

# **Life Cycle Happiness and Its Sources**

*Intersections of Psychology, Economics, and Demography*

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## **Abstract**

In the United States happiness rises slightly, on average, from ages 18 to midlife, and declines slowly thereafter. This pattern for the total population is the net result of disparate trends in the satisfaction people get from various life domains: their financial situation, family life, health, and work. The slight rise in happiness through midlife is due chiefly to growing satisfaction with one's family life and work, which together more than offset decreasing satisfaction with health. Beyond midlife, happiness edges downward as a continuing decline in satisfaction with health is joined by diminishing satisfaction with one's family situation and work; these negative trends are offset considerably, however, by a sizeable upturn in later life in people's satisfaction with their financial situation. These findings come from an analysis of the United States General Social Surveys, using the demographer's synthetic panel technique. They support neither the mainstream economics view that well-being depends only on one's objective conditions nor the psychologists' strong setpoint model in which adaptation to such conditions is rapid and complete. They are consistent with a "bottom up" model in which happiness is the net outcome of both objective and subjective factors in various life domains.

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At what stage of life are people happiest – when they are on the threshold of their adult lives, at mid-life when families are complete and many are close to the peak of their working careers, or in the “golden years” of retirement? What are the factors responsible for the life cycle pattern of happiness? These are the questions – the nature and causes of life cycle happiness – to which this paper is addressed. In answering them, the paper draws on theoretical and empirical work in economics and psychology and the methodology of demography.

## **Psychology and Economics**

### ***The Nature of Life Cycle Happiness***

Surprisingly, there is little agreement on how happiness varies, on average, over the life course. Consider four recent surveys of research on subjective well-being (SWB), three in psychology and one in economics, published almost contemporaneously. David G. Myers (2000, p. 58), in the special issue of the American Psychologist that surveys work in the new field of positive psychology states: “Although many people believe there are unhappy times of life – times of adolescent stress, midlife crisis, or old age decline – repeated surveys across the industrialized world reveal that no time in life is notably happiest and most satisfying”. (Here and subsequently the terms happiness, life satisfaction, and affect balance are used interchangeably; although the concepts are not identical, they are highly positively correlated.)

In contrast, Michael Argyle, writing in the encyclopedic volume on “hedonic psychology” edited by Kahneman, Diener, and Schwarz (1999) concludes that studies both of life satisfaction and positive and negative affect imply that well-being increases with age (p. 354, cf. also Argyle 2001). A survey by Diener et al (1999, p.291) blends these two results, stating that “recent studies converge to show that life satisfaction often increases, or at least does not drop, with age”. But Bruno S. Frey and Alois Stutzer in a book synthesizing the recent economics literature argue that “much care should be taken when claiming that old age leads to unhappiness, or that the old are happier than the young...[T]he economic studies just referred to reach a more differentiated conclusion – namely, that the young and the old are happier than the middle-aged” (2002, p.54).

All of these surveys appear to be addressing the straightforward question of life cycle well-being: as people progress from young adulthood through midlife to older age, experiencing life’s various joys and vicissitudes, do they become, on average, happier, less happy, or does happiness remain unchanged? But the economic studies on which the Frey and Stutzer statement is based are, in fact, considering a quite different question. The U-shaped generalization derives from multivariate regressions of happiness on age plus a number of life circumstances that vary systematically over the life cycle. Hence, these studies are, in effect, asking if one compares young, midlife, and older persons who are in the *same* circumstances with regard to income, employment, marital status, and health, how does their happiness differ? Although Frey and Stutzer imply that this economic research contradicts assertions that “the old are happier than the young”, in fact it does not, because this research abstracts from numerous economic, family, and health conditions that differentiate older persons from younger. Clearly if one wants to know

whether a person is likely to be happier in his or her golden years than when forming families, one would not want to set aside the fact that older people are likely to have lower income, and be less healthy, and are more likely to be living alone. The conclusion of the economic studies – that the happiness-age relationship is U-shaped when many age-related differences in life circumstances are controlled – is, no doubt, of interest, but it is misleading to suggest that it says anything about how the happiness of young or old persons compares, on average, with those at midlife.

All of the generalizations just cited are based on research consisting almost wholly of point-of-time comparisons of happiness with age. This is true even of those studies that pool data for more than one year, because these studies typically include survey year as a control, and, in effect, derive the average of a succession of cross sections over the years included (cf. e.g. Blanchflower and Oswald 2004). Point-of-time studies are an uncertain basis for generalizing about life cycle experience, because the young and old in such comparisons are persons from different birth cohorts with different life histories. When data, say, for the year 2000 for happiness classified by age are used to infer change over the life cycle, the implicit assumption is that those born in 1980 (who are 20 years old in 2000) will follow the same life course trajectory as did those born fifty years earlier (and are 70 years old in 2000). The unease created by this assumption is compounded when one realizes that cross sectional data for the United States in the 1950s reveal a negative association of happiness with age, while current cross-sections show a zero relation (Campbell, 1981, pp. 175, 245). The difference between these point-of-time comparisons very likely reflects a shift over the period, not in the relation of happiness to age, but in the happiness of older compared with younger

birth cohorts as the relative circumstances of different cohorts have changed over the past half century (Easterlin 1987).

If the life cycle pattern of happiness is to be better established, then what is needed are longitudinal studies that follow the happiness of a given birth cohort – those born in the same year or group of years – as it ages. The problem here is that there are very few studies that span many years of the life cycle of a birth cohort. The one perhaps most frequently cited is that by Paul T. Costa et al (1987); this, for example, is the only longitudinal study of the relation of SWB to age cited in the article by Diener and his collaborators that summarizes the results of three decades of psychological research on subjective well-being (1999, pp. 291-292). The Costa et al article concludes (p.54) that “the present data provide compelling evidence for the stability of levels of well-being in adulthood.” The conclusion is based on the net balance of observations of positive and negative affect for 9 year segments of the life cycle of five different 10-year birth cohorts, some younger, some older. The same result is reached in a “synthetic panel” study by Easterlin and Schaeffer (1999), which examines ten 5-year birth cohorts with segments of experience ranging from 13 to 21 years in length. Two newer studies by psychologists, however, each offer different results. Charles et al (2001) examine linear trends in positive and negative affect for three “generations” of adults (younger, middle-aged, and older) for segments of the life cycle up to 23 years in length. They conclude that “positive affect remains fairly stable” while “negative affect decreases across the adult life span” (p. 149). This result implies that, on balance, subjective well-being increases over the life cycle. But the latest panel study of some length, that by Mroczek and Spiro (2005), following 1900 men for 22 years, reports an overall trajectory in well-being that is

curvilinear, an inverted-U with a peak at age 65. Thus, even the few fairly lengthy longitudinal studies that have been done do not agree on the pattern of life cycle happiness.

