ARE OLDER PEOPLE REALLY HAPPIER

THAN YOUNGER PEOPLE?

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To God: I will never give up on bringing your happiness to the world. Thank you for giving me the opportunity to use my knowledge to spread love.

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ABSTRACT

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ARE OLDER PEOPLE REALLY HAPPIER THAN YOUNGER PEOPLE?

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In recent years, quite a few studies and media reports have claimed that older people are happier than younger people. Although this argument may contain partial truth, I question the total validity of this claim. This study investigates several possibilities. I first examine how the effect of age on happiness varies by health status and economic status. I then investigate a possible non-linear effect of age over a lifetime. I also analyze the effect of generational cohorts and period on happiness. Data from General Social Surveys 1972-2016 and logistic regression are used to test the possibilities.

The results show that the effect of age on happiness is moderated by health status and by income. This study also detects a significant nonlinear effect of age on happiness, namely, as people age they become less happy and least happy at the age of 52, and then gradually regain happiness. It is also found that later generations are happier than earlier generations and that the happiness of Americans has ebbed and flown with the peak in 1990.

The findings of this study challenge the popular position that older people are happier than younger people and provide a more complete picture of the relationship between age and

happiness. The findings also have significant implications for government policies and programs to improve the well-being of the elderly.

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CHAPTER I

INTRODUCTION

"When I was 5 years old, my mother always told me that happiness was the key to life. When I went to school, they asked me what I wanted to be when I grew up. I wrote down 'happy'. They told me I didn't understand the assignment, and I told them they didn't understand life." - John Lennon

The United States has more elderly now than at any other time in history. By 2035, there will be 78 million people aged 65 or over versus 76.7 million under the age of 18 (Census Bureau 2018). So, what does this mean for our population dynamics? This population projection suggests that we will have more retirees than workers. By 2020, there will be about 3.5 working-age adults for 1 retirement-age person (Census Bureau 2018). More older people mean more Medicaid and Social Security withdrawal. Those that are healthy and economically stable should fare well, but what about those that are in poor health conditions or economic conditions?

In recent years, quite a few studies and media reports (Bratskeir 2016; Breheny et al. 2014; Isaacowitz 2012; Leland 2017; MacMillan 2018; Szalavitz 2013; Tanner 2008) have claimed that older people are happier than younger people. Alternative scholarly studies (Cruwys 2014; Pachana 2016; Sutin 2013) dispute this claim, stating that older people are not as happy as they seem. Other researchers (Fritjers and Beaton 2012; Yang 2008) provide some evidence that the relationship between age and happiness is nonlinear

but uncover different patterns of curvilinear relationship between age and happiness. There exists another argument that age has no impact on happiness (Cantril 1965; Dear, Henderson, and Korten 2002; Palmore and Luikart 1972). As of now, answers to this question from the existing literature are inconclusive at best. The reality may be more complex than what has been offered. This study seeks to join this discourse and to provide more complete and cogent answers to this question.

The Research Problem

The central research question of this study is: Are older people really happier than younger people? Specifically, this study examines two real possibilities: (1) Does economic and health status moderate the effect of age on happiness? (2) Is there a nonlinear effect of age on happiness?

In this study, "happiness" is defined as an individual's feeling of contentment or positive well-being, together with a sense that the individual's life is meaningful. "Economic status" refers to the individual's access to money, property, and other economic capital assets. "Health status" is defined as the individual's overall physical and mental well-being.

Significance of the Study

This study will make several contributions. First, this study will contribute to a fuller understanding of the effect of age on happiness by taking into account the moderating effect of economic and health statuses. Another principal contribution of this study is to

provide clear and concrete evidence of the nonlinear effect of age on happiness, using the latest GSS data that span over 44 years. Finally, the findings may have significant practical implications for improving life satisfaction over the life span. A significant nonlinear relationship between age and happiness will suggest a need of support for the elderly after a certain age. If a significant effect of interaction between age and health status and/or between age and economic status is detected, government policies and programs such as Medicaid, social security, and pharmaceutical supplementation will need to address the needs of those elderly who have poor economic and/or health conditions.

Structure of the Thesis

After this introductory chapter, Chapter Two reviews the published literature from professional journals and reputable magazines. It also discusses my hypotheses on whether economic and health status moderates the effect of age on happiness and whether the effect of age on happiness is nonlinear. Chapter Three describes data and methods. Chapter Four presents the results of this study. The concluding chapter summarizes the findings, discusses implications, and suggests future research.

CHAPTER II

LITERATURE REVIEW AND HYPOTHESES

This chapter reviews previous research released in both the mainstream media and academia and proposes three hypotheses to be tested. Understanding the manner in which happiness throughout the life span and within age categories is shaped can then allow an examination through a sociological lens of the assumptions and the beliefs of much of the work undertaken by journalists and academics explored in previous work.

Literature Review

The existing literature provides some answers to my central research question: Are older people really happier than younger people? This review will highlight competing arguments that include an affirmative answer, a dissenting response, and a nonlinear relationship. It will also identify gaps in current literature.

A popular argument from the current literature maintains that older people are happier than younger people. Several researchers have found that older people are happier because they have fewer life stressors and more cognitive control (Breheny et al. 2014; Warr 2015), leaving them freer to take more actions they normally would not perform. Their responsibilities and daily routines such as an occupation and young children have been lifted from their conscience. Derek Isaacowitz (2012) reported that the elderly focused on and remembered positive events and left behind negative ones. The research found that these processes help older people regulate their emotions, letting them view life in a sunnier

light. Other explorations have revealed that older people are more able to brush off life's

small stressors and accumulate more wisdom than youth (Oaklander 2016). The elderly

have better control of their emotions due to experience; thus, they exhibit more positive

emotions and serenity (Ross and Mirowsky 2008). Anila and Dhanalakshmi (2014)

explored the relationship between the variables hope, happiness and general health of 100

elderly people (aged 60-80 years) in India. Anila and Dhanalakshmi's results show that

overall positive outlooks on life indicate higher well-being in the ageing process. Anila and

Dhanalakshmi also found that the more active and healthy the elderly were, the happier

they were.

Other studies (e.g., Lafee 2016) argued that "survivor bias"—less healthy adults do

not live to old age—is to blame for the skewed results in elderly happiness research. Yang

also agreed with the survivor bias outlook: "Selective survival also may play a role in

explaining the positive age effect and the leveling of stratification effects. Higher levels of

happiness in older adults may result from the selective survival of respondents who are

happier" (2008:221). This selective survival could contribute to a higher level of happiness,

as those with a poorer health or economic status would be deceased, leaving healthier and

wealthier older people.

Contrary to the popular argument, the published literature has shown a pattern that

older people are less happy than younger people. The elderly had a different outlook

depending on their situations: positive or negative (Tuminello et al. 2011). Those with a

negative economic outlook also reported depression like symptoms (Tuminello et al. 2011).

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Myers and Diener suggested that although the absence of income could be misery, the relationship between income and subjective well-being by no means should be a positive linear one (1995). In extreme economic situations, such as the Great Depression, individuals' happiness has fallen exponentially. Life changes such as deteriorating cognitive and behavioral status, as well as societal norms placed upon the elderly can create lasting effects. The effects include social withdrawal, isolation, and anhedonia, which eventually lead to mild to clinical depression (Cruwys 2014). The elderly feel subjectively older due to this loss of social support and role identity crisis. When the elderly begin losing social norms, such as their ability to drive, they perceive themselves as a societal burden and create a loss of independence (Pachana et al. 2016). Social isolation and social loss, as well as other factors, influence depression and thus the social identity of an individual. This culmination of factors creates a loss of personal control and role relevance, with the reaction being frustration, denial, and overall unhappiness (Pachana et al. 2016). The general consensus explaining why the elderly appear happier suggests that physical ailments cause mortality before the elderly age (65) begins (Lafee 2016). Ross and Mirowsky also researched age and the balance of emotions, finding that levels of depression, anxiety, and anger can also be explained among the elderly via work, family, health and personal control levels through aging (2008).

