal studies, the Baltimore Longitudinal Study of Aging (BLSA) and the National Health and Nutrition Examination Survey (NHANES). Started in 1958, the BLSA is one of the oldest continuing longitudinal studies in the United States. The design of the BLSA offers two crucial attributes for distinguishing cohort from age effects. First, there is a substantial range of cohorts and ages in the BLSA: year of birth in this sample covers nearly a full century, from 1885 to 1980, and age at assessment covers a similarly large range, from 19 to 100 years old. Second, because of on-going recruitment efforts, there is a fair amount of overlap in age across cohorts. For example, the BLSA includes 60-year-old participants who were born in 1920 and tested in 1980 and 60-year-old participants who were born in 1950 and tested in 2010, and many in between. Thus, any differences in well-being found across these two groups would be due to secular trends (cohort, time of measurement), rather than age, because age is invariant. The BLSA, however, is a highly educated sample and thus effects found may not generalize to other populations. We therefore sought to replicate any effects found in the BLSA with nationally representative data from NHANES.

Method

Samples

BLSA—A total of 2,267 community-dwelling volunteers from the Baltimore Longitudinal Study of Aging were part of this study (47% female, 73.8% White, 20.0% Black, 6.2% other ethnicities, *M* years of education = 16.46, *SD* = 2.42). The well-being data (see below) were collected between 1979 and 2010 at regularly scheduled visits. The mean age at the first assessment was 57.90 years (*SD* = 17.07; range 19 to 96 years) and the mean age at the most recent assessment was 68.52 years (*SD* = 16.34; range 25 to 100 years). Participants completed the measure up to 19 times (*M* assessments per participant = 4.44, *SD* = 3.47, range = 1 to 19) for a total of 10,075 assessments. The mean interval between administrations was 2.46 years (*SD* = 1.78; range 4 months to 20 years). Year of birth ranged from 1885 to 1980 (*M* = 1935, *SD* = 18.94).

NHANES—The National Health and Nutrition Examination Survey (NHANES) is a program of studies designed to assess the health and nutritional status of adults and children in the United States (CDC, 1977). We used data from NHANES I; this sample, assessed between 1971 and 1975, included 3,004 adults who completed the well-being measure. This subsample of the larger NHANES I is a nationally representative sample of the U.S. population ages 25–74 years at the time of data collection. Most participants (*n* = 2,284) completed the measure again, on average eight years later (*M* = 8.22, *SD* = .68, range 6 to 10 years). At the first assessment, the mean age was 45.94 (*SD* = 13.98; range 25–74), the

sample was 56% women, 90.3% white, 8.4% Black and 1.3% other ethnicities, and the average level of education was a high school diploma (range less than high school to advanced degree). Year of birth ranged from 1889 to 1950 (M = 1928, SD = 14.00). Attrition analyses for both samples can be found in the supplementary materials.

Well-Being Measure

In both samples, well-being was assessed with a subscale of the Center for Epidemiologic Studies Depression Scale (Radloff, 1977). This 20-item scale assesses the frequency of a variety of depressive symptoms during the previous week. Items are rated on a four-point scale from 0 (*rarely*) to 3 (*most or all of the time*). The well-being subscale is the sum of four items that measure the experience of positive emotions and well-being ("I enjoyed life.", "I felt that I was just as good as others." "I felt hopeful about the future." and "I was happy.") that are typically reverse scored into the total scale score (Hertzog, Van Alstine, Usala, Hultsch, & Dixon, 1990; Radloff, 1977). The well-being subscale was only moderately correlated with the other three subscales of the CES-D: −.30 (BLSA) and −.22 (NHANES) with Depressed Affect, −.25 (BLSA) and −.17 (NHANES) with Somatic Complaints, and −.12 (BLSA and NHANES) with Interpersonal Problems. In contrast, depressed affect and somatic complaints correlated .59 in the BLSA and .68 in NHANES. These correlations suggested that the well-being subscale of the CES-D is related to, but not the same, as depression (Stansbury, Ried, & Velozo, 2006). At the first BLSA assessment, well-being had a mean of 9.88 (SD = 3.05) and at the first NHANES assessment, well-being had a mean of 9.20 (SD = 3.27).

