

Two Determinants of Happiness: A Case for Value Education*

Madhu S. Mohanty
California State University, Los Angeles

Abstract

With a view to exploring alternative methods of augmenting personal happiness, the current study examines two major determinants of happiness: income and positive attitude. Income, the objective determinant of happiness, is already known in the literature to depend on schooling. The current study, following a propensity score matching approach, demonstrates that value education in the form of religious attendance affects positive attitude, the subjective determinant of happiness, positively. Based on this finding and the finding of the earlier studies on the positive schooling-earnings relationship, the study recommends supplementing traditional schooling with value education to simultaneously improve earnings and attitude, leading to an increase in personal happiness.

Key words: Income; Attitude; Religiosity; Value Education; Propensity Score Matching

JEL Classification Code: A12, A13, A14, Z13, Z18

- The author wishes to thank Miles Finney and Pravakar Rao for helpful comments on an earlier draft of this paper. The usual disclaimer applies. Please address all correspondence to Professor Madhu S. Mohanty, Department of Economics and Statistics, California State University, Los Angeles, 5151 State University Drive, Los Angeles, CA 90032, USA, Tel. 001-323-343-2930, Fax. 001-323-343-5462, Emails: mmohant@calstatela.edu, mmohanty9@yahoo.com

I. Introduction

Research on the determinants of personal happiness traditionally remained under the domain of psychologists. Economists did not really take any serious interest in this subject until the later part of twentieth century when Easterlin (1974) for the first time in the economics literature presented the evidence that an increase in income does not necessarily enhance an individual's reported level of happiness.¹ This finding, widely known in the literature as "Easterlin paradox," has led to numerous studies by several economists all over the world in the recent years (Oswald, 1997; Easterlin, 1995, 2001; Blanchflower and Oswald, 2004a, 2004b; Ahuvia, 2008; Pouwels et al., 2008; Deaton, 2008; Stevenson and Wolfers, 2008; Guriev and Zhuravskaya, 2009; Graham, 2009, 2012). In fact three excellent recent surveys on happiness economics by Frey and Stutzer (2002), Clark et al. (2008) and Dolan et al. (2008) containing reference to hundreds of articles, and the publication of *Handbook on the Economics of Happiness* edited by Bruni and Porta (2007) containing thirty-seven major studies provides a glimpse of the overwhelming growth of interest among economists in the recent years on this new and exciting area of research. While identifying numerous variables that contribute to an individual's level of happiness, most of these studies focus on examining directly or indirectly to what extent income and wealth, the widely accepted objective determinants of happiness, truly affect his/her personal happiness.

While debating whether income, the key to an individual's material well-being, can promote personal happiness beyond a certain point (Drakopoulos and Karayiannis, 2007; Layard, 2005),² economists join psychologists in their search for other happiness augmenting factors, such as good health, supportive marriage, good social relationship, freedom, democracy, lack of tragedy etc. (Argyle, 1999; Diener and Lucas, 1999; Gerdtham and Johannesson, 2001; Frey and Stutzer, 2002; Blanchflower and Oswald, 2004a, 2004b; Dolan et al., 2008). It is interesting to note that most psychologists raise serious doubts over whether or not the objective factors, especially

income and wealth, can contribute to personal happiness in any significant manner (Diener and Seligman, 2004). In fact, they claim that all these variables taken together account for even less than 15 percent of the variance of happiness (Andrews and Withey, 1976; Argyle, 1999; Diener, 1984; Diener et al., 1999). Happiness thus depends not only on objective factors that includes income, but also to a large extent on numerous observed and unobserved subjective factors.

Recently, a new but a thin line of research that focuses on the subjective determinants of happiness demonstrates that personal happiness of an individual is related significantly to his/her positive attitude (Mohanty, 2009, 2013b). Defining positive attitude as the psychological capital skill (Goldsmith et al, 1997; Waddell, 2006) of perceiving different life events with an optimistic outlook (Mohanty, 2009, 2012) that can change in course of time due to changes in its determinants (Mohanty, 2013a), these studies argue that personal happiness, which is predominantly a psychological feeling, can be explained more by the individual's inner psychological attitude than by other external variables, objective or subjective, including income. Using the US data these studies have in fact demonstrated that a large percentage of the change in self-reported happiness is explained by changes in the individual's attitude.

Note that the role of inner psychological variables, such as personality, in the determination of an individual's utility is not new in economics. Treating man as a moral individual, Dowell et al. (1998) have presented powerful arguments in favor of including personality traits (for example, honesty) in the individual's utility function. Mohanty (2009) has recently demonstrated that an individual's personal happiness depends to a large extent on his/her positive attitude. In their recent seminal study on the role of personality traits in economics, Borghans et al. (2008) have strongly recommended integrating economics with psychology by including personality traits in standard neoclassical utility functions. All these studies agree that happiness depends not only on objective and external factors, such as income, employment, supportive marriage, good health etc.,

but also on inner subjective (or psychological) factors, such as honesty, positive attitude, self-esteem and numerous other personality traits. In other words, happiness (H) depends broadly on three groups of variables: those related to material progress (income, employment etc.), those associated with physical health and relationships (health, marriage, children and other societal variables) and those related to inner psychological characteristics (attitude, personality etc.). Holding the second category of variables constant, the happiness of an individual can then be expressed as a function of the other two categories of objective and psychological variables. Denoting income (I) as the proxy for all objective factors and positive attitude (A) as an instrument for all psychological variables, we can write the happiness function in its simplest form as follows:

$$(1) \quad H = H(I, A), \text{ where } H_I > 0, H_A > 0, H_{II} < 0, H_{AA} < 0, \text{ and } 0 \leq A \leq 1.$$

It is important to note that no one disputes over whether or not income should be considered as a determinant of happiness (Clark et al. 2008; Stevenson and Wolfers, 2008). The debate is primarily over the extent to which it affects happiness, and consequently inclusion of income as the proxy for objective determinants of happiness in equation (1) is quite straight forward. Inclusion of positive attitude in equation (1) as a proxy for subjective determinants of happiness, however, is not standard and therefore needs further explanation. First, a number of psychologists in recent years have demonstrated the beneficial effects of positive thinking in different aspects of life, especially when promoting happiness and coping with adversities (McCrae and Costa, 1986; Seligman, 1991; Scheier and Carver, 1993; Taylor and Armor, 1996; Folkman, 1997; DeNeve and Cooper, 1998). Second, several economists in different contexts have also shown that the psychological variable attitude and other personality traits affect the worker's economic performance positively (Goldsmith et al., 1997; Waddell, 2005; Mohanty, 2012). Since income is known to affect happiness positively, attitude by directly affecting income is expected to influence happiness indirectly. Finally, Mohanty (2009, 2013b) has already demonstrated that

positive attitude does in fact affect happiness positively. For all these reasons, we consider positive attitude as a good proxy for most psychological variables – observed or unobserved – that affect happiness.