A third approach is that the effect of age on happiness is nonlinear or that happiness rises and falls depending on age. Yang (2008) found a nonlinear effect of age on happiness. Fritjers and Beaton's (2012) research found a curvilinear pattern to happiness throughout

life. Oaklander's (2016) research showed more of a wave-like pattern from ages 20 to 60 rather than a U-shaped pattern mentioned. Hsieh (1995) found a positive nonlinear effect of income and a curvilinear effect of age on happiness. The UK Office of National Statistics reported in 2015 that individuals aged 20 and 40-50 score progressively lower in measures of happiness, but after the middle years of their life, happiness becomes steadily greater until it levels off at 70 (Warr 2015).

Finally, a fourth argument is that age has no effect on happiness. This older argument is mostly held by psychologists (Cantril 1965; Dear, Henderson, and Korten 2002; Palmore and Luikart 1972). However, no much empirical evidence has been provided to back up this argument.

Limitations to the aforementioned studies are multi-dimensional. The existing research has not considered the moderating effects of health status and economic status on happiness. Also, various patterns of nonlinear effects of age on happiness have been reported and therefore require further testing and verification. Additionally, the bulk of studies are based on a small or non-representative sample or a single nation/state (Gerdtham and Johannesson 2001; Palemore and Luikart 1972; Ross and Mirowsky 2008; Warr 2015).

Hypotheses

This study tests three hypotheses that examine the effect of age on happiness contingent upon people's economic conditions and health conditions, and the nonlinear

effect of age on happiness over life time. First, I hypothesize that happiness of older people depends on their health conditions. Many senior citizens struggle with declining health that can completely alter not only their state of mind but also their daily lives. Biological, social and psychological issues can cause an individual's attitude on life change. Illness and functional impairment can cause depression (Blazer and Hybels 2005). Health issues can be spurred from psychological issues such as dementia. Though it can affect all ages, stressful life events such as bereavement and life responsibility shifts create a significant risk of habitual illness in the elderly (Blazer and Hybels 2005:6). Research shows that "the increasing health problems and loss of important social relationships through mortality with increasing age lead to predictions of a decrease in quality of life over the life course" (Yang 2008:205). On the other hand, those elderly with stable health conditions are able to have a more positive outlook on aging. Other factors such as supplemental health insurance and prescription care, as well as physical mobility for exercise, make those with stable health conditions healthier and improve health's effect on happiness.

My second hypothesis is that happiness of older people depends on their economic conditions. Economic status must also be considered because it can affect individuals' life conditions and therefore happiness. Those that live in poverty or lower economic status have poor living conditions, leading to physical, mental, and premature mortality issues (WHO 2010). A lack of economic resources also limits access to sufficient healthcare. Because of these reasons, economic status can help or hinder someone's feeling about life. According to Holder (2017), money can buy happiness through its ability to increase

leisure time for quality life experiences with other like-minded individuals. In contrast, the elderly with stable or substantial income have access to better living conditions, better doctors and hospitals, access to physical trainers, and an overall better quality of life.

Finally, I hypothesize that the effect of age on happiness is nonlinear. Young people are generally very happy because they do not have too many things to worry about. Once they enter adulthood and gain independence from their parents, life stressors will increase, and happiness will decline. Life stressors lessen as individuals age; thus, the elderly will become happier since they are freer from responsibilities.

CHAPTER III

DATA AND METHODS

This chapter first describes the data used in this research. This is followed by the depiction of variables and measurements, including the coding for dependent, independent, and control variables. The final section discusses the methods of analysis.

Data

The data for this study come from the NORC General Social Surveys (GSS) 1972 to 2016. Housed by the University of Chicago, the GSS gathers data on social issues and trends in American society. The sample included respondents aged 18 or older. I restricted the analysis to the respondents who provided a valid answer to the question on my dependent variable, happiness. All data were weighted so that the results can be generalized to the population. After weighting and restricting the data, the sample size was 57,523 respondents.

One advantage of the data is that the use of the GSS allows a generalization of findings to the population, as it is a random sample from the population. Another advantage is that the GSS contains many demographic and socioeconomic variables (e.g., income, sex, education, race) that have potential impact on happiness. Additionally, a large sample size enables reliable statistical estimates.

Limitations of the data must be acknowledged. While income is a good indicator of economic conditions, other indicators of economic conditions that could potentially

influence happiness such as wealth and retirement accounts are not accessible from the

GSS. Other individual-level potential predictors of happiness such as important life

events (e.g., promotion, loss of job, death in the family) are also unavailable.

Furthermore, some macro-level structural determinants of happiness (e.g., welfare

system) are not available in the GSS as well. All of these may account for unexplained

variances in happiness.

Variables and Measurements

The dependent variable is happiness (HAPPY), which comes from the GSS survey

question: "Taken all together, how would you say things are these days- would you say

that you are very happy, pretty happy or not too happy?" Happiness is an ordinal variable

with three categories: 1= *Very happy*, 2 = *Pretty happy*, and 3 = *Not too happy*. This

variable was then reverse recoded so that a higher value indicates a higher degree of

happiness.

The independent variable is age, which is a ratio variable measured in continuous

years, ranging from 18 to 89 or more. To test my hypotheses, I measure age in two different

ways. First, to test the effects of interaction, I created two dummy variables for age with

youth (18-29 years) as the reference category: middle-agers (30-64 years) and elderly (65-

88+ years). Second, to test the nonlinear effect of age, I used the ratio variable age and

created a quadratic term age^2.

My control variables include economic status, health status, marital status, sex,

education, race, religious attendance, work status, number of children, year, and cohort as

these variables have been found to possibly affect happiness (Holder 2017; Oaklander 2016; Sutin 2013; Yang 2008). Income is used to measure economic status. Income is defined as "Inflation-adjusted personal income." Income is divided by 1,000 to show constant dollars in $1,000.

Health status is measured by self-reported health, which is based on the following question: "Would you say your own health, in general, is excellent, good, fair, or poor?" Health is an ordinal variable with four categories: 1 = *Excellent*, 2 = *Good*, 3 = *Fair*, and 4 = *Poor*. The variable is reverse recoded so that a higher value indicates a better health.

Marital status is defined by the question: "Are you currently married, widowed, divorced, separated, or have you never been married?" Marital status has five answer categories: 1 = *Married*, 2 = *Widowed*, 3 = *Divorced*, 4 = *Separated*, and 5 = *Never married*. This variable is dummy coded with 1 for currently married and 0 for not currently married (never married/divorced/separated/widowed).

Religious attendance is defined by the question: "How often do you attend religious services?" Religious attendance has 9 answer categories: 1 = *Never*, 2 = *Less than once a year*, 3 = *About once or twice a year*, 4 = *Several times a year*, 5 = *About once a month*, 6 = *2-3 times a month*, 7 = *Nearly every week*, 8 = *Every week*, and 9 = *Several times a week*.

Work status is defined by the question: "Last week were you working full time, part time, going to school, keeping house, or what?" Work status has 7 answer categories: 1 = *Full Time*, 2 = *Part Time*, 3 = *Job but not at work illness/vacation/strike*, 4 = *Unemployed*,

laid off, looking for work, 5 = *Retired*, 6 = *In school*, 7 = *Keeping house*, and 8 = *Other*. Several dummy variables were created for full time, part time, retired, and all other, with unemployed as the reference category.

