INFORMATION TO USERS

This manuscript has been reproduced from the microfilm master. UMI films the text directly from the original or copy submitted. Thus, some thesis and dissertation copies are in typewriter face, while others may be from any type of computer printer.

The quality of this reproduction is dependent upon the quality of the copy submitted. Broken or indistinct print, colored or poor quality illustrations and photographs, print bleedthrough, substandard margins, and improper alignment can adversely affect reproduction.

In the unlikely event that the author did not send UMI a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyright material had to be removed, a note will indicate the deletion.

Oversize materials (e.g., maps, drawings, charts) are reproduced by sectioning the original, beginning at the upper left-hand corner and continuing from left to right in equal sections with small overlaps. Each original is also photographed in one exposure and is included in reduced form at the back of the book.

Photographs included in the original manuscript have been reproduced xerographically in this copy. Higher quality 6" x 9" black and white photographic prints are available for any photographs or illustrations appearing in this copy for an additional charge. Contact UMI directly to order.

UMI

A Bell & Howell Information Company
300 North Zeeb Road, Ann Arbor MI 48106-1346 USA
313/761-4700 800/521-0600

ROLE OF TIME PREFERENCE IN THE CORRELATION BETWEEN HEALTH AND EDUCATION

By

MOFAKHAR HUSSAIN

A dissertation submitted to the Graduate Faculty in Economics in partial fulfillment of the requirements for the degree of Doctor of Philosophy, City University of New York

1997

This manuscript has been read and accepted for the Graduate Faculty in Economics in satisfaction of the dissertation requirement for the degree of Doctor Of Philosophy.

9/5/97 Michael Grossman

Date — Chair Of Examining Committee

9/7/97 Linda M Edwards

Date — Executive Officer

Dr. Michael Grossman

Dr. Theodre Joyce

Dr. Robert Kaestner

Supervisory Committee

THE CITY UNIVERSITY OF NEW YORK.

Abstract

ROLE OF TIME PREFERENCE IN THE CORRELATION BETWEEN HEALTH AND EDUCATION

By

Mofakhar Hussain

Advisor: Professor Michael Grossman

In this paper I investigate the role of time preference in the correlation between schooling and health status. For the purpose data from the Panel Study Of Income Dynamics(PSID) and National Longitudinal Survey of Youth(NLSY) is used. By use of the residual from the schooling equations and proxies of rate of time preference, I analyze the nature and extent of causality between individual discount rate, schooling and health. The result of a positive correlation between schooling and good health status supports previous findings. The role of the unobservables in the form of a residual from the schooling equation is also analyzed. The significant and positive impact of schooling on time preference proxies implies that schooling causes increased levels of future orientation. Analysis of the role of time preference in the health-schooling correlation implies a stronger correlation between individual discount rate and schooling. I offer possible ways of improving the analysis.

CONTENTS

TABLES

I. Introduction.

It is widely accepted that there is a strong correlation between health and education (Grossman,1972). Using the framework of household production function, Grossman(1972) has developed a model that shows the interaction between health and schooling. In empirical application of the model (Grossman,1975) it is shown that schooling has a positive and significant effect. Yet it is observed that a large unexplained variation in health remains after controlling for schooling and other determinants. Researchers have adopted a 'third variable' explanation to clarify the phenomenon. It is argued that individual discount rate or rate of time preference may be the third variable that is correlated with both schooling and health. However, the direction of causality between time preference, schooling and health remains a matter of debate.

Fuchs(1982) argues that persons who are more future oriented (have a lower rate of time preference for present) attend school for longer periods of time and thus invest more in health. Consequently those with lower rate of time preference will have better health. According to this argument rate of time preference is an omitted unobservable that causes both schooling and health.

On the other hand Becker and Mulligan (1994) propose that schooling may affect individuals discount rate which in

turn affect the healthy choices they make. According to this argument, difference in schooling among individuals may result in differences in people's ability to delay gratification. Since ability to delay gratification is correlated with healthy habits, differences in time preference may explain difference in health. They also note that more healthy individuals may discount the future less as better health reduces morbidity. As a result, they propose that time preference may be endogenous in the correlation between health and schooling.

The fact that time preference is unobservable further complicates the analysis. Researchers are limited to using proxies for time preference. However, there are no established observable variable that is regarded as the most appropriate proxy. Furthermore, in analysis of health estimation that treats schooling, time preference or both as endogenous variables, often require use of self-selection models. But the two-stage procedure that is used in self-selection models are not without costs. For instance, use of predicted variables on the right hand side may result in loss of consistency of parameters that is driven by high multicollinearity.

Resolution of these matters is pertinent from a policy standpoint as well. If there is correlation between time preference and schooling and if time preference is

exogenous, then its omission from a health equation may not correctly reflect the impact of schooling, its inclusion on the other hand will provide a more accurate measure of the return to schooling. If schooling impacts health through its effect on time preference, then education policies that increases individual discount rates may result in better health. Empirical evidence will also provide a guideline for selecting the appropriate proxies for time preference and methodology to evaluate the relationship between time preference and other economic variables.

In this paper, I use direct and indirect indicators of time preference to test and evaluate the nature and extent of causality between health, schooling and individual discount rate. In section II, I document the different attempts at measuring time preference and its relation to covariates such as education , income and health. In section III, I develop a simple model in which time preference is related to schooling, and in which schooling affects health status. The framework for analytical and empirical implementation is described in Sections IV and V. Finally, in section VII, I evaluate the findings.

II. Past Research:

Time Preference

A key difficulty in studying the role of time preference in economic decision making analysis is the fact that it is unobservable. Consequently, researchers have adopted several methods for deriving a value of time preference.