The above specification of the happiness function suggests that any attempt to enhance the individual's personal happiness must include among others measures to augment his/her income and improve attitude. Numerous past studies have already shown that more schooling leads to higher earnings (Becker, 1964, 1993; Card, 1999; Mincer, 1974). One way to augment an individual's personal happiness therefore is to enhance his/her income through more schooling. The current study goes a step further and claims that an alternative way to raise personal happiness is to improve his/her attitude through appropriate value education. In the absence of appropriate data on value education, the current study uses religious attendance as a proxy for this variable and tests whether or not value education affects attitude positively.

The study is organized as follows. The next section demonstrates graphically how the happiness of an individual can be enhanced by increasing income and improving attitude. Section 3 introduces the estimating equations to empirically demonstrate that (i) happiness depends on income and attitude, (ii) income depends on traditional schooling, and (iii) attitude depends on value education. Section 4 introduces the data and Section 5 presents both cross-sectional and panel data results. This section also tests the presence of a causal effect of value education on attitude and examines its policy implications. The final section summarizes our findings.

II. Happiness Function: An Augmented Utility Function

It is important to note that the happiness function presented in equation (1) is in fact an extension of the traditional neoclassical utility function with attitude included as an additional independent variable. In a simple two goods model (X and Y), an individual with a given income

and constant market prices P_X and P_Y solves the following constrained utility maximization problem:

$$(2) \quad \text{Max } U = U(X, Y), \quad U_X > 0, U_Y > 0, U_{XX} < 0, U_{YY} < 0,$$

$$(3) \quad \text{s.t.} \quad P_X X + P_Y Y = I.$$

Given the goods prices, the utility of the individual in this framework can be increased only by increasing income. In other words, with given prices, both equations (2) and (3) can be summarized by a simple unconstrained maximization problem in which income (I), the proxy for all material goods and services that can be purchased by money, appears as the only argument in the utility function. The above maximization problem thus reduces to

$$(4) \quad \text{Max } U = U(I), \quad U_I > 0, U_{II} < 0.$$

The happiness function in equation (1) clearly is an extended version of the utility function in equation (4). In other words,

$$(5) \quad H(I, A) = U(I, A).$$

This happiness function may thus be treated as an augmented utility function that recognizes the role of both subjective and objective factors in influencing happiness (Dowell et al., 1998; Borghans et al., 2008; Mohanty, 2009).

Note that income (I) is a continuous variable. The psychological variable positive attitude (A), on the other hand, may be either continuous or binary. The psychological variable in the augmented utility function of Dowell et al. (1998) is honesty which for obvious reason explained in their study assumes the value one when the individual is honest and is zero, otherwise. The psychological variable positive attitude, on the other hand, is different because individuals may differ from each other based on the degree of their positive outlooks. A person who assumes a positive attitude 75 percent of the time is certainly more positive than someone who bears such an attitude 25 percent of the time. The attitudes of these two individuals differ in degree only, and

consequently attitude in a given cross-section of individuals may be treated as a continuous variable that assumes any value between zero and one.

With the above continuity assumptions on both arguments, the happiness function can be represented graphically by standard indifference curves that are downward sloping and are convex to the origin between $A = 0$ and $A = 1$, as shown in Figure 1.

(Insert Figure 1 here)

From an initial level of happiness represented by an indifference curve H_0 , an individual can rise to a higher level (indifference curve) either by increasing income or by improving attitude or by doing both. For example, with a given attitude level A_0 , happiness of the individual can be increased only by increasing income up to a point where the partial derivatives $H_I = 0$ and $H_{II} < 0$, because higher income with prices remaining constant results in a higher level of utility leading to more happiness. This result that implicitly assumes a given attitude level has been derived empirically by numerous studies in the literature which shows a positive relationship between income and happiness (Clark et al., 2008; Deaton, 2008; Stevenson and Wolfers, 2008; Graham, 2009). With attitude as an additional argument in the happiness function, the current study presents three additional scenarios under which happiness can be increased.

Case 1: *With income remaining constant, the attitude improves from A_0 to A_1 .* This is the simplest case for augmenting happiness with a given income. As long as $A_1 < 1$, the individual will enjoy higher level of happiness on a higher indifference curve at E_1 in fig. 1.

Case 2: *With income remaining constant, the attitude improves initially leading to further rise in income.* This is the case in which improvement in attitude can have both direct and indirect effects on happiness. The direct effect is already incorporated in the happiness function (from E_0 to E_1 in fig. 1). The indirect effect follows from numerous earlier findings that suggest that improvement in attitude leads to increase in earnings from I_0 to I_1 (Groves,

2005; Waddell, 2006; Mohanty, 2012), and higher earnings lead to increase in happiness from E_1 to E_2 (Stevenson and Wolfers, 2008). The interaction between two arguments thus leads to even a higher level of happiness than what is predicted initially (H_1 to H_2).

Case 3: *When both income and attitude improve simultaneously.* Clearly, the individual is transported initially to a much higher indifference curve with a higher level of happiness (from E_0 to E_2). Subsequently, the happiness may rise still further if case 2 comes into effect (from E_2 to E_3). In that case, the happiness keeps on increasing at a faster rate until A equals 1, and subsequently at a decreasing rate if income increases still further until $H_1 = 0$.

All these cases suggest that maximization of a happiness (or augmented utility) function does not contradict the standard results of neo-classical constrained utility maximization. It simply extends the traditional utility analysis to the analysis of a broader utility function designed to help policy makers formulate more effective policies based on both objective and psychological factors that determine personal happiness.

III. Estimating Equations

The goal of this study is to demonstrate that happiness of an individual can be enhanced by both increasing income and improving attitude which in turn can be accomplished by traditional schooling and value education, respectively. To test this composite hypothesis, we have to test three different, but related, hypotheses. First, to test whether or not happiness (H) is related to income (I) and attitude (A), we have to estimate the following equation:

$$(6) \quad H_i = \alpha_0 + \alpha_1 A_i + \alpha_2 I_i + \alpha_3 I_i^2 + X_{li} \alpha_4 + \varepsilon_i,$$

where X_{li} is a row vector of individual characteristics that influence happiness. Income is included in a quadratic manner in this equation to verify whether or not happiness rises at a decreasing rate with the rise in income. Depending on the availability of data, the attitude variable may be

continuous or binary. The variable happiness in most data sets is available as an ordered categorical variable. Under the assumption of normality of the error term therefore equation (6) can be estimated by ordered probit. Depending on the availability of data, equation (6) can be estimated from either different cross-sectional samples or multi-period panels. In case of panel data, this equation can be estimated by either fixed effect or random effect ordered probit. The hypothesis that both attitude and income affect happiness positively can then be tested by examining the signs and significance levels of α_1 and α_2 respectively.