Number of children is a ratio variable ranging from 0 to 8 or more. Sex is a dummy variable coded 1 for male and 0 for female. Two dummy variables were created for race with white as the reference category: black and other race. Education is a ratio variable with 20 categories ranging from no schooling to 20 years of schooling.

A series of dummy variables for year was created in order to test the period effect, using 1972 as the reference category. Each year dummy variable was dummy coded 1 for the designated year (e.g., 1973) and 0 for all other years.

In order to detect generational differences in happiness, a number of dummy variables were recoded using the cohort variable: G.I. Generation (1924 or earlier), Silent Generation (1925-1945), Baby Boomers (1946-1964), Generation X (1965-1979), Millennials (1980-1994), and iGen (1995-2012) (McCrindle 2014:56).

To test the effect of interaction between age categories and health status on happiness, I created two cross-product terms: health x middle age, and health x elderly. To test the effect of interaction between age categories and economic status on happiness, I created two interaction variables: income x middle age, and income x elderly.

Methods of Data Analysis

Ideally, ordinal regression should have been used in this study, because the dependent variable is ordinal. However, the parallel line assumption was not met. Hence, I dummy coded the dependent variable with 1 indicating "Happy," including "Pretty happy" and "Very happy," and 0 denoting "Not too happy," and I then used logistic regression for this dichotomous dependent variable.

I constructed five logistic regression models to test hypotheses 1 and 2. Model 1 includes two dummy variables for age: middle-agers and elderly, with youth as the reference category. Model 2 adds socioeconomic variables to Model 1. Model 3 adds generational cohorts to Model 2. Model 4 adds the dummy variables for year to Model 3. Model 5 adds four interaction terms to Model 4: health x middle-agers, health x elderly, income x middle-agers, and income x elderly.

I tested five additional logistic regression models to test hypothesis 3. In Model 1, happiness is regressed on age. Model 2 adds the nonlinear term age^2 to Model 1. Model 3 adds all socioeconomic variables to Model 2. Model 4 adds generational cohort variables to Model 3. Model 5 adds dummy variables for year to Model 4.

CHAPTER IV

RESULTS

This chapter reports the results of this study. The chapter first presents the results of descriptive analysis. The bulk of the chapter is then devoted to the findings of logistic regression analyses pertinent to the three hypotheses about the effect of age on happiness moderated by health and economic conditions and the nonlinear effect of age on happiness. The effects of cohort, period, and other control variables on happiness are reported.

Descriptive Analysis

The means and standard deviations of the variables used in analysis are presented in Table 1. The dependent variable, happiness, had a mean of 2, which indicated that on average the respondents were pretty happy. Of the respondents, 55.4 percent were pretty happy, 33 percent were very happy, and 11.6 percent were not too happy. Of all of the respondents, 23.5 percent were considered youth, 61.4 percent fell into the middle-ager category, and 15.1 percent were elderly.

The control variables include: economic status, health status, marital status, number of children, race, sex, education, religious attendance, work status, generational cohort, and year. The health condition of the respondents had a median of 3, which indicated good health. Of the respondents, 45.4 percent reported they were in good health, 30.8 percent in excellent health, 18.5 percent in fair health, and 5.2 percent in poor health. The income

variable, which is measured on a continuous scale, shows the average income of the respondents was $18,810 with a standard deviation of $29,557. The marital status of the respondents showed 60.4 percent currently married and 39.6 percent not currently married (never married/divorced/separated/widowed). On average, the respondents had two children. Of the respondents, 81 percent were white, while 13.4 percent were black and 5.7 percent were other races. The sex of the respondents was reported as 54.2 percent female versus 45.8 percent male. The respondents on average had a slightly more than high school education. The respondents on average attended religious services several times a year. In regards to work status, about half of the respondents worked full time, 11 percent worked part time, 11.8 percent retired, 3.5 percent unemployed, and 23.8 percent belonged to other categories, including in school. Generationally, 13.8 percent of the respondents were from the GI Generation, 24.8 percent for the Silent Generation, 37.3 percent were Baby Boomers, 28 percent were GenXers, 31.6 percent were Millennials, and 6.4 percent were iGen. From 1972 to 1993, each year, the respondents made up around 2-3 percent of the pooled sample. Since 1994, the yearly proportion increased to around 5 percent except for 2002-2004 and 2008-2014.

Table 1. Means and Standard Deviations (SD) of Variables Used in the Analysis, U.S. Adults, GSS 1972-2016

Variable	Mean	SD
Dependent Variable		
General Happiness	2.213	.633
Independent Variable		
Age		
Youth (18-29)	.235	.424
Middle-agers (30-64)	.614	.487
Elderly (65+)	.151	.358
Control Variables		
Health Condition		
Excellent	.308	.838
Good	.454	.838
Fair	.185	.838
Poor	.052	.838
Income	18,810	29,557
Marital Status		
Currently Married	.604	.489
Not Currently Married	.396	.489
Number of Children	2.000	1.810
Race		
White	.810	.393
Black	.134	.342
Other	.057	.231
Sex		
Female	.542	.498
Male	.458	.498
Education	12.79	3.13
Religious Attendance	3.82	2.72
Work Status		
Full Time	.499	.500
Part Time	.110	.313
Retired	.118	.323
Unemployed	.035	.183
All Other	.238	.453
Generational Cohort		
GI	.138	.345

Table 1. (Continued)

Silent	.248	.432
Baby Boom	.373	.484
GenX	.280	.449
Millennial	.316	.465
iGen	.064	.245
Time Period		
1972	.028	.164
1973	.026	.159
1974	.026	.158
1975	.026	.158
1976	.026	.159
1977	.027	.160
1978	.026	.160
1980	.025	.157
1982	.032	.176
1983	.027	.163
1984	.025	.156
1985	.027	.161
1986	.025	.157
1987	.031	.173
1988	.026	.156
1989	.027	.161
1990	.024	.152
1991	.026	.159
1993	.028	.164
1994	.052	.221
1996	.050	.218
1998	.049	.215
2000	.048	.214
2002	.024	.152
2004	.023	.150
2006	.052	.222
2008	.035	.184
2010	.035	.185
2012	.034	.181
2014	.044	.205
2016	.050	.217

Logistic Regression Analyses

Table 2 presents the results of five logistic regression models predicting happiness with the purpose of testing hypotheses 1 and 2. The model fit statistics are shown at the bottom of the table. The smaller the -2 log likelihood, the better the fit of the model; a higher model χ^2 indicates a better fit. All five models are good models because the models χ^2's are all statistically significant at the 0.001 level. The -2 log likelihoods and model χ^2's indicate that each more complex model fits the data better than its simpler model. The pseudo R^2's confirm this conclusion. Model 5 is the best-fitting model and explains about 12 percent of the variance in the probability of happiness.

Differences in Happiness among Age Categories

As illustrated in Model 1, age does not have a significant effect on happiness because the coefficients for the two dummy variables for age are not statistically significant at the .05 level. The middle-agers and the elderly were not significantly different from the youth in happiness.

Model 2 shows that after adding demographic and socioeconomic variables, the coefficient for middle-agers becomes statistically significant, but the coefficient for the elderly is not significant at the .05 level. The results indicate that the middle-agers were less happy than the youth, but the elderly were not significantly different from the youth.

Model 3 displays that after generational cohort variables are added to the model the dummy variables for both elderly and middle-agers gain statistical significance at least at

the .05 level. The middle-agers were less happy than the youth, while the elderly are happier than the youth.

Model 4 is the full model, including dummy variables for year. The results for the age dummy variables are similar to those in Model 3. The odds ratios indicate that the middle-agers were 13.1 percent less happy ($.869 - 1 = -.131$) than the youth, while the elderly were 20 percent happier ($1.2 - 1 = .20$) than the youth.