In one type of method, measurement of time preference depends on questions asked to agents in a pilot survey. The questions require agents to respond to queries regarding receipts of different sums of money at different points of time in the future. The responses are then used to calculate an implicit rate of time preference. Although these studies(Thomas and West; West,1978; Thaler, 1979) provide expected correlations between implicit discount rate and other economic variables, the authors do find the results to be generally unsatisfactory. For instance, Fuchs (1979) evaluates data from a pilot survey of 508 to analyze time preference, health and schooling. The study uses a series of questions asking individuals to choose between sums of money now and a larger sum of money at a specific time in the future. The sum of money and waiting time varied across questions. The responses are used to assign each individual an implicit interest rate. These rates are used as

indicators of time preference. Other questions surveyed individuals attitude , family background, health measures, academic achievements and income status. The research finds expected correlation between schooling and time preference. The research also indicate that the effect of time preference on health behavior and on health status is usually in the expected direction , but not significant . He notes that the poor results may be due to measurement error and or due to specification errors. He also argues that investment on health may be affected not only by time preference but also by individual's attitude towards risk as there is considerable uncertainty in health outcomes. In a more health specific study, Dolan and Gudex (1995)report results of a pilot survey where they evaluate agent's preference for health status and duration. They find that most of the agents have negative time preference implying that people prefer poor health today and good health next period over good health today and poor health next period. They argue that

" when separate events are seen as an integral consumption package, they will choose to start with events that yield the lowest levels of utility and finish with events that yield the highest levels of utility."(pg 297). The authors do however caution that the study design may have influenced their results.

In an alternative method, parameters of the Euler equations are used to arrive at a value for the rate of time preference. Viscusi and Moore(1989) relate rate of time preference with choice of occupational fatality risk. They study the effect of individual discount factors on intertemporal health risk decisions using the 1982 University of Michigan Panel Study Of Income Dynamics. In a two equation model, the parameters of a wage equation, along with other variables are used to estimate the implicit price agents are willing to pay for additional job risk. They find that the discount factor parameters are significant and are systematically dependent on the level of education . With higher education the rate of time preference decreases. Lawrence(1991) uses estimates of an Euler equation to predict levels of time preference across different income class, education and other socio-economic variables. The finding suggest that permanent income and schooling are negatively related to time preference. Hotz, Kydland and Sedlack(1989) analyzes a life cycle labor supply model in which utility function is non-separable in leisure. They too use parameters of the Euler equation to arrive at a value for time preference and other parameters. However, the procedure results in negative rates of time preference. To date there are no studies where time preference, derived

from the Euler equation, is used in estimation of health outcomes.

Yet others have used behaviors such as smoking to proxy for time preference. Evans and Montgomery (1994) uses 'smoking at age 18' as an instrument for schooling in a wage model by using data from Current Population Survey(CPS), National Health Interview Survey(NHIS) and National Medical Expenditures Survey(NMES). They find that smoking at 18 is correlated with other future oriented behaviors in the expected direction.

Time preference, Health and Schooling:

In studies of health related behaviors, researchers have used a variety of methods to analyze the role of time preference and schooling. Following Fuchs, one method involves studying the role of the residual term from a schooling equation in estimating health. The notion is that unobservables such as time preference is captured by the residual from the schooling equation and that this affects schooling and health. Berger and Leigh(1989) analyze the impact of unobservables and schooling in predicting health; in the paper they treat unobservables from a schooling equations as indicator of time preference. They apply a method developed by Garen(1984),in which the effect of

schooling and unobservable from the schooling equation are allowed to affect income. The two stage method involves using the schooling, residual from the estimated schooling equation and the product of the residual and actual schooling in the health equation estimation. In the study, the authors use two data sets: the National Health and Nutrition Examination Survey(NHANES I) and the National Longitudinal Survey Of Young Men(NLS). In NHANES I, health is measured by blood pressure while in the NLS, health is measured by functional and work limitation. The two stage procedure results with predicted schooling having a larger coefficient in estimating work limitation while the effect of predicted schooling is the same as its ordinary least square counterpart when the dependent variable is functional limitation. In the NHANES data set, predicted schooling has a larger impact on blood pressure for persons between the ages of 20 and 40 , and an insignificant effect for persons over the age of 40.

Using a similar method, Leigh(1990) attempts to distinguish between risk preference and time preference in the correlation between schooling and seat-belt use with the PSID 1968 data. Seat-belt use is interpreted as investment in health and thus the study tries to analyze the impact of schooling and heterogeneity on investment

decisions amongst agent. The study uses the residual from a schooling equation as a explanatory variable, along with other socio-economic, risk and time preference variables, to predict the probability of seat belt use. The study uses dummy variables that indicate new car ownership, car insurance, medical insurance, packs of cigarettes smoked per day, monthly saving ratio as indicators of risk preference; while time preference is described by dummy variables that reflect plans for children education, future type of job, future kind of job training. In the probit analysis, the study finds that the schooling coefficient changes substantially (decrease by 44 %) once the residuals and preference variables are added to the specifications. Although most of the preference variables carry the expected sign, the study cannot establish the difference between risk and time preference . Leigh notes that the direction of causality between schooling and preferences need to be examined.

Leigh and Dhir(1997) analyze the effect of schooling on health using direct measures of time and risk preference as additional covariates. They also correct for any unobservable effects by including the residual from the schooling estimation function as a covariate in the health estimation equation. Health status is indicated by frailty, as measured by Activity of Daily Living(ADL), and exercise.

Data from the 1972 and 1986 PSID survey is used for the research. The study finds that the correlation between ADL and schooling is strong for women and exercise and schooling is strong for men. The study finds that when time/risk preference and the residual from the schooling equations are added to the health equation, the coefficient on schooling decreases.

These studies have shown that individual discount rate may affect health but he impact of schooling remain significant. Furthermore as Leigh(1997, pg. 52) notes, schooling may affect health inn more than one way. How ever certain issues remain unexplained. For instance, how does one interpret the role of the schooling residual in estimating health. Any success from assuming endogenous time preference is also missing from these studies.

Alternatively, Becker and Mulligan(1994) argue that increases in schooling may increase time preference for the future. The paper argues that individuals will attempt to increase time preference for the future as this increases the present value of future utility. Since education also increases future marginal utility through higher income and life expectancy, equilibrium time preference for the future and schooling will have a positive correlation. The authors also note that parental education and economic status may also have positive impact on

offspring's time preference for the future. The paper uses data from the Panel Study Of Income Dynamics(PSID) to evaluate these notions. Food consumption growth and non-durable consumption growth are used as indicators of time preference; higher values of these growth rates indicate higher time preference for the future(See Appendix A). In pooled regressions, estimated own income, father's income, father's schooling are seen to have a positive, yet weak impact on consumption growth.