Second, to test the hypothesis that more schooling (S) affects income positively it is necessary to estimate an income equation with schooling as one of the independent variables. Since wage income constitutes the largest share of an individual's total family income and since numerous studies have already demonstrated the presence of a significant positive relationship between schooling and earnings (Becker, 1964, 1993; Card, 1999; Mincer, 1974), we can easily conclude that increase in traditional schooling by directly augmenting income may indirectly enhance personal happiness.³ To avoid further repetitive work, we do not estimate an income equation in this study, and draw the conclusion just mentioned based on this established earlier evidence.

Finally, the test of the presence of a positive causal effect of value education on attitude calls for a randomized experiment in which the treatment group selected at random is offered some value education in period 1 which is not available to the control group. Both the groups are then observed in period 2. A difference-in-difference regression of attitude on value education from the pooled data of both periods in this case would provide an ideal measure of the treatment effect of value education on attitude. A positive and statistically significant effect would then confirm that value education improves attitude which through equation (6) would further indicate that happiness can be augmented by improving attitude through value education.

In the absence of such a randomized controlled experiment, however, the next best alternative is to follow a quasi-randomized experimental approach, known as propensity score matching (Rosenbaum and Rubin, 1983; Greene, 2012), to measure the treatment effect of value education in the first period on their attitudes in the second time period. In the absence of data on value education, we use religious attendance as a proxy for this variable. Most religious institutions traditionally preach human values and moral codes of conduct to participants through their weekly services, and consequently such a variable may be treated as a good instrument for value education.⁴ Note that religious attendance is usually by choice and not by random assignment, and consequently difference-in-difference regression approach is not applicable. In such a situation, however, the propensity score matching technique is most suitable for estimating the treatment effect of religiosity on attitude. Under this approach, the treatment variable (religiosity) is regressed on several individual characteristics to obtain propensity scores for all individuals in the sample during the treatment period. These scores are then used to match individuals from both treatment and control groups. The average difference in the outcome variable (attitude) in a later period between the treatment and control groups provides an estimate of the desired treatment effect.

Let the W_i be the vector of individual characteristics in time period 1 before the treatment is administered. The treatment variable religiosity (R) then is defined as

$$(7) \quad R_i = 1 \text{ (the individual attends religious services), if } R_i^* > 0; \text{ and } = 0, \text{ otherwise,}$$

$$(8) \quad R_i^* = W_i \theta + \eta_i.$$

Note that R_i^* is the latent continuous variable that generates the binary treatment variable R_i . The propensity score for the i^{th} individual then is defined as

$$(9) \quad P(W_i) = P(R_i = 1 | W_i) = E(R_i | W_i).$$

Under the assumption of the normality of the error term in equation (8), we can estimate propensity scores by probit, where

$$(10) \quad P(W_i) = \Phi(W_i\theta).$$

Individuals with similar characteristics (W_i) are expected to have similar propensity scores $P(W_i)$. We can thus match individuals with comparable propensity scores from both treatment and control groups. Let the outcome variable (positive attitude) in the second time period for the i^{th} individual be denoted by A_i . Under this procedure, for any individual from the treatment group with propensity score $P(W_i)$ in time period 1 and outcome A_i in time period 2, we identify an individual in the control group with similar propensity score $P(W_c)$ and outcome A_c . The difference $(A_i - A_c)$ measures the treatment effect of religiosity on attitude for that particular individual. The average treatment effect is obtained by taking average over all the matching observations in the sample.⁵ Corrected standard error of this statistic is then computed to obtain the relevant t-ratio. A positive and statistically significant treatment effect of religiosity on attitude would then confirm that value education through religious attendance by improving attitude is likely to enhance an individual's personal happiness.

Note that the presence of a causal relationship between two variables suggests that desired changes in the response variable can be brought about by initiating appropriate changes in the stimulus variable through different policies. Presence of a causal relation thus adds strength to a policy recommendation based on such a relationship. This is exactly the reason why the current study follows the propensity score matching approach to test whether or not a positive causal connection exists between value education and attitude. Evidence of such a causal relation along with a significant positive coefficient of the attitude variable in equation (6) would validate our

claim that value education by affecting attitude positively may have a positive effect on the individual's personal happiness.

IV. Data

To show that happiness depends on attitude and income, and that attitude depends on value education (religious attendance), we need data on at the least four key variables: happiness, positive attitude, income and religious attendance. For propensity score matching, it is necessary to have religious attendance data available in the first period and the positive attitude data available in the second period. A data set, in which these variables are available, is most suitable for the study under consideration. The National Longitudinal Survey of Youth, 1979 (NLSY79), a longitudinal data set from the United States, satisfies these data requirements and therefore is used in this study for estimating relevant equations. The NLSY79 that started in 1979 with 12,686 individuals aged between 14 and 21 and was continued annually until 1992 and biennially thereafter. For the purpose of our study, we observed these respondents at three different time periods: 1980, 1987 and 2006. These three years were chosen because they are the only surveys in the NLSY79 that contain information on the individual's attitude and happiness. Moreover, out of these three years, the information on religious attendance is available in 1980 only, making this data most suitable for our propensity score matching.

The information on happiness of the individual (*HAPPY*) is reported in these surveys as an ordered categorical variable. The respondents were asked to respond to the statement, "On the whole, I am satisfied with myself," by choosing one of the four alternatives – (1) strongly agree, (2) agree, (3) disagree and (4) strongly disagree, which for estimation purposes were re-coded in this study as 3, 2, 1, and 0 respectively. Note that this variable by being an indicator of self-satisfaction (or contentment) acts as a good proxy for overall happiness and therefore is suitable for the study under consideration. Note that the variable "satisfied with self" is clearly different

from the variable “satisfied with life” or the life-satisfaction variable used extensively in the literature. However, it is fairly close to Diener’s (1984) subjective well-being (SWB), an umbrella term for happiness in the literature with the components, (i) pleasant emotions, (ii) unpleasant emotions, (iii) global life judgement and (iv) domain satisfaction, because a person with self-satisfaction or contentment is likely to exhibit less of unpleasant emotions and more of the other three components. In the absence of information on any other reliable alternative measure of well-being in our data set therefore we use this self-reported self-satisfaction variable as the proxy for an individual’s true level of SWB or personal happiness.