Model 5 in Table 2 further shows that the interaction effects between health and age categories on happiness are statistically significant. Figure 1, based on calculations using the coefficients in Model 5 (B for youth = .176, B for middle-agers = -.009, and B for Elderly = -.056)[1], displays that the effect of health status on happiness was greatest for the youth, but smallest for the elderly and somewhat in between for the middle-agers. Figure 1 also suggests that with the same level of health, the elderly were much less happy than the youth and middle-agers. These results are consistent with Hypothesis 1.

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[1] The formulas for calculating the B's for different age categories are as follows:
B for Youth   = .176 health status - .009 (0) x health status -.056 (0) x health status = .176 health status
B for Middle-agers = .176 health status - .009 (1) x health status -.056 (0) x health status = .167 health status
B for Elderly   = .176 health status - .009 (0) x health status -.056 (1) x health status = .120 health status

Table 2. Logistic Regression Estimates (Standard Errors in Parentheses) Predicting Happiness with Interaction Variables, U.S. Adults, GSS 1972-2016

Predictor	Model 1		Model 2		Model 3		Model 4		Model 5	
	B	Odds Ratio	B	Odds Ratio	B	Odds Ratio	B	Odds Ratio	B	Odds Ratio
Constant	2.000*** (.027)	7.390	-1.472*** (.109)	.229	-1.512*** (.122)	.599	-1.145*** (.142)	.318	-2.376*** (.179)	.301
Age (reference=Youth)										
Middle-agers (30-64)	.042 (.031)	1.043	-.213*** (.043)	.808	-.136** (.050)	.873	-.140* (.051)	.869	-.069** (.073)	.934
Elderly (65+)	.024 (.043)	1.025	.118 (.069)	1.125	.223* (.084)	1.250	.214* (.085)	1.239	.224*** (.105)	1.251
Health Status (4 point scale)			.615*** (.019)	1.850	.126*** (.009)	1.135	.189*** (.010)	1.208	.176*** (.019)	1.192
Income (in $1,000)			.006*** (.001)	1.006	.009*** (.001)	1.009	.008*** (.001)	1.008	.015*** (.002)	1.015
Marital Status (currently married)			.858*** (.035)	2.357	.894*** (.030)	2.445	.914*** (.031)	2.494	.915*** (.031)	2.496
Number of Children			-.026** (.009)	.974	-.028** (.008)	.973	-.026** (.010)	.974	-.026** (.008)	.975
Race (reference= White)										
Black			-.578*** (.040)	.561	-.566*** (.035)	.568	-.554*** (.036)	.575	-.551*** (.036)	.577
Other			-.137** (.066)	.872	-.229** (.055)	.795	-.257*** (.057)	.774	-.256** (.057)	.774
Sex (Male)			-.157*** (.035)	.855	-.181*** (.030)	.835	-.160*** (.030)	.852	-.160*** (.030)	.852
Education			.040*** (.006)	1.041	.071*** (.005)	1.074	.066*** (.005)	1.068	.066*** (.005)	1.069
Religious Attendance			.059*** (.006)	1.061	.072*** (.005)	1.074	.072*** (.005)	1.068	.072*** (.005)	1.074

Table 2. (Continued)

	Model 1		Model 2		Model 3		Model 4	
Work Status (reference=Unemployed)								
Full Time	.886*** (.067)	2.426	.914*** (.057)	2.494	.908*** (.058)	2.480	.900*** (.058)	2.460
Part Time	.778*** (.078)	2.176	.777*** (.066)	2.176	.758*** (.067)	2.133	.760*** (.067)	2.138
Retired	1.070*** (.088)	2.916	.876*** (.076)	2.402	.858*** (.076)	2.359	.848*** (.077)	2.335
All Other	.778*** (.070)	2.178	.650*** (.060)	1.916	.655*** (.060)	1.926	.659*** (.060)	1.933
Generational Cohort (reference=GI)								
Silent			-.023 (.034)	.977	-.027 (.035)	.974	-.022 (.035)	.978
Baby Boom			-.023 (.072)	.977	-.005 (.072)	.995	.001 (.073)	1.001
GenX			-.018 (.084)	.982	-.020 (.084)	.981	-.011 (.085)	.989
Millennial			.147 (.088)	1.158	.361 (.125)	1.140	.140** (.089)	1.150
iGen			.515*** (.107)	1.674	.497*** (.108)	1.644	.561*** (.110)	1.752
Time Period (reference=1972)								
1973					.434*** (.107)	1.544	.434*** (.107)	1.543
1974					.252** (.108)	1.287	.239** (.108)	1.271
1975					.239** (.107)	1.270	.225** (.107)	1.252

Table 2. (Continued)

	Model 1		Model 2		Model 3		Model 4	
1976					.330*** (.108)	1.391	.316*** (.108)	1.372
1977					.426*** (.110)	1.531	.498*** (.113)	1.508
1978					1.235***	3.439	1.217***	3.377

			(.122)	
1980			.308***	1.361
			(.109)	
1982			.397***	1.487
			(.100)	
1983			.853***	2.346
			(.111)	
1984			.367***	1.443
			(.111)	
1985			.491***	1.634
			(.112)	
1986			1.089***	2.970
			(.118)	
1987			.422***	1.526
			(.103)	
1988			1.003***	2.725
			(.122)	
1989			.874***	2.397
			(.118)	
1990			1.034***	2.811
			(.127)	
1991			.825***	2.281
			(.117)	
1993			.754***	2.126
			(.114)	
1994			.594***	1.811
			(.094)	
1996			.580***	1.787
			(.095)	
1998			.476***	1.609
			(.095)	
2000			.756***	2.130
			(.098)	
2002			.685***	1.984
			(.115)	
2004			.541**	1.718
			(.115)	
2006			.667***	1.948
			(.095)	
2008			.423***	1.527
			(.099)	

(.122)		(.122)		
.291***	1.338			
(.110)				
.382***	1.465			
(.101)				
.833***	2.301			
(.111)				
.356***	1.427			
(.111)				
.478***	1.614			
(.112)				
1.072***	2.920			
(.118)				
.407***	1.502			
(.103)				
.988***	2.687			
(.122)				
.855***	2.352			
(.118)				
1.017***	2.765			
(.127)				
.811***	2.250			
(.117)				
.741***	2.098			
(.114)				
.581***	1.788			
(.094)				
.567***	1.762			
(.095)				
.462***	1.588			
(.095)				
.741***	2.098			
(.098)				
.672***	1.958			
(.115)				
.530***	1.698			
(.115)				
.653***	1.922			
(.095)				
.410***	1.507			
(.099)				

Table 2. (Continued)

|							
2010				.564***	1.758	.554***	1.740
				(.099)		(.100)	
2012				*.632****	*1.881*	*.624****	*1.867*
				(.102)		*(.102)*	
2014				.660***	1.936	.653***	1.921
				(.097)		(.098)	
2016				.505***	1.657	.492***	1.636
				(.093)		(.093)	
Interactions							
Health x Middle-ager						-.009**	1.009
						(.021)	
Health x Elderly						-.056**	1.057
						(.030)	
Income x Middle-ager						-.008**	.992
						(.003)	
Income x Elderly						-.011*	.989
						(.004)	
-2 log likelihood	41,346	37,777	37,724	37,453		37,437	
Model χ²	1.852***	3,329***	3,382***	3,654***		3,669***	
Pseudo R²	.000	.110	.112	.121		.122	
Degrees of Freedom	2	15	20	47		54	
N	57,523	57,251	57,250	57,250		57,250	