It should be noted that there has been studies that tries to eliminate the effect of the rate of time preference in the correlation between schooling and health. Sander(1995) looks at the effect of actual and predicted schooling on the probability of quitting smoking among adult smokers. His data consist of the 1986-1991 waives of the National Opinion Research Center's General Social Survey. The study looks at the effect of actual schooling and predicted schooling on the probability of quitting smoking among adult smokers and ex-smokers who are older than 25. In the model ,schooling is instrumented with parental schooling, rural residence at age 16, region of residence at age 16 and number of siblings. Since the sample consist of older individuals, the instruments used to predict schooling are less likely to be correlated with individual's time preference. Consequently, the coefficient on predicted

schooling is free from any effects of unobserved factors such as the rate of time preference. He finds that schooling has a positive and significant effect on the probability of quitting smoking. The instrumental variable regression also shows that schooling is exogenous in the quit smoking equation.

III. Rate Of Time Preference

Following Uzawa(1988), Becker and Mulligan(1994), we define rate of time preference for the present as the ratio between current and future utilities. Thus time preference reflects marginal rate of substitution between current and future utilities. Agents value future utilities according to their propinquity and intensity. Rate of time preference capture the extent to which these valuations are made. Those individuals who places a relatively high value on future utilities will have a low time preference for the present and a high discount rate. The converse is true for agents with low time preference; these agents will have a low discount rate. But agents are unable to accurately estimate the intensity and remoteness of future utilities. The ability to assess the remoteness of future pleasures depends on what Becker and Mulligan calls "future oriented' capital. With more of this capital, the predictive power increases. Agents, aware of their inability to assess the future, spend resources to increase the level of 'future oriented' capital so that future utilities appear less remote. Thus they invest in future oriented capital which reduces the propinquity of future utility.

Patience , tolerance, level of knowledge are examples of future oriented capital. With higher levels of these types of capital, S, agents are able to perceive the future

in a more accurate manner; placing a higher value on future utilities. Higher levels of S leads to a lower rate of time preference for the present and thus to a higher discount factor.

Parents induce a sense of the future to agents when they are young. Offspring's of parents who are future oriented are more likely to have higher level of patience. Thus S can be seen as capital that is inherited and does not change through the life cycle of the agent. This leads to the constancy of the individual discount factor. And this is the assumption in most of the literature. But as Becker and Mulligan argue, as adults, agents recognize their inability to clearly predict the future and therefore they try to increase S. They influence their S by committing time and effort in planning and anticipating the future. So while time preference may be inherited, it is also possible that cognizant agents , aware of their frailty, invest to make the future appear less remote.

Factors such as schooling may improve agents future oriented capital and thus affect time preference . Becker and Mulligan notes that

" Schooling can communicate images of the situations and difficulties of adult life, which are the future of childhood and adolescence. In addition, through repeated practice at problem-solving, schooling helps children learn

the art of scenario simulation. Thus, educated people should be more productive at reducing the remoteness of future pleasures" (Becker and Mulligan, p8)

Denote the discount factor used to weight future utility as β, and that this discount factor equals 1/1+t ; where t stands for rate of time preference. Impatience is described by high value of t which implies that these agents have low β. The discount factor decreases with higher levels of impatience. To put it another way, β increases with higher levels of patience. If S represents the level of patience or future oriented capital, then β increases with S .

$$\beta = \beta(S)$$

$$\beta'(S)>0 \quad \text{for } S>0$$

Since agents discount the future, it is assumed that β is less than 1.

Consider an agent that lives for two periods. Agent derives utility from a flow of health, h and other market goods, x. Therefore lifetime utility is given by

$$U = u(h_0, x_0) + \beta(S)u(h_1, x_1) \qquad 1$$

The budget constraint relates cost of the flow of health and other goods to lifetime wealth. The cost of producing health may include own time, medical care and other market goods.

$$C(h_0,x_0)+ C(h_1,x_1)(1+r_1)^{-1}+C(S) = A_0 \qquad 2$$

In equation one C(.) reflects cost every period, r_1 is the market rate of interest and A_0 represent lifetime wealth. Agents choose levels of h in each period to maximize U(.) subject to the budget constraint.

Optimal choices involve

$$u'(h_0,.) = C'(h_0,.)\lambda_0 \qquad 3$$

$$\beta(S)u'(h_1,.) = C'(h_1,.)(1+r_1)^{-1}\lambda_0 \qquad 4$$

In equations 3 and 4 C'(.) represent cost of additional unit of h. The implication of these conditions are that discounted value of the ratios of the marginal utilities equals the discounted values of the ratios of the marginal costs :

$$u'(h_0,.)/\ \beta u'(h_1,.) = C'(h_0,.)/\ (1+r_1)^{-1}C'(h_1,.) \qquad 5$$

The theory of endogenous time preference implies that agents choose levels of S as well. Thus,

$$\beta'(S)u(h_1,.) = C'(S)\ \lambda_0 \qquad 6$$

Combining 5 and 6 leads to

$$\beta(S)u'(h_1,.)/\beta'(S)u(h_1,.) = C'(h_1,.)\ (1+r_1)^{-1}/\ C'(S) \qquad 7$$

Suppose marginal cost of next period h and S are equal. In that case, (7) implies that

$$\beta(S)u'(h_1,.)\ (1+r_1) = \beta'(S)u(h_1,.) \qquad 8$$

In equation 8, the left hand side is the discounted , corrected for interest rate, value of marginal utility of future h. The right hand side is the valuation, in terms of future utility of h ,of the marginal increases in the discount factor . Thus agent will optimize their lifetime utility by choosing levels of h and S such that value of the marginal utility equals value of the marginal discount factor in terms of future utility.

The above analysis suggest that there is complementary between time preference and future levels of utility, an increases in future utility is associated with an increase in the discount factor. If individual lives up to the next period, then equations 3 and 6 results in

$$\beta'(S)u(h_1,.) = u'(h_0,.)\lambda_0 \qquad 8'$$

If the current level of marginal utility is constant, then anything that raises future utility will also tend to decrease the equilibrium level of time preference rate.

Suppose there is an increase in life expectancy, then this will tend to increase future utility through higher

earnings. If life time wealth is constant, then there will also be an increase in future consumption. Thus the marginal benefit from investment in future oriented capital increases. This will provide incentives for people to invest in future oriented capital. Consequently increases in health is associated with higher discount factor and higher levels of future oriented capital

How ever, the direction of causality between health and patience remain unclear. As was shown above, healthier individuals will have higher discount factor, it could also be the case that those with higher endowed discount factor will reallocate resources from current time period towards the next period consumption and patience capital. Since higher levels of future oriented capital leads to better health, a higher endowed discount factor may cause better health.