The two most important determinants of happiness relevant to the test of our hypothesis are the individual’s attitude and income. Attitude is obtained from the categorical variable “positive attitude” available in all three surveys. The respondents were asked to choose from a list of four options, “strongly agree,” “agree,” “disagree,” and “strongly disagree” to the statement, “I take a positive attitude toward myself.” This categorical variable was used to create a dummy variable *POSATD* which assumes the value 1 if the respondent chooses the option “strongly agree” and is zero otherwise.⁶ The variable income (*INCOME*) in this study is defined as the total family income that may also include the worker’s own income if he/she is employed. We prefer this income variable to wage income because happiness to a large extent depends on greater purchasing power regardless of whether it originates from income earned in the labor market or income obtained from other sources, such as self-employment, inheritance etc. To test the hypothesis that happiness rises at a decreasing rate with the increase in income (Deaton, 2008), we enter this variable in the happiness equation with a quadratic specification (*INCOMSQR*).

Other variables that are known in the literature to influence happiness (Gerdtham and Johannesson, 2001; Frey and Stutzer, 2002; Peiro, 2006; Dolan et al., 2007; Deaton, 2008; Mohanty, 2009) are years of schooling (*YEARSCHL*), intelligence measured by the Armed Force

Qualifications Test (*AFQT*) score, gender (*MALE*), race (*WHITE*), marital status (*MARRIED*), age (*AGE*, *AGESQR*), location of residence (*URBAN*), employment status (*EMP*), health condition (*HLTHPRB*), family size (*FAMSIZE*), number of children (*CHILDNM*), home ownership (*OWNHOUS*) and current school enrollment (*ENROLL*). Parental education (*MOTHGRD*, *FATHGRD*) and occupation (*FATHMNG*) may genetically influence the child's abilities leading to higher income and more happiness (Taubman, 1976; Behrman and Taubman, 1989). Growing up in an intact family during childhood may also enhance an individual's personal happiness (Mohanty and Ullah, 2012). The information on all these important variables are available in the NLSY79, they are included in the happiness equation as explanatory variables.

After eliminating missing values from all the variables just mentioned, we found our 1980 cross-sectional sample reduced to 5,473 observations. Similarly, 1987 and 2006 samples were reduced respectively to 5,741 and 4,800 observations with information on the full set of variables. To estimate happiness equations from the panel data we combined the 1980 sample with 1987 sample and the 1987 sample with 2006 sample, and generated two balanced panels. After eliminating missing observations from all relevant variables, we found the 1980-1987 and 1987-2006 panels reduced respectively to 4,500 and 4,460 observations.

To estimate the treatment effect of religious attendance (*RELIGS*) on attitude through propensity score matching, we need to first estimate the religious attendance equation by probit using data from the first time period (1980) when the treatment was first administered. The dependent variable in this regression is the binary religiosity variable defined in equation (7). The explanatory variables included in the religiosity regression are the individual's age (*AGE*, *AGESQR*), work experience (*EXP*), years of schooling (*YEARSCHL*), innate abilities (*AFQT*), school enrollment status (*ENROLL*), total family income (*INCOME*), family size (*FAMSIZE*), gender (*MALE*), race (*WHITE*), marital status (*MARRIED*), employment status (*EMP*), location of

residence (*URBAN*), presence of health problems (*HLTHPROB*) and intact family upbringing during childhood (*INTACT*). All these variables are obtained from the 1980 survey. Estimation of the treatment effect, however, requires observing the outcome variable *ATTITUDE* at a later time period. We observed this variable in 1987 and 2006. For estimation of the treatment effect through propensity score matching therefore we obtained two separate samples, the 1980-1987 sample with 5,723 observations, and the 1980-2006 sample with 5,495 observations. All variables in the 1980-1987 sample except *ATTITUDE* are drawn from the 1980 survey. The information on the attitude variable is then obtained from the 1987 survey. Similarly, the attitude variable in the 1980-2006 sample was obtained from the 2006 survey with all other variables drawn from the 1980 survey.

Based on the propensity scores of matched individuals from treatment and control groups, the treatment effect of religiosity on attitude is measured by observing in the second time period (1987 or 2006) the outcome variable *ATTITUDE*. Note that for propensity score matching, it is necessary for the outcome variable to be continuous. Unfortunately, however, the variable *ATTITUDE* in our study is ordered categorical with four values only: 3, 2, 1 and 0. In the absence of a suitable continuous outcome variable, we treat this ordered categorical variable as a continuous variable in obtaining the treatment effect.⁷ Clearly, this affects the size of the treatment effect, but not the sign, because the ordered nature of this categorical dependent variable guarantees larger numerical values to be associated with better attitude categories. All the variables introduced in this section are defined in Data Appendix which also reports their means and standard deviations.

V. Results

In this section, we present two important results. First, we test whether or not happiness is positively related to income and positive attitude. Then we demonstrate whether or not attitude improves with religious attendance, the proxy for value education. Both these results are necessary

to establish our conclusion that value education by improving attitude is likely to enhance personal happiness.

5.1 *Happiness Equation Results*

To test our first hypothesis that happiness depends on income and positive attitude, we estimate the happiness equation from all three cross-sectional samples. The results are reported in Table 1. While reporting the coefficient estimates of several known determinants of happiness, this table also presents their marginal effects. Note that more years of schooling and marriage enhance the happiness of young-adults of the 1980 and 1987 samples, whereas they do not have any significant effect on the happiness of matured adults (2006 sample). The happiness of the matured adults, on the other hand, is affected adversely by the presence of health problems which do not have any significant effects on the young-adults' happiness probabilities. Current school enrollment affects the happiness probabilities of teenagers and younger young-adults (1980 sample), whereas it does not have any significant effect on the happiness probabilities of either matured young-adults (1987 sample) or matured adults (2006 sample).

Interestingly, females and whites enjoy higher happiness probabilities in the 1987 sample of matured young-adults only. Their coefficients in the 1980 and 2006 samples, however, are not statistically significant. As expected, home ownership has a significant positive effect on happiness probabilities of matured adults and young-adults, but not of the younger young-adults. This is not surprising because most of these respondents live with their parents, and with little or no incomes of their own, they are less likely to own houses. This is supported further by the income variable not assuming a desired significance level in the 1980 happiness equation. Managerial occupation of the father enhances the happiness probabilities of matured young-adults, but not of matured adults, who may have left their parental families long ago, and younger young-adults, who may still be living with their parents. Interestingly, being raised in an intact family by both parents

increases the happiness of matured young-adults only (Mohanty and Ullah, 2012) and has no effects on happiness of other two groups. As expected, more children by reducing per capita amenities available to family members affect the happiness of matured young-adults negatively. This variable, however, is not statistically significant among younger young-adults, who are less likely to have too many children, and matured adults, whose incomes may have been high enough to support more children.⁸ All these results clearly indicate that the determinants of happiness differ among individuals of different age-groups (Mohanty, 2013b).