### ***Determinants of Life Cycle Happiness***

If one turns to explanations of life cycle well-being, the literature is equally mixed. For purposes of contrast it is useful to distinguish two extreme views, one common in economics, the other sometimes found in psychology.

Economists typically adopt the view that well-being depends on actual life circumstances, and that one can safely infer well-being simply from observing these circumstances. At the extreme this view reduces to using real GDP per capita as a measure of well-being, and asserting that if people have more goods and services they must be better off. Economists recognize, of course, that well-being is influenced by other conditions than just the amount of goods and services people have, but typically they assume that if this amount increases substantially, then overall well-being will move in the same direction.

Over the past 30 years there has been a gradual accumulation of empirical evidence contradicting this view – in a number of countries the trend in subjective well-being has remained flat despite a marked increase in GDP per capita (Easterlin 1995, 2005). This evidence, however, has been largely dismissed by most economists, indoctrinated as they are in a disciplinary paradigm encapsulated in the concept “behaviorism”. According to this view, “what people *do* is more relevant than what they say” (Fuchs 1983, p.14, emphasis in original).

In contrast, psychologists do pay attention to what people say. Moreover, they typically view the effect on well-being of objective conditions as being mediated by psychological processes in which people adjust to the ups and downs in their life circumstances. At the extreme, this adjustment process, sometimes termed “hedonic adaptation”, has led to the notion that people are on a hedonic treadmill (Brickman and Campbell 1971, Kahneman, Diener, and Schwarz 1999, p.13-15). This view is typically formulated as a “setpoint model”, and “[t]he assumption that happiness set points exist has guided much of the current theory and research on SWB” (Lucas et al 2004, p.8). In this approach individual happiness tends to a setpoint level established by personality and genetic heritage. Life events, such as marriage, loss of a job, and serious injury or disease, may deflect a person above or below this setpoint, but hedonic adaptation will fairly quickly return an individual to the setpoint. In this “strong” setpoint model hedonic adaptation to life events is rapid and complete. This view is exemplified by recent statements such as the following by David G. Myers (2000, p.60):”Our human capacity for adaptation... helps explain a major conclusion of subjective well-being research, as expressed by the late Richard Kammann (1983): ‘Objective life circumstances have a negligible role to play in a theory of happiness’” (cf. also Czikszentmihalyi and Hunter, 2003, pp. 185-186, Lykken and Tellegen, 1996, p. 189).

Psychologists support this view empirically by pointing to the results of multivariate analyses of SWB, including those by economists, that typically find that objective life circumstances account for only a small part of individual differences in happiness – perhaps only 15 percent, at best (Diener 2000, p.37). What this reasoning overlooks, however, is that the factors that are most important in determining *individual*

*differences* in happiness are not necessarily the same as those most important in explaining the average life cycle pattern of happiness. This distinction is not generally recognized in the psychological literature where the role of a variable in explaining individual differences is typically taken as the sole criterion of that variable's explanatory importance. However, a variable that is important in explaining differences among persons at a point in time is not necessarily equally important in accounting for a change over time common to these persons as a group. As an example, consider the marked upswing and subsequent collapse in the United States rate of childbearing in the three decades after World War II – the great baby boom and bust. Among the various factors explaining individual differences in childbearing at any given time, both religion and economic circumstances are important. In explaining the baby boom and bust, however, economic considerations are of overriding significance, and religion, which changes very little over time, is unimportant (Easterlin, 1987). Similarly, it is possible that in explaining the average trend of life cycle happiness, the relative importance of life circumstances is greater than it is in explaining differences among persons, because life circumstances tend to change more over the life cycle than do factors such as personality and genetic heritage.

The sharp contrast between the mainstream economics view and the strong setpoint model is illustrated by the distinction drawn by psychologists between a “top down” and “bottom up” explanation of well-being (Diener 1984, Diener et al 1999, Headey et al 1991). The economics model would fall in the bottom up category where overall happiness is seen as the outcome of experiences, good and bad, in various life domains. The setpoint model exemplifies the “top down” view in which global happiness

is a personality trait and hedonic adaptation in different life domains overrides the impact of life events. Thus a top down advocate would see people as adapting fairly quickly to an event like the death of a spouse and returning to the happiness setpoint given by personality and genetic make-up, while bottom up proponents would expect such an adverse occurrence to depress happiness significantly.

Not all psychologists subscribe to the setpoint model nor do all economists view well-being as depending solely on actual life circumstances. In economics there is a line of work, some of it extending back over 50 years, that brings into consideration the effect on well-being of psychological processes such as social comparison and habituation (Duesenberry 1949, Modigliani 1949, Pollak 1970, 1976). Economists engaged in the recent upsurge of research on happiness uniformly acknowledge the importance of psychological factors in the explanation of well-being (Easterlin 1995, 2001, Frey and Stutzer 2002, Graham 2005, Layard 2005, Stutzer 2003, van Praag and Frijters 1999, van Praag and Ferrer-i-Carbonell 2005). Indeed, to the extent any explanation has been offered by economists of their finding of a U-shaped relation of happiness to age, it is in terms of a psychological factor, aspirations. Thus, Blanchflower and Oswald speculate about the source of the U-shape as follows: “One tentative possibility is that this decline and then rise in well-being through the years may reflect a process of adaptation to circumstances; perhaps by the middle of their lives, *people relinquish some of their aspirations and thereby come to enjoy life more*” (2004, p.1375, emphasis added). Frey and Stutzer (2002, p.54) say virtually the same thing<sup>1</sup>.