In our analysis we assume schooling, S, to reflect future oriented capital. Given production functions of h and S, and a specific form of a utility function one can express optimal levels of h and β in terms of input prices and parameters of the utility and production functions. This leads to the demand for h ,β, an S.

IV. Analytical Issues

We begin by specifying a simple linear demand function of health. In equation 9, H stands for current status of health. Schooling, S, is expected to have a positive coefficient for its productive and allocative efficiency. Those with higher levels of schooling are able to produce better health by way of reducing the cost of additional health. Furthermore, higher levels of knowledge that the more educated have allows them to choose better mix of inputs which results in better health. Individuals with higher levels of patience are expected to invest more in future oriented capital such as schooling, which in turn leads to better health. The notion of time preference affecting schooling and health are therefore described by equations 11 and 9. It is also possible that education leads to higher levels of patience which in turn leads to individuals making healthier choices . Therefore the concept of schooling causing time preference and health is depicted by equations 9 and 10. The coefficient on β is expected to be positive in all three equations. Z includes environmental variables as well as predetrmined variables. Predetermined variables such as past health, parental economic status will affect current health status through their impacts on schooling and time preference. Thus more educated parents

may transfer their notion of future orientation to their off-springs.

$$H = \gamma_0 + \gamma_1 Z + \gamma_2 S + \gamma_3 \beta + v \quad \ldots\ldots 9$$
$$\beta = \alpha_0 + \alpha_1 S + u \quad \ldots\ldots 10$$
$$S = \phi_0 + \phi_1 \beta + e \quad \ldots\ldots 11$$

Fuchs argues that time preference has an independent effect on health through schooling. Thus if time preference is excluded from the health equation, the schooling coefficient is biased. But as Becker and Mulligan argues, agents may chose their levels of time preference and their ability to do will depend on the amount of schooling that they acquire. They argue that schooling may be exogenous, while time preference is exogenous.

V. Empirical Specification

Suppose health depends on a function Φ, and an error term v. As indicated in equation 12, the arguments in Φ include vectors Y_1, Z_1 and variable S. Covariates in Y_1 includes background variables such as age, binary variables reflecting race, gender and the earliest health limitation data available for each data set.

$$H = \Phi(Y_1, Z_1, S; \gamma_1, \gamma_2, \gamma_3) + v \quad \ldots\ldots\ldots 12$$

Z_1 includes contemporaneous variables reflecting marital status, family size, number of children in the household and occupational choices. v is assumed to be normally distributed with constant variance. The above specification provides consistent result as long as the error term is uncorrelated with other variables in Φ. However, if unobservables that are correlated with schooling also affect health, then the coefficient on S is biased. This is a sample selection problem, since factors that are unobservable to the econometrician affect schooling and health. One approach to the problem is to use an auxiliary regression for S and use the predicted value in equation 12. As detailed in Appendix B, Garen(1985) has developed a method to correct for this self-selection bias when the unobservable affect schooling and earnings. This method was

used in health estimation models in Berger and Leigh,(1989);Leigh,(1990); Leigh,(1997). The method involves treating schooling as endogenous and using the residual from the schooling equation function and the actual levels of schooling, in the health status estimation. We follow this method and specify a schooling equation of the form:

$$S = \phi_0 + \phi_1 Y_1 + e \ldots\ldots\ldots 13$$

In equation 13, variables in Y_1 were specified earlier. Y_2 includes variables that uniquely determine schooling. These are may include parental schooling, variable representing region and states in which respondents was reared and father's occupational choices, and past health limitations. Father's occupation is used to proxy for economic status of the family. For the NLSY data set we also add ASVAB(Army Standardized Vocational Battery) test scores as measures of ability. Although this is a common specification for a schooling function, the role of the past health limitation in a schooling equation needs some qualification. Including past health limitation is appropriate as long as individuals have not attained highest grade completed. If individuals have completed schooling at the time past health is measured, then it may be the case schooling causes past health that limitation .

We estimate equation 13 by simple OLS and use the predicted values to estimate equations 14 and 14'.

$$H = \Phi(Y_1, Z_1, S, \hat{e}; \gamma_1, \gamma_2, \gamma_3, \gamma_4) + v_1 \ldots\ldots\ldots 14$$

$$H = \Phi(Y_1, Z_1, \hat{S}; \gamma_1, \gamma_2, \gamma_3) + v_1 \ldots\ldots\ldots\ldots\ldots 14'$$

$$H = \Phi(Y_1, Z_1, S, S\hat{e}; \gamma_1, \gamma_2, \gamma_3, \gamma_4) + v_1 \ldots\ldots\ldots 14''$$

In the above equations, $\hat{e}$ is the residual and $\hat{S}$ is the predicted value from the schooling equation in 13. Thus it is assumed that unobservables that affect schooling is captured by $\hat{e}$. Even if e and v_1 are correlated the above specification provides consistent estimators. But as Garen notes, these estimators may not be efficient; v_1 will depend on S. Consequently correction for heteroscedasticity is called for. It should be noted that estimation of equatioons 13 and 14 is akin to testing whether S is endogenous when schooling affects health. This is the well known Wu-Hauseman(1978) test for endogeneity; a significant coefficient on $\hat{e}$ in equation 14 would imply that schooling is endogenous.

Next, we pursue the above strategy but now include direct measures of time preference in the health equation function. We estimate equations of the forms.

$$H = \Phi(Y_1, Z_1, S, \beta; \gamma_1, \gamma_2, \gamma_3, \gamma_4) + v_1 \quad \ldots\ldots 15$$
$$H = \Phi(Y_1, Z_1, S, \beta, \hat{e}; \gamma_1, \gamma_2, \gamma_3, \gamma_4, \gamma_5) + v_1 \quad \ldots\ldots 15'$$
$$H = \Phi(Y_1, Z_1, \hat{S}, \beta; \gamma_1, \gamma_2, \gamma_3, \gamma_4) + v_1 \quad \ldots\ldots 15''$$
$$H = \Phi(Y_1, Z_1, S, \beta, S\hat{e}; \gamma_1, \gamma_2, \gamma_3, \gamma_4, \gamma_5) + v_1 \quad \ldots\ldots 15'''$$

The vector β includes time preference proxies for each data set. Significant coefficients on β in equation 15 would imply that time preference has in independent affect on health. While significance of β in equation 15′ would imply that time preference has an effect on health even when unobservable components of schooling are accounted for. Alternatively, if it is observed that the coefficient of S changes between equations 12 and 15 or between equations 14 and 15′, then it can be argued that correlation's between schooling and time preference is driving these changes.