As predicted, income plays a significant role in the determination of happiness of all groups of individuals except the teenagers and younger young-adults. These youngsters are most likely to be dependent on their parents for their financial needs and therefore are not concerned too much about their current incomes. The variable *INCOMSQR* assumes a statistically significant negative coefficient in both 1987 and 2006 samples which supports the earlier finding that happiness increases at a decreasing rate with the rise in income (Deaton, 2008). The only variable that assumes a significant and positive coefficient in all three cross-sectional samples of Table 1 is positive attitude (*POSATD*). Interestingly, the marginal effects of this variable in all three samples are considerably larger than those of other significant independent variables. For example, improvement in the attitude to its strongest category (when *POSATD* changes from 0 to 1) leads to an increase in the happiness probability by 53.83 percentage points in the 2006 sample, 52.89 percentage points in the 1987 sample and 44.48 percentage points in the 1980 sample. The marginal effects of other determinants of happiness are quite smaller compared to these large marginal effects associated with *POSATD*. Positive attitude thus emerges as one of the most important determinants of an individual's personal happiness regardless of his/her age.

To resolve the problem of unobserved individual heterogeneities associated with cross-sectional estimation, we re-estimated the happiness equations using panel data by both random

effect and fixed effect ordered probit methods. These estimates obtained from 1980-1987 and 1987-2006 panels are reported in Table 2. Since most of the coefficients are very similar to our cross-sectional estimates, we report in this table the coefficient estimates of the income and attitude variables only.⁹ These panel data results provide strong support to our cross-sectional findings that both positive attitude and income have significant positive effects on personal happiness and that happiness increases with income at a decreasing rate. The size of the marginal effect of the attitude variable in Table 2 like that in Table 1 further confirms that positive attitude is one of the most important variables that is related to happiness.

Despite numerous differences in the determinants of happiness among individuals of different age-groups reported in Table 1, both cross-sectional and panel data results reveal two interesting facts that are common to all of them. First, regardless of the age, an individual's happiness has a significant positive relationship with his/her positive attitude. Second, happiness is positively related to income, especially when the individual lives independently without parental supports. These results have important policy implications. They suggest that any policy to augment personal happiness is likely to be more effective if it contains measures to enhance income and improve attitude. Earnings, as demonstrated by numerous studies in the literature, can be increased through more schooling (Card, 1999). This is an already established result that needs no further verification, and consequently following this earlier research we recommend policies designed to encourage more schooling leading to higher earnings and more happiness. The other alternative method of augmenting happiness that follows from our results is to help individuals improve their attitudes. In the next subsection, we demonstrate how value education in the form of religious attendance by improving attitude can also promote personal happiness.

5.2. *Treatment Effect of Religiosity (Value Education) on Attitude*

Note that in the absence of appropriate data on value education, religious attendance has been used in this study as its instrument. To obtain the treatment effect of value education on attitude therefore we estimate in this subsection the treatment effect of religiosity on attitude through propensity score matching. This requires estimating the religiosity equations first using the 1980 data when the treatment variable religious attendance (*RELIGS*) was first observed. The estimates of the religiosity equation coefficients from both 1980-1987 and 1980-2006 samples are reported in Table 3. The propensity score matching is conducted using the econometric software LIMDEP (Greene, 2007). The estimates of the average treatment effect are reported at the bottom portion of Table 3.

Our results indicate that the probability of religious attendance for teenagers and young-adults rises with the increase in their years of schooling, current school enrollment, family size, marriage, employment and intact family background. Males and whites are less likely to attend religious services than otherwise identical females and non-whites. Interestingly, religiosity of these younger people declines as they grow older (from age 15 to 22), whereas it increases as they accumulate more work experience. The coefficients of these last two variables (*AGE*, *EXP*), however, are not statistically significant at a desired level in both samples although they assume similar signs in both of them. These results indicate that, all else held constant, younger people more connected to their families (family size, marriage, intact family) and engaged in their age-specific activities (school enrollment, more schooling, employment, experience) are likely to be more religious than their otherwise identical counterparts. As they grow older (from 15 to 22) and stay away from parental homes, their connection with their parental family becomes weaker which in turn may lead to decline in their religious attendance probabilities.

The coefficients of these religiosity equations were used to obtain propensity scores for all individuals in the sample. Individuals with similar propensity scores from control and treatment groups were then matched and their attitudes, the outcome variable, were observed in 1987 and 2006. Differences in the outcome variable between the matched individuals were obtained to estimate individual treatment effects of religiosity on attitude. The average of these individual treatment effects provides a measure of the desired treatment effect. Our results in Table 3 indicate that the average treatment effects of religiosity on attitude in 1987 and 2006 respectively are 0.0397 and 0.0637. These effects are not only positive, but also statistically significant at desired levels. Note that with a categorical attitude variable, the interpretation of the absolute magnitudes of these treatment effects, as explained earlier, is not quite reliable. The signs, significance levels and the relative sizes of these effects, however, are not affected by the categorical nature of this variable. Our treatment effect results thus lead to the following two important conclusions. First, value education in the form of religious attendance has a significant positive causal effect on the individual's attitude, and second, this causal effect is larger in the long-run (year 2006) indicating longer lasting effects of value education on an individual's attitude.¹⁰

5.3. *Policy Implications: A Case for Value Education*

The findings in this section have important policy implications. We find the evidence that a higher level of happiness is related positively to higher income and better attitude. Higher income, as demonstrated in the literature, can be earned by acquiring more traditional schooling. Better attitude, as demonstrated in this study, can be developed by promoting religious attendance. It is important to note that mere attendance of religious services does not necessarily guarantee improvement in one's attitude. For example, learning religious fanaticism during such religious services may in fact change one's attitude in the negative direction. Attendance of religious services in an organized religious institution therefore is not absolutely necessary for improving attitude. It

is the content of the religious service, and not the place of worship, that is truly responsible for the positive change in the individual's attitude (Mohanty, 2013a). In other words, it is the values learned during these services that inspire the true improvements in the attitude. Under the assumption that most religious organizations, with exception, teach ideal human values during their regular service hours, attendance in these services may be treated as attendance in value education programs. Based on our findings, we can claim therefore that substantial improvements in attitude may be achieved by promoting education in universal human values regardless of whether it is imparted under the auspices of an organized religion or is offered at any other place including neighborhood schools and communities.

The above recommendation is not new in the literature. Numerous earlier studies have recommended improvement in attitude and behavioral skills through education and counseling as an important means of improving the worker's economic performance (Groves, 2005; Waddell, 2006; Sai Baba, 2009; Mohanty, 2012). In fact, Groves (2005, p. 829) remarks, *"If personality variables are rewarded in the labor market, worker-training programs will be more successful if they educate and prepare workers with the behavioral and social characteristics that can improve occupational success. Also, schools may increase students' opportunities for high-wage jobs by concentrating on both cognitive and behavioral skills."* Since economic wellbeing in the form of increased income promotes happiness, value education and training in behavioral skills by augmenting individuals' earning potentials are also likely to enhance their personal happiness indirectly. Value education thus has the potential to promote happiness not only directly through improved attitude as demonstrated in this study, but also indirectly through better economic performance as recommended by past researchers. The importance of value education in promoting personal happiness should not therefore be underestimated.