Statistical Analyses

We examined changes in well-being over time in several ways. First, for comparison with previous cross-sectional studies, we used linear regression to predict the first assessment of well-being from age (linear term) and age squared (quadratic term). Second, to take advantage of the longitudinal data, we used Hierarchical Linear Modeling (HLM; Raudenbush & Bryk, 2002) to estimate the trajectory of well-being across adulthood. Using HLM Version 6 (Raudenbush, Bryk, & Congdon, 2004), we fit a quadratic model to test for non-linear changes across adulthood. We then tested sex, ethnicity, education, year of first assessment (i.e., time of measurement), and year of birth (i.e., cohort) as Level 2 predictors of the intercept and linear slope. We centered age in decades on the grand mean (65.95 years for BLSA, 49.20 years for NHANES) to minimize the correlation between the linear and quadratic terms and facilitate interpretation. Time of measurement was defined as the year of the first well-being assessment for each participant in the BLSA, centered on the mean year (1993).[1] Year of birth was centered on the mean birth year (1935 for BLSA and 1928 for NHANES). Additional analyses controlled for antidepressant medication use and comorbidity in the BLSA (supplemental materials).

Results

BLSA

Cross-sectional analysis on the first assessment of well-being from each BLSA participant suggested that older adults had a less positive outlook than younger and middle-aged adults (b_{linear} = −.28 [SE = .04] and $b_{quadratic}$ = −.08 [SE = .02], both ps < .01; Figure 1A). The longitudinal model also indicated that well-being declined with age, although the decline was not as steep as suggested by the cross-sectional analysis (b_{linear} = −.09 [SE = .03] and

[1]Year of first assessment and year of birth were only moderately correlated in the BLSA (r = .3) and thus were included in the same model. Year of first assessment was not included in the NHANES analyses because of the limited range of years of data collection (1971–1974).

$b_{quadratic}$ = −.04 [SE = .01], both *p*s < .01; Table 1); controlling for demographic factors (sex, ethnicity, education) did not appreciably change the shape of the trajectory (b_{linear} = −.09 [SE = .03] and $b_{quadratic}$ = −.03 [SE = .01], both *p*s < .01).

In contrast to the other demographic factors, adding year of birth to the model to account for differences in cohort had a dramatic effect on the estimated trajectory of well-being (Table 2). Specifically, controlling for the effect of cohort reversed the sign of the linear slope from negative (b_{linear} =−.09 [SE = .03], *p* < .01) to positive (b_{linear} =.38 [SE = .06], *p* < .01); the quadratic slope remained negative but was reduced to a trend ($b_{quadratic}$ = −.06 [SE = .03], *p* = .06). Thus, instead of a decline, well-being increased across adulthood with a slight plateau in old age. Antidepressant use and increased comorbidity with age had negligible effects on this trajectory.

To understand the effect of cohort, we plotted the trajectory of five cohorts, limiting the ages to the range of actual ages of assessment within each cohort (Figure 1B). All five cohorts, including the oldest, increased slightly in well-being over time. There was, however, a substantial difference in the level of well-being across cohorts; each younger cohort reported a more positive outlook than the previous cohort, even when measured at the same age. We also examined the average level of well-being at the first assessment by decade of birth (see Figure 2). Each bar of the histogram represents the average level of well-being for each decade of birth, independent of age. Of note, cohorts who lived through the Great Depression had progressively lower levels of well-being than those reared during more prosperous times.

Table 2 shows the effect of the demographic factors and secular trends on the intercept and linear slope of well-being that may explain some of the significant variability in the intercept and slope variance (both *p*s < .01). White and educated participants generally had higher well-being. Both year of first assessment and year of birth were associated with higher levels of well-being: Participants who entered the study more recently (year of first assessment) and more recent cohorts had higher average levels of well-being. Year of first assessment, however, did not have the same effect on the sign of the linear trajectory as did cohort; the dramatic reversal of the trajectory was due to when participants were born, not to when they were tested. In addition, there was no effect of either cohort or year of first assessment on the slope of well-being, which indicated that there was not an age x cohort or age x first assessment interaction. Finally, this effect of cohort was specific to well-being: After removing the well-being items from the total CES-D scale, there was no effect of cohort on the slope of depressive symptoms, nor the other subscales of the CES-D (see supplemental material for analysis of depressed affect).