Finally, we investigate whether schooling affect health through its impact on time preference. We estimate a time preference formation function that includes schooling as an exogenous variable. We then use the predicated value of time preference to estimate health. Thus we estimate equations of the form,

$$\beta = \alpha_0 + \alpha_1 Y_1 + \alpha_2 X_1 + \alpha_3 S + u \quad \ldots\ldots 16$$
$$H = \Phi(Y_1, Z_1^1, S, \hat{\beta}; \gamma_1, \gamma_2, \gamma_3, \gamma_4) + v_1 \quad \ldots\ldots 16'$$

In equation 16, variables in Y_1 was listed before, while X_1 includes covariates that are unique to preference

formation. We use parental schooling, fathers occupation and other patience proxies as factors that affect time preference only. Education of mother and father reflects the extent of patient capital that parents have. Consequently parent's education and own rate time preference for the future should have a positive relationship. Father's occupation is used to proxy for father's economic status. If offspring's of well to do parents are more future oriented than coefficient on these variables should be significant. Z'_1 includes all variables in Z_1 except own occupation dummy variables, these dummies were dropped to identify the two equations. It should be noted that the above specification may lead to multicollinearity in the health equation as S and predicted value of β are likely to be highly correlated.

VI. Data

Two nationally representative data set are used for the analysis. The National Longitudinal Survey of Youths(NLSY) surveys agents who were 14-16 years in 1979. The data set contains result of survey carried out every year until 1993. I use information from 1979 and 1989-1993 survey years. The Panel Study of Income Dynamics(PSID) data set collects information on household heads, starting from 1968. I use information from 1968, 1972 and 1988-1992 survey years.

Both data sets reports the amount respondents spent on food at home and outside of home. The sum of the two provides an annual version of the amount spent on food in the last year by each family unit. The consumption growth is obtained by taking the log of the ratio of annual consumption in year t over year t-1. For the NLSY, the average of consumption growth over the last four years is used. I use current and past year food consumption to measure PSID consumption growth. The PSID data set report expenditure on housing as well. These expenditures include rent, payment for mortgage, property taxes and insurance. Those who do not report any mortgage payments were assigned a payment equal to 6% of the value of their property. I use expenditure on housing and food as a measure of non-durable

consumption expenditure. The growth of this expenditure was calculated in a manner similar to the one used for food consumption growth. All the expenditure variables were discounted by their respective price deflators.

For alternative measures of time preference, I employ several variables reported in the two data sets. Following Leigh(1990), I use the time preference index reported by the PSID 1972 surveys. I also use the risk avoidance index reported in the same data set. While no comparable variable is reported in the NLSY, the data set do report on individual's saving, health insurance choices. Intuitively, those who are more future oriented are more likely to have health insurance and savings. I use these as indicators of individuals time and risk preference. I also use the log of the ratio of year t hours worked over hours worked in year t-1 as another proxy for time preference. The motivation to use this is inspired by the idea that more future oriented individuals will work more hours in the current period and thus have lower hours of work growth. The table below describe the different variables I use.

Simple correlation analysis shows that food consumption growth in the NLSY has the expected signs with respect to the other indicators of patient behavior. Positive correlation between food consumption growth ,saving and health insurance imply that those with savings and health

insurance, that is those who are more future oriented, are likely to experience higher food consumption growth. The positive correlation between Risk Avoidance and time preference index in the PSID support apriori notions on the relationship between risk attitude and future orientation. The positive correlation between time preference index and both consumption growth variables also support the notion that higher values of consumption growth are associated with higher levels of foresight . However, the negative correlation between food , non-durable consumption growth and Risk Avoidance appear disturbing.

Both data set report self reported health status. In the 1968 and 1992 survey years of the PSID, health related questions requested respondents to provide answers based on a scale of health limitations; from complete limitation to no limitation.

These are labeled as 'Health Status' for 1992 survey year and 'Past health limitation' for 1968 survey year. The 1992 survey year also provide data on whether health limit type or amount of work one can do, and this is termed as 'Health limitation'. Note that higher values of health status reflect poor health while the converse is true for past health limitation. Starting in 1979 survey year NLSY surveyed individuals on whether health limited type and

amount of work. In our data set, 'Past Health Limitation' and 'Health Limitation' capture these health variables.

While the NLSY report actual schooling measure, the PSID data set report scaled versions of parental schooling. I therefore convert the scaled versions to actual schooling by assigning each scale a midpoint grade. The PSID report number of children under 18 years of age in household whereas the NLSY report number of own biological children. I interpret both as number of children in household.

Both data set report own occupation according to the 1970 Census of Population , Alphabetic Index of Industries and Occupation. However, due to missing values, and the fact that PSID data set has fewer categories of fathers' occupation, certain occupations do not appear in the set of regressors.

Geographic data include regional data, whether respondent is resident in SMSA region and states in which individual grew up. For PSID, the state variable is from the 1968 survey year. In the NLSY, the variable reflect the state in which respondent was residing in at age 14, and the data was collected in the 1979 survey year. In the PSID sample there are no individuals who grew up Delaware, Vermont and Arkansas, while in the NLSY sample, there are no individuals who grew up in Idaho, Wyoming and Hawaii.

For the NLSY , I restrict our sample to those who were either employed or temporarily laid-off in the current and past year, and to those who had no change in family size in the last three years. Respondents in the PSID sample were employed or temporarily laid off in the current and past year, were heads of household in the current and past year, had no change in family size over the last year and were older than 25 years of age. These restrictions resulted with 1760 observations for NLSY and 1693 observations for PSID.