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<sup>1</sup> Economists sometimes describe their U-shaped finding as describing the ceteris paribus impact of aging on well-being. But the references above by economists to possible life cycle changes in aspirations make clear that the ceteris paribus characterization of their result is inappropriate, because aspirations are not held constant in their studies.

In psychology there has been a retreat from the strong setpoint model. At a minimum, allowance is usually made for the possibility of individuals being able to improve their well-being through various psychological measures (Seligman 2002). Beyond this, there is often recognition that at least some life circumstances may have lasting effects on happiness. Myers (1992, 2000), for example, makes a specific exception to the hedonic treadmill in the case of family and social relationships. Lucas et al (2003) report that while adaptation to marriage is, on average, rapid and complete, adaptation to widowhood may take, on average, eight years (but on adaptation to marriage see, Zimmermann and Easterlin 2006). Elsewhere, they conclude that the effect on well-being of unemployment is even more enduring, changing the “happiness setpoint” (Lucas et al 2004). A clear implication of this work is that life circumstances, rather than being lumped together in a portmanteau generalization, need to be considered separately with regard to their effects on well-being, as is done by Diener and Seligman (2004) in their thoughtful proposal for a national well-being index<sup>2</sup>. Recent research by Kahneman and others (2004), making clear that all life circumstances are not hedonically equal, underscores the importance of looking separately at different life circumstances (see Robinson and Godbey, 1997, chapter 17 for a similar analysis based on a broader population sample). Thus, there is evidence of some convergence of the disciplines toward a view that in explaining happiness both life circumstances and psychological

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<sup>2</sup> Headey and Wearing were among the first to reject the strong setpoint model, arguing from their longitudinal data that “life events influence SWB over and above the effects of personality” (1989, p.731; cf. also Headey, Holmström, and Wearing, 1994; Diener 1996). However, life events in the Headey-Wearing empirical analysis are not specific circumstances but an aggregative measure that combines numerous favorable and/or unfavorable experiences, each experience being assumed to have equal weight in determining satisfaction.

factors matter. Nevertheless, there persists an important difference in emphasis, with economics stressing objective life circumstances and psychology, subjective factors.

## **Policy**

The mainstream economic theory of well-being and the strong setpoint model have quite different implications for public policy. The economic model implies that programs that improve people's life circumstances can improve subjective well-being. In contrast, the strong setpoint model amounts virtually to an "iron law of happiness" – any measure taken to improve people's economic and social conditions can have only a transient effect on well-being, because each individual will, in time, revert to his or her given setpoint of happiness<sup>3</sup>. Lykken and Tellegen (1996) were at one time outspoken exponents of this view, and it is made quite explicit with regard to policy by Ed Diener and Richard E. Lucas: "The influence of genetics and personality suggests a limit on the degree to which policy can increase SWB. . . . Changes in the environment, although important for short-term well-being, lose salience over time through processes of adaptation, and have small effects on long-term SWB" (Diener and Lucas, 1999, p. 227).

As I have mentioned, in recent years psychologists have increasingly backed away from the strong setpoint model. Lykken's (1999) book explicitly renounces the view in his earlier article with Tellegen, and the recent article by Diener and Seligman (2004) advocating governmental participation in the measurement of SWB, specifies a number of ways through which improvements in economic and social conditions might be expected to raise SWB. Nevertheless, the sharp contrast between the two disciplinary

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<sup>3</sup> In the media this view has found expression as "futile pursuit of happiness" (Gertner 2003).

views highlights a major policy issue – the potential for public programs to improve well-being is less, the more people are found to adapt psychologically to changing life circumstances. Hence, a crucial policy issue is the relative weight in determining well-being of actual life events vis-à-vis hedonic adaptation to such events.

### **Conceptual framework**

This study adopts the life domain approach to explaining happiness pioneered by psychologist Angus Campbell and his collaborators (Campbell et al 1976; Campbell, 1981)<sup>4</sup>. In this view responses on global happiness are seen as the net outcome of reported satisfaction with various domains of life – material living conditions, family life, health, work, and so on. Statements about satisfaction in each domain are, in turn, viewed as reflecting the extent to which objective outcomes in that domain match the respondent’s goals or needs in that area. In the domain of family life, for example, one’s goals, simply put, might be a happy marriage with two children and warm family relationships. Satisfaction with family life would reflect the extent to which objective circumstances match these goals – the greater the shortfall, the less the satisfaction with family life. Over time, subjective goals, objective circumstances, or both may change, and thereby alter judgments on domain satisfaction. Given objective conditions, goals may be adjusted to accord more closely with actual circumstances, in line with the process of hedonic adaptation emphasized by psychologists. Given goals, objective circumstances may shift closer to or farther from goals, altering satisfaction along the lines stressed by economists.

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<sup>4</sup> This approach is sometimes termed multiple discrepancy theory (Michalos 1986, 1991, cf. also Diener et al 1999; Solberg et al 2002).

An advantage of this approach is that judgments on domain satisfaction that are central to determining happiness reflect both subjective factors of the type emphasized in psychology and objective circumstances stressed by economics. Another advantage is that it classifies into a tractable set of life domains the everyday circumstances to which people refer when asked about the factors affecting their happiness. Of course, there is not complete agreement on what domains of life are conceptually preferable, and the classification of life domains remains a subject of continuing research. Virtually all life domain studies, however, agree that economic condition, family circumstances, health, and work are important domains determining happiness. These four, for example, with slightly different labels, are at the head of Cummins's (1996) meta-analysis of the domains of life satisfaction, and all figure prominently in recent empirical studies using the life domain approach (Saris and others 1995, Salvatore and Muñoz Sastre 2001, Rojas 2005, van Praag and Ferrer-i-Carbonell 2004, van Praag, Frijters, and Ferrer-i-Carbonell 2003). It is these four domains – economic, family, health, and work – that are studied here.

## **Data and Methods**

The data are from the United States General Social Survey (GSS) conducted by the National Opinion Research Center (Davis and Smith 2002). This is a nationally representative survey conducted annually from 1972 to 1993 (with a few exceptions) and biannually from 1994 to 2002. The present analysis is based on data for 1973-1994, because two of the variables of interest, family and health satisfaction, are included in the GSS only during this time span. The GSS is a survey of households, and weighted responses are used here to represent more accurately the population of persons (Davis

and Smith, 2002, pp. 1392-1393 of Codebook). For happiness there are 3 response options; financial satisfaction, 3 options; job satisfaction, 4 options; family satisfaction, 7 options; and health satisfaction, 7 options. The specific question for each variable is given in Appendix A. In the present analysis the response of an individual to each question is assigned an integer value, with a range from least satisfied (or happy) equal to 1, up to the total number of response options (e.g., 3 for happiness, 7 for health satisfaction).