Based on the earlier findings that establish a positive education-income relationship, and the findings of this study that confirm the presence of a positive and causal relationship between value education and attitude, we recommend an educational system that combines both traditional schooling and value education as a tool for promoting personal happiness.¹¹ In other words, a plan to foster happiness of an individual is likely to succeed if it enhances his/her income through increased schooling and improves his/her attitude through proper value education. By supplementing traditional schooling with appropriate value education, the policy makers can change the two major determinants of happiness in a positive direction significantly and thereby can help individuals achieve higher levels of personal happiness. For adults away from schools, these behavioral trainings to improve attitude may be offered at their workplaces, communities or even at adult schools.

VI. Conclusion

Using data from the National Longitudinal Survey of Youth, 1979 (NLSY79), the current study examined the roles of two major correlates of happiness, income and attitude. Three cross-sectional samples from three different age-groups – younger young-adults, matured young-adults and matured adults – and two separate two-periods balanced panels were used to conduct this study. Our findings indicate that the correlates of happiness vary significantly among individuals of different age-groups. Despite these differences, however, we find the evidence that positive attitude and income are the two most important variables that affect an individual's personal happiness positively regardless of his/her age. Although the role of income in the determination of happiness of younger young-adults is weaker than the role it plays in the happiness functions of matured young-adults and matured adults, it does not reduce the importance of income as a determinant of happiness because most of the younger young-adults, who receive parental supports, either have no income or have very low income. The study thus confirms that both

objective factor income and subjective factor positive attitude contribute positively to ones personal happiness.

With a view to designing policies to promote personal happiness, the study explores different approaches that may help augment income and improve attitude. Acquiring more years of schooling has already been recommended in the literature as an effective method of increasing earnings. We fully concur with this recommendation and hence the current study, with a view to avoiding repetition, does not attempt to test the validity of this already established finding. Instead, the study focuses on identifying a possible method by which an individual's attitude can be improved. Using religious attendance as a proxy for value education and following the propensity score matching technique, the study demonstrates that value education in the form of religious attendance may in fact improve individuals' attitudes which in turn may promote their personal happiness. The study thus strongly recommends value education that improves attitude and other behavioral skills to supplement traditional schooling that augments cognitive skills. Such an integral educational system clearly has the potential to promote both the objective and subjective determinants of happiness – income and positive attitude – simultaneously leading eventually to higher levels of happiness for its participants.

We conclude with a few precautionary notes. First, in the absence of a randomized controlled experiment, we used the propensity score matching technique to determine the causal effect of religiosity on attitude. As a quasi-randomized method, this approach has its own limitations and consequently our results should be interpreted with caution. This problem can be resolved only through an appropriate randomized controlled experiment, which, although difficult, is not impossible. Such an experiment, which requires substantial amounts of external funding and involves a reasonably long time period to meaningfully observe the outcome variable, is clearly beyond the scope of this study and therefore is reserved as a topic for future research.

Second, propensity score matching requires the outcome variable to be continuous. The outcome variable in this study is *ATTITUDE* which is an ordered categorical variable. Imposition of continuity on this categorical variable unnecessarily assumes constant marginal changes in attitude from one category to the other. In the absence of a continuous variable, we have no other choice but to use this variable as our outcome variable. This clearly affects the magnitude of the average treatment effect which calls for careful interpretation. This does not, however, affect the comparison of treatment effects between two different time periods as long as the outcome variables in both periods assume the same categorical values. This is the reason why our conclusion that treatment effect of religiosity is higher in 2006 than in 1987 is valid. Moreover, the sign of the treatment effect is not affected by the categorical nature of the outcome variable as long as it is ordered, and consequently our claim that the treatment effect of religiosity on attitude is positive remains unchanged. It is due to these advantages that the ordered categorical attitude variable was used in our study as the outcome variable in place of a continuous variable which was not available. The treatment effect obtained by using this outcome variable does not, however, measure the true magnitude of this effect and therefore should be interpreted carefully.

Finally, the primary purpose of this study is to demonstrate that value education by improving attitude can promote personal happiness. In the absence of actual data on value education, we used in this study religious attendance as an instrument for this variable under the assumption that religious services instill ideal human values in the minds of the participants helping them thereby develop better attitudes. It is important to note, however, that negative and destructive religious teachings can do more harm than good. Our proposed value education should not therefore be confused with mere religious attendance. Such a program based on universal values clearly demands careful scrutiny by researchers and policy-makers. Our recommendation of supplementing traditional schooling with value education in regular school settings cannot

therefore be considered without an actual real-world experiment. This calls for further research in this direction.

Notes

1. In fact, this conclusion was reached a few years earlier by two psychologists Brickman and Campbell (1971) who, by extending the adaptation level theory, claimed that improvements in income and wealth did not necessarily have lasting effects individual wellbeing. Easterlin, however, is the first economists who formally introduced this paradox into economics literature.
2. In fact, Layard (2005, p. 149) remarks, “if we compare countries, there is no evidence that richer countries are happier than poorer ones – so long as we confine ourselves to countries with incomes over \$15,000 per head”
3. This conclusion is supported strongly by the evidence of a significant causal effect of education on earnings in the literature. See Card (1999) for an excellent survey of this causal effect.
4. Religious fanaticism, however, is an exception which may even affect an individual’s attitude adversely.
5. See Greene (2012) for a detailed discussion on this important procedure.
6. The variable *POS* assumes the value 1 when the respondent strongly agrees to the statement “I have a positive attitude toward myself,” and thus it is likely to represent the true attitude of the individual. The response to the other category in which the respondent simply agrees to the above statement is weak and therefore is likely to be less reliable as a proxy for positive attitude.
7. Imposition of continuity on this categorical variable implicitly assumes constant marginal changes of attitude from one category to the next higher category which, although restrictive, is unavoidable due to unavailability of a suitable continuous variable.

8. With a t-value of -1.36, the importance of this variable in the 1980 sample cannot be ignored completely.
9. The estimates of full set of coefficients can be obtained from the author on request.
10. Note that the size of the average treatment effect in 2006 is approximately 1.6 times as large as the treatment effect in 1987 even though the outcome variable attitude assumes the same categorical values in both years.
11. Sai Baba (2007), a spiritual leader in India, not only has recommended this integral education program, but also has implemented it in public schools of several countries of the world including England, Canada, Australia, Argentina, Thailand and India. This program, widely known as Education-in-Human-Values (EHV), has been quite successful in transforming the character of numerous youth in all these countries. For more details, see Sai Baba (2007) or visit the website of the International Sathya Sai Organization at <http://www.sathyasai.org>.