Tables 5 shows the summary statistics of the two samples. It is apparent that the NLSY respondents tend to be younger and the standard deviation of age shows that variation in age in the NLSY data set is considerably less than that in the PSID sample. Males make up 52 percent of the NLSY sample, while corresponding ratio is 89 percent in the PSID sample. This is primarily due to the fact that PSID collects information on household heads. In terms of race, blacks make up 17 percent of both the data sets. It appears that PSID respondents have higher parental schooling relative to the NLSY sample. I believe this is due to the coding procedures used in translating schooling scales for parental schooling. Thus the standard deviation of parental schooling of the PSID sample is typically lower than those in the NLSY sample. Finally, fathers of the PSID respondents were primarily craftsmen, foreman and kindred workers while

those of NLSY sample were split between craftsmen, laborer and managers.

In terms of current variables ,majority of both the samples are married. Both the samples seem to be similar in terms of number of children in household, while the family size is larger for the PSID sample. Regional data imply that both the sample have a large number of respondents living in the south. Respondents from both the sample seem to have acquired similar levels of schooling.

Labor market data shows that agents in the PSID sample earn higher wages while hours spent working was about the same for both the sample. Majority of the respondents in the NLSY sample are in professional and clerical categories. Most of the respondents in the PSID sample are in professional and managerial positions.

Data on health limitation indicate that more of the PSID respondents reported adverse status of health; while 2.8 percent of the NLSY respondents report any work related health limitation, the comparable number is 10.6 percent for the PSID sample.

Comparing the food consumption growth rates, it appears that respondents in the PSID sample experienced a food consumption growth of .2 percent while the average food consumption declined by .7 percent in the NLSY sample. The decline in the housing expenditure among the PSID agents

leads to a lower level of non-durable consumption growth. Hours worked grew at a rate of 4.9 percent for the NLSY sample while it declined by 0.4 percent in the PSID sample.

VII. RESULTS.

Since the dependent variables are qualitative, I employ probit and ordered probit to estimate the health equations. In the binary case, the probit procedure predicts the likelihood that the dependent variable takes on a value of 1; thus a negative coefficient implies that a higher value of the regressor leads to better health and vice versa. In the case of ordered probit, the sign of the first and the last coefficients are unambiguous while signs of all other coefficients remain ambiguous(Green, pg. 674). Consequently, I only comment on the significance levels of parameter estimates calculated using the ordered probit procedure.

Result of the estimation of equation 12 is presented in Table 6. In all three measures of health, schooling enters with a significant coefficient; in the NLSY sample schooling is the only significant predictor. In the PSID, apart from schooling, occupation (omitted category is professional)in managerial, clerical and farm laborer category, and past health status have a negative and significant (at 10% level) effect on Health Limitation. Those who reported occupation as household workers are more likely to report health limitations. Being white is also positively related to reporting health limitation.

The negative coefficient of schooling supports previous findings that states schooling and good health are positively correlated. The negative effect of being married also supports previous findings(Taubman and Rosen, 1982). Although addition of log of wage to the specification leads to a decrease of the schooling coefficient, the effect of schooling does remain significant in all of the health measures.

Schooling, Health And Unobservables.

In order to investigate the role of unobservable in health estimation when schooling is treated as an endogenous variable ,I estimate equation 13 and variant forms of equation 14.

Table 7 reports estimation of the schooling equation using both the sample. In the NLSY data set, mother's schooling and offspring of fathers who are professionals, managers and sales workers have significant positive impact on schooling(the omitted category for fathers occupation is those who reported 'private household' as occupation). Being white has a negative and significant effect. Six of the ten ASVAB test scores have a positive and significant sign while two are negative and significant. Although it is not significant, the negative coefficient on past health limitation do imply that any health limitations in 1979 may

have limited individual's ability to acquire additional years of schooling in subsequent years.

In the PSID, being white has a positive and significant effect on acquiring additional schooling. Offspring of fathers who were managers(the omitted category is professional), reported a positive and significant effect while offspring's of craftsmen, operative workers and laborers reported a negative and significant effects on schooling. Finally, the R-square and the F statistics for both the data set imply that the models are a good fit.

I do not include past health limitation in the PSID sample, as more of the respondents are likely to have completed years of schooling by 1968. In the PSID sample, past health limitation is taken from the 1968 survey and schooling is taken from the 1992 survey. In the NLSY, past health limitation is taken from the 1979 survey, while 'Schooling' is taken from the 1993 survey . It is observed that 45 percent of the PSID sample went on to acquire more schooling between 1968 and 1992. 78 percent of the NLSY sample went on to acquire additional schooling between 1979 and 1993. So the use of past health limitation to predict years of schooling completed appear to be more appropriate in the NLSY sample.

I use the residual from the schooling, the predicted value of schooling and a schooling-residual interaction term

to estimate equations 14, 14′ and 14′′. Table 8 reports the findings. In the NLSY sample, the residual is positive and insignificant while the coefficient on schooling remains negative and significant. It is noted that the schooling coefficient has increased between models in equations 12 and 14. When predicted schooling is used instead of actual schooling, the absolute value of the coefficient increases from .075 in column 1 to .103 in column health 3. In the full model with schooling, schooling residuals, and the interactions between the two , results show that schooling is significant and the interaction and the residual terms remain insignificant.

For the PSID sample, similar method produces different results. While the schooling coefficient changes in the same manner as in the NLSY, the interaction term obtains a significant(at 10%) coefficient in column 3. At the same time the residual enters with a positive and significant coefficient.

It has been noted(Grossman, 1994; pg. 32) that using variables such as parental schooling as instruments for schooling may be inappropriate as these variables may be correlated with the disturbance term in the health equation. To evaluate how sensitive the results are to choice of instruments, I estimated equation 14′ with and without parental education, fathers occupation dummies. In the

NLSY, I also test the role of ability covariates in the instruments. The NLSY sample appear to be sensitive to only the ability instruments , while the PSID sample do not appear to be sensitive to choice of instruments.

The above results suggest that, allowing residuals from a schooling equation in a health estimation equation has the effect of increasing the coefficient on schooling. The insignificant coefficient of the residual in the NLSY also suggest that schooling is exogenous when it is used to predict health. If these residuals capture unobservables of the schooling equation, then, unobservables do not play a independent and significant role in predicting health among the individuals in the NLSY. How ever, the change in the schooling coefficient do suggest that excluding the residuals may lead to biased coefficients. Analysis of the PSID parameters offer a different observation. Although the schooling coefficient behaves in the same manner as it does in the NLSY sample, the residual is significant(at the 10%) when it is used with actual level of schooling and when used with interaction term. According to the Wu-Hauseman test , the null hypothesis of endogenous schooling cannot be rejected for the PSID sample. This also suggests that even if unobservables do not play a significant independent role, their interaction with schooling may play an important role in predicting health.