NHANES

Although year of birth was more restricted in NHANES (range 1899 to 1950) than in the BLSA, it still covered a period of substantial change in the United States. Similar to the BLSA, both the cross-sectional (b_{linear} = −.24 [SE = .04], *p* < .01; $b_{quadratic}$ = .01 [SE = .03], *ns*) and longitudinal (Table 1) analyses indicated that well-being declined with age. Replicating the effect in the BLSA, including year of birth in the model reversed the sign of the trajectory, such that well-being increased rather than decreased across adulthood, although the linear slope did not reach statistical significance (Table 1). Replicating the pattern from the BLSA with nationally representative data, the well-being of those from earlier cohorts was lower than those of later cohorts (Figure 3). As with the BLSA, white and educated participants generally had higher levels of well-being, there was no age x cohort interaction (Table 2), and the cohort effect was specific to well-being.

Discussion

The present findings suggest that cohort may be one factor that obscures the association between well-being and age. Cross-sectional and longitudinal analyses of two independent samples showed that well-being declined with age. The direction of this trajectory reversed, however, once we controlled for the fact that older cohorts started with lower levels of well-being. That is, relative to their starting point, all of the cohorts increased, rather than decreased in well-being with age. Although time of measurement was associated with the mean-level of well-being–those who entered the study more recently reported greater well-being–it did not alter the shape of the trajectory as cohort did. The present study is a step toward disentangling cohort, age, and time of measurement effects on well-being.

Our analysis of cohort suggests a more positive view of happiness in old age than indicated by the cross-sectional and longitudinal analyses. Although participants were getting happier as they grew older, the effect of age was modest, about 1/10 of a standard deviation per decade in the BLSA. By comparison, the effect of cohort was much larger; there was a greater than one standard deviation difference from the early to mid part of the 20th century. Still, the effect of age was not trivial; it was larger than the difference between men and women and roughly similar to the difference between a high school diploma and a college degree. Thus, older adults maintain and may even improve their emotional well-being despite the inevitable physical and social losses that occur with aging.

When individuals make judgments about their well-being, those judgments reflect more than just an assessment of their current situation. Along with factors such as personality, life events, and demographic characteristics, the socio-cultural environment in which individuals grow up may also contribute to ratings of well-being. In the current study, the well-being of those born in the early part of the 20th century, particularly those who lived through the Great Depression, was substantially lower than cohorts who grew up during more prosperous times. Such economic troubles can have devastating, lasting effects. For example, the psychological effects of unemployment continue even after reemployment, and well-being may never return to pre-unemployment levels (Lucas, Clark, Georgellis, & Diener, 2004). Similar to this individual-level effect, severe economic upheaval at the national level may reduce levels of well-being, a reduction that may persist even through more prosperous times. Interestingly, the same process does not appear to be true for depressed affect. In contrast to well-being, the experience of negative emotions may reflect more dispositional and/or maturational processes that are resistant to early social and environmental influences.

The cohort effect on well-being is particularly striking in the BLSA sample, given the generally high socioeconomic status of these participants at the time of testing. Over 50% of the sample has at least a college education (including the older cohorts) and about 40% hold an advanced degree, whereas less than 10% of the sample has less than a high school education. Thus, many BLSA participants among the older cohorts accomplished their educational goals despite the economic upheaval of the 1930s. But, even with this level of educational success, the well-being of those born earlier in the 20th century was stunted compared to those born later. This effect, however, was not limited to the highly educated BLSA. A similar, albeit less pronounced, effect was apparent among the nationally-representative NHANES sample, suggesting a pervasive cohort effect on well-being.

A number of factors may account for the observed cohort effects. Cross-cultural research has indicated that higher income tends to be associated with greater well-being, an association stronger in more developed countries (Diener, Ng, Harter, & Arora, 2010) and that there are significant mean-level differences in well-being between the rich and the poor

(Lucas & Schimmack, 2009). The increase in well-being across the 20th century found in the current research may reflect, in part, the economic prosperity in the United States following World War II. Beyond economic issues, other changes in the United States may have contributed to the increase in well-being. Over the 20th century, life expectancy at birth and at age 65 increased dramatically while infant mortality had a similarly dramatic decline (Kinsella, 1992). Nutrition has likewise changed dramatically, and the burden of disease has shifted from primarily acute to primarily chronic (Kinsella, 1992). There have also substantial changes in social norms and attitudes (e.g., marriage, divorce, women in the workplace, parenting, etc). One effect of these economic, medical, and cultural changes may be higher well-being.

The 20th century in the United States was a period marked by rapid progress, with increased longevity, greater educational and economic opportunities, and the advent of social services that ensure a minimum standard of living for the elderly. The greater well-being enjoyed by younger cohorts may be the cumulative effect of both economic prosperity and public programs designed to build a highly educated workforce (e.g., the G.I. Bill of 1944 provided an avenue to education for millions of veterans) and buffer against the setbacks of unemployment (e.g., the Federal Unemployment Tax Act of 1939 created unemployment benefits). As young adults today enter a stagnant work force, the challenges of high unemployment may have implications for their well-being that long outlast the period of joblessness. Economic turmoil may impede psychological, as well as financial, growth even decades after times get better.

Acknowledgments

This research was supported entirely by the Intramural Research Program of the NIH, National Institute on Aging.

References

Baird BM, Lucas RE, Donnellan MB. Life satisfaction across the lifespan: Findings from two nationally representative panel studies. Social Indicators Research. 2010; 99:183–203. [PubMed: 21113322]

Blanchflower DG, Oswald AJ. Is well-being U-shaped over the life cycle? Social Science and Medicine. 2008; 66:1733–1749. [PubMed: 18316146]

Carstensen LL, Turan B, Scheibe S, Ram N, Ersner-Hershfield H, Samanez-Larkin GR, et al. Emotional experience improves with age: Evidence based on over 10 years of experience sampling. Psychology and Aging. 2011; 26:21–33. [PubMed: 20973600]

Centers for Disease Control and Prevention (CDC). National Center for Health Statistics (NCHS). National Health and Nutrition Examination Survey Data. Hyattsville, MD: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention;

Charles ST, Reynolds CA, Gatz M. Age-related differences and change in positive and negative affect over 23 years. Journal of Personality and Social Psychology. 2001; 80:136–151. [PubMed: 11195886]

Chida Y, Steptoe A. Positive psychological well-being and mortality: A quantitative review of prospective observational studies. Psychosomatic Medicine. 2008; 70:741–756. [PubMed: 18725425]

Diener E, Gohm CL, Suh E, Oishi S. Similarity of the relations between marital status and subjective well-being across cultures. Journal of Cross-Cultural Psychology. 2000; 31:419–436.

Diener E, Ng W, Harter J, Arora R. Wealth and happiness across the world: Material prosperity predicts life evaluation, whereas psychosocial prosperity predicts positive feeling. Journal of Personality and Social Psychology. 2010; 99:52–61. [PubMed: 20565185]

Diener, E.; Suh, EM. Subjective well-being with age: An international analysis. In: Shaie, KW.; Lawton, MP., editors. Annual review of gerontology and geriatrics: Vol. 17. Focus on emotion and adult development. New York: Springer; 1998. p. 304-324.

Gerstorf D, Ram N, Mayraz G, Hidajat M, Lindenberger U, Wagner GG, et al. Late-life decline in well-being across adulthood in germany, the united kingdom, and the united states: Something is seriously wrong at the end of life. Psychology and Aging. 2010; 25:477–485. [PubMed: 20545432]

Graham C, Eggers A, Sukhtankar S. Does happiness pay? An exploration based on panel data from Russia. Journal of Economic Behavior and Organization. 2004; 55:319–342.