The average trend of happiness and each domain satisfaction variable from ages 18 to 89 is established by regressing happiness on age controlling for year of birth (birth cohort), gender, race, and education. The technique is essentially a statistically refined variant of demographers' birth cohort analysis. The control for birth cohort means, in effect, that segments of life cycle experience for numerous closely overlapping birth cohorts are combined to infer the typical life cycle pattern. In any given year the individuals actually surveyed differ from the previous year – the surveys provide a random sample year after year of persons from the same birth cohort, but not the responses of exactly the same members of the cohort; thus it is a “synthetic” panel. One of the benefits of a synthetic panel is that the data are a random sample of the entire population, thus avoiding the problem of possible bias due to sample selectivity. But because a synthetic panel does not follow exactly the same individuals as they age, it is not possible to study variability in individual life course patterns as is done by Fujita and Diener (2005) and Mroczek and Spiro (2005); hence, the present study is confined to the average pattern.

The total number of birth cohorts included in the analysis is 93. The 51 cohorts born in successive years from 1905 to 1955 are each followed over 21 years of the life cycle (those born in 1955 starting at age 18; those in 1905, at age 68). For the other 42 cohorts the time span covered ranges from 20 years (for the cohorts of 1956 and 1904) down to 1 year (for the cohorts of 1976 and 1884), with a mean time span for these 42 cohorts of 10.5 years.

Gender, race, and education are characteristics that are either fixed throughout the adult life cycle, or, in the case of education, fixed early on for almost all persons. The controls for these characteristics are because older persons and older cohorts differ somewhat in their demographic composition from younger, having somewhat larger proportions of females, nonblacks, and less educated persons. If cohort patterns were analyzed without controls, generalizations about happiness over the entire life course would be distorted because happiness or domain satisfaction varies by gender, race, and education (Argyle 1999, Blanchflower and Oswald 2004, Frey and Stutzer 2002).

A dichotomous variable for education is used here – 12 years or less or 13 years or more, but the results would be virtually the same if, instead, highest grade completed were the variable. A dichotomous variable is used because education is viewed as dividing the population in much the same way as the gender and race variables – into two distinctive social groups, in this case, those who go to college and those who do not. Each of these subdivisions – gender, race, and education - may be thought of as identifying classes of the population whose average trend in life cycle happiness may differ from that for the total population. Differences among these subgroups is an important research issue, but one for the future. In the present analysis the focus is on the pattern typical of

the population as a whole, and gender, race, and education are treated only as control variables. Descriptive statistics for all variables are presented in Appendix B.

The regression technique used throughout is ordered logit, because responses to the several variables are categorical and number three or more. Ordinary least squares regressions yield virtually identical results, suggesting that the findings are robust with regard to methodology. In the regression analysis to determine the life cycle pattern for happiness and each domain satisfaction variable various linear and quadratic combinations have been tried for both the age and cohort variables. The combination yielding the best fit for happiness or domain satisfaction is used here, because there is no reason to suppose that life cycle and cohort patterns would be the same from one domain to another or for global happiness. The average trend in life cycle happiness and in each domain satisfaction variable is the estimated value at each age 18 to 89 when mean values for all independent variables other than age are entered in the regression equation<sup>5</sup>. The estimated value for a given age differs from the raw mean of individual responses at that age, because it is adjusted for compositional differences across ages in cohort, gender, race, and education.

## **Results**

### ***The Average Trend in Life Cycle Happiness***

Happiness is greatest at midlife, but not by a great deal. On average, it rises somewhat, as people progress from age 18 to 51 and declines thereafter (Figure 1; see Appendix C, column 1, for the underlying equation). On the three option happiness scale

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<sup>5</sup> More specifically, this estimation procedure yields probabilities for each response category – in the case of happiness, for example, the probabilities that happiness equals 1, 2, or 3 respectively. The adjusted mean value is obtained by multiplying the category value (1, 2, or 3) by the probability for that category, and summing the products.

– very happy, pretty happy, not too happy – the increase from age 18 to 51 is equivalent to an upward shift over the first 33 years of the adult life cycle of 7 percent of the population by one response category, say from “pretty happy” to “very happy.” Subsequently, happiness drops at about the same rate as it previously rose, and by age 89 it is below the level at age 51 by an amount equivalent to a downward shift of one response category for about 9 percent of the population. Panel studies (Fujita and Diener, 2005) make clear that many more individual shifts in SWB are actually occurring – the 7 and 9 percent changes reported here are the net balance of a much larger number of individual movements.

As mentioned, Mroczek and Spiro (2005) also find an inverted U for the average trajectory of life cycle satisfaction. The amplitude of movement that they report is difficult to compare with that in Fig. 1, because they use a different measure and scale for SWB - life satisfaction, ranging in value from 0 to 11. Their peak occurs somewhat later in life at age 65. Their difference from the peak here may be due to the fact that their sample comprises relatively healthy men from around age 40 onward (Mroczek and Spiro, 2005, p. 192) whereas the present results are for the total population from age 18 on. It is likely too that the peak for all males occurs earlier than that for healthy males.

It was noted previously that Costa et al (1987) in a panel study following respondents for nine years report a constant level of affect balance over the life cycle. Their data, however, do not clearly contradict the present findings or those of Mroczek and Spiro (2005). If one plots against age the mean level of affect balance from their study (with or without the “health concerns” component) for the five successive life cycle

segments represented by the cohorts they analyze, there is, in fact, a pattern suggesting that the overall trend in mean level peaks around age 65.

A closer look at the positive trend in life cycle happiness suggested by Charles et al (2001) also yields a result consistent with the present pattern. If one differences at each age the mean values of positive and negative affect estimated in their study, one finds that affect balance rises to age 55 and falls thereafter (pp. 144-145, Figures 2 and 3).