To further investigate the role of unobservables from a schooling equation in estimating, I evaluate whether the residual and the schooling-residual interaction terms are jointly significant. The Wald statistics(Green, pg. 647) for the null hypothesis of zero coefficients is rejected at the 90% confidence interval in the PSID but cannot be rejected in the NLSY. This implies that there is indeed significant interaction between unobservable attributes and schooling in the PSID.

Previous studies (Berger & Leigh, 1989; Leigh, `1990; Leigh & Dhir, 1997) have usually found the schooling coefficient to decrease with the addition of the schooling residual. This evidence is used to support the notion that the schooling coefficient may be over stated if the residual term is omitted. On the contrary, the current findings implies that exclusion of the residual term may result in underestimating the effect of schooling on health. It should be noted that, of the three studies cited above, only in Berger and Leigh(1989) did the residual attain statistical significance. It is unclear what is driving the discrepancy but it is important to note that the same trend of signs and changes in schooling coefficient is observed across all three measures of health in the current model.

The sign of the schooling-residual interaction term does agree with previously found results, it is typically

the same as the sign on schooling. In this context, Garen(1984) provides a useful insight. In estimating income, he observes a negative sign on the residual and a positive sign on the interaction term. He posits that those with unexpectedly high schooling, that is those with high levels of positive residuals, would have earned less than others had they acquired less schooling. He notes that his finding agrees with the comparative advantage hypothesis of schooling (Garen, pg. 1215). For our case. In the PSID sample with health limitation as the dependent variable, negative coefficient on the interaction term and positive coefficient on the residual term compare well with his results. In this context, individuals who have high positive values of residual and low levels of schooling are more likely to report poor health than those with more schooling. Consider individuals with schooling levels greater than 16. On average the residual for this sub-sample is 3.18. Consequently the coefficient on schooling becomes -.144(=-.155-.009*3.18).Next consider individuals with less than 12 years with schooling. For this sub-sample, the mean residual is -3.28 and their schooling coefficient becomes -.085. Thus individuals who chooses higher levels of schooling than is predicted by the model appear to be less likely to show health problems than those who chooses lower levels of schooling.

Time Preference and Health.

In this section I evaluate the role of time preference in the presence of unobservables, I follow the method used by Berger and Leigh(1989). In this method time preference proxies and unobservables from the schooling equation are allowed to affect health. I add time preference variables individually, and then collectively to the specification in equation 15. Table 9 shows the results. In the NLSY consumption growth enters with the a positive sign and is insignificant. The coefficient on 'Health Insurance' is also positive. These signs are unexpected as this implies that more future oriented individuals, that is those with health insurance, report poor health. Conversely, sign of savings indicator do support apriori expectation.

In the PSID data, when health limitation is the dependent variable, Horizon Proxy and Risk Avoidance enter with the expected sign, while food consumption growth enter with a positive sign. Of these time preference indicators , the 'Risk Avoidance' and the food consumption coefficient are both significant at the 10% significant level. Collectively, these time preference variables produces a reduction of the schooling coefficient, as was observed for the NLSY sample. When self reported health status is the dependent variable, 'Risk Avoidance' remains to be the only significant time preference proxy.

The above results suggests that those who are more future oriented, as indicated by food consumption growth, and possession of health insurance report poorer health. While if the extent of future orientation is measured by 'Horizon Proxy', 'Risk Avoidance' , 'Saving' then higher time preference for the present is correlated with poor health. The positive correlation between consumption growth and poor health status appear to be reasonable if discount rate for health is negatively correlated with that for other consumption goods. Then agents with high consumption growth will choose poorer levels of health in the current period. These agents may be sacrificing current period health by working hard in order to attain better health and higher levels of consumption next period. The fact that poor health is negatively related to the growth of hours worked seem to strengthen this notion.

Furthermore research by Dolan and Guidex(1995) shows that agents may discount health differently than other goods. They report results of a pilot study where they evaluate agent's preference for health status and duration. They find that most of the agents have negative time preference implying that people prefer poor health today and good health next period over good health today and poor health next period. Consequently better health status and time preference may have a negative correlation.

The positive correlation between Health Insurance and poor health may exist if agents with poorer health chooses to purchase health insurance. This may be reflecting the well known adverse selection phenomenon of health insurance, where agents who expect to use more medical care will purchase more health insurance. On the other hand, since most insurance is employer based, and since most of the agents in the sample are employed, it is not clear whether existence of can be ascribed to individual preference. The low significance level of the 'Health Insurance' coefficient imply that the link between insurance and poor health is weak in the NLSY.

The negative relationship between risk attitude and poor health status appear to support previous studies on the relationship. In Leigh(1990), the components of 'Risk Avoidance' was used to predict seat-belt use. In the probit analysis all the significant coefficients were positive. In Leigh and Dhir(1997), 'Risk Avoidance' was used to predict exercise frequency and disability index. The coefficient on 'Risk Avoidance' was positive in the former case and negative in the latter case; although non of the coefficient were significant.

To evaluate whether these time preference indicators capture the effect of unobservables in a health equation, I re-estimate equations 14 by including the preference

indicators in the equation. As is shown in Table 10, the schooling coefficient increases in the same manner as it did in the previous section. In the NLSY, the schooling residual and the schooling-residual interaction term remain insignificant. While in the PSID sample, the residual is significant at the 5% level the interaction term is significant at the 10% level. How ever, addition of the time preference indicators leads to a small decrease in the schooling coefficient. In the NLSY sample, the schooling coefficient decreases as well. The Wald statistics for the joint significance of the interaction and the residual terms decreases with the addition of the preference indicators; the test statistics barely equals the critical value of 4.61.