Hertzog C, Van Alstine J, Usala PD, Hultsch DF, Dixon R. Measurement properties of the Center for Epidemiological Studies Depression Scale (CES-D) in older populations. Psychological Assessment. 1990; 2:64–72.

Holahan CK, Holahan CJ, Velasquez KE, North RJ. Longitudinal change in happiness during aging: The predictive role of positive expectancies. International Journal of Aging and Human Development. 2008; 66:229–241. [PubMed: 18459603]

Judge TA, Larsen RJ. Dispositional affect and job satisfaction: A review and theoretical extension. Organizational Behavior and Human Decision Processes. 2001; 86:67–98.

Keyes CLM, Shmotkin D, Ryff CD. Optimizing well-being: The empirical encounter of two traditions. Journal of Personality and Social Psychology. 2002; 82:1007–1022. [PubMed: 12051575]

Kinsella KG. Changes in life expectancy 1900–1990. American Journal of Clinical Nutrition. 1992; 55:1196S–1202S. [PubMed: 1590256]

Kurland BF, Gill TM, Patrick DL, Larson EB, Phelan EA. Longitudinal change in positive affect in community-dwelling older persons. Journal of the American Geriatrics Society. 2006; 54:1846–1853. [PubMed: 17198489]

Lucas RE, Clark AE, Georgellis Y, Diener E. Unemployment alters the set point for life satisfaction. Psychological Science. 2004; 15:8–13. [PubMed: 14717825]

Lucas RE, Schimmack U. Income and well-being: How big is the gap between the rich and the poor? Journal of Research in Personality. 2009; 43:75–78.

Mroczek DK, Kolarz CM. The effect of age on positive and negative affect: a developmental perspective on happiness. Journal of Personality and Social Psychology. 1998; 75:1333–1349. [PubMed: 9866191]

Ong AD. Pathways linking positive emotion and health in later life. Current Directionsin Psychological Science. 2010; 19:358–362.

Ostir GV, Markides KS, Peek MK, Goodwin JS. The association between emotional well-being and the incidence of stroke in older adults. Psychosomatic Medicine. 2001; 63:210–215. [PubMed: 11292267]

Radloff LS. The CES-D scale: A self-report depression scale for research in the general population. Applied Psychological Measures. 1977; 1:385–401.

Raudenbush, SW.; Bryk, AS. Hierarchical linear models: Applications and data analysis methods. 2. Thousand Oaks, CA: Sage; 2002.

Raudenbush, SW.; Bryk, AS.; Congdon, R. HLM (Version 6). Lincolnwood, IL: Scientific Software International; 2004.

Stacey CA, Gatz M. Cross-sectional age differences and longitudinal change on the Bradburn Effect Balance Scale. Journals of Gerontology. 1991; 46:76–78.

Stansbury JP, Ried LD, Velozo CA. Unidimensionality and bandwidth in the Center for Epidemiologic Studies Depression (CES-D) Scale. Journal of Personality Assessment. 2006; 86:10–22. [PubMed: 16436016]

Stone AA, Schwartz JE, Broderick JE, Deaton A. A snapshot of the age distribution of psychological well-being in the United States. Proceedings of the National Academy of Sciences of the United States of America. 2010; 107:9985–9990. [PubMed: 20479218]

Stutzer A, Frey BS. Does marriage make people happy, or do happy people get married? Journal of Socio-Economics. 2006; 35:326–347.

Twenge JM, Campbell WK. Age and birth cohort differences in self-esteem: Across-temporal meta-analysis. Personality and Social Psychology Review. 2001; 5:321–344.

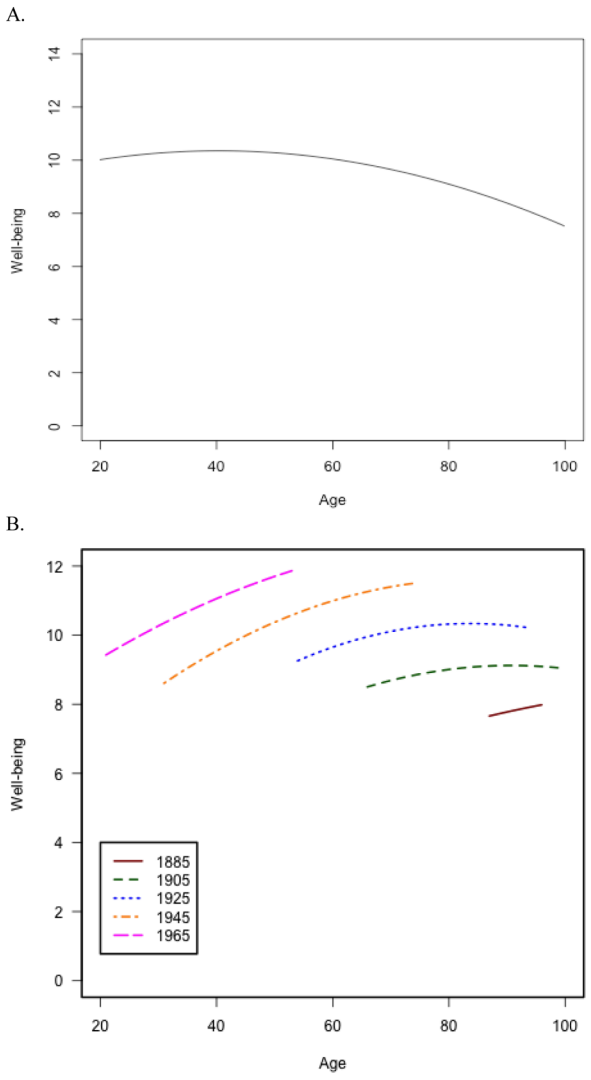

Figure 1.
The average normative trajectory of well-being estimated from cross-sectional data in the BLSA (A) and the trajectory of well-being for five selected cohorts estimated from 30 years of longitudinal assessments of well-being in the BLSA (B).

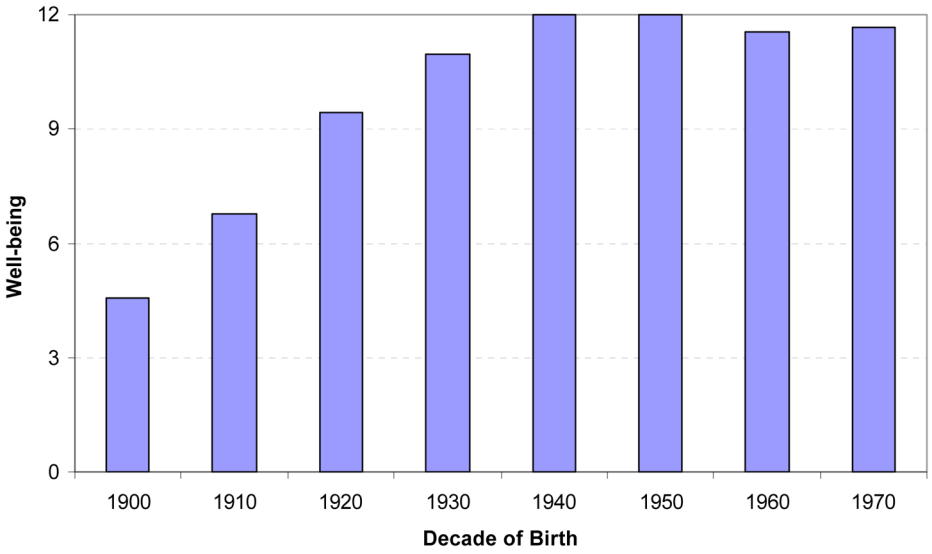

Figure 2.
Estimated marginal means of well-being in the BLSA, plotted by decade of birth and controlling for age, age squared, sex, ethnicity, and education.