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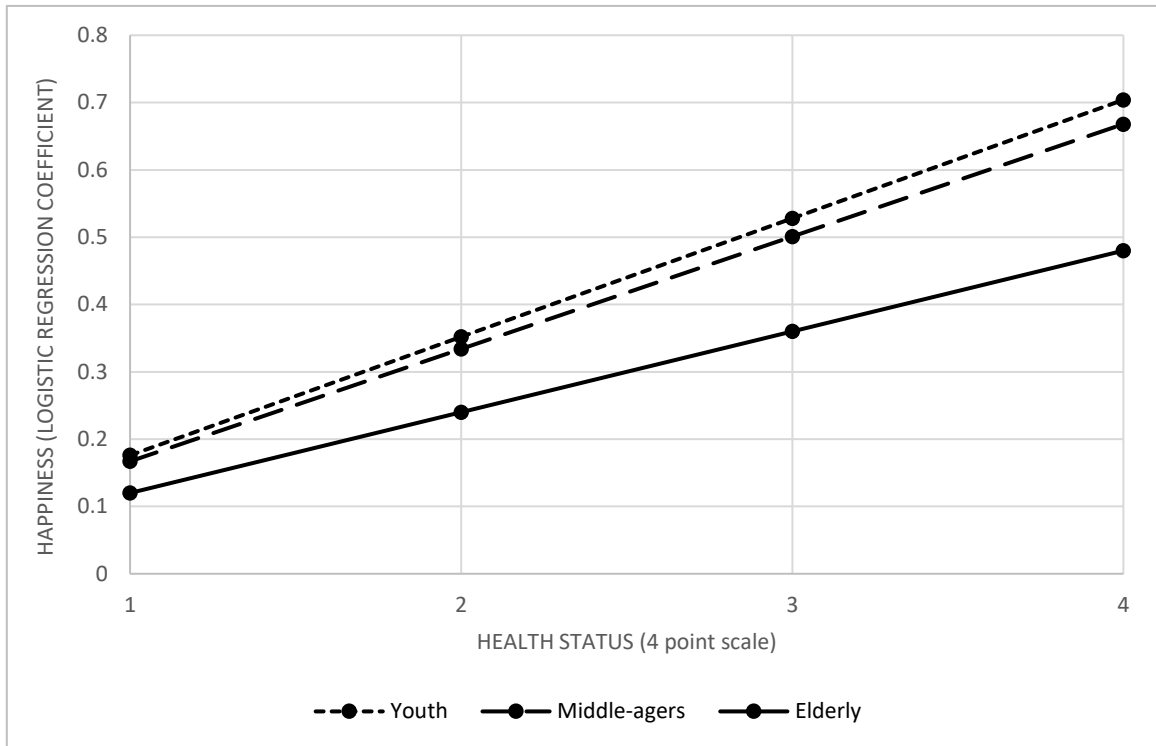
Figure 1. Effects of Health Status on Predicted Happiness by Age Categories,

U.S. Adults, 1972-2016

Model 5 in Table 2 also shows that the interaction effects between age and income on happiness are statistically significant. Figure 2, based on calculations using the coefficients in Model 5 (B for youth = .015, B for middle-agers = -.008, and B for Elderly = -.011)]², shows that for each $1000 increase in income, the odds of happiness for youth increase by 1.5 percent while the odds of happiness for middle-agers increase by 0.7 percent and the odds of happiness for elderly increase by 0.4 percent. Hence, the effect of income on happiness was greatest for youth, somewhat in-between for the middle-agers, and least for the elderly. Figure 2 also shows that with the same level of income, the youth were most happy, followed by the middle-agers, and the elderly were least happy. These results confirm Hypothesis 2.

---

² The formulas for calculating the B's for different age categories are as follows:
B for Youth   = .015 income - .008 (0) x income - .011 (0) x income = .015 income
B for Middle-agers = .015 income - .008 (1) x income - .011 (0) x income = .007 income
B for Elderly   = .015 income - .008 (0) x income - .011 (1) x income = .004 income
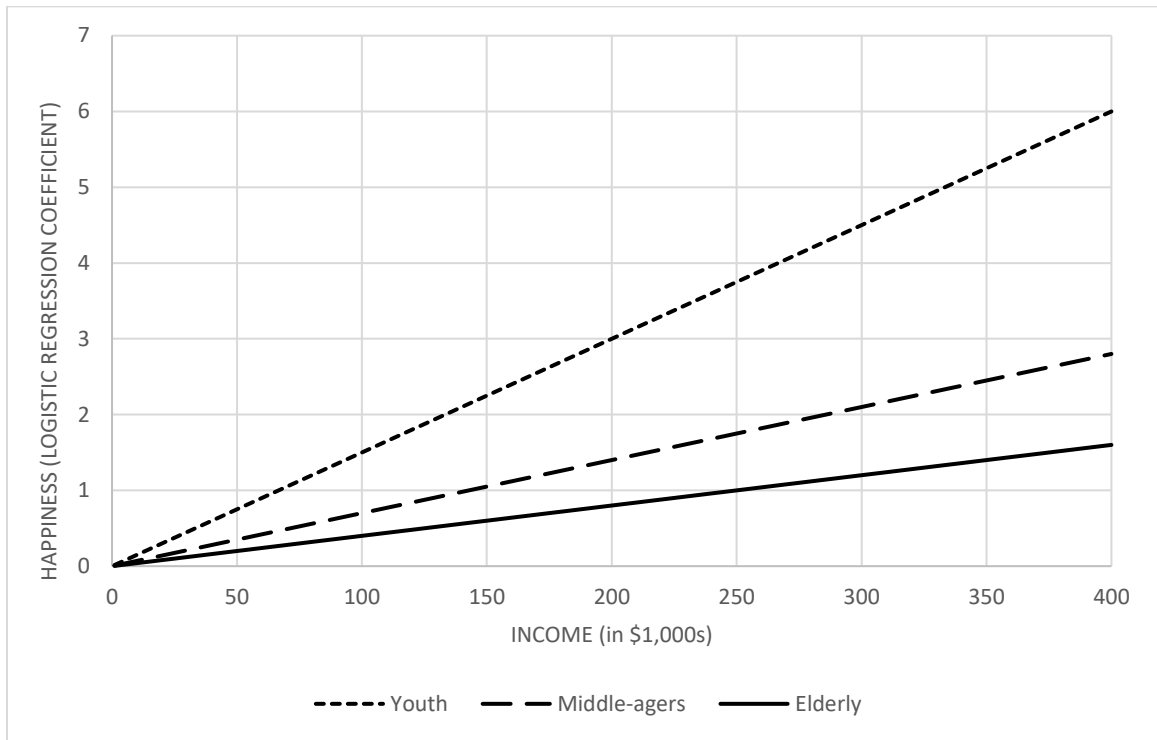
Figure 2. Effects of Income on Predicted Happiness by Age Categories,
U.S. Adults, 1972-2016

Nonlinear Effect of Age

Table 3 shows the results of five logistic regression models predicting happiness with the purpose of testing hypothesis 3. The model fit statistics indicate that all five models are good models because the models χ^2's are all statistically significant at the 0.001 level. The -2 log likelihoods, model χ^2's, and pseudo R^2's all indicate that each more complex model fits the data better than its simpler model. Model 5 is the best-fitting model and explains about 12 percent of the variance in the probability of happiness.

Model 1 reveals that age is not a significant predictor of happiness by itself. This non-effect is proven to be spurious in Model 2, because adding the quadratic term renders both age and age^2 statistically significant at the .01 level. The results indicate that age has a nonlinear effect on happiness, but the signs for both the linear term and the square term depict a parabolic relationship, which contradicts my hypothesis. In Model 3, including demographic and socioeconomic variables reverses the parabolic pattern as the signs for both the linear term and the square term switch. Model 4 is similar to Model 3 after including generational cohort variables.