Through simple correlation analysis, attributes captured by the schooling residual can be studied. In both the sample, the residual is uncorrelated with parental schooling or father's occupation. It is, however, correlated with contemporaneous variables such as own occupation, time preference indicators, health indicators and wage. The sign of these correlations suggest that the residual reflects attributes that are positively associated with risk averseness, saving behavior own wage, managerial and professional occupation. However, the significant positive coefficient on the residual term for the PSID data set in

Table 7 do suggest that higher values of this variable is associated with poor health.

Endogenous time preference implies that there is patience formation and this process affects health. To evaluate his notion, I estimate various forms of equation 15. I then use the predicted values in the health estimation equation of 16. It should be noted that the parameters for the health equation when 'Saving' and 'Health Insurance' are endogenous are efficient; the parameters are calculated in a procedure suggested by Murphy and Toppel(1985). The procedure describes a method to correct the standard error of the second stage estimators in models where the first stage or the auxiliary regression involves non-linear estimation. The other parameters have not been corrected for any bias that may occur due to two-stage estimations. The results are reported in Table 12. To assure the validity of instruments in the first stage, I use a method suggested by Bound et All(1990). The method involves running a F-test on the excluded instruments. Failure to reject of the null will undermine the set of instruments and may result in biased parameters. In the case where the first-stage estimation involves binary dependent variable, I use the Wald test statistics under the null hypothesis that all of the excluded instruments have zero coefficients.

In the estimation of time preference proxies for the PSID ,all the equations have the expected sign for the schooling coefficient. Except for the horizon proxy, schooling also remain a significant predictor. Fathers education has the wrong sign in predicting time preference, while occupation of father in the 'clerical and sales' category is a negative and significant predictor for 'Risk Avoidance'. It should also be noted that white appear to be a positive and significant predictor of Risk Avoidance and Horizon Proxy.

In the NLSY sample, I estimate two different time preference indicators: Health Insurance and Saving. Health Insurance and Saving estimation indicate that schooling has a positive and significant effect on these time preference indicators. Fathers occupation in the clerical, craftsman and operative categories have a negative and significant effect on the probability that agent's has any form of health insurance. Age is the other significant positive predictor. Father's occupation in craftsman category and being white have positive and significant effect on saving.

The findings for PSID compare well with reported results in the literature. Lawrence(1991) reports that schooling is positively correlated with consumption growth. She also finds that white households have a greater food consumption growth than non-whites. Both of these evidence

is found in our results. The significant coefficient on mother's schooling and fathers occupation in clerical and sales in predicting 'Risk Avoidance' appear to support Becker and Mulligan's notion of inter-generation transfer of time preference. The result of a number of significant coefficients on father's occupation variables in predicting 'Health Insurance' in the NLSY also support this notion.

Estimation of the health equation in the PSID shows that predicted 'Horizon Proxy' and 'Risk Avoidance' have negative signs and 'Horizon Proxy' is significant. The schooling coefficient undergoes noticeable changes when predicted variables are added. For 'Horizon Proxy' and 'Risk Avoidance', the coefficient decreases while for 'Food Consumption Growth' the coefficient increases.

In the NLSY, use of the predicted values in the health equation results in positive coefficient on 'Saving', and negative coefficient on 'Health Insurance. Of these, predicted 'Health Insurance' has a significant coefficient. Addition of these predictors affects schooling coefficient in different ways. In the case of 'Health Insurance' , the schooling coefficient decreases in absolute value, and is insignificant. While in the case of 'Saving', the coefficient increases in absolute value and remain significant.

It is interesting to note that use of Health Insurance in the NLSY and Risk Avoidance in the PSID produces similar results. In both the cases, apart from own schooling, father's occupation in the clerical category has a significant effect in predicting future orientation. Further more use of the predicted values results in a dramatic decrease of the significance level and magnitude of the schooling coefficient. The similarity is not surprising in the sense that health insurance makes up a component of the Risk Avoidance index. The change of the schooling coefficient in the health equation appears to be primarily driven by the use of own schooling in predicting the time preference proxy; indeed in separate estimation where schooling is excluded from the preference formation equation, the results are not as dramatic.

The above results suggests that although schooling may have a significant impact on preference formation, the effect of this relationship on health is unclear. For instance, using predicted horizon proxy leads to a decrease in the schooling coefficient whereas using food consumption growth or savings results in a increase of the coefficient.

In the interest of brevity, I use the PSID sample and estimate a model where health, schooling and time preference are endogenous. I employ a two stage simultaneous equation model to estimate the parameters of the three

structural equations. The risk avoidance index is used as a proxy for time preference and for health measure, I use health status. The exogenous variables in the first stage estimation includes age, age-squared, past health limitation, parental schooling, marital status, family size ,number of kids, dummy variables reflecting region grew up in, father's occupation, race and gender. The health equation is identified by only including past health limitation, marital status family size and number of kids; the schooling equation is identified by the regional dummy variables while the risk avoidance equation is identified by the father's occupational dummy variables. Table 13 shows the results of the two-stage estimations along with the ordinary least square parameters.

The schooling, time preference proxy and the health status variables carry the expected signs. Noting that higher values of health status reflect poorer health, schooling and risk avoidance have negative effect on health status while schooling and risk avoidance are positively related. It is also important to note that the coefficient on all of the endogenous variables is higher than their OLS counterparts. In all equations, schooling remain significant (for the risk avoidance equation it is significant at the 1% level).

From these results one could conclude that, while risk avoidance and years of completed schooling have significant interaction in the expected direction, in their effect on health the schooling effect dominates. It is also plausible that past health limitations may cause individuals to be more future oriented.

VIII. Conclusion.

Based on the above analysis, we make several conclusions. First, schooling coefficent remains a significant predictor of health, independent of the inclusion of unobservables and or time preference. The effect of including residual from the schooling equation to account for unobservables leads to an increase of the schooling coefficient in the health equation. This suggests that excluding the residual may lead to downward bias of the return to schooling. Although sign of the residual is ambiguous, the sign of the schooling residual interaction term suggests that there is comparative advantage to schooling. Consequently, it appears that unobservables may impact health through its interaction with actual levels of schooling.

Addition of time preference indicators to explain health leads to a small decrease in the schooling equation. This suggest that exclusion of preference indicators may lead to small a bias of the schooling coefficient. Of the preference indicators, food consumption growth does not appear to provide expected sign when the dependent variable is health. The other preference proxies in the PSID and saving indicator in the NLSY do have the expected signs. Assuming endogