# Beyond Gender Differences in U.S. Life Cycle Happiness

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**Abstract:** We employ two decades of General Social Survey data consisting of 83 birth cohorts from 1893 to 1975 to estimate the influence of satisfaction in seven life domains (family, finances, work, health, friends, place of residence, and leisure time activity) on life-cycle happiness among men and women aged 18 to 89 years in the United States. The adult population is estimated to be happiest at age 51, and men are estimate to surpass women in happiness at age 48. Contrary to both *genetic or personality* (e.g., traditional gender role) and *access to resources* ("more is always better") explanations of happiness, but consistent with a *life-course domain-interaction adaptation* model, we find that satisfaction with family, finances, work, and health explain much of the variation in average life-cycle happiness among both men and women. Individual life domain satisfactions, furthermore, appear to track objective life circumstances fairly well – except for finances, where satisfaction is estimated to rise despite declining income in elder years – thus psychological adaptation is of limited value in explaining either average domain-specific or global subjective well-being. Lastly, we find little evidence that men or women modify the importance they place on various life domains even as circumstances within these change over the life cycle, and we estimate a positive "pure effect of age" on happiness for both genders. Rather than relying exclusively on a conventional bottom-up economic or top-down psychological approach to studying happiness, our results suggest that an integration of methods and theories from economics, psychology, sociology, and gerontology offers a more useful means for understanding gender differences in life-cycle happiness.

Key words: subjective well-being, satisfaction, utility, welfare

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During what stages of life are men and women relatively happy in the United States – during early adulthood when family formation and career development are in full swing, toward mid-life when circumstances are (or are thought to be) more stable, or during older ages when retirement, declining wealth, an "empty nest," and spousal loss are more likely? How well does satisfaction with various life domains – work, family, friendship, place of residence, hobbies, health, and finances – explain variation in the patterns of men's and women's happiness? Do men and women adapt differently to changing life circumstances as they age by shifting the relative importance they place on specific life domains? What is the "pure effect of aging" on happiness among men and women, that is, once one eliminates variation in life circumstances? These are four questions we ask in this paper. We answer them by analyzing several decades of pooled, nationally representative, cross-sectional data from the United States on self-reported overall, "global," or "context-free" happiness *and* "domain-" or "context-" specific satisfaction; and by employing a method that combines demographers' birth cohort and economists' regression analytical approaches. The analytical approach of tracing the influence of prior and changing social circumstances over the life course of individuals was introduced in the early 20th-century by the Chicago school of sociology (Thomas & Znaniecki, 1918) but remained dormant for more than four decades until being revitalized in economics (Easterlin, 1961), psychology (Schaie, 1965), and sociology (Ryder, 1965). We shall argue, furthermore, that the integration of this approach with econometric techniques to analyze the influence of satisfaction with separate life domains on overall happiness by gender in the tradition of Angus Campbell and colleagues (Campbell, 1981; Campbell, Converse, & Rodgers, 1976) offers a unique and promising approach to the study of human well-being.

Although cohort analyses have been widely used to investigate how specific health conditions and mortality change over the life course (Keyfitz & Litman, 1979; Manton & Myers, 1987; Manton & Stallard, 1982; Patrick, Palesch, Feinleib, & Brody, 1982; Patrick & Erickson, 1993) and to obviate

the possible erroneous causal interpretations emanating from cross-sectional data analysis (Lamb & Siegel, 2004), their application to the study of subjective well-being, life satisfaction, welfare, or what we here term overall human happiness has been almost nonexistent. This is surprising for at least three reasons. First, there has been a rising consensus since the 1940s that definitions of health should stretch beyond individualistic biomedical conceptualizations, that is, emphasize "a state of complete physical, mental and social well-being, and not merely the absence of disease or infirmity" (http://www.who.int/about/definition/en) even if historical trend analyses of psychological well being are more difficult to study than mortality due to data limitations (Young, 2005: 53). Second, health-related quality of life (HRQOL) research has gained popularity since the 1980s (Patrick & Erickson, 1993) and includes questions concerning self-assessed health and days spent being depressed, with emotional or mental problems, or unable to pursue one's usual activities (U.S. Centers for Disease Control and Prevention, 2000). Such definitional extensions of health as well as recent work in social epidemiology on the relationship between affective states, depression, and physical health (Carney & Freedland, 2000; Kubansky & Kawachi, 2000) suggest increasing interest in psychological well-being. Third, although we are unaware of any comprehensive demographic investigations of the individual and circumstantial or social determinants of global happiness, several researchers have studied satisfaction with (or how happiness is influence by) particular domains of life such as marriage and parenting (Marini, 1976, 1980; Waite, 1995), community or place of residence (Bach & Smith, 1977; Hagerty, 2000; Helliwell & Putnam, 2004; Landale & Guest, 1985; McHugh, Gober, & Reid, 1990; Speare Jr., 1974), and health measured as individual body weight (Ball, Crawford, & Kenardy, 2004). In short, scholarly interest in how men and women adapt to these and other changing life events is not new (Holmes & Rahe, 1967), but research has only recently brought these various areas together to assess their possible impact on the study of happiness.

Conclusions about the relative contributions of psychological adaptive ability determined by one's biology or personality (formed during early childhood) and of life circumstances to overall happiness; therefore, have been drawn primarily from cross-sectional and limited longitudinal studies of no more than nine years (Costa Jr. et al., 1987). Although analyses of data at a point in time or over particular life cycle stages are likely to yield results that are of limited value for generalizing about trends in or the sources of happiness over the life course, the main message from such studies is that the trend in affect balance is flat and therefore adaptation back to some psychological set point despite changing life circumstances is often complete. Importantly, the only published panel study that follows the same persons for a longer period of time (22 years) finds an inverted-U-shaped life satisfaction curve that peaks at age 65 (Mroczek & Spiro III, 2005). Only men, however, are included in this study's sample.

Below we draw upon a "multi-level life course model" of adaptation to aging from sociology, which emphasizes the need to study the effects of gender within a framework of individuals linked to their socio-historical life experiences (Hatch, 2000), and employ a recently developed "synthetic panel" model (Easterlin, 2005) that analyzes annual and bi-annual random samples of adults from the same birth cohort (rather than following the same individuals as they age) to estimate trends in and sources of happiness among men and women.

Our results may be summarized succinctly. First, diverging from recent work by several economists (Blanchflower & Oswald, 2004; Frey & Stutzer, 2002) indicating a U-shaped life-cycle pattern of happiness and from a genetic, personality, hedonic treadmill, or set-point model of subjective well-being (SWB) offered by leading psychologists in the field (Brickman & Campbell, 1971; Kahneman, Diener, & Schwartz, 1999) suggesting no change in happiness throughout life, we find that happiness in the United States rises for men and declines for women over the adult life cycle – producing an X-shaped graph that crosses at age 48. For all adults viewed collectively the

curve is, consistent with Easterlin's (2005) and Mroczek & Spiro III's (2005) findings, an inverted-U that peaks at age 51.

Second, much of the variation in global happiness among both men and women is explained by satisfaction with the same four domains of life – family, finances, work, and health – and although the explanatory weight of family, finances, and health are higher for women than for men, and that of work higher for men than for women, the relative rank of these to overall happiness within gender is identical.

Third, not only does satisfaction with the same four areas of life predict overall happiness fairy well for both men and women and is the rank order of these domains in terms of explanatory power the same by gender, but the relative significance of each domain's contribution to overall happiness changes very little during adulthood when satisfaction with particular domains is changing. For example, although family circumstances change throughout adulthood, the contribution of satisfaction with this area of life to one's global happiness remains fairly constant. Changing life circumstances, although partly mediated psychologically by changing aspirations and social comparison, alter one's overall sense of well-being. This, we argue, moves one beyond the two dominant dichotomous explanations in gerontology and sociology regarding adaptation to aging – traditional gender role theory (Barer, 1994) and access to economic (Morgan, 1986), health (Crimmins, Hayward, & Saito, 1996), and social support (Berkman & Syme, 1979) resources – and toward a more comprehensive perspective that views gender as a multi-dimensional social institution interacting with various other demographic characteristics (e.g., ethno-racial group, education, birth cohort) and life circumstances (e.g., family, work, physical health) over time. In short, neither socially proscribed gender roles (associated with psychologists' set-point theory) nor access to material resources (as most economists maintain) – separately or jointly – adequately explain(s) trends in happiness among men and women in the United States. Rather, examining how specific

domains of life influence happiness throughout adulthood "explicitly identifies potential sources of similarity in women's and men's lives as well as sources of difference" (Hatch, 2000: 24).

Finally, once we take life circumstances into account, the "pure" age-happiness relationship is estimated to be positive for all adults and by gender. That is, the inverted-U shaped age-happiness curve we estimate for all adults combined and the X-shaped gendered age-happiness relationship we estimate are contingent upon the levels of satisfaction people have with their financial, family, work, and health conditions. Taken together, these results support what we term a *bottom-up*, *life-course domain-interaction adaptation* model of happiness and challenge both the *top-down traditional gender role* and *bottom-up access to resources* models of happiness. Contrary to ambiguous gender role explanations of how men and women adapt to aging differently (e.g., women have better social relationships and coping skills and live longer, but are more at risk for long-term chronic illnesses and depression), the domain-interaction life course perspective adopted here offers a processual rather than a dichotomous approach wherein gender is viewed as "crucial to consider, but must be . . . grounded in social-historical context" and "in conjunction with" various other demographic characteristics (Hatch, 2000: 91)

**BACKGROUND**

**Levels of and Trends in Men's and Women's Happiness**

Conclusions concerning the relationship between gender and self-reported happiness or other measures of subjective well-being (SWB) such as life satisfaction have been ambiguous both empirically and theoretically (Hatch, 2000). Although several reviews of the determinants of context-free or global happiness find few gender differences or ignore gender altogether when considering demographic correlates (Argyle, 1990, 2001), for example, studies analyzing brain wave, experience sampling, and population-level data suggest that women in North America are happier than men, or

at least report more intense positive emotions (Inglehart, 1990; Nolen-Hoeksema & Rusting, 1999; Seidlitz & Diener, 1998; White, 1992; Wood, Rhodes, & Whelan, 1989). Although others argue the opposite (Mroczek & Kolarz, 1998), such static comparisons or short-term longitudinal studies are of limited value for understanding the determinants of life-cycle gender differences in happiness.

The gender-happiness relationship may change throughout the life cycle and over time, and recent evidence from several economists employing national-level data suggest that men's relative happiness has risen during the past several decades in the United States despite declining labor market discrimination against women and women's increasing earnings (Blanchflower & Oswald, 2004; Easterlin, 2001). Easterlin (2003b), furthermore, argues that men surpass women in happiness on average at about age 60 in the United States due to differential effects of retirement and spousal loss, but the sample he employs excludes those younger than 34 years of age. Although there is mixed evidence concerning the relative effect of retirement on men compared to women (Cummin & Henry, 1961; Easterlin, 2003b), there is a consensus that women are more likely to experience – and therefore suffer from – the loss of a spouse. Other reasons sometimes given for the possibility that men become relatively happier as they age include relatively unhealthy or unhappy men dying earlier (Rahman, Strauss, Gertler, Ashley, & Fox, 1994), men's lower risk of experiencing chronic illness and greater access to economic resources (Pearlin & Schooler, 1978; Umberson, Wortman, & Kessler, 1992), women being more likely to be caretakers (Taylor, 2002), and the cumulative effects of female psychological impairment (Gove & Tudor, 1973). These may be offset; however, by women's better coping skills and healthier interpersonal relationships (Taylor, 2002). Indeed, there is some evidence in earlier studies that these factors may increasingly balance each other over the life

course – levels of self-reported life satisfaction or happiness among older men and women are often quite similar (Antonucci & Akiyama, 1987; Doyle & Forehand, 1984).[1]

The only recent study of which we are aware that systematically analyzes overall happiness in the United States over the life course provides some evidence of countervailing life satisfaction domain effects, but it does not analyze men and women separately (Easterlin, 2005).


**Theories of How Aging Influences Happiness among Men and Women**

Although the etiologies of gender (Hatch, 2000; Lorber, 1994; West & Zimmerman, 1987) and SWB are hotly contested and often separate fields of scholarly debate spanning multiple disciplines (Diener, Suh, Lucas, & Smith, 1999; Easterlin, 2003a; Fujita & Diener, 2005; Keyes, Shmotkin, & Ryff, 2002; Lucas, Clark, Georgellis, & Diener, 2003; Ryff, 1989; Ryff & Keyes, 1995; Springer & Hauser, 2005), it is increasingly acknowledged that both are influenced by individual behaviors, characteristics, past and present circumstances, and experiences. It is nonetheless analytically useful to outline two broad theories of psychological adaptation to changing life circumstances over the life course that have dominated the economics and psychology literatures, and to discuss how three sociological theories of how men and women may adapt differently as they age fit into these.