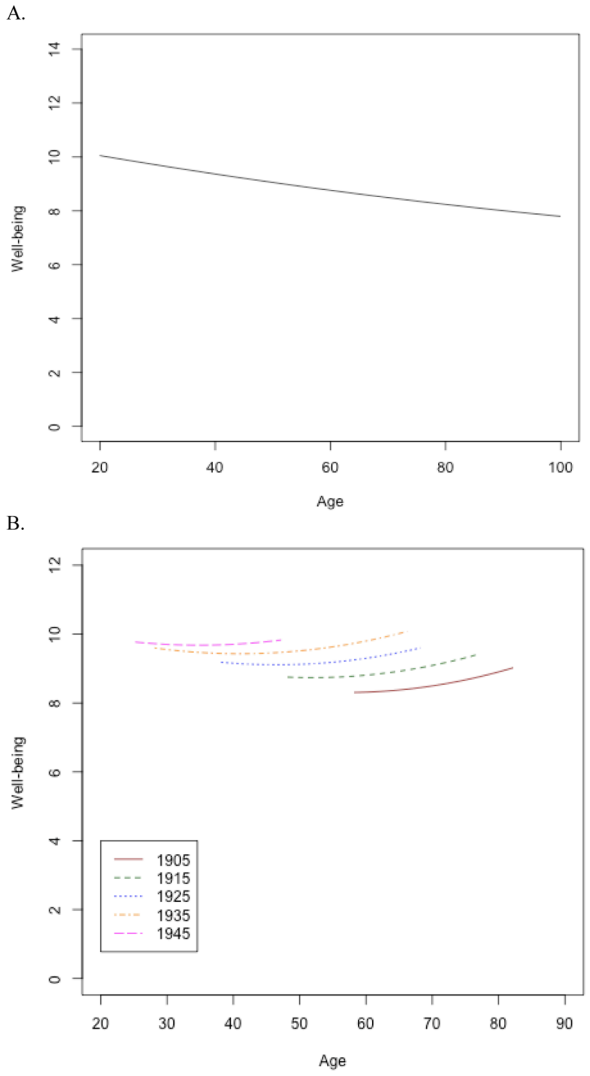

Figure 3.
The average normative trajectory of well-being estimated from cross-sectional data in NHANES (A) and the trajectory of well-being for five selected cohorts estimated from two longitudinal assessments of well-being in NHANES (B).

Table 1

HLM Coefficients of Intercept, Linear, and Quadratic Equations Predicting Well-Being from Age in Decades

Scale	σ^2: Residual within-subject variance	Intercept	Linear	Quadratic
BLSA				
Model 1	3.22	10.30 (.05)**	−.09 (.03)**	−.04 (.01)**
Model 2	3.42	10.62 (.07)**	.50 (.04)**	−.05 (.03)
Model 2a	3.35	10.78 (.07)**	.38 (.06)**	−.06 (.03)
NHANES				
Model 1	4.43	9.22 (.07)**	−.23 (.03)**	.01 (.02)
Model 2	4.37	9.36 (.10)**	.07 (.10)	.12 (.08)

Note. N = 2,267 for BLSA and N = 3,004 for NHANES. Standard errors are shown in parenthesis. HLM = hierarchical linear modeling. Model 1 includes age and age squared. Model 2 adjusts for sex, ethnicity, education, and year of birth. Model 2a adjusts for Model 2 covariates and year of first assessment.

** $p < .01$.

Table 2

Effect of Demographic Factors and Secular Trends on the Intercept and the Linear Slope of Well-Being

	Intercept	Linear Slope
BLSA		
Sex (Female)	.15 (.08)	.02 (.04)
Ethnicity (Black)	−.34 (.12)**	.08 (.07)
Ethnicity (Other)	−.80 (.19)**	−.03 (.11)
Education[a]	.05 (.01)**	.00 (.01)
Year of first assessment	.78 (.09)**	−.01 (.06)
Year of Birth	.61 (.05)**	−.02 (.04)
NHANES		
Sex (Female)	−.13 (.10)	.03 (.07)
Ethnicity (Black)	−.43 (.18)*	.22 (.12)
Ethnicity (Other)	−.31 (.59)	.02 (.39)
Education[a]	.36 (.04)**	−.05 (.03)
Year of Birth	.31 (.10)**	.13 (.09)

Note. N = 2,267 for BLSA and N = 3004 for NHANES.

Standard errors are shown in parentheses.

[a] Education is scaled in years in the BLSA and by degree in NHANES.

* $p < .05$.

** $p < .01$.