Model 5 includes dummy year variables. Figure 3, which is based on the coefficients in Model 5 of Table 3, displays that the effect of age on happiness is nonlinear, roughly like a J shape. Youth were happier than middle-agers; happiness declines as people age; those at the age of 52 were the least happy; they then gradually regained happiness after 52, and the elderly were the happiest. These results support hypothesis 3.

Table 3. Logistic Regression Estimates Predicting Happiness with Quadratic Term, US Adults, GSS 1972-2016

Predictor	Model 1		Model 2		Model 3		Model 4		Model 5	
	B	Odds Ratio	B	Odds Ratio	B	Odds Ratio	B	Odds Ratio	B	Odds Ratio
Constant	2.070*** (.036)	7.922	1.862*** (.092)	6.434	-.814*** (.157)	.443	-.207*** (.292)	.813	-.890*** (.302)	.155
Age	-.001 (.001)	.999	.009** (.004)	1.009	-.040*** (.006)	.961	-.038*** (.010)	.962	-.037*** (.010)	.964
Age²			-.00102** (.041)	.903	.0043*** (.059)	1.538	.475*** (.093)	1.609	.463*** (.094)	1.589
Health Status (4-point scale)					.615*** (.020)	1.849	.126*** (.009)	1.135	.189*** (.010)	1.208
Income (1,000s)					.006*** (.001)	1.006	.009*** (.001)	1.009	.008*** (.001)	1.008
Marital Status (currently married)					.869*** (.035)	2.385	.899*** (.030)	2.458	.917*** (.031)	2.503
Number of Children					-.025** (.010)	.976	-.028** (.008)	.972	-.03*** (.008)	.973
Race (reference=White)										
Black					-.574*** (.040)	.563	-.564*** (.035)	.569	-.551*** (.036)	.576
Other					-.136** (.066)	.873	-.226*** (.055)	.797	-.251*** (.057)	.778
Sex (Male)					-.157*** (.035)	.855	-.179*** (.030)	.836	-.158*** (.030)	.854
Education					.041*** (.006)	1.042	.072*** (.005)	1.074	.067*** (.005)	1.069
Religious Attendance					.059*** (.006)	1.061	.072*** (.005)	1.075	.072*** (.005)	1.075
Work Status (reference=Unemployed)										
Full Time					.886*** (.067)	2.425	.913*** (.057)	2.491	.906*** (.058)	2.475
Part Time					.776*** (.078)	2.173	.781*** (.066)	2.183	.761*** (.067)	2.140

Table 3. (Continued)

	coef		coef		coef	
Retired	1.06***	2.880	.89***	2.430	.87***	2.382
	(.088)		(.075)		(.076)	
All Other	.770***	2.159	.649***	1.914	.653***	1.922
	(.070)		(.060)		(.060)	
Generational Cohort (reference=GI)						
Silent			-.021	.979	-.026	.975
			(.035)		(.035)	
Baby Boom			.182	1.199	.200**	1.221
			(.093)		(.094)	
GenX			.287***	1.332	.290**	1.337
			(.130)		(.130)	
Millennial			.470***	1.600	.470***	1.600
			(.156)		(.157)	
iGen			.772	2.164	.778***	2.178
			(.184)		(.185)	
Time Period (reference=1972)						
1973					.438***	1.549
					(.107)	
1974					.260**	1.297
					(.108)	
1975					.239**	1.270
					(.107)	
1976					.327***	1.387
					(.108)	
1977					.429***	1.536
					(.110)	
1978					1.241***	2.459
					(.122)	
1980					.308**	1.361
					(.109)	
1982					.396***	1.486
					(.100)	
1983					.855***	2.352
					(.111)	
1984					.368***	1.445
					(.111)	
1985					.489***	1.630
					(.112)	

Table 3. (Continued)

1986	.1.088***	1.967
	(.118)	
1987	.421***	1.523
	(.103)	
1988	1.00***	2.718
	(.122)	
1989	.871***	2.390
	(.118)	
1990	1.029***	2.797
	(.127)	
1991	.824***	2.280
	(.117)	
1993	.755***	2.127
	(.114)	
1994	.590***	1.805
	(.094)	
1996	.576***	1.779
	(.095)	
1998	.474***	*1.606*
	(.095)	
2000	.750***	2.118
	(.098)	
2002	.680***	1.974
	(.115)	
2004	.536***	1.709
	(.115)	
2006	.660***	1.935
	(.095)	
2008	.419***	1.520
	(.099)	
2010	.556***	1.744
	(.099)	
2012	.627***	1.871
	(.102)	
2014	.653***	1.922
	(.097)	
2016	.499***	1.647
	(.093)	

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Table 3. (Continued)

-2 log likelihood	41,347	41,341	37,750	37,726	37,455
Model χ^2	1	7	3,356	3,381	3,652
Pseudo R^2	.000	.000	.111	.112	.121
Degrees of Freedom	1	2	15	20	50
N	57,523	57,523	57,251	57,250	57,250

* $p \leq .05$ ** $p \leq .01$ *** $p \leq .001$
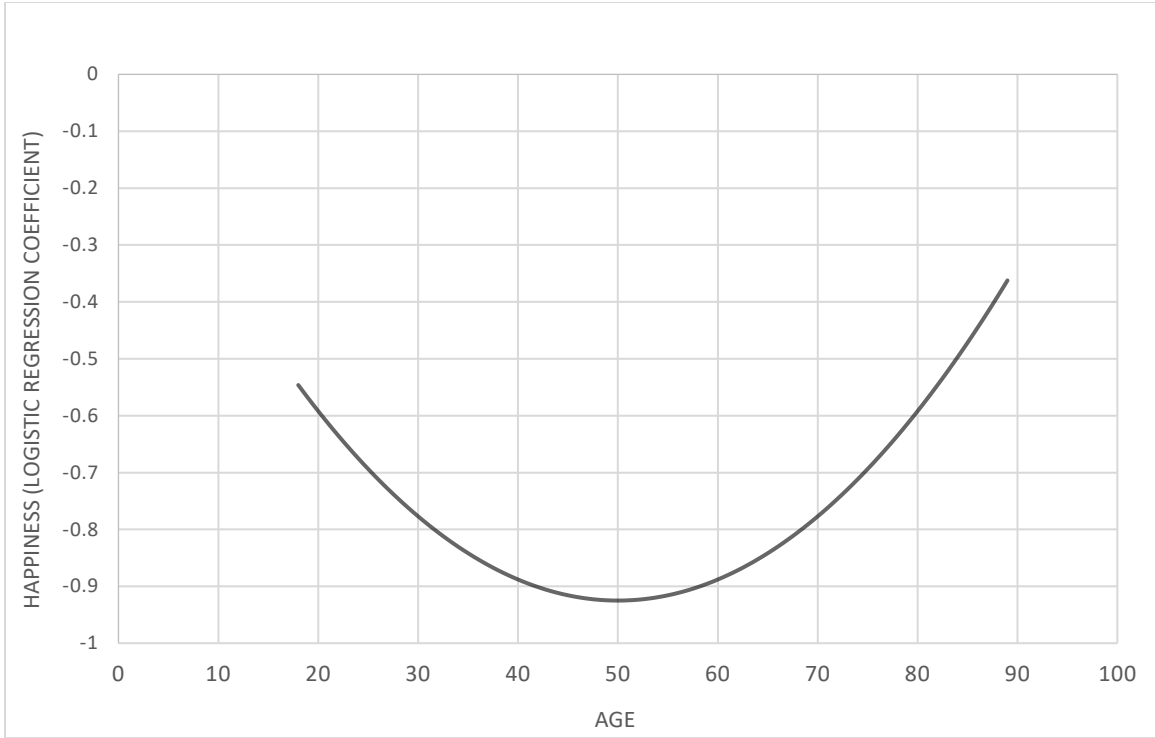
Figure 3. Effect of Age on Predicted Happiness, U.S. Adults, 1972-2016

The Cohort Effect

Model 5 in Table 3 also shows generational differences in happiness. Except for the Silent Generation, which was not significantly different from the G.I. Generation, all other generations were significantly happier than the G.I. Generation. As shown in Figure 4, the later the generations, the happier they were. For example, the odds ratios show that the Baby Boomers were 1.2 times as happy as the G.I. Generation, and the iGen was about 2.2 times as happy as the G.I. Generation.
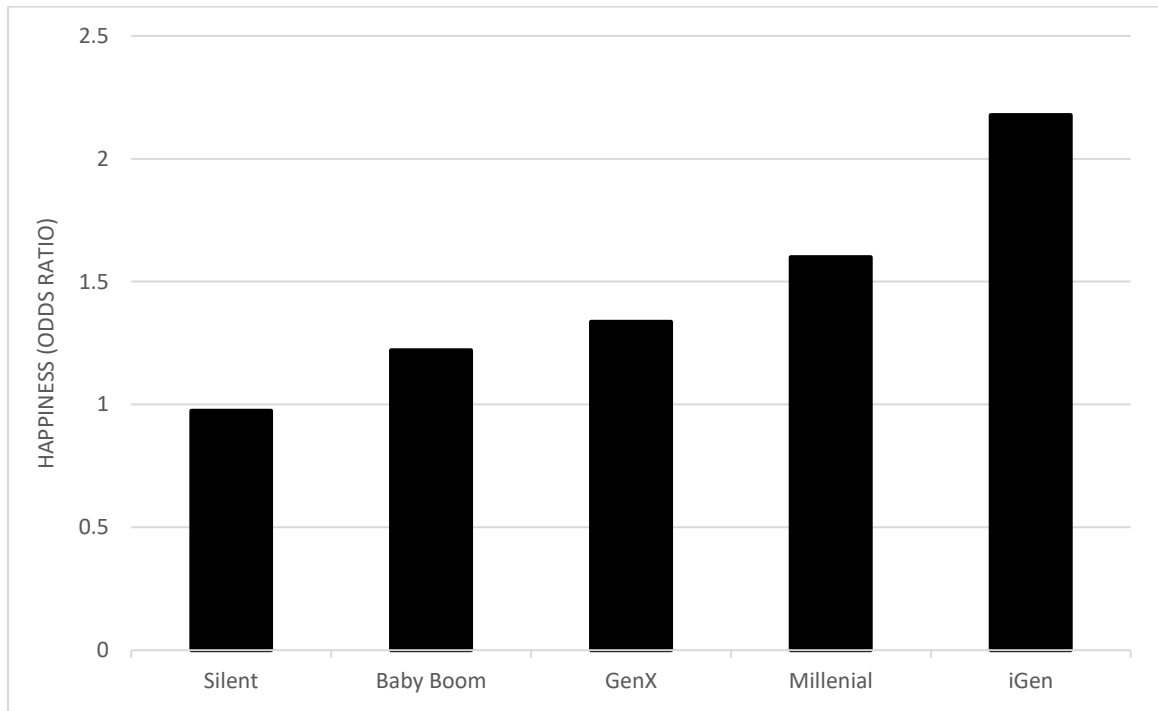
Figure 4. Generational Differences in Odds Ratios of Happiness, U.S. Adults, GSS 1972-2016

The Period Effect

Model 5 in Table 3 shows that respondents in all years after 1972 were relatively happier than respondents in 1972, but happiness has varied over time. The magnitude of such period changes was relatively small. Figure 5, based on the odds ratios in Model 5 of Table 3, proves that the effect of time on happiness is nonlinear. The figure shows that respondents in 1990 were the happiest in the past 5 decades, but happiness has declined with fluctuations after 1990.
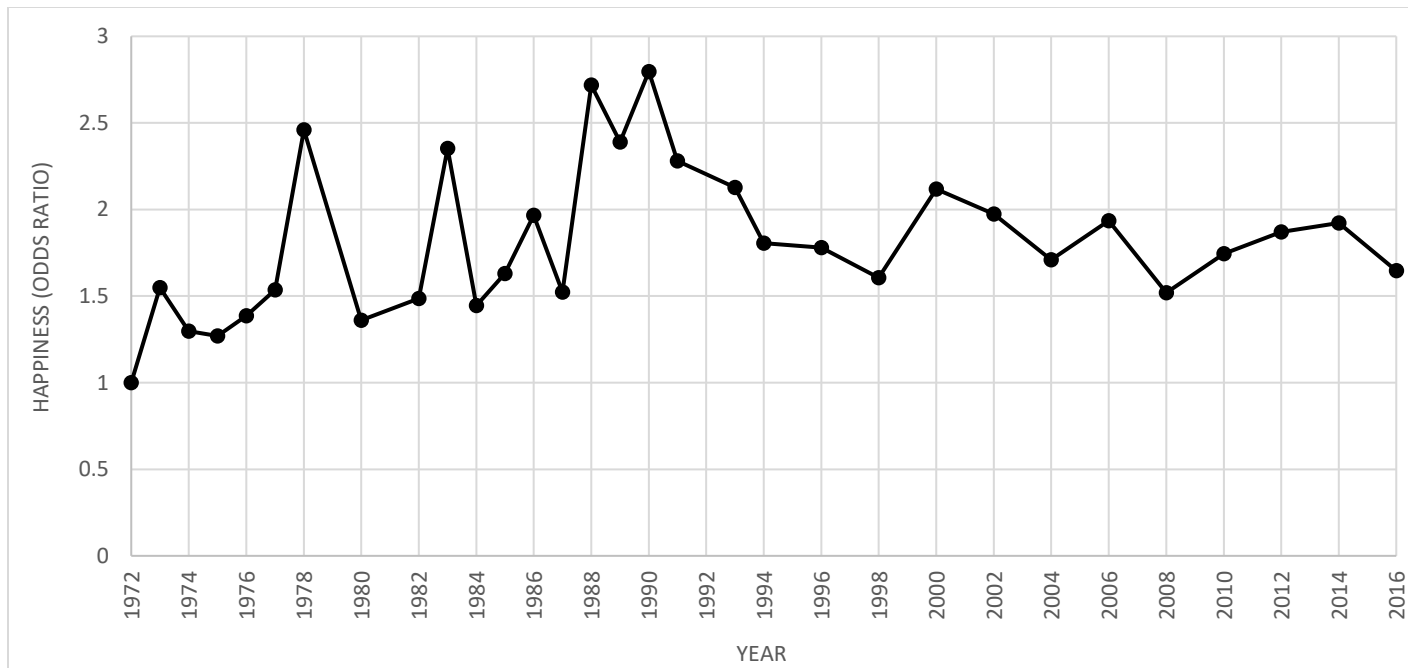
Figure 5. Effects of Period on Happiness, U.S. Adults, 1972-2016

Effects of Other Control Variables

In addition, it is useful to note the effects of other control variables on happiness: marital status, number of children, race, sex, education, religious attendance, and work status. Model 5 in Table 3 is the best fitting model to interpret coefficients for other control variables. All sociodemographic variables are statistically significant at least at the .01 level. Based on the odds ratios in Model 5, married respondents were 2.503 times as happy as unmarried ones. For each additional child, the odds of happiness were predicted to decrease by 2.7 percent. On average, blacks were about 42 percent less happy than whites, and other races were about 22 percent less happy than whites. Men were 15 percent less happy than women. For each additional year of school, the odds of happiness were predicted to increase by nearly 7 percent. For each level increase in attendance of religious services, the odds of happiness were predicted to increase 7.5 percent. Compared to the unemployed, full-time workers are 1.48 times happier, part-time workers were 1.14 times happier, people in other situations were 92 percent happier, and retirees were 1.38 times happier. Full-time workers are the happiest among all work statuses.