As summarized by Easterlin (2005), economists tend to view human well being as strictly contingent upon objective circumstances and employ multivariate regression analyses to test how various demographic (e.g., age, race, educational attainment), economic (e.g., employment, income, homeownership), and socio-political (e.g., citizen trust in government, government intervention, political participation) factors influence happiness (Blanchflower & Oswald, 2004; Easterlin, 2003b; Frey & Stutzer, 2002). This we term the *bottom-up theory of happiness*. It is not dichotomous in the

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[1] The idea that the body tends "to keep things the way that they are" despite changing circumstances is known more generally as "homeostasis" and is a term introduced by Harvard physiologist Walter Cannon in the early 1900s (Cannon, 1928, 1967 [1932]; Mayer, 1968: 12; McEwen & Lasley, 2002).

sense of reifying one factor (e.g., class, gender, race) as the most important determinant of happiness and investigates the interaction of multiple factors, but it fails to consider how psychological processes may mediate the impact of life circumstances on SWB. Conversely, psychologists often dismiss the effect of objective conditions on happiness and argue that "hedonic adaptation" – a psychological adjustment process resulting from one's genetic endowment or personality – regulates the effect of changing family, employment, health, and other life domains such that happiness returns to some initial homeostatic condition (Cannon, 1967 [1932]: 19-26) or set point (Brickman & Campbell, 1971; Kahneman et al., 1999; Myers & Diener, 1995; Steel & Ones, 2002). One influential study of genetically identical and same-sex fraternal twins, for instance, proclaims "it may be that trying to be happier is as futile as trying to be taller and therefore is counterproductive" (Lykken & Tellegen, 1996: 189). This we shall term *top-down theory*, and while there has been some examples of integrating lessons from bottom-up and top-down theories by some psychologists (Fujita & Diener, 2005; Headey & Wearing, 1989; Lucas et al., 2003; Lucas, Clark, Georgellis, & Diener, 2004; Lykken, 1999; Mroczek & Spiro III, 2005) and economists (Easterlin, 1974, 2005; Graham, 2005; Layard, 2005; van Praag & Frijters, 1999), these two extreme classifications provide a useful analytical continuum.

Reminiscent of the first study to examine the relationship between satisfaction of particular life domains and overall life satisfaction using random national data in the United States (Campbell et al., 1976), some of the latest efforts have relaxed allegiance to either the strong bottom-up or top-down theoretical position and recognized that not all life domains are hedonically similar (Easterlin, 2005; Kahneman, Krueger, Schkade, Schwarz, & Stone, 2004). This has provided an opportunity to address the so-called Easterlin paradox (Alesina, Di Tella, & MacCulloch, 2004; Easterlin, 1995) – that is, the finding that there are diminishing returns to happiness from income – to consider other areas of life that may augment or reduce happiness, and to discuss how to create a more politically

useful metric of national well being than per capita gross national product (Abraham & Mackie, 2005; Di Tella & MacCulloch, 2005; Diener, 2000; Diener & Seligman, 2004; Robinson & Godbey, 1997: Chapter 17). Knowing which domains of life (only one of which is purely pecuniary) most influence happiness provides an opportunity to investigate possible policy interventions for increasing human well-being. Not only does happiness or satisfaction appear to be inversely related to various health risks and negative health outcomes (Ball et al., 2004; Diener, Wolsic, & Fujita, 1995; Frey & Stutzer, 2002; Konow & Earley, 2003; Pinhey, Rubinstein, & Colfax, 1997); for instance, but it has also been estimated to be positively correlated with residential sedentariness (Bach & Smith, 1977; De Jong, Chamratrithirong, & Tran, 2002; Landale & Guest, 1985; Lee, Oropesa, & Kanan, 1994; McHugh et al., 1990; Speare Jr., 1974), and healthy work and family conditions (Easterlin, 2005). In short, income appears to be an inadequate proxy for human welfare in an advance political economy such as the United States.

Academic interest in measuring human well being and its determinants systematically was initially expressed in the United States during the 1930s when various social scientists questioned a *perceived* underlying assumption of Simon Kuznet's newly developed national income accounting that absolute income fully reflects social welfare (Bennett, 1937; Duncan, 1975; Kuznets, 1941; Nordhaus & Tobin, 1973; Scitovsky, 1992 [1976]). But it was not until evidence of a secular decline in community cohesion and trust in the United States (Putnam, 2000) that researchers and policymakers once again began to take an active interest in investigating the sources of happiness.

We have already noted that the analytical approach of tracing the influence of prior and changing social circumstances over the life course of individuals had lain dormant for more than half a century before being revitalized in economics (Easterlin, 1961), psychology (Schaie, 1965), and sociology (Ryder, 1965). This influenced analyses of family life (Glick, 1977) and other specific life domains as noted above (e.g., where one lives) with some alacrity, but the recognition that the

sources of happiness may be more fully understood when controlling for individuals' personal characteristics and prior life experiences that are shared with others of a similar socioeconomic background or of the same birth cohort in addition to examining various domains of life (Allen & Pickett, 1987; Easterlin, 1987; Elder Jr., 1974; Elder Jr. & Liker, 1982; Hareven, 1978) – rather than concentrating on a single individual characteristic such as age, gender, employment, or marital status at a particular point in time – is a very recent development.

Integrating lessons from economics, demography, psychology, and sociology – we shall argue below – generates a more analytically powerful view of the determinants of men's and women's happiness. Although a life course approach is not a theory (George, 1996), its main advantages include estimating the influence of past and current life events and experiences on present outcomes and providing a conceptual frame within which one may evaluate competing theories that explicitly acknowledges "the joint significance of age, period, and cohort" (O'Rand, 1996). In the present study such a methodological approach – set under a theoretical umbrella covering  individual biological and contextual sources of well being –  enables us to estimate the relative merit of (1) *traditional gender role theory*, (2) *access to resources explanations*, and what we shall term a (3) *life-course domain-interaction adaptation model* (Easterlin, 2005; Hatch, 2000) for explaining trends in and differences between men's and women's happiness as they age (Figure 1). The first and third two views fall under a bottom-up, and the second may be placed under a top-down, theoretical perspective.


**<<< Figure 1 about Here >>>**


Although most studies of adaptation to aging in gerontology have focused on SWB broadly defined as emotional states, happiness, life satisfaction, mental and personality disorders, and

psychological distress/stress (Aneshensel, Rutter, & Lachenhruch, 1991; Mastekaasa, 1992; Pearlin & Schooler, 1978; Pearlin & Skaff, 1996) and have privileged gender-specific behavior (e.g., coping) as an explanation of adaptation to age *writ large* at a point in time or during one stage of the life cycle (Hatch, 2000), no study of which we are aware has investigated how individual demographic characteristics and satisfaction with various life domains jointly influence global happiness by gender over the entire, or at least a large portion of the, adult life-cycle.

We suspect that neither traditional gender role theory nor access to resource explanations – the two dominant approaches in gerontology – are adequate for understanding changes in men's and women's happiness over the life course. Traditional gender role theory is traceable to Talcott Parsons' idea that shared norms and values are the foundation of modern society (e.g., functionalism rather than group conflict) and views gender as the master identity cutting across and explaining outcomes in all other areas of life (Parsons, 1955). It posits, within the domain of the family for example, that women are socialized to assume socioemotional functions/roles and men to assume instrumental functions/roles, and that this is a desirable and harmonious division of household labor. The central focus is on one individual personality trait (gender) and therefore is consistent with a top-down theory of happiness.

Gender differences in access to resources explanations, by contrast, do not assume that men and women are always and everywhere socialized to take on different orientations toward various domains of life or that their personalities and interests are inherently different. Rather, people are viewed as similarly influenced by the constraints and opportunities they have (Kanter, 1977). While the former theory emphasizes the enduring influence of gender roles on happiness and downplays socioeconomic inequalities, the latter mistakenly assumes that equal access to resources will automatically generate similar levels of happiness among all men and women (Hatch, 2000).

Below we build on the synthetic cohort methodology developed by Easterlin (2005) to estimate levels of happiness among men and women in the United States throughout the adult life cycle, and how satisfaction with family, finances, work, health, friends, hobbies, and place of residence domains influence overall happiness rather than focusing solely on one's gender or access to valued resources. We do not ignore how gender and material resources affect happiness, but estimate in which domains of life men's and women's satisfaction differs and how SWB is influenced by this.

## DATA AND METHODOLOGY

### Data Source and Sample

We employ 1973-1994 General Social Survey (GSS) data, a nationally representative survey of households in the United States administered by the National Opinion Research Center (NORC) almost annually between 1972 and 1993 (not in 1979, 1981, and 1992), and biannually from 1994 to 2004 (Davis, Smith, & Marsden, 2005). Thus, our data come from 18 of the 24 available files covering a 31-year period from 1972 to 2002. The 2004 data were unavailable at the time we began our analysis, and we exclude data from 1972 and after 1993 because two variables of interest when considering the determinants of overall happiness – satisfaction with one's family and health – are missing during these years. We also develop and apply appropriate sample weights (e.g., adjusting for black over-sampling in 1982 and 1987, and the switch from quota to full probability sampling in 1975-76) to increase the likelihood that our results reflect what is true for individuals rather than households (Stephenson, 1978), and our final sample includes information regarding happiness for 30,239 respondents after dropping observations due to missing values. Specifically, 12,931 of a total 43,698 observations are lost when eliminating 1972 and 1995-2002 data, 241 are dropped due to the desire to have a sufficient number of observations in each birth cohort (at least 30), and another 241 observations had missing values for at least one variable important for our analysis. Thus, there are about 1,680 observations on average annually. All respondents are aged 18 to 89 years, and birth

cohort values (centered on 1893) range from 0 to 82. Variable definitions, samples sizes, means, and standard deviations for all variables used in our analysis are presented in Table 1.

**<<< Table 1 about Here >>>**

Values for global happiness (HAPPY) and satisfaction with one's financial situation (SATFIN) span a numeric range of two units (1-3), those for satisfaction with one's work have a range of three units (1-4), and all remaining domain satisfaction variables (SATFAM, SATHEALTH, SATFRIEND, SATPLACE, and SATHOBBY) span a range of six units (1-7). But what questions were asked to obtain these? The wording of the question for HAPPY reads "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?" The wording for SATFAM reads "For each area of life I am going to name, tell me the number that shows how much satisfaction you get from that area.

Your family life:

1) A very great deal
2) A great deal
3) Quite a bit
4) A fair amount
5) Some
6) A little
7) None

For SATHEALTH the wording is identical but "Your health and physical condition" replaces "Your family life." Like HAPPY, there are three possible responses for SATFIN and the question asks "We are interested in how people are getting along these days. So far as you and your family are concerned, would you say that you are pretty well satisfied with your present financial situation, more or less satisfied, or not satisfied at all?" SATWORK differs from the other three domain satisfaction variables that turn out to be statistically relevant for understanding men's and women's

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global happiness in two ways. First, whereas all respondents are asked about how satisfied they were with their families, finances, and health – only those currently working, temporarily not at work, or keeping house were asked "On the whole, how satisfied are you with the work you do – would you say you are very satisfied, moderately satisfied, a little dissatisfied, or very dissatisfied?" (Smith, 1990). Second, this is the only domain satisfaction question with four responses (a range of 3 units).

There is also a question in the GSS asking how satistfied respondents are with their marriages. Although this information would likely be useful for understanding variation in the happiness of people who are married, we are interested in assessing the determinants of all men and women in the United States and therefore do not consider this variable. There are also questions in 1996 which ask respondents about their emotional and spiritual states, but these are not amenable to a life-course methodological approach given that they are only asked in one year.

What is immediately obvious and on the surface striking from our descriptive statistics is that the means for HAPPY and some of the domain satisfaction variables are quite similar for men and women. The only possible exceptions are that men's satisfaction with their health and hobbies are slightly higher, and women's satisfaction with their friends and where they reside are somewhat higher. Overall, however, these differences are not large – a finding consistent with much research employing cross-sectional or short-term longitudinal data.