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Table 1

Ordered Probit Estimates of Happiness Equations Coefficients and Their Marginal Effects (ME).^a

Variable	2006	1987	1980
Constant	0.4462 (0.060)	5.2437** (2.267)	1.0964 (0.576)
POSATD	1.6376** (38.304) [0.5383]	1.6167** (41.033) [0.5289]	1.3232** (34.152) [0.4448]
INCOME	0.0024** (3.318) [0.0008]	0.0078** (2.864) [0.0026]	0.00015 (0.044) [0.0000]
INCOMSQR	-0.00003* (1.858) [0.0000]	-0.0001** (1.966) [0.0000]	0.0002 (0.486) [0.0000]
YEARSCHL	0.0042 (0.434) [0.0014]	0.0161* (1.787) [0.0054]	0.0382** (2.657) [0.0122]
AFQT	0.0002 (0.219) [0.0001]	0.0011 (1.387) [0.0004]	-0.0020** (2.451) [-0.0006]
AGE	0.0507 (0.152) [0.0170]	-0.2543 (1.427) [-0.0845]	0.0787 (0.400) [0.0252]
AGESQR	-0.0003 (0.088) [-0.0001]	0.0046 (1.340) [0.0015]	-0.0025 (0.496) [-0.0008]
MARRIED	0.0105 (0.203) [0.0035]	0.1256** (3.008) [0.0418]	0.0985* (1.813) [0.0322]
MALE	0.0057 (0.151) [0.0019]	-0.1161** (3.282) [-0.0385]	0.0244 (0.708) [0.0078]
WHITE	-0.00004 (0.000) [0.0000]	0.1161** (2.684) [0.0379]	0.0626 (1.425) [0.0198]
URBAN	-0.0247 (0.590) [-0.0083]	-0.0269 (0.651) [-0.0090]	0.0263 (0.643) [0.0084]
EMP	0.0471 (0.818) [0.0156]	0.0291 (0.596) [0.0096]	0.0446 (1.213) [0.0142]
HLTHPRB	-0.2974** (4.745) [-0.0924]	-0.1025 (1.146) [-0.0331]	-0.1150 (1.122) [-0.0354]

ENROLL	0.0019 (0.019) [0.0006]	0.0791 (1.265) [0.0268]	0.1602** (3.737) [0.0514]
FAMSIZE	-0.0422 (1.421) [-0.0142]	0.0085 (0.615) [0.0028]	-0.0089 (0.965) [-0.0028]
CHILDNM	0.0304 (0.891) [0.0102]	-0.0591** (2.565) [-0.0196]	-0.0537 (1.360) [-0.0172]
OWNHOUS	0.1304** (2.827) [0.0430]	0.1016** (2.357) [0.0342]	0.0151 (0.199) [0.0049]
MOTHGRD	-0.0082 (1.039) [-0.0027]	0.0039 (0.539) [0.0013]	-0.0062 (0.877) [-0.0020]
FATHGRD	0.0003 (0.043) [0.0001]	-0.0117* (1.876) [-0.0039]	-0.0027 (0.442) [-0.0009]
FATHMNG	0.0192 (0.374) [0.0064]	0.1061** (2.209) [0.0359]	0.0173 (0.370) [0.0056]
INTACT	-0.0464 (1.187) [-0.0156]	0.1061** (2.894) [0.0349]	0.0369 (1.040) [0.0118]
<hr/>			
μ_1	1.1023** (29.211)	1.0845** (28.711)	0.9944** (31.876)
μ_2	3.4981** (82.489)	3.6049** (86.359)	3.2815** (93.422)
<hr/>			
Sample Size	4,800	5,741	5,473
Log L	-3334.208	-3815.409	-4114.971
<hr/>			

a Absolute values of asymptotic t-ratios are in the parentheses. The marginal effects are in square brackets which denote changes in the probability of being included in the highest category of happiness (HAPPY =3) as a result of a unit change in respective independent variables.

**(*) Significant at 5 percent (10 percent) level.

Table 2

Ordered Probit Estimates of Happiness Equations Coefficients from Panel Data.^a

Variable	1980-1987		1987-2006	
	RE	FE	RE	FE
POSATD	1.4471** (45.962) [0.4837]	2.4217** (38.814) [0.7441]	1.6349** (48.786) [0.5340]	3.0095** (42.380) [0.8385]
INCOME	0.0040** (2.907) [0.0013]	0.0114** (3.400) [0.0037]	0.0013** (2.960) [0.0004]	0.0039** (3.593) [0.0013]
INCOMSQR	-0.0002* (1.919) [0.0000]	-0.0001** (2.761) [0.0000]	-0.00001 (1.366) [0.0000]	-0.00005** (2.692) [0.0000]
Other Variables	YES	YES	YES	YES
μ_1	1.0486** (25.095)	1.7639** (24.951)	0.3000** (13.387)	1.8453** (24.178)
μ_2	3.3783** (59.720)	4.2539** (49.928)	3.4719** (63.657)	4.5826** (49.642)
Sample Size	4,500	4,500	4,460	4,460
Log L	-6535.819	-2808.654	-6869.526	-2518.857

a Absolute values of asymptotic t-ratios are in the parentheses. The marginal effects are in square brackets which denote changes in the probability of being included in the highest category of happiness (HAPPY =3) as a result of a unit change in respective independent variables.

**(*) Significant at 5 percent (10 percent) level.

Table 3

Binary Probit Estimates of Religiosity Equations for Propensity Score Matching^a

Variable	1980-1987 Sample		1980-2006 Sample	
	Coefficient	t-ratio	Coefficient	t-ratio
Constant	3.4609**	2.197	2.7668*	1.735
AGE	-0.2976*	1.750	-0.2057	1.189
AGESQ	0.0052	1.158	0.0031	0.676
EXP	0.0603**	2.323	0.0372	1.365
YRSCHL	0.0873**	5.435	0.0708**	4.198
AFQT	0.0004	0.412	0.0007	0.737
ENROL	0.2782**	5.025	0.2793**	4.857
FMINC	-0.0006	0.389	-0.0016	1.004
FAMSIZ	0.0294**	2.641	0.0223**	2.088
MALE	-0.2666**	6.528	-0.2757**	6.544
WHITE	-0.3274**	6.186	-0.3189**	6.227
URBAN	0.0044	0.093	-0.0468	0.920
MARRIED	0.1811**	2.910	0.1746**	2.528
EMPLOY	0.1566**	3.360	0.1963**	4.097
HLTHPRB	-0.0070	0.054	0.0856	0.624
INTACT	0.2491**	5.833	0.2161**	4.936
Number of treated obs.	4,671		4,533	
Number of controls	1,051		962	
Average treatment effect	0.039653**		0.063666**	
Asymptotic standard error	0.019923		0.026902	
t-statistic	1.990341		2.366632	
Number of observations	5,723		5,495	
Log Likelihood	-2,576.162		-2,426.901	

a The quantities in the parentheses are absolute t-ratios.