All panels, synthetic or not, lose members of a cohort through mortality. (A synthetic panel, however, does not have the additional problem of attrition due to inability to locate the original panel members.). Over the life cycle selection occurs in favor of happier persons, because persons in poor health are both less happy and more likely to die (Idler and Benyami 1997; Mehnert et al, 1990; Smith, Taylor, and Sloan, 2001). Such selection is not very great up to age 70, when three-fourths of the cohort alive at age 18 are still living. By age 80, however, the proportion surviving drops to one-half and by 89, to little more than a fifth<sup>6</sup>.

Mortality causes an upward bias at older ages of the curve in Figure 1, because the average is increasingly based on persons in better health. Mroczek's and Spiro's valuable analysis (2005, pp. 194-5 and Table 4) provides an idea of the magnitude of this bias, because they estimate separate life satisfaction trajectories for those who died and those who remained alive, an analysis possible only with data following the same individuals as they age. Their statistical results imply that at age 85 the mean life satisfaction of those who died would have been about 8 percent less than those who remained in the sample. Those who died comprise about one-third of the original sample;

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<sup>6</sup> Survival rates are from the 2001 United States life table available at <http://www.ssa.gov/OACT/STATS/table4c6.html>.

hence in the absence of attrition due to mortality mean satisfaction would have been about 3 percent less ( $1/3 \times 8$ ). In the synthetic panel analyzed here attrition due to mortality reaches one-third when people are in their mid-seventies. If the Mroczek-Spiro estimates are applicable here, then the bias due to mortality in Figure 1 is probably small up to about age 75. Nevertheless, this selection bias plus the fact that observations for persons over age 75 become increasingly scarce suggest that the present results for ages over 75 be viewed as rather tentative.

On the face of it, the life cycle pattern for overall happiness in Figure 1 appears fairly consistent with the strong setpoint model – that happiness, on average, is fairly stable and not much affected by life circumstances. True, there is some evidence of change, but it is fairly mild and hardly contradicts the model seriously. The domain patterns, however, are a rather different story.

### ***Average Trends in Domain Satisfaction***

Satisfaction in the individual domains typically varies considerably more over the life cycle than does happiness (Figure 2; see Appendix C, columns 2-5, for the underlying equations). The exception is satisfaction with family life whose life cycle movement is very similar to that in happiness in that it peaks around age 50 and has only a slightly greater amplitude. Satisfaction with one's financial situation, however, has a strikingly different pattern; it declines very slightly through age 36, but thereafter rises considerably, with the biggest increase late in life. The pattern for satisfaction with health too is distinctive, falling throughout the life course. Finally, satisfaction with one's work rises to age 60, and then drops. For all of the domain satisfaction variables, mortality probably causes a selection effect in favor of those in better health that leads to an

upward bias at the oldest ages like that for happiness just mentioned. For satisfaction with health this bias is probably the reason for the slowing of the rate of decline as people move into their seventies and eighties, where this selection bias becomes increasingly important.

The amplitude of the changes in satisfaction with particular aspects of life are, on average, considerably greater than that for happiness, even after allowing for the fact that, except for financial satisfaction, the number of response categories for the domain variables is greater than for happiness. The scales for domain satisfaction in Figure 2 are adjusted for differences in number of response categories; for example, health and family situation, which have a response range of 6 compared with a range of 2 for happiness, are drawn to a scale one-third as great as that for happiness. As can be seen, even after adjustment, the amplitude of life cycle change for each of the domain satisfaction variables is greater than that for happiness. So while the life cycle pattern of happiness in Figure 1 seemingly gives some credence to the strong setpoint model, the domain satisfaction patterns in Figure 2 are typically counter to what one would expect if adaptation were rapid and complete within each domain.

An analysis of the specific factors determining each of the domain satisfaction variables is beyond the scope of this paper. But the patterns here of domain satisfaction do seem to say something about the importance of objective life circumstances relative to subjective goals in determining satisfaction in each domain. The pattern for satisfaction with family life, for example, can be seen to parallel roughly life cycle trends in objective circumstances in the family domain (cf. Waite, 1995, Delbes and Gaymu, 2002). As unions are formed and families built, satisfaction with family life rises; then, in midlife

and beyond, as children leave home, and divorce and widowhood take their toll on partnerships, satisfaction turns downward. Satisfaction with health also appears dominated by actual life circumstances, declining throughout the life course as the incidence of disability and disease rises (Reynolds et al 1998). Satisfaction with work rises as people move up the career ladder, but drops off as work careers come to their end. If, in each of these domains people were adapting rapidly and completely to changing life circumstances, then satisfaction would not follow the general pattern of actual events. This is not to say that no adaptation is occurring, but clearly adaptation is not enough in each domain to offset the similarity of life cycle satisfaction to the actual course of life events.

But actual life circumstances do not dominate in every domain. In contrast to the others, satisfaction with one's financial situation does not follow the life course pattern of people's actual economic condition. Income rises throughout most of the working years and then levels off and declines, but satisfaction with one's financial situation moves almost inversely, starting to rise noticeably in midlife, and increasing most in late life when income, if anything, is typically declining. The upswing in satisfaction with one's financial situation in midlife and beyond suggests that an economic model relying on objective circumstances alone as determining well-being is mistaken, for the upturn in later life clearly cannot be due to rising income. A clue to the explanation may come from the aforementioned aspirations hypothesis of happiness researchers in economics, applied in this case, however, to the financial domain alone rather than to overall happiness. Early in adult life material aspirations may rise faster than income and households incur a growing burden of debt to income that creates financial worries.

These emotional strains undercut the rise in financial satisfaction that income growth in itself would engender. Then later in life aspirations may level off and decline, and the pressure of debt payments on income diminish. As financial worries recede, satisfaction with one's financial situation rises. If this reasoning is right, it points to the important effect in the financial domain of subjective influences such as material aspirations.

The domain results contradict a top down interpretation of the determinants of life cycle well-being. A top down advocate, who sees happiness as a reflection of stable traits like personality and genetic make-up, would expect that the fairly constant life cycle pattern of happiness in Figure 1 would be replicated in each of the various domains. But this does not happen: as Figure 2 demonstrates most of the domain patterns differ markedly from the happiness pattern and they differ also among themselves. The considerable variability in the domain patterns thus belies the top down view, and calls into question the idea that personality and genetic make-up principally determine the average life course pattern of happiness. The next section addresses the bottom up view.