**Statistical Analysis of Life Domain Satisfaction and Global Happiness**
Our analysis has five steps. First, we estimate 18 ordered logit regression models and select the best fitting one for men, women, and all adults to adjust self-reported happiness and each of the seven domain satisfaction variables listed in Table 1 by birth cohort, education, and race to generate "adjusted" or what we also term "actual" life-cycle trends. We do so because older persons and those from older cohorts differ somewhat in their demographic composition (having larger

proportions of non-blacks and less educated persons), and past research has shown well-being to vary by these characteristics (Argyle, 1999; Blanchflower & Oswald, 2004; Easterlin, 2001, 2003b; Frey & Stutzer, 2002). The control for year of birth implies that people in numerous closely overlapping birth cohorts (of which there are 83) are combined to infer typical life-cycle patterns. In short, these characteristics are fixed throughout all or most of the adult life-cycle and not controlling for them would offer a distorted view of happiness trends. Second, we regress adjusted HAPPY (again using ordered logit) on the seven adjusted domain satisfaction variables to see which domains best explain variation in global happiness. Next, to assess the value of our model, we use the top four domain satisfaction variables to predict global happiness among men and women separately. Fourth, we introduce age group-domain satisfaction interaction terms into our models to estimate whether men or women adapt to changing life circumstances by switching the weight they place on family, finances, work, and health as they age as contrasted with adapting within given domains. Lastly, we derive the "pure effect of aging" on happiness by controlling not only for cohort, education, and race – but also for satisfaction across various life domains.

## RESULTS

### Life-Cycle Happiness Trend by Gender

Contrary to conventional stories of mid-life crisis, we estimate (using the parameters reported in Table 2) that men's happiness rises and women's happiness falls sharply from age 18 to 89, and for all adults taken together happiness rises somewhat from age 18 to 51 and then declines similar to how it rose during the first half of adult life (Figure 2). Specifically, happiness for all adults rises from 2.17 to 2.24 (3.5 percent) from age 18 to 51 and then falls to 2.15 (-4.6 percent) by age 89. The total decrease in happiness over the life course is a mere 0.02 or -1.1 percent on average, but it is important to keep in mind that these three small movements represent the net balance of many larger offsetting individual changes revealed in panel studies (Fujita & Diener, 2005). This inverted-

U-shaped age-happiness curve for all adults is consistent with one recent study employing the same data and methodology (Easterlin, 2005) and with another using longer-term panel data including only men (Mroczek & Spiro III, 2005), but diverges from most other studies -- those using cross-sectional data or short-term longitudinal data, or that do not adjust for the demographic characteristics we control for here (Blanchflower & Oswald, 2004; Cartensen, Pasupathi, Mayr, & Nesselroade, 2000; Frey & Stutzer, 2002; Mroczek & Kolarz, 1998; Myers, 2000).

**<<< Table 2 & Figure 2 about Here >>>**

The X-shaped happiness trend pattern among men and women suggests that men surpass women in happiness at age 48. Whereas men's happiness rises from 2.10 to 2.40 (or +15 percent spread fairly evenly) throughout adulthood, women's drops from 2.28 to 2.09 (or -9.2 percent, with 7.0 percent of this occurring after age 51). The punch line here is that men are approximately 9.0 percent less happy than women at age 18 and about 15.0 percent happier at age 89. There results are somewhat at odds with others' results. One recent study employing the same data as we but not controlling for birth cohort, for instance, reports that happiness rises with age for both men and women similarly (Blanchflower & Oswald, 2004). Another study employing the GSS data that control for 10-year birth cohorts from 1891-1940 reports results that are more consistent with ours – men surpass women in happiness toward mid-life as a result of men's rising and women's declining happiness, but the crossover age is slightly later given that respondents in the sample are aged 34 to 85 years (Easterlin, 2003b).

**Domain Satisfactions across the Life Course by Gender**

The first piece of evidence challenging a *top-down traditional gender role* view of happiness and possibly supporting a *bottom-up*, *life-course domain-interaction adaptation* model comes from the life-cycle domain satisfaction graphs reported in Figures 3 and 4, which are based on the models reported in columns 2-5 and the second and third panels of Table 2. The scales of these graphs, it should be noted, are adjusted for differences in the number of response categories.

**<<< Figures 3 & 4 about Here >>>**

If one's genetic endowment or early childhood development determined one's future SWB, then we would expect global happiness to remain relatively stable over the life course for men and women, and satisfaction with various domains of life simply to mirror this. We have already seen above in Figure 1 that the age-happiness trajectory is not flat for either men or women, and here we see that with the possible exceptions of satisfaction with heath among women (Figure 3, bottom graph) and satisfaction with work among men (Figure 4, top graph), life-cycle variation in satisfaction with most of the life domains is quite different than it is for happiness by gender. As discussed above, women's happiness declines continuously through adulthood, but satisfaction with their family situation rises until age 48 and then falls to a point only slightly below where it was when they were 18 (Figure 3, top graph). Women's satisfaction with their family's financial situations moves almost directly against satisfaction with family life by declining first and then rising after age 39. As illustrated in the top graph of Figure 4, these trends for men are similar to that of women's but more pronounced, with satisfaction with family rising more steeply until age 55 and then falling, and satisfaction with finances falling until age 33 and then rising.

Clearly, not only do all four of the domain satisfaction patterns fail to track trends in happiness by gender as is predicted by set-point and traditional gender role theories, but the formers' variation

is much greater than that of happiness – suggesting that within domain adaptation is quite limited over the life cycle. It could be, of course, that people alter the importance they place on various domains of life as they age and that this influences their overall happiness. This we address momentarily, but first we turn our attention immediately below to the issue of whether domain satisfaction trends are generally reflective of objective circumstances.

Although investigating the sources of satisfaction in each life domain warrants separate analyses, the patterns reported here provide some guidance regarding the relative importance of objective circumstances. The objective-subjective link is most obvious in the family, work, and health domains. During family formation satisfaction with family rises, and when children begin to leave home, marital relationships begin to change, and widow- or "widowerhood" (Hatch, 2000: 94) occurs satisfaction with family begins to wane (Delbes & Gaymu, 2002; Waite, 1995). Similarly, as careers are being established and people are moving up occupational and prestige ladders, satisfaction with work rises. Afterwards – at least for women – it begins to fall. The continuous rise in work satisfaction for men may simply reflect the fact that relatively unhealthy men die sooner than comparatively unhealthy women and men who survive into the elder years are relatively healthy and professionally successful – thus they are more likely to remain employed formally. There is some evidence, furthermore, that being employed is the strongest protector of elder men's health (Rushing, Ritter, & Burton, 1992), and men may choose to remain employed for this reason alone. Lastly, increasing health problems accompany aging during adulthood and satisfaction with health consequently declines (Reynolds, Crimmins, & Saito, 1998). This all makes sound sense and suggests that adaptation to changing family, work, and health circumstances is less than complete.

The pattern of satisfaction with family finances over the life cycle by gender, although also calling into question gender role and set-point theories, provides evidence of an objective-subjective disconnect rather than link. On average, although incomes rise the longer one works, they eventually

level off and begin to decline. For both men and women, and at odds with the economist's strict objective *bottom-up access to resources* model of happiness, satisfaction with family finances moves in contrast to income trends over the life course. Easterlin (2005) suggests such a pattern may be explained by lower aspiration levels in this domain as perceptions of material needs decline in later life, or as family debt declines.

**Life-Cycle Domain Satisfactions and Happiness by Gender**

The male-female gender gaps in satisfaction with family over the life cycle, and to a smaller degree with finances – but not in satisfaction with the other two life domains that explain variation in global happiness fairly well (work and health) – appear to move in the same direction as the male-female difference in global happiness until mid-life (Figure 5). Thereafter, it appears that trends in the gender satisfaction gaps in work and health join that in finances to help explain the trajectory of the gender happiness gap. Is this indeed the case? Previous work investigating how several *objective* domain-specific circumstances influence the adult male-female happiness gap in the United States reports that work and marital status but not health or income help explain the gender happiness gap (Easterlin, 2003b).

**<<< Figure 5 about Here >>>**

When regressing happiness on the seven life domain satisfaction variables, we find satisfaction with family, finances, work, and health (as noted above) to be statistically significant. In other words, on average, greater satisfaction in each of these domains augments overall happiness. Examining the effect of each of these domains separately by gender we find that satisfaction with family explains the most variance in happiness, followed by satisfaction with finances, work, and health (Table 3).

Specifically, we see that satisfaction alone accounts for approximately 5.3 to 7.7 percent (pseudo $R^2$ for men and women) of the variance in overall happiness, and that this explanatory power rises to 12.0 to 14.5 percent (again, for men and women) after included all four statistically significant domain satisfaction variables.

**<<< Table 3 about Here >>>**

Similar studies analyzing the relationship between satisfaction with various life domains and overall happiness report similar levels of explanatory power (Easterlin, 2005; Rojas, 2005; Salvatore & Muñoz Sastre M.T., 2001; van Praag, Frijters, & Ferrer-i-Carbonell, 2003), and it is important to highlight that these variables were first employed in psychology (Campbell et al., 1976) and are typically thought to reflect how well objective circumstances match aspirations. Economists usually focus on the former and ignore the latter, and when we regress global happiness on the typical demographic and economic variables employed in economics the explanatory power is about one-half of what we obtain when including our four domain satisfaction variables. These results are not reported here but are available upon request.

As Easterlin (2005) suggests, although the domain-interaction model employed here explains more variation (between 12 and 15 percent) in individual happiness than the typical regression models employed by economists, there is much room for other explanatory factors (e.g., genetics and personality). This admission; however, should not deflect attention away from the possibility that satisfaction with various life domains explains average trends in happiness relatively well. Whereas genes or personality (religious beliefs), for instance, change relatively slowly and may be important for understanding individual-level differences in happiness (fertility) at a given point in

time, life circumstances (economic considerations) change more readily and may be stronger predictors of life cycle patterns in happiness (fertility) (Easterlin, 1987).

**Predicting Life Cycle Happiness from Domain Satisfactions by Gender**

So do life cycle patterns in family, financial, work, and health satisfaction among men and women explain their overall happiness over the life course fairly well even if these domains do not explain much individual variation? The answer is yes (Figure 6). Predicted happiness at each age from 18 to 89 years is estimated for men and women separately by substituting the age- and gender-specific mean of each domain satisfaction variable (shown in Figures 3 and 4) into the gender-specific regression equations reported in column 4 of Table 3. Among women, predicted happiness is lower than actual (demographically adjusted) happiness until age 32 and the predicted maximum value occurs at an older age (45 years) than estimated from the "actual" data (18 years). Nonetheless, the actual and predicted life cycle trends are downward for women. For men, the predicted life-cycle trend is also consistent with the adjusted estimates, but the former is below the latter until age 44 and the predicted maximum value is 2.28 rather than 2.40 at age 89.

**<<< Figure 6 about Here >>>**

The close connection between actual and predicted life-cycle happiness by gender joins the X-shaped gendered happiness relationship (Figure 2) in lending credibility to a bottom-up, domain-interaction life-cycle model of happiness. Women's relative happiness through mid-life is sustained primarily by rising satisfaction with family and work, which collectively offset declines in happiness due to diminishing satisfaction with finances and health. As mid-life approaches and despite increasing satisfaction with finances; however, women's falling happiness due to changes in health

satisfaction is accompanied by lower levels of satisfaction with family and work. Men's lower levels of happiness compared to women's before mid-life appear to be driven mostly by men's lower satisfaction with family life. Beyond mid-life, men surpass women in happiness because satisfaction with finances, work and health countervail declining satisfaction with family life.

The above evidence intimates that satisfaction with these four life domains – family, finances, work, and health – explain a notable amount of variation in life-cycle happiness among men and women, and consequently much of the gender happiness gap. But could it be that people alter the importance they place on individual life domains as they age (Parducci, 1995), and could this differ for men and women in such as way as to explain the gender happiness gap even in the absence of within-domain adaptation? For instance, could it be that as men become increasingly less content with their family lives and their health after mid-life and more satisfied with their work and financial situations that they begin to value the latter two domains more, thus raising their overall well-being?[2]

We have just seen that men's and women's changing life-cycle happiness trajectories are predicted quite well when employing constant domain weights from only four life domains. This result by itself suggests cross-domain adaptation is not likely to be an important process by which overall happiness is determined. But to test this interpretation more carefully we regress happiness on the same four domain satisfaction variables with age group interaction variables (Table 4). Coefficients on the age-domain interaction terms indicate whether, on average, adults in the United States place more weight on different life domains as they age compared to the entire sample. For example, the -0.046 coefficient in Column 2 in Panel A suggests that adults aged 18-39 years were less satisfied on average with their family situations compared with the entire adult population. Comparing the same coefficient in Panel B and Panel C, it appears that this result is driven by men in this age group being less satisfied on average. The coefficient for women is not statistically

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[2] For a detailed discussion of how men and women adapt to spousal death and retirement, see Hatch (2000: chapters 5 and 6 especially).

significant even at the 90 percent confidence level.  The most relevant finding here; however, is that only four of these 36 age-domain interaction coefficients are statistically significant at the 99 percent confidence level (e.g., 3 of 12 among all adults viewed collectively, 1 of 12 among women, and none among men). Put simply, this means that the coefficients are fairly stable across age groups and neither men nor women are switching the weight they place on various life domains very much as they age. Among the coefficients that are statistically significant at lower confidence levels, furthermore, we see some evidence contradicting what would be expected from domain-switching perspective. Both men and women appear to place decreasing value on finances as they age despite the fact that satisfaction with this domain is rising over the life cycle.

<<< Table 4 about Here >>>

**The "Pure" Effect of Age on Happiness by Gender**

Past research has been rather ambiguous concerning the effect of aging itself on global happiness – as contrasted with the effect of how people adapt to various changing domains over the life cycle. Some report that no age or stage of life is more privileged and thus the life-cycle pattern of happiness is flat (Myers, 2000), some find that happiness rises over the life course (Argyle, 1999; Cartensen et al., 2000; Mroczek & Kolarz, 1998), some estimate the conventional mid-life crisis or U-shaped pattern (Blanchflower & Oswald, 2004; Frey & Stutzer, 2002), and others suggest the inverse of the mid-life crisis story – happiness rises until about mid-life and then declines throughout the rest of life (Easterlin, 2005; Mroczek & Spiro III, 2005). These apparently conflicting results; however, are likely to be an artifact of different questions being asked and different types of data or statistical methods being employed (Easterlin, 2005).

To identify the "pure effect of aging" on happiness among men and women in the current study we need to ask how happy younger and older adults having the same levels of satisfaction with family, financial, work, and health domains were – while still controlling for their birth cohort, race, and educational attainment.  We do this by holding these four life domain satisfaction variables constant and rerunning our models. Table 5 reports our regression results and Figure 7 shows the estimated pure effect of age on happiness for all adults collectively and by gender. Consistent with recent work by some psychologists (Cartensen et al., 2000) but contrary to that of some economists (Blanchflower & Oswald, 2004; Frey & Stutzer, 2002), we estimate that happiness increases with age for both men and women. Happiness for men emanating solely from age rises from 2.0 to 2.4, and happiness for women from 2.2 to 2.3. The pure effect of age on happiness among all adults over this 72-year life span is captured by the thick solid line in Figure 7: happiness rises from 2.0 to 2.3 from age 18 to 89.

Because our life-cycle domain satisfaction-interaction models predict average actual happiness fairly well (Figure 6), and these results differ from those produced with our pure age effect models, it is highly likely that factors other than age are responsible for happiness trajectories among men and women in the United States. Furthermore, scholars interested in what economists refer to as utility or welfare would do well to remember that more than improving individual objective circumstances will be required to augment happiness among men and women: our models perform better than those employed by economists controlling for individual objective circumstances only.

**DISCUSSION**

Results reported in this study are somewhat consistent with a parallel development in this field of research which argues that well-being is better understood by breaking it down into various component parts such as self-acceptance, ability to control the environments in which one lives, autonomy, purpose in life, personal growth, and resilience (Keyes et al., 2002). Specifically, we employ econometric techniques and "synthetic panel" data and find that we can better understand happiness among men and women in the United States over the life cycle by controlling for at least one important demographic characteristic ignored in almost all past happiness research (e.g., birth cohort) and how satisfied adults are with various life domains rather than with individual objective conditions per se. Men are estimated to be less happy than women from age 18 to 48, but happier thereafter. Although our models explain a very small fraction of variance in individual-level happiness (approximately one-seventh to one-eighth), they predict variation in average happiness by age group and gender quite well. Much of men's rising and women's declining happiness from age 18 to 89 is explained by satisfaction in four life domains – family, finances, work, and health. The three domains of life that are in our data and do not appear to be as important for understanding trends in overall or global happiness include satisfaction with friends, place of residence, and how one uses leisure time (Currell, 2005; Robinson & Godbey, 1997).

Building directly on several recent demographic studies of life-cycle well being (Easterlin, 2005; Hatch, 2000), our research supports a *bottom-up*, *life-course domain-interaction adaptation* model of subjective well-being and challenges more conventional *bottom-up access to resources* and *top-down traditional gender role* models of happiness. Stated simply, our findings are at odds with conventional approaches and conclusions in economics (e.g., "more is always better) and psychology (e.g., set-point theory), but consistent with a demographic approach that integrates methods and theories from these two disciplines as well as from sociology and gerontology. Future work should

investigate the influence of individual objective circumstances on satisfaction in particular life domains over the life cycle, as well as whether the same four domain satisfaction variables found to be important for understanding gender differences in happiness are helpful for explaining differences by race, education, nativity, and other demographic characteristics. Another promising direction subsequent analyses of happiness might take is to consider the effects of heteronomous or extra-individual factors such as residential segregation, income inequality, social capital, and poverty (Ellen, Mijanovich, & Dillman, 2001; Helliwell & Putnam, 2004; Kawachi & Berkman, 2003; Kawachi, Wilkinson, & Kennedy, 1999).

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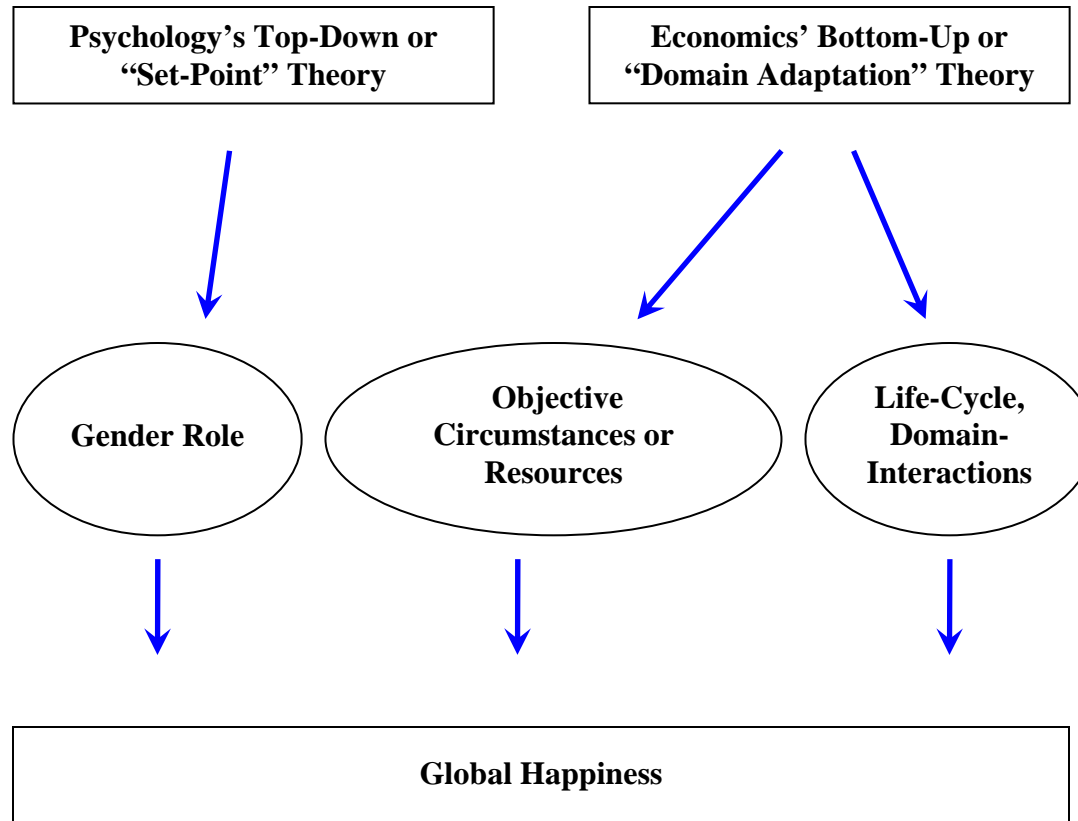
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**Figure 1. Psychological, Economic, and Sociological Theories of Happiness**

| Psychology's Top-Down or "Set-Point" Theory | Economics' Bottom-Up or "Domain Adaptation" Theory |
|---|---|

Gender Role

Objective Circumstances or Resources

Life-Cycle, Domain-Interactions

Global Happiness

# Table 1: Variable Definitions and Weighted Sample Characteristics, Adults Aged 18-89 by Gender, United States, 1973-1994

## All Adults

| Variable Name | Definition | Observations | Mean | SD | 95% Confidence Interval | |
|---|---|---|---|---|---|---|
| HAPPY | "Not too happy" (= 1), "Pretty happy" (= 2), "Very happy" (= 3) | 30,239 | 2.232 | 0.678 | 2.224 | 2.239 |
| AGE | Respondent's age in years (= 18 to 89) | 30,239 | 43.790 | 18.213 | 43.584 | 43.995 |
| BIRTH COHORT | Year of birth minus 1890 (= -7 to 92) | 30,239 | 47.221 | 19.470 | 47.001 | 47.440 |
| MALE | Dummy variable = 1 if respondent reported being male, = 0 if female | 30,239 | 0.452 | 0.541 | 0.446 | 0.458 |
| BLACK | Dummy variable = 1 if respondent reported being black, = 0 if non-black | 30,239 | 0.110 | 0.332 | 0.106 | 0.114 |
| EDUC<12YEARS | Dummy variable = 1 if respondent did not complete high school, = 0 s/he did | 30,239 | 0.612 | 0.528 | 0.606 | 0.618 |
| SATFIN | How Satisfied with family financial situation? ("Not at all"=1 to "Pretty well satisfied"=3) | 30,126 | 2.050 | 0.801 | 2.041 | 2.059 |
| SATFAM | Satisfaction obtained from family life ("none"=1 to "a very great deal"=7) | 23,655 | 5.996 | 1.317 | 5.979 | 6.013 |
| SATWORK | How satisfied with one's work? ("Very dissatisfied"=1 to "Very satisfied"=4) | 24,178 | 3.289 | 0.874 | 3.278 | 3.300 |
| SATHEALTH | Satisfaction obtained from health/physical condition ("none"=1 to "a very great deal"=7) | 23,701 | 5.462 | 1.587 | 5.442 | 5.482 |
| SATFRIEND | Satisfaction obtained from friendships ("none"=1 to "a very great deal"=7) | 23,707 | 5.785 | 1.312 | 5.768 | 5.802 |
| SATPLACE | Satisfaction obtained from place of residence ("none"=1 to "a very great deal"=7) | 23,712 | 5.083 | 1.638 | 5.062 | 5.104 |
| SATHOBBY | Satisfaction obtained from non-working activities ("none"=1 to "a very great deal"=7) | 23,623 | 5.321 | 1.693 | 5.300 | 5.343 |

## Men

| Variable Name | Definition | Observations | Mean | SD | 95% Confidence Interval | |
|---|---|---|---|---|---|---|
| HAPPY | "Not too happy" (= 1), "Pretty happy" (= 2), "Very happy" (= 3) | 13,177 | 2.219 | 0.669 | 2.207 | 2.230 |
| AGE | Respondent's age in years (= 18 to 89) | 13,177 | 43.421 | 18.202 | 43.110 | 43.731 |
| BIRTH COHORT | Year of birth minus 1890 (= -7 to 92) | 13,177 | 47.525 | 19.541 | 47.191 | 47.858 |
| BLACK | Dummy variable = 1 if respondent reported being black, = 0 if non-black | 13,177 | 0.100 | 0.320 | 0.095 | 0.106 |
| EDUC<12YEARS | Dummy variable = 1 if respondent did not complete high school, = 0 s/he did | 13,177 | 0.580 | 0.529 | 0.571 | 0.589 |
| SATFIN | How Satisfied with family financial situation? ("Not at all"=1 to "Pretty well satisfied"=3) | 13,129 | 2.059 | 0.798 | 2.045 | 2.072 |
| SATFAM | Satisfaction obtained from family life ("none"=1 to "a very great deal"=7) | 10,299 | 5.929 | 1.348 | 5.903 | 5.955 |
| SATWORK | How satisfied with one's work? ("Very dissatisfied"=1 to "Very satisfied"=4) | 10,175 | 3.289 | 0.869 | 3.272 | 3.306 |
| SATHEALTH | Satisfaction obtained from health/physical condition ("none"=1 to "a very great deal"=7) | 10,324 | 5.525 | 1.537 | 5.496 | 5.555 |
| SATFRIEND | Satisfaction obtained from friendships ("none"=1 to "a very great deal"=7) | 10,335 | 5.705 | 1.309 | 5.680 | 5.730 |
| SATPLACE | Satisfaction obtained from place of residence ("none"=1 to "a very great deal"=7) | 10,338 | 5.048 | 1.596 | 5.018 | 5.079 |
| SATHOBBY | Satisfaction obtained from non-working activities ("none"=1 to "a very great deal"=7) | 10,311 | 5.393 | 1.631 | 5.362 | 5.425 |

## Women

| Variable Name | Definition | Observations | Mean | SD | 95% Confidence Interval | |
|---|---|---|---|---|---|---|
| HAPPY | "Not too happy" (= 1), "Pretty happy" (= 2), "Very happy" (= 3) | 17,062 | 2.243 | 0.685 | 2.232 | 2.253 |
| AGE | Respondent's age in years (= 18 to 89) | 17,062 | 44.094 | 18.204 | 43.821 | 44.367 |
| BIRTH COHORT | Year of birth minus 1890 (= -7 to 92) | 17,062 | 46.970 | 19.385 | 46.679 | 47.261 |
| BLACK | Dummy variable = 1 if respondent reported being black, = 0 if non-black | 17,062 | 0.118 | 0.342 | 0.113 | 0.123 |
| EDUC<12YEARS | Dummy variable = 1 if respondent did not complete high school, = 0 s/he did | 17,062 | 0.638 | 0.524 | 0.630 | 0.646 |
| SATFIN | How Satisfied with family financial situation? ("Not at all"=1 to "Pretty well satisfied"=3) | 16,997 | 2.043 | 0.803 | 2.031 | 2.055 |
| SATFAM | Satisfaction obtained from family life ("none"=1 to "a very great deal"=7) | 13,356 | 6.051 | 1.286 | 6.029 | 6.072 |
| SATWORK | How satisfied with one's work? ("Very dissatisfied"=1 to "Very satisfied"=4) | 14,003 | 3.288 | 0.877 | 3.274 | 3.303 |
| SATHEALTH | Satisfaction obtained from health/physical condition ("none"=1 to "a very great deal"=7) | 13,377 | 5.410 | 1.627 | 5.382 | 5.438 |
| SATFRIEND | Satisfaction obtained from friendships ("none"=1 to "a very great deal"=7) | 13,372 | 5.851 | 1.309 | 5.828 | 5.873 |
| SATPLACE | Satisfaction obtained from place of residence ("none"=1 to "a very great deal"=7) | 13,374 | 5.111 | 1.671 | 5.083 | 5.139 |
| SATHOBBY | Satisfaction obtained from non-working activities ("none"=1 to "a very great deal"=7) | 13,312 | 5.262 | 1.740 | 5.232 | 5.291 |

Note: 1973-1994 Geneneral Social Survey (GSS) Data employed to produce unweighted N and weighted sample descriptive statistics (with STATA's SVY commands)

## Table 2: Demographically "Adjusted" Well-Being: Ordered Logit Regression of Happiness and Life Domain Satisfactions on Age, Birth Cohort, Education, and Race

### A. All Adults

| Variable | 1. Happy β | S.E. | 2. SatFam β | S.E. | 3. SatFin β | S.E. | 4. SatWork β | S.E. | 5. SatHealth β | S.E. |
|---|---|---|---|---|---|---|---|---|---|---|
| AGE | 0.021 | 0.006 [a] | 0.047 | 0.005 [a] | -0.032 | 0.004 [a] | 0.048 | 0.008 [a] | -0.031 | 0.007 [a] |
| AGE SQUARED | -0.0002 | 0.0001 [a] | -0.0005 | 0.0000 [a] | 0.0004 | 0.0000 [a] | -0.0004 | 0.0001 [a] | 0.0001 | 0.0001 [c] |
| BIRTH COHORT | -0.017 | 0.005 [a] | -- | -- | -0.011 | 0.002 [a] | -0.024 | 0.007 [a] | 0.029 | 0.006 [a] |
| BIRTH COHORT SQUARED | 0.0001 | 0.0001 [b] | -- | -- | -- | -- | 0.00013 | 0.00007 [c] | -0.00036 | 0.00006 [a] |
| MALE | -0.106 | 0.025 [a] | -0.183 | 0.026 [a] | 0.018 | 0.024 | 0.028 | 0.027 | 0.105 | 0.026 [a] |
| BLACK | -0.748 | 0.041 [a] | -0.475 | 0.042 [a] | -0.671 | 0.039 [a] | -0.450 | 0.042 [a] | -0.238 | 0.039 [a] |
| < HIGH SCHOOL | -0.265 | 0.025 [a] | -0.109 | 0.027 [a] | -0.395 | 0.025 [a] | -0.217 | 0.028 [a] | -0.231 | 0.027 [a] |
| Dependent Variable Category 1 Cut-point | -2.462 | 0.197 | -3.660 | 0.113 | -2.371 | 0.189 | -2.970 | 0.223 | -4.756 | 0.216 |
| Dependent Variable Category 2 Cut-point | 0.365 | 0.195 | -2.754 | 0.107 | -0.333 | 0.188 | -1.616 | 0.221 | -3.647 | 0.212 |
| Dependent Variable Category 3 Cut-point | -- | -- | -2.099 | 0.105 | -- | -- | 0.341 | 0.221 | -3.006 | 0.211 |
| Dependent Variable Category 4 Cut-point | -- | -- | -1.222 | 0.103 | -- | -- | -- | -- | -1.895 | 0.211 |
| Dependent Variable Category 5 Cut-point | -- | -- | -0.459 | 0.103 | -- | -- | -- | -- | -1.175 | 0.211 |
| Dependent Variable Category 6 Cut-point | -- | -- | 1.060 | 0.103 | -- | -- | -- | -- | 0.259 | 0.210 |
| N | 30,239 | | 23,655 | | 30,126 | | 24,178 | | 23,701 | |
| Chi$^2$ | 553.18 | | 295.69 | | 1472.78 | | 830.32 | | 790.92 | |
| LR | -27,935 | | -31,956 | | -31,285 | | -25,765 | | -37,896 | |
| Pseudo-R$^2$ | 0.012 | | 0.006 | | 0.027 | | 0.019 | | 0.012 | |

### B. Men

| Variable | 1. Happy β | S.E. | 2. SatFam β | S.E. | 3. SatFin β | S.E. | 4. SatWork β | S.E. | 5. SatHealth β | S.E. |
|---|---|---|---|---|---|---|---|---|---|---|
| AGE | 0.018 | 0.007 [a] | 0.061 | 0.007 [a] | -0.036 | 0.007 [a] | 0.014 | 0.013 | -0.045 | 0.010 [a] |
| AGE SQUARED | -0.00004 | 0.00007 | -0.00055 | 0.00007 [a] | 0.00053 | 0.00006 [a] | 0.00004 | 0.00016 | 0.00028 | 0.00011 [a] |
| BIRTH COHORT | 0.001 | 0.003 | 0.000 | 0.003 | -0.007 | 0.003 [a] | -0.026 | 0.012 [c] | 0.027 | 0.009 [a] |
| BIRTH COHORT SQUARED | -- | -- | -- | -- | -- | -- | 0.0002 | 0.0001 | -0.0004 | 0.0001 [a] |
| BLACK | -0.538 | 0.065 [a] | -0.371 | 0.067 [a] | -0.640 | 0.063 [a] | -0.392 | 0.06978 [a] | -0.109 | 0.064 [c] |
| < HIGH SCHOOL | -0.203 | 0.038 [a] | -0.029 | 0.040 | -0.422 | 0.037 [a] | -0.224 | 0.04149 [a] | -0.118 | 0.039 [a] |
| Dependent Variable Category 1 Cut-point | -1.554 | 0.286 | -2.835 | 0.317 | -2.202 | 0.281 | -3.657 | 0.364 | -5.075 | 0.325 |
| Dependent Variable Category 2 Cut-point | 1.314 | 0.286 | -1.997 | 0.315 | -0.180 | 0.281 | -2.310 | 0.362 | -4.049 | 0.320 |
| Dependent Variable Category 3 Cut-point | -- | -- | -1.343 | 0.313 | -- | -- | -0.343 | 0.361 | -3.389 | 0.319 |
| Dependent Variable Category 4 Cut-point | -- | -- | -0.551 | 0.312 | -- | -- | -- | -- | -2.307 | 0.318 |
| Dependent Variable Category 5 Cut-point | -- | -- | 0.190 | 0.312 | -- | -- | -- | -- | -1.577 | 0.318 |
| Dependent Variable Category 6 Cut-point | -- | -- | 1.731 | 0.312 | -- | -- | -- | -- | -0.094 | 0.317 |
| N | 13,177 | | 10,299 | | 13,129 | | 10,175 | | 10,324 | |
| Chi$^2$ | 218.96 | | 148.07 | | 647.69 | | 389.42 | | 222.07 | |
| LR | -12,120 | | -14,294 | | -13,630 | | -10,805 | | -16,267 | |
| Pseudo-R$^2$ | 0.011 | | 0.007 | | 0.028 | | 0.022 | | 0.008 | |

### C. Women

| Variable | 1. Happy β | S.E. | 2. SatFam β | S.E. | 3. SatFin β | S.E. | 4. SatWork β | S.E. | 5. SatHealth β | S.E. |
|---|---|---|---|---|---|---|---|---|---|---|
| AGE | 0.003 | 0.006 | 0.023 | 0.009 [b] | -0.029 | 0.006 [a] | 0.060 | 0.010 a | -0.022 | 0.009 [a] |
| AGE SQUARED | -0.0001 | 0.0001 [b] | -0.0002 | 0.0001 [a] | 0.0004 | 0.0001 [a] | -0.0006 | 0.0001 [a] | 0.0000 | 0.0001 |
| BIRTH COHORT | -0.011 | 0.002 [a] | 0.019 | 0.008 [b] | -0.013 | 0.002 [a] | -0.023 | 0.009 a | 0.032 | 0.008 [a] |
| BIRTH COHORT SQUARED | -- | -- | -0.0002 | 0.0001 [b] | -- | -- | 0.0001 | 0.0001 | -0.0004 | 0.0001 [a] |
| BLACK | -0.903 | 0.053 [a] | -0.561 | 0.054 [a] | -0.691 | 0.049 [a] | -0.494 | 0.052 [a] | -0.334 | 0.050 [a] |
| < HIGH SCHOOL | -0.327 | 0.034 [a] | -0.174 | 0.038 [a] | -0.376 | 0.034 [a] | -0.217 | 0.038 [a] | -0.339 | 0.036 [a] |
| Dependent Variable Category 1 Cut-point | -3.066 | 0.264 | -3.984 | 0.314 | -2.532 | 0.253 | -2.728 | 0.287 | -4.587 | 0.288 |
| Dependent Variable Category 2 Cut-point | -0.262 | 0.261 | -2.989 | 0.303 | -0.481 | 0.252 | -1.369 | 0.284 | -3.418 | 0.281 |
| Dependent Variable Category 3 Cut-point | -- | -- | -2.331 | 0.301 | -- | -- | 0.582 | 0.284 | -2.790 | 0.280 |
| Dependent Variable Category 4 Cut-point | -- | -- | -1.362 | 0.299 | -- | -- | -- | -- | -1.655 | 0.280 |
| Dependent Variable Category 5 Cut-point | -- | -- | -0.577 | 0.298 | -- | -- | -- | -- | -0.941 | 0.279 |
| Dependent Variable Category 6 Cut-point | -- | -- | 0.934 | 0.298 | -- | -- | -- | -- | 0.457 | 0.279 |
| N | 17,062 | | 13,356 | | 16,997 | | 14,003 | | 13,377 | |
| Chi$^2$ | 400.32 | | 202.73 | | 830.21 | | 471.02 | | 592.43 | |
| LR | -15,770 | | -17,572 | | -17,572 | | -14,942 | | -21,609 | |
| Pseudo-R$^2$ | 0.016 | | 0.007 | | 0.026 | | 0.018 | | 0.015 | |

Note: 1973-1994 GSS data employed. First column of each happiness or domain satisfaction variable is the estimated coefficient and the second column is the standard error obtained with STATA's SVY commands and sampling weights. A superscript "a" indicates a 99% confidence level, a "b" indicates a 95% level, and a "c" indicates a 90% level.
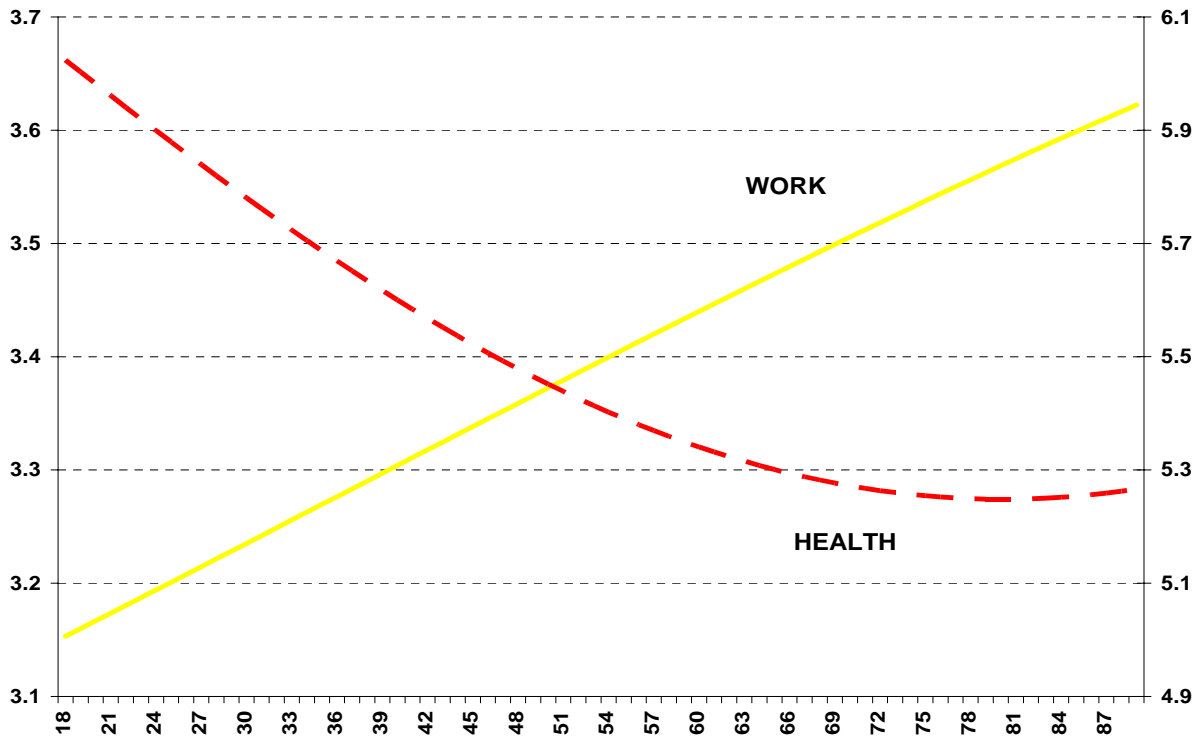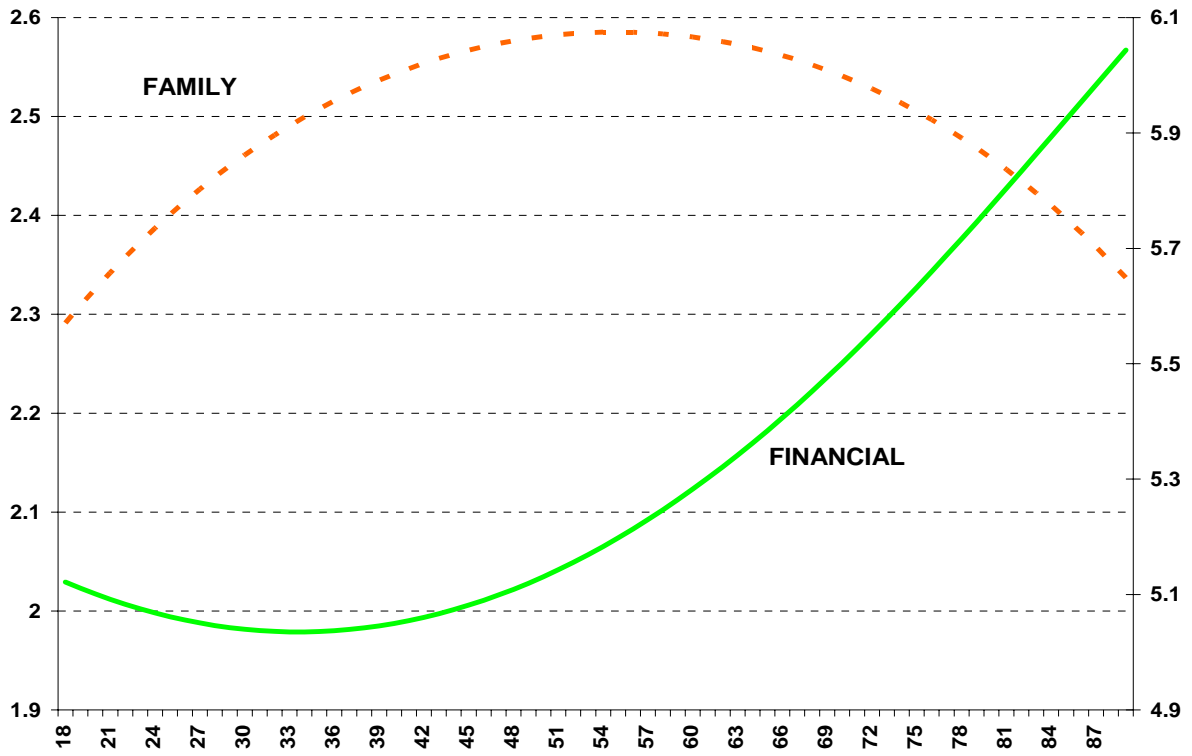
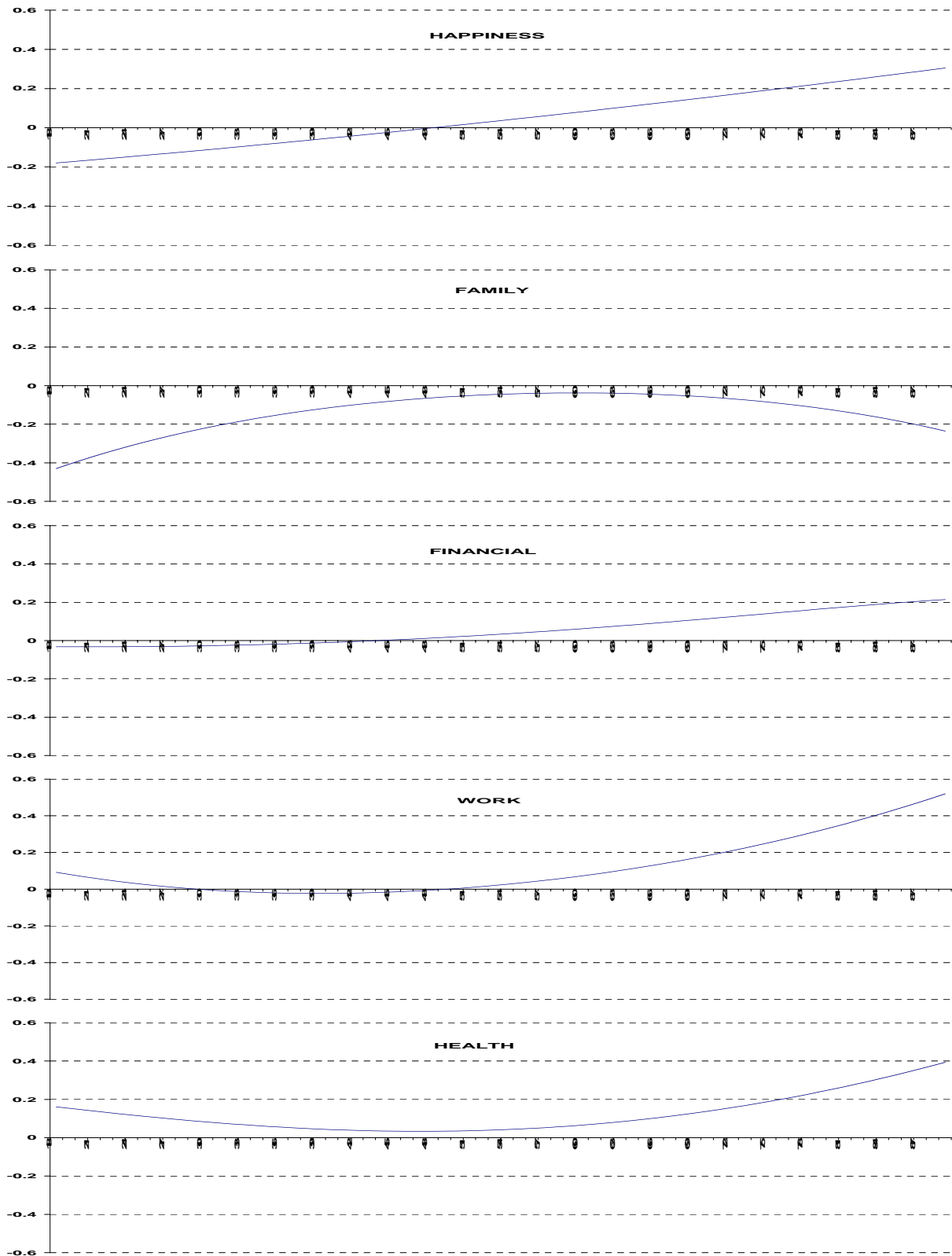**Figure 2: The X-Shaped Gender Life-Cycle Happiness Relationship**
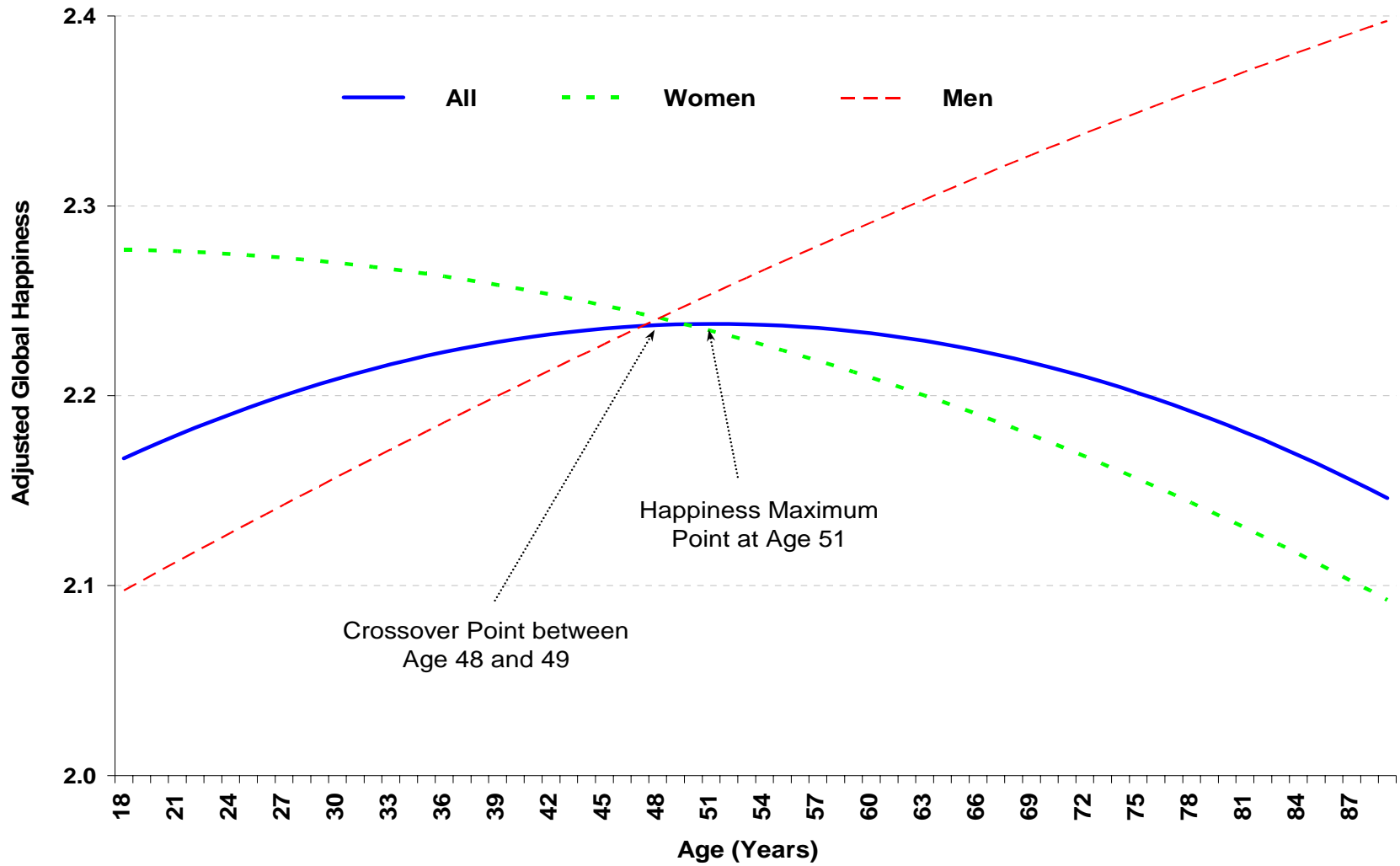
**Figure 3: Women's Satisfaction with Family, Financial, Work, and Health Life Domains**
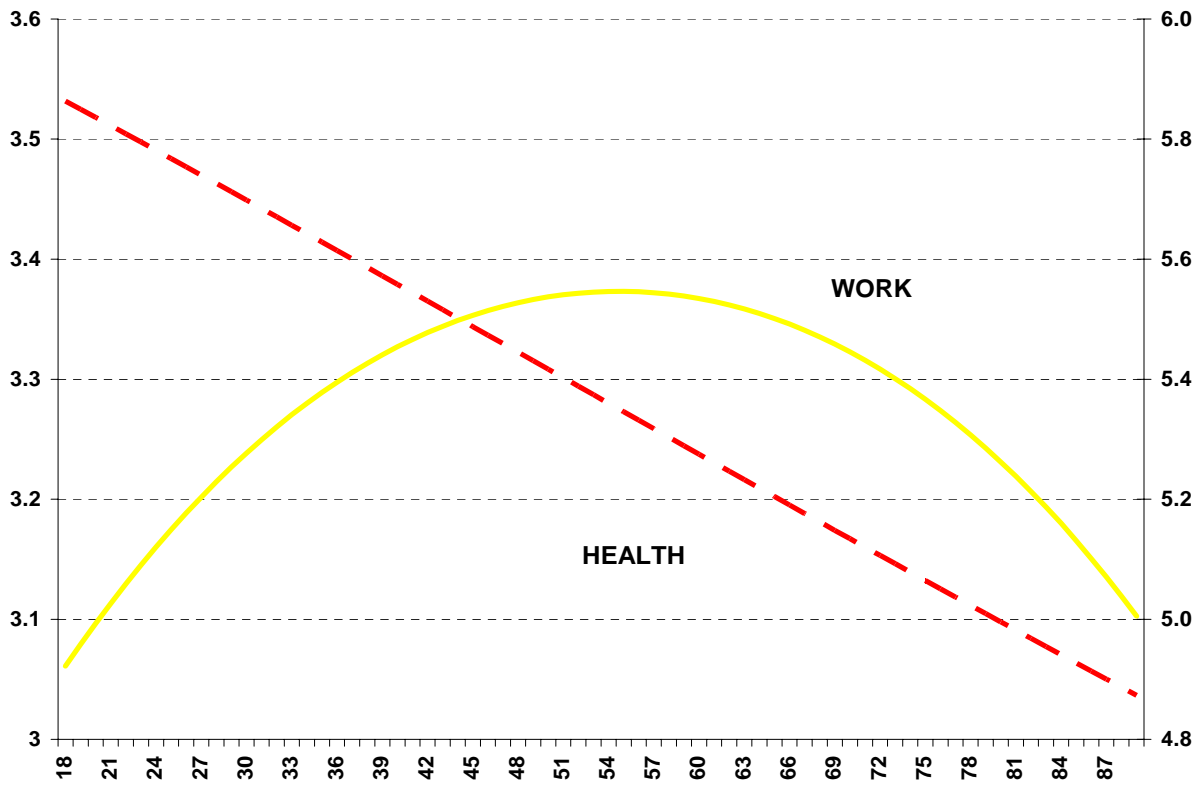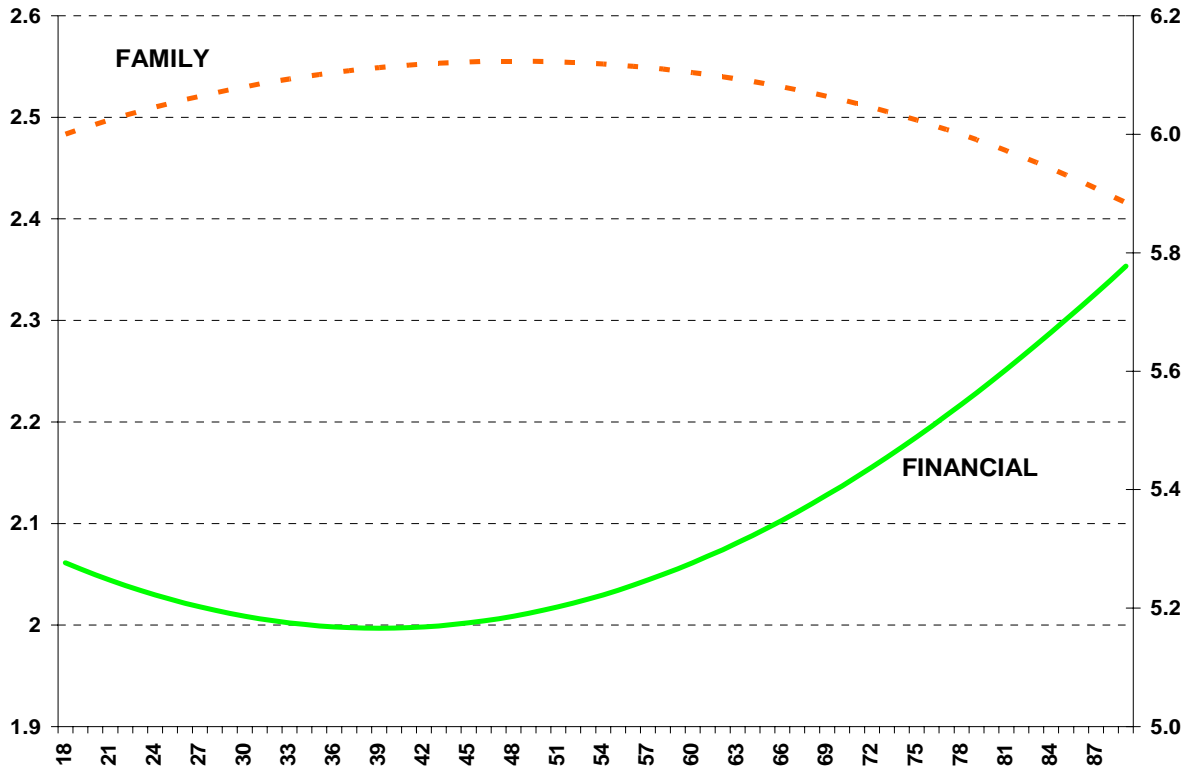
**Figure 4: Men's Satisfaction with Family, Financial, Work, and Health Life Domains**

**Figure 5:   Excess Men-to-Women Happiness and Satisfaction with Four Life Domains**
**(Percentage Point Difference)**

# Table 3: Ordered Logit Regression of Global Happiness on Life Domain Satisfactions

| | All Adults | | | |
|---|---|---|---|---|
| **Satisfaction by Life Domain** | **(1)** | **(2)** | **(3)** | **(4)** |
| SATFAM | 0.600 | 0.565 | 0.527 | 0.461 |
| SATFIN | -- | 0.713 | 0.605 | 0.575 |
| SATWORK | -- | -- | 0.523 | 0.501 |
| SATHEALTH | -- | -- | -- | 0.241 |
| | | | | |
| Happiness Category 1 Cut-point | 1.209 | 2.343 | 3.540 | 4.308 |
| Happiness Category 2 Cut-point | 4.337 | 5.624 | 6.929 | 7.757 |
| | | | | |
| n | 18,814 | 18,814 | 18,814 | 18,814 |
| Chi$^2$ | 1,694.28 | 2,561.69 | 2,938.54 | 3,189.21 |
| Log Likelihood | -16,325 | -15,719 | -15,355 | -15,145 |
| Pseudo R$^2$ | 0.066 | 0.100 | 0.121 | 0.133 |
| | Men | | | |
| **Satisfaction by Life Domain** | **(1)** | **(2)** | **(3)** | **(4)** |
| SATFAM | 0.509 | 0.475 | 0.447 | 0.387 |
| SATFIN | -- | 0.712 | 0.582 | 0.560 |
| SATWORK | -- | -- | 0.538 | 0.525 |
| SATHEALTH | -- | -- | -- | 0.235 |
| | | | | |
| Happiness Category 1 Cut-point | 0.672 | 1.826 | 3.079 | 3.936 |
| Happiness Category 2 Cut-point | 3.832 | 5.142 | 6.512 | 7.417 |
| | | | | |
| n | 7,870 | 7,870 | 7,870 | 7,870 |
| Chi$^2$ | 596.43 | 994.28 | 1,137.69 | 1,209.55 |
| Log Likelihood | -6,846 | -6,595 | -6,439 | -6,363 |
| Pseudo R$^2$ | 0.053 | 0.088 | 0.110 | 0.120 |
| | Women | | | |
| **Satisfaction by Life Domain** | **(1)** | **(2)** | **(3)** | **(4)** |
| SATFAM | 0.684 | 0.646 | 0.600 | 0.523 |
| SATFIN | -- | 0.716 | 0.625 | 0.588 |
| SATWORK | -- | -- | 0.508 | 0.481 |
| SATHEALTH | -- | -- | -- | 0.249 |
| | | | | |
| Happiness Category 1 Cut-point | 1.708 | 2.818 | 3.954 | 4.644 |
| Happiness Category 2 Cut-point | 4.821 | 6.082 | 7.320 | 8.078 |
| | | | | |
| n | 10,944 | 10,944 | 10,944 | 10,944 |
| Chi$^2$ | 1,108.23 | 1,582.01 | 1,828.31 | 2,009.78 |
| Log Likelihood | -9,447 | -9,092 | -8,891 | -8,751 |
| Pseudo R$^2$ | 0.077 | 0.112 | 0.131 | 0.145 |

**Note: 1973-1994 GSS data employed; all coefficients are statistically significant at the 99% confidence level (p>|z|=0.000)**

**Figure 6: Predicted Happiness by Gender**
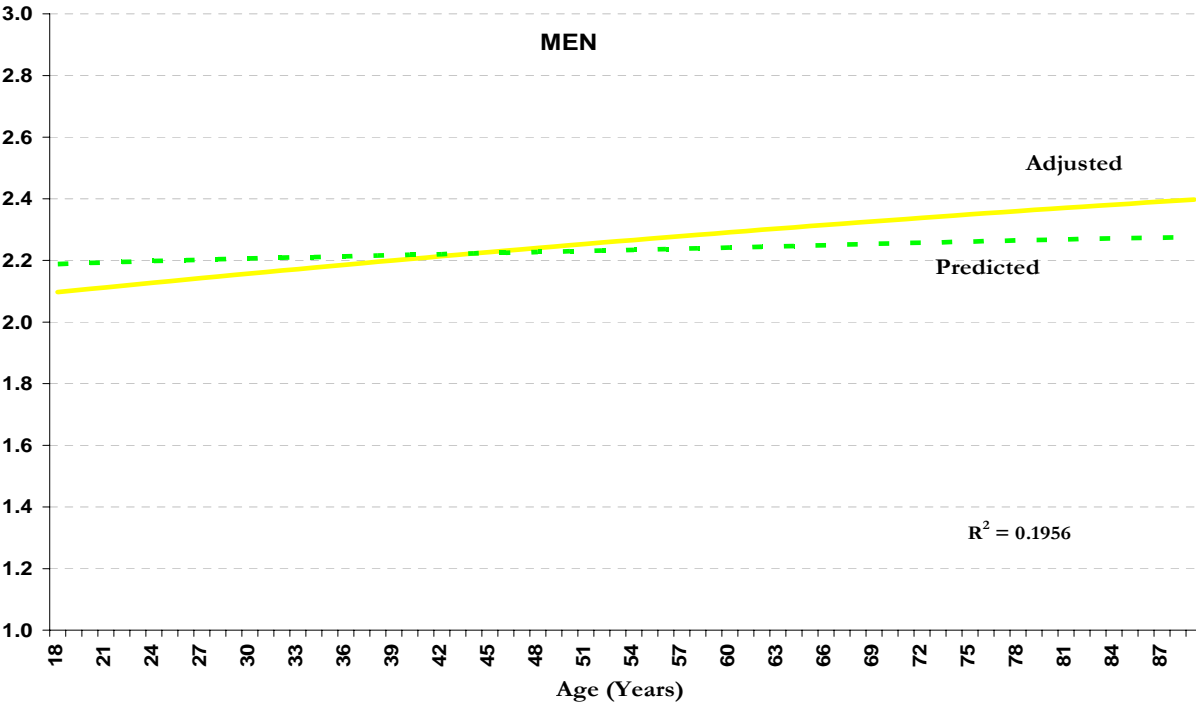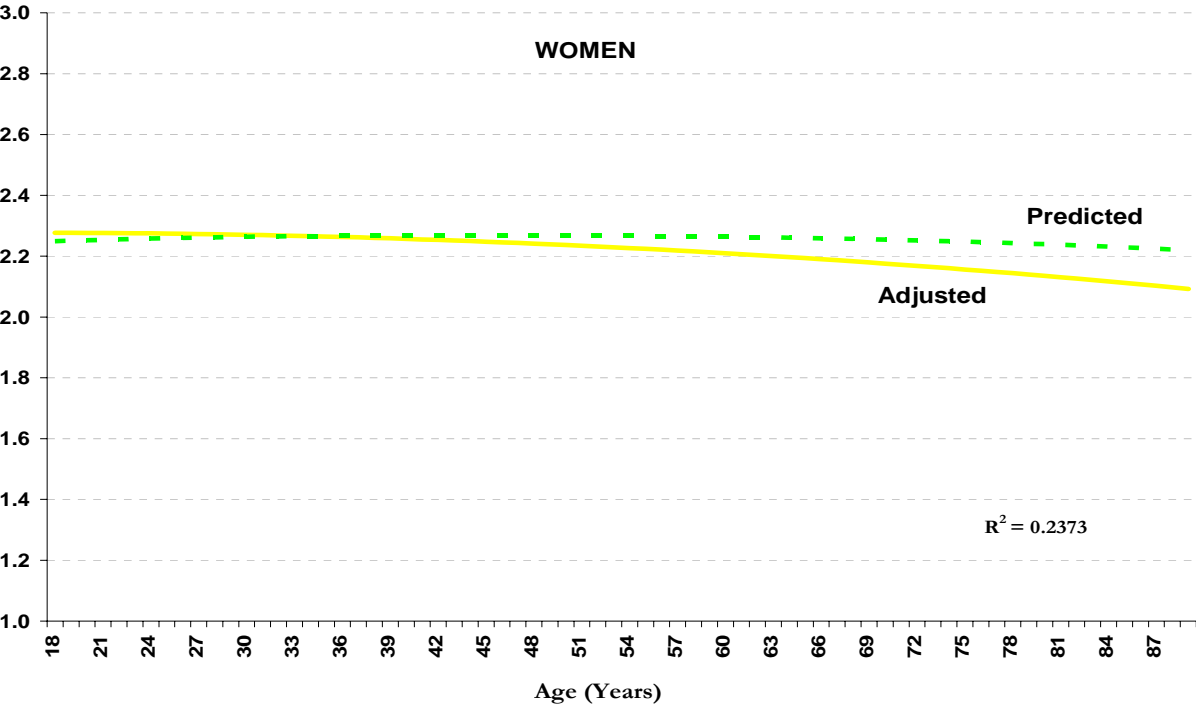
### Table 4: Life Domain Adaptation over the Life Cycle?: Ordered Logit Regression Analysis of Happiness with Age Group Interactions