** (*) Significant at 5 (10) percent level.

Data Appendix

Variable Definitions, Means and Standard Deviations^a

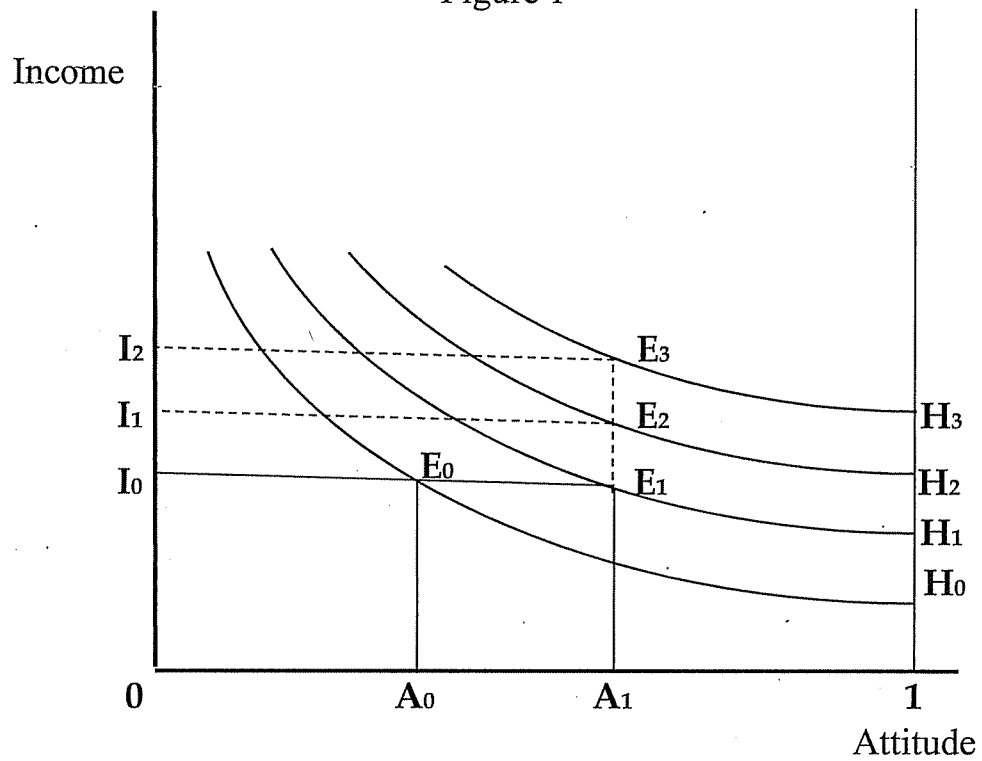
Variable	Definition	2006	1987	1980
HAPPY	= 3, strongly agrees = 2, agrees = 1, disagrees = 0, strongly disagrees to the statement, "I am satisfied with myself."	2.2440 (0.609)	2.5557 (0.581)	2.1966 (0.599)
POSATD	= 1, if the worker strongly claims that he/she has a positive attitude	0.4248 (0.494)	0.4259 (0.495)	0.3623 (0.481)
INCOME	= total family income (in thousands) = wage + net family income	111.846 (81.573)	37.1787 (23.260)	23.3664 (16.143)
INCOMSQR	= INCOME squared	19162.2 (32723.6)	1923.18 (2110.3)	806.593 (1139.8)
YEARSCHL	= completed years of schooling	13.6023 (2.509)	12.8852 (2.450)	11.7347 (1.788)
AFQT	= Armed Forces Qualifications Test Score	44.1560 (28.412)	43.5111 (29.216)	46.0418 (29.162)
AGE	= age in years	44.6729 (2.236)	25.8885 (2.261)	19.4820 (1.879)
AGESQR	= age squared	2000.67 (200.555)	675.325 (117.492)	383.080 (73.340)
MARRIED	= 1, if the worker is married	0.6135 (0.487)	0.4806 (0.499)	0.1639 (0.370)
MALE	= 1, if the worker is male	0.4752 (0.499)	0.4614 (0.498)	0.4703 (0.499)
WHITE	= 1, if the worker is White	0.7119 (0.453)	0.7483 (0.434)	0.7519 (0.432)
URBAN	= 1, if the worker lives in an urban place	0.7313 (0.443)	0.7706 (0.420)	0.7833 (0.412)
EMP	= 1, if the worker is currently employed	0.8467 (0.360)	0.8150 (0.388)	0.6048 (0.489)
HLTHPRB	= 1, if the worker has health limitations	0.1169 (0.321)	0.0359 (0.186)	0.0259 (0.159)
ENROLL	= 1, if the worker is enrolled in a school	0.0327 (0.178)	0.0876 (0.283)	0.4614 (0.499)
FAMSIZE	= number of family members	3.0423 (1.507)	2.8326 (1.563)	3.9642 (2.210)
CHILDNM	= number of own children	1.2456 (1.205)	0.7953 (1.053)	0.1615 (0.480)
OWNHOUS	= 1, if the worker owns (makes payment on) a house	0.7144 (0.452)	0.2975 (0.457)	0.0632 (0.243)
MOTHGRD	= mother's completed years of schooling	11.0681 (3.141)	11.0354 (3.093)	11.0769 (3.182)

FATHGRD	= father's completed years of schooling	11.0333 (3.895)	11.0141 (3.905)	11.0546 (3.939)
FATHMNG	= 1, if father is a manager/professional	0.2071 (0.405)	0.2101 (0.407)	0.2121 (0.409)
INTACT	= 1, if the individual was raised by biological parents until the age 18	0.6569 (0.475)	0.6661 (0.472)	0.6046 (0.489)
Sample Size		4,800	5,741	5,473
ATTITUDE ^b	= 3, strongly agrees = 2, agrees = 1, disagrees = 0, strongly disagrees to the statement, "I take a positive attitude toward myself" In 1987 or 2006	2.3853 (0.577)	2.3844 (0.566)	—
RELIGS ^b	= 1, if the individual attends religious Services in 1980	(from the 1980-2006 sample of 5,495) (from the 1980-1987 sample of 5,723)		0.8249 (0.380) 0.8162 (0.387)

a Quantities in parentheses are standard deviations.

b Obtained from the 1980-2006 or 1980-1987 sample for propensity score matching.

Figure 1



CASE I - $E_1 \rightarrow H_1$

CASE II - $E_2 \rightarrow H_2$

CASE III - $E_3 \rightarrow H_3$