Summary

The most important finding of this chapter is that all three hypotheses are confirmed. With the same health condition or economic condition, the elderly were the least happy compared to middle-agers and youth. A curvilinear effect of age on happiness is also detected. The effect of period on happiness is also nonlinear with ups and downs. On the other hand, later generations tend to be happier than earlier generations, all else being equal.

CHAPTER V

CONCLUSION

This study aims to examine whether economic and health status moderates the effect of age on happiness, and whether the effect of age on happiness is nonlinear, using national survey data GSS 1972-2016. This concluding chapter summarizes the key findings of this study, discusses implications of the findings, and points to the directions for future research.

Summary of the Findings

The claims of some media reports and academic studies in recent years that older people are happier than younger people do not capture the whole story, and the reality is much more complicated. Using GSS 1972-2016, I tested three hypotheses that better reflect the real world. My first hypothesis that the happiness of older people depends on their health conditions is supported. A better health status is associated with a higher level of happiness, but a better health status increases happiness most for youth, least for the elderly, and somewhat in-between for the middle-agers. With the same level of health, the elderly were much less happy than youth and middle-agers.

My second hypothesis is also supported. The happiness of older people does depend on their economic conditions. An increase in income has the greatest positive effect on the happiness of youth, a medium positive effect on the happiness of middle-agers and the

slightest positive effect on the happiness of the elderly. With the same level of income, the elderly were much less happy than youth and middle-agers.

The finding that the effect of age on happiness is nonlinear supports my final hypothesis. I found a U-shaped trajectory of happiness with age that dipped first and then gradually rose. Youth were somewhat happier than middle-agers. Happiness declined through the middle ages, reaching the nadir at the age of 52. People regained happiness after 52.

The effect of generational cohort on happiness shows that the later the generation, the happier it is. GenX, Millennials, and iGen were significantly happier than the G.I. generation.

Happiness has varied over time, as respondents in all years after 1972 were relatively happier than those interviewed in 1972. During the span of 44 years, respondents were most happy between 1988-1990. After hitting the peak in 1990, happiness has slowly declined with only slight changes.

In addition, those who were currently married were significantly happier than those not currently married. Males were less happy than females. Blacks and other races were less happy than whites. As education increased, so did happiness. Individuals who attended religious services more frequently were happier than those who attended less frequently. People who worked full-time or part time, or had retired were at least twice as happy as the unemployed.

Implications of the Findings

The findings of this study have several significant implications for scholarly research on this topic and practices. As reviewed in Chapter 2, the most popular position is that older people are generally happier than younger people (Bratskeir 2016; Breheny et al. 2014; Isaacowitz 2012; Leland 2017; MacMillan 2018; Szalavitz 2013; Tanner 2008). To summarize this popular opinion, Northwestern University professor Claudia Haase said it best: "When we think of old age, we often think of decline and loss, but a growing body of research shows that some things actually get better as we age" (cited in Gregiore 2015). The findings of this study challenge this popular position. Although the argument that older people are happier than younger people may not be totally wrong, it does not capture the whole story because it neglects the moderating effects of health status and economic status on happiness. The results indicate that if we only look at the independent effect of age on happiness, the elderly seem to be happier than the youth as well as the middle-agers. Nonetheless, when the moderating effects of health status and economic status on happiness are taken into account, the picture is totally different.

Specifically, when the effect of interaction between health status and age is considered, the elderly are considerably less happy than the youth with the same health status (see Figure 1). This finding suggests that health is a crucial condition for the happiness of the elderly. To ensure the happiness of the elderly, we must ensure that they have good health. This finding also implies that it may not be meaningful to talk about

the happiness of the elderly without talking about their health condition. The happiness of the elderly depends on their health condition.

In the same vein, when the effect of interaction between income (as a measure of economic status) and age is taken into consideration, the elderly are much less happy than the youth and the middle-agers with the same income (see Figure 2). This finding suggests that economic condition is another critical condition for the happiness of the elderly. To be happier, the elderly must have superior economic status in order to overcome disadvantages. The happiness of the elderly is relative, contingent upon their economic condition.

The above findings have practical implications for the happiness of the elderly, and their economic wellbeing and health in particular. The results could offer policy makers useful data to more effectively address the basic needs of those elderly who have poor economic and/or health conditions.

The significant nonlinear effect of age on happiness revealed in this study confirms the results detected in several prior studies (Hsieh 1997; Warr 2015; Yang 2008) but somewhat deviates from the wave-like pattern found by Fritjers and Beaton (2012). The U shape in Figure 3 indicates that people around 80 years old will reach the level of happiness as those in their mid-20s. The nonlinear findings have significant practical implications for improving life satisfaction over the life span. A significant nonlinear relationship between age and happiness suggests a need of support for the elderly after a certain age.

The finding that each younger generation was happier than its older generation suggests that life is getting better generation by generation as living conditions and life expectancy improve. Future life is expected to be better and happier than the present and past life.

In addition, the finding that married people are happier than unmarried people suggests that marriage makes people happier on average. The result that racial minorities are less happy than whites implies that minorities are less satisfied with American life than the majority, and therefore there are inequality issues that still need to be addressed. The finding of a positive relationship between frequency of attending religious services and happiness suggests that religious service may be beneficial to happiness. A significant positive relationship between education and happiness points to the positive effect of education on happiness.

Future Research

Further research could benefit from a qualitative study, so that we can gain an in-depth understanding of who is really happier and why. A comparative in-depth analysis of happiness among the elderly, middle-agers, and youth may help understand the mechanisms of happiness across life course. Although repeated cross-sectional trend data are useful in understanding how happiness changes with age, panel data will provide ultimate evidence to assess the effect of age on happiness across life course. Finally, a cross-national analysis of happiness may add new insight into the determination process of happiness. For example, variations in broader structural factors (e.g., welfare systems,

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universal income, and universal healthcare) across nations may have differential impacts

on people's happiness in different societies.

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APPENDIX

IRB Approval Letter

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May 18, 2018

Erica Leone
3701 Grapevine Mills Pkwy Apt 327
Grapevine TX 76051

Dear Ms. Leone

I have received and approved the prospectus entitled *Are Older People Really Happier than Younger People?* for your Thesis research project.

To help reduce the last minute stress of preparing to graduate the Graduate School provides an online formatting guide, the *Formatting Navigator* (http://www.twu.edu/gradschool/forms/), as well as personal formatting assistance. Once you have a working draft set an appointment with the Senior Graduate Services Analyst to have the formatting of your paper reviewed.

Once you have successfully defended your completed Dissertation/Thesis and made any changes requested by your committee, you will submit a copy to the Graduate Reader, by the submission deadline or earlier; (See deadline dates at: http://www.twu.edu/gradschool/degree-completion/), who will review it for grammar, spelling, punctuation, and citations.

Utilizing these resources will allow for a smoother submission process.

Best wishes to you in the research and writing of your project.

Sincerely yours,

Ruth A. Johnson

Ruth A. Johnson, Ph.D.
Associate Dean of the Graduate School
Texas Woman's University
940-898-3383

mcc

cc: Phillip Yang, PhD, Major Professor, Sociology
       Celia Lo, PhD, Department Chair, Sociology