### ***Domain Satisfaction and Happiness***

Do the domains studied here play an important role in shaping the life cycle pattern of overall happiness? To answer this, the relation of happiness to satisfaction in the individual domains is first examined; then, based on this result, an attempt is made to predict the average trend in life cycle happiness from the life cycle patterns in the four domains taken together.

One would expect that if satisfaction in a particular domain had an important effect on happiness, then overall happiness would increase if satisfaction in that domain rises and no change takes place in any other domain. Is this, in fact, the case? The

answer is yes. On average, happiness varies directly and significantly with each dimension of people's lives included here: with one's financial situation, family life, health, and work. This is the lesson of a multivariate ordered logit regression on the domain satisfaction variables (Table 1, column 4). Thus, the greater is satisfaction with each of these life situations, the greater, on average, is overall happiness.

The domain satisfaction variables array as follows from high to low with regard to magnitude of effect on happiness: family life, financial situation, job, and health. When the effect on happiness of each domain variable is considered singly, family satisfaction has the highest pseudo- $R^2$ . After family satisfaction, the pseudo- $R^2$  increases most with the addition of financial situation, then with job satisfaction, and finally with health satisfaction (Table 1, columns 1-4).

Can the life cycle patterns for the domain satisfaction variables taken together actually explain the observed life cycle pattern of happiness? To answer this, predicted life cycle happiness at each year of age from 18 to 89 is estimated here by substituting in the regression equation in column 4 of Table 1 the value for each domain satisfaction variable for each year of age shown in Figure 2. The outcome is that the four domain satisfaction variables predict fairly closely the actual pattern of life cycle happiness (Figure 3). The amplitude of the predicted movement is somewhat greater than in actual happiness, and the peak, a little later, at 55 years of age, compared with 51.

The correspondence between predicted and actual life cycle happiness supports the "bottom-up" view of the determinants of happiness. The similarity further implies that the considerable stability observed in overall happiness in Figure 1 is due, not to rapid and complete adaptation to life events within domains, but to offsetting changes in

people's satisfaction with different domains of life<sup>7</sup>. The mild rise in happiness through midlife that occurs in the population as a whole is due, on average, chiefly to growing satisfaction with family life and work, which in combination more than counteract diminishing satisfaction with health. Beyond midlife happiness decreases, because the continuing decline in satisfaction with health is joined by diminishing satisfaction with family life and work. However, these negative influences on happiness beyond midlife are offset to a considerable degree by a progressive improvement in people's satisfaction with their financial situation.

### **Summary and Implications**

Bearing in mind that one is dealing here with averages for the total population and that this is a study of one particular time and place, the following tentative conclusions may be drawn.

In the population as a whole the tendency, on average, is for the happiness of a birth cohort to rise mildly from age 18 to midlife, and decline somewhat thereafter. This is the net result of disparate movements in satisfaction within major life domains – family life, financial situation, work and health. Until people are around age 50 increased satisfaction with family life and work outweigh diminished satisfaction with health and contribute, on average, to a mild rise in happiness. From midlife onward, decreasing satisfaction with family life and work join that in health in causing a decline in happiness.

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<sup>7</sup> In discussing psychological strategies that might increase SWB, Parnucci (1995, p.161) describes another possible type of adaptation. People might “tune out” less happy domains and place more emphasis on happier ones – what would be equivalent in the present statistical analysis to shifting the relative weights of the domains in the regression in Table 1, column 4. But statistical tests give no evidence that this “cross-domain” adaptation actually takes place. Indeed, in later life the tendency, on average, is to place greater weight on the less happy domain of health, and less weight on the more happy domain of finances.

This negative impact is considerably offset, however, by increasing satisfaction of people with their financial situation.

The average trends in satisfaction with family life, work, and health appear to reflect the dominance, on balance, of actual life circumstances in determining satisfaction in those domains, although some adaptation is probably occurring. This is consistent with economists' emphasis on the importance of objective conditions in determining well-being, but not necessarily with the strong economic model in which no adaptation occurs. On the other hand, the movement in people's satisfaction with their financial situation runs counter to the economists' emphasis on objective conditions, and points to the importance in determining happiness that psychologists place on subjective variables such as aspirations.

In general, the results consistently support neither the mainstream economic model, in which objective conditions alone determine well-being, nor the strong setpoint model or its close ally, the top down model, that see life cycle happiness as the highly stable product of personality and genetic make-up. Rather the results point to a bottom up approach, in which the pattern of life cycle happiness is the net outcome of satisfaction in the principal life domains, and satisfaction in each domain is the product of both objective conditions and goals or aspirations in that domain.

The finding that life cycle happiness is the net outcome of disparate movements in the four life domains implies that there is nothing inevitable about the average trend reported here in life cycle happiness – there is no “iron law of happiness”. For example, policies reducing the incidence of disability and disease would moderate the downtrend in satisfaction with health, where actual health circumstances seem to dominate over

adaptation. Such policies, by reducing mortality and morbidity, would also reduce the dissolution of marriages and the consequent decline at older ages of satisfaction with family life. In turn, milder declines in satisfaction with health and family life would, other things constant, raise the average trend of life cycle happiness, especially in later life. In this way, public policy might raise overall happiness.

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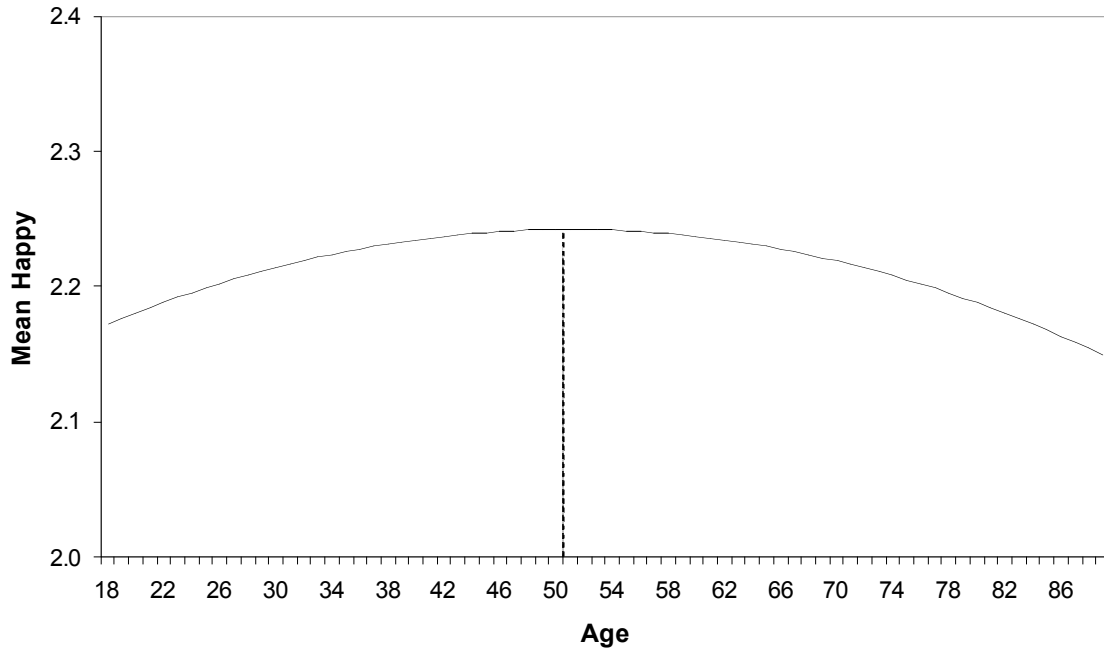
## Figure Legends

Fig. 1 Life Cycle Happiness

Fig. 2 Life Cycle Happiness and Domain Satisfaction

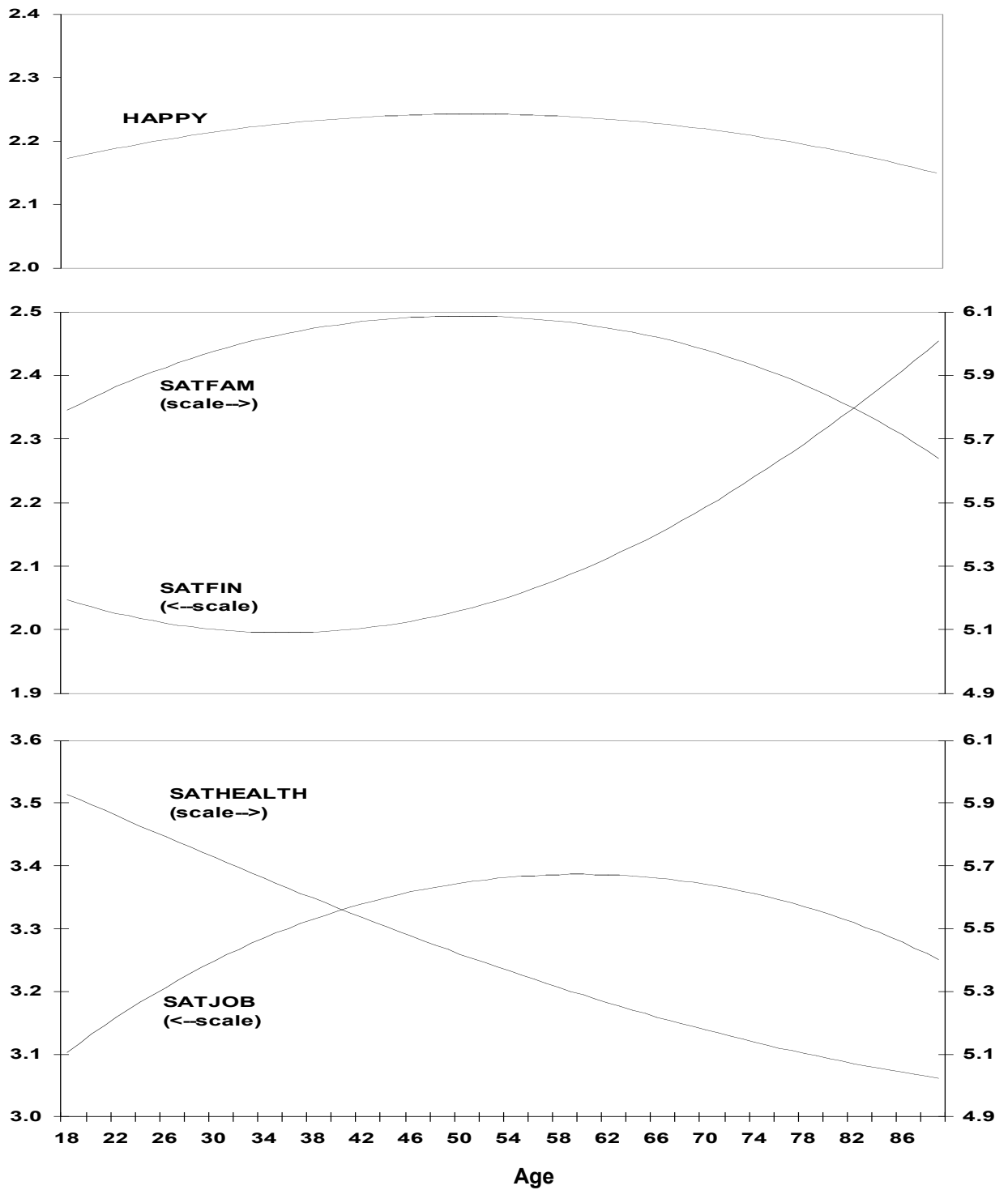
Fig. 3 Life Cycle Happiness, Actual and Predicted