**A. ALL ADULTS**

| Variable | 1. Ages 18-89 (No Interactions) | | 2. Ages 18-89 (Interactions with Age Group 18-39) | | 3. Ages 18-89 (Interactions with Age Group 40-59) | | 4. Ages 18-89 (Interactions with Age Group 60-89) | |
|---|---|---|---|---|---|---|---|---|
| | β | S.E. | β | S.E. | β | S.E. | β | S.E. |
| SATFAM | 0.461 | 0.015 [a] | 0.485 | 0.021 [a] | 0.443 | 0.018 [a] | 0.461 | 0.016 [a] |
| SATFIN | 0.575 | 0.024 [a] | 0.501 | 0.035 [a] | 0.608 | 0.029 [a] | 0.589 | 0.025 [a] |
| SATWORK | 0.501 | 0.022 [a] | 0.501 | 0.033 [a] | 0.522 | 0.026 [a] | 0.481 | 0.023 [a] |
| SATHEALTH | 0.241 | 0.014 [a] | 0.247 | 0.019 [a] | 0.235 | 0.016 [a] | 0.247 | 0.015 [a] |
| | | | | | | | | |
| SATFAM x AGE GROUP | -- | -- | -0.046 | 0.026 [c] | 0.052 | 0.028 [c] | -0.005 | 0.040 |
| SATFIN x AGE GROUP | -- | -- | 0.136 | 0.047 [a] | -0.092 | 0.049 [c] | -0.186 | 0.075 [a] |
| SATWORK x AGE GROUP | -- | -- | -0.010 | 0.041 | -0.069 | 0.043 | 0.176 | 0.065 [a] |
| SATHEALTH x AGE GROUP | -- | -- | -0.005 | 0.025 | 0.021 | 0.027 | -0.007 | 0.035 |
| | | | | | | | | |
| Dependent Variable Category 1 Cut-point | 4.308 | 0.115 | 4.295 | 0.116 | 4.300 | 0.115 | 4.316 | 0.116 |
| Dependent Variable Category 2 Cut-point | 7.757 | 0.132 | 7.747 | 0.133 | 7.752 | 0.132 | 7.768 | 0.132 |
| | | | | | | | | |
| N | 18,814 | | 18,814 | | 18,814 | | 18,814 | |
| Chi$^2$ | 3,189.21 | | 3219.09 | | 3214.73 | | 3200.99 | |
| LR | -15,145 | | -15,137 | | -15,139 | | -15,136 | |
| Pseudo-R$^2$ | 0.133 | | 0.134 | | 0.134 | | 0.134 | |

**B. MEN**

| Variable | 1. Ages 18-89 (No Interactions) | | 2. Ages 18-89 (Interactions with Age Group 18-39) | | 3. Ages 18-89 (Interactions with Age Group 40-59) | | 4. Ages 18-89 (Interactions with Age Group 60-89) | |
|---|---|---|---|---|---|---|---|---|
| | β | S.E. | β | S.E. | β | S.E. | β | S.E. |
| SATFAM | 0.387 | 0.022 [a] | 0.437 | 0.032 [a] | 0.366 | 0.026 [a] | 0.377 | 0.023 [a] |
| SATFIN | 0.560 | 0.037 [a] | 0.456 | 0.057 [a] | 0.597 | 0.045 [a] | 0.581 | 0.038 [a] |
| SATWORK | 0.525 | 0.034 [a] | 0.496 | 0.053 [a] | 0.532 | 0.040 [a] | 0.524 | 0.035 [a] |
| SATHEALTH | 0.235 | 0.023 [a] | 0.247 | 0.032 [a] | 0.233 | 0.027 [a] | 0.234 | 0.024 [a] |
| | | | | | | | | |
| SATFAM x AGE GROUP | -- | -- | -0.090 | 0.040 [b] | 0.055 | 0.041 | 0.170 | 0.075 [b] |
| SATFIN x AGE GROUP | -- | -- | 0.178 | 0.073 [b] | -0.103 | 0.076 | -0.343 | 0.149 [b] |
| SATWORK x AGE GROUP | -- | -- | 0.034 | 0.062 | -0.032 | 0.064 | -0.062 | 0.132 |
| SATHEALTH x AGE GROUP | -- | -- | -0.011 | 0.041 | 0.014 | 0.042 | 0.017 | 0.071 |
| | | | | | | | | |
| Dependent Variable Category 1 Cut-point | 3.936 | 0.180 | 3.912 | 0.181 | 3.924 | 0.180 | 3.917 | 0.181 |
| Dependent Variable Category 2 Cut-point | 7.417 | 0.204 | 7.401 | 0.205 | 7.409 | 0.205 | 7.403 | 0.205 |
| | | | | | | | | |
| N | 7,870 | | 7,870 | | 7,870 | | 7,870 | |
| Chi$^2$ | 1,209.55 | | 1247.01 | | 1232.81 | | 1223.25 | |
| LR | -6,363 | | -6,354 | | -6,359 | | -6,356 | |
| Pseudo-R$^2$ | 0.120 | | 0.121 | | 0.120 | | 0.121 | |

**C. WOMEN**

| Variable | 1. Ages 18-89 (No Interactions) | | 2. Ages 18-89 (Interactions with Age Group 18-39) | | 3. Ages 18-89 (Interactions with Age Group 40-59) | | 4. Ages 18-89 (Interactions with Age Group 60-89) | |
|---|---|---|---|---|---|---|---|---|
| | β | S.E. | β | S.E. | β | S.E. | β | S.E. |
| SATFAM | 0.523 | 0.021 [a] | 0.525 | 0.028 [a] | 0.502 | 0.024 [a] | 0.544 | 0.023 [a] |
| SATFIN | 0.588 | 0.031 [a] | 0.535 | 0.044 [a] | 0.619 | 0.038 [a] | 0.596 | 0.034 [a] |
| SATWORK | 0.481 | 0.030 [a] | 0.513 | 0.043 [a] | 0.513 | 0.035 [a] | 0.440 | 0.031 [a] |
| SATHEALTH | 0.249 | 0.017 [a] | 0.251 | 0.023 [a] | 0.245 | 0.020 [a] | 0.255 | 0.019 [a] |
| | | | | | | | | |
| SATFAM x AGE GROUP | -- | -- | -0.004 | 0.035 | 0.067 | 0.038 [c] | -0.106 | 0.047 [b] |
| SATFIN x AGE GROUP | -- | -- | 0.106 | 0.061 [c] | -0.089 | 0.064 | -0.111 | 0.088 |
| SATWORK x AGE GROUP | -- | -- | -0.061 | 0.054 | -0.103 | 0.058 [c] | 0.311 | 0.076 [a] |
| SATHEALTH x AGE GROUP | -- | -- | -0.003 | 0.033 | 0.015 | 0.035 | -0.014 | 0.041 |
| | | | | | | | | |
| Dependent Variable Category 1 Cut-point | 4.644 | 0.151 | 4.648 | 0.153 | 4.643 | 0.152 | 4.694 | 0.153 |
| Dependent Variable Category 2 Cut-point | 8.078 | 0.174 | 8.083 | 0.176 | 8.081 | 0.175 | 8.136 | 0.176 |
| | | | | | | | | |
| N | 10,944 | | 10,944 | | 10,944 | | 10,944 | |
| Chi$^2$ | 2009.78 | | 2012.78 | | 2020.22 | | 2018.6 | |
| LR | -8,751 | | -8,748 | | -9,746 | | -8,739 | |
| Pseudo-R$^2$ | 0.145 | | 0.145 | | 0.146 | | 0.146 | |

Note: 1973-1994 GSS data employed. First column of each happiness or domain satisfaction variable is the estimated coefficient and the second column is the standard error obtained with STATA's SVY commands and sampling weights. A superscript "a" indicates a 99% confidence level, a "b" indicates a 95% level, and a "c" indicates a 90% level.

**Table 5: The "Pure Effect of Age": Ordered Logit Regression Analysis of Happiness by Gender**

| Variable | All Adults | | Men | | Women | |
|---|---|---|---|---|---|---|
| AGE | 0.010 | 0.003 [a] | 0.030 | 0.012 [a] | -0.008 | 0.009 |
| AGE SQUARED | -- | -- | -0.0001 | 0.0001 | 0.0001 | 0.0001 |
| BIRTH COHORT | 0.006 | 0.003 [b] | 0.015 | 0.004 [a] | 0.000 | 0.004 |
| MALE | -0.157 | 0.033 [a] | -- | -- | -- | -- |
| BLACK | -0.499 | 0.056 [a] | -0.302 | 0.088 [a] | -0.625 | 0.072 [a] |
| < HIGH SCHOOL | -0.106 | 0.033 [a] | -0.027 | 0.050 | -0.176 | 0.045 [a] |
| | | | | | | |
| SATFAM | 0.450 | 0.015 [a] | 0.377 | 0.022 [a] | 0.519 | 0.022 [a] |
| SATFIN | 0.551 | 0.024 [a] | 0.546 | 0.037 [a] | 0.554 | 0.032 [a] |
| SATWORK | 0.486 | 0.023 [a] | 0.504 | 0.035 [a] | 0.468 | 0.030 [a] |
| SATHEALTH | 0.252 | 0.014 [a] | 0.250 | 0.023 [a] | 0.250 | 0.017 [a] |
| | | | | | | |
| Happiness Category 1 Cut-point | 4.712 | 0.273 | 5.555 | 0.460 | 4.166 | 0.392 |
| Happiness Category 2 Cut-point | 8.183 | 0.281 | 9.050 | 0.472 | 7.631 | 0.400 |
| | | | | | | |
| n | 18,814 | | 7,870 | | 10,944 | |
| Chi$^2$ | 3,283.10 | | 1,239.83 | | 2,091.41 | |
| Log Likelihood | -15,070 | | -6,241 | | -8,693 | |
| Pseudo R$^2$ | 0.138 | | 0.123 | | 0.151 | |

**Note: 1973-1994 GSS data employed. First column of each population group is the estimated coefficient and the second column is the standard error obtained with STATA's SVY commands and sampling weights. A superscript "a" indicates a 99% confidence level, a "b" indicates a 95% level, and a "c" indicates a 90% level.**

**Figure 7: The "Pure Effect of Age" on Global Happiness by Gender**