**Fig.1 Life Cycle Happiness**



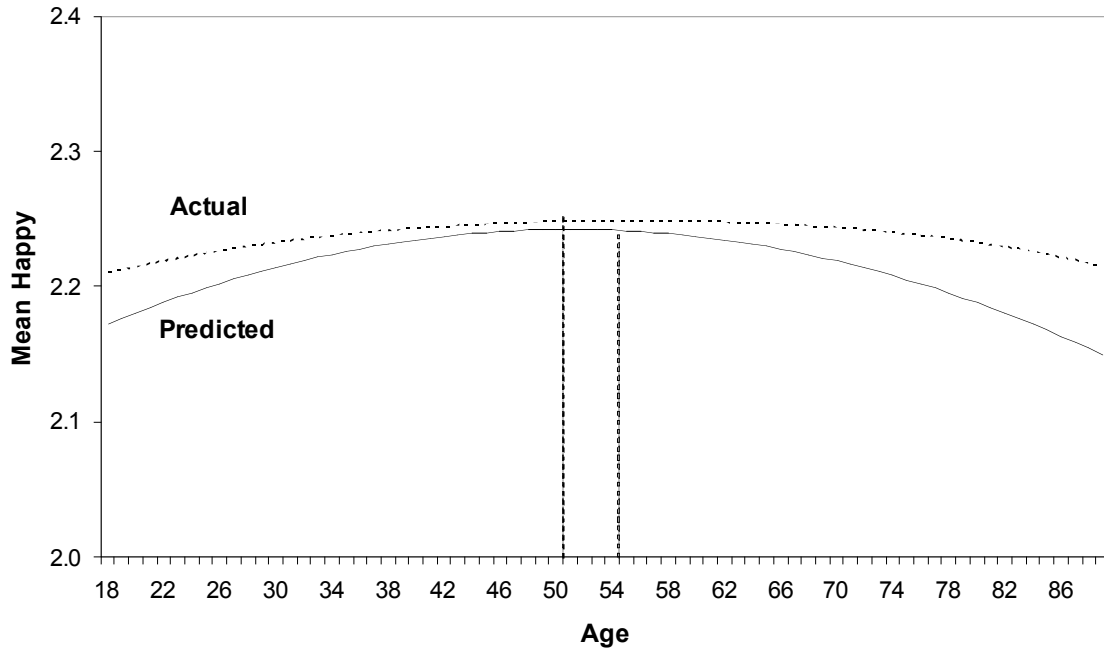
Source: Appendix C, column 1.

**Fig.2 Life Cycle Happiness and Domain Satisfaction**



Source: Appendix C, columns 1-5.

**Fig.3 Life Cycle Happiness, Actual and Predicted**



Source: Actual, same as Fig. 1. Predicted happiness at each age is obtained by entering the Figure 2 values for that age in the regression of Table 1, column 4.

**Table 1***Regression of Happiness on Specified Domain Satisfaction Variables:**Ordered Logit Statistics<sup>a</sup>*

Independent variable	Model			
	(1)	(2)	(3)	(4)
Satfam	.578	.542	.527	.461
Satfin	--	.705	.599	.573
Satjob	--	--	.518	.498
Sathealth	--	--	--	.242
Cut1	1.132	2.266	3.519	4.299
Cut2	4.166	5.448	6.899	7.744
n	23,119	23,035	18,470	18,440
Chi <sup>2</sup>	2168	3232	2920	3200
Log likelihood	-20,334	-19,526	-15,099	-14,852
Pseudo R <sup>2</sup>	.065	.099	.121	.133

a. For all coefficients,  $P > |z| = 0.000$

## Appendix A

### Questions and Response Categories for Happiness and Satisfaction Variables

HAPPY: 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? (Coded 3, 2, 1 respectively)

SATFIN: We are interested in how people are getting along financially 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? (Coded 3, 2, 1 respectively)

SATJOB: (Asked of persons currently working, temporarily not at work, or keeping house.) 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? (Coded from 4 down to 1)

SATFAM: 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

(Reverse coded here)

SATHEALTH: Same as SATFAM, except “Your family life” is replaced by “Your health and physical condition.”

## Appendix B

### *Descriptive Statistics*

Variable	Number of observations	Mean	Standard deviation	Minimum	Maximum
Happy	29,651	2.21	0.63	1	3
Age	29,651	45.1	17.65	18	89
Birth cohort (1890=0)	29,651	48.9	18.68	-6	86
Male	29,651	0.44	0.50	0	1
Black	29,651	0.11	0.32	0	1
Educ $\leq$ 12 yrs.	29,651	0.61	0.49	0	1
Satfin	29,710	2.04	0.74	1	3
Satjob	23,816	3.29	0.82	1	4
Satfam	23,189	5.91	1.36	1	7
Sathealth	23,235	5.43	1.49	1	7

## Appendix C

### *Regression of Happiness and Each Domain Satisfaction Variable*

*on Specified Independent Variables:*

#### *Ordered Logit Statistics*

(In paren,  $P > |z|$ )

Independent Variable	Dependent Variable				
	Happy (1)	Satfin (2)	Satjob (3)	Satfam (4)	Sathealth (5)
Age	.020686 (0.001)	-.030693 (0.000)	.046965 (0.000)	.044662 (0.000)	-.032047 (0.000)
Age <sup>2</sup>	-.000203 (0.001)	.000432 (0.000)	-.000394 (0.000)	-.000453 (0.000)	.000142 (0.042)
Cohort	-.017975 (0.001)	-.010219 (0.000)	-.022615 (0.002)	-- --	.028104 (0.000)
Cohort <sup>2</sup>	.000129 (0.014)	-- --	.000114 (0.091)	-- --	-.000336 (0.000)
Male	-.101324 (0.000)	.016625 (0.483)	.023647 (0.381)	-.180871 (0.000)	.121271 (0.000)
Black	-.735731 (0.000)	-.671642 (0.000)	-.461883 (0.000)	-.480112 (0.000)	-.238758 (0.000)
Ed ≤ 12	-.260456	-.392832	-.216605	-.097925	-.238501

	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Cut1	-2.510397	-2.360142	-3.027477	-3.68573	-4.751097
Cut2	.316674	-.32067	-1.678026	-2.780609	-3.637703
Cut3	--	--	.272434	-2.12574	-2.99655
Cut4	--	--	--	-1.244581	-1.881087
Cut5	--	--	--	-.4823342	-1.16334
Cut6	--	--	--	1.035689	-.279621
n	29,651	29,728	23,808	23,207	23,252
Chi <sup>2</sup>	508	1492	812	279	802
LR	-27,395	-30,852	-25,397	-31,446	-37,218
Pseudo R <sup>2</sup>	.0119	.0270	.0187	.0055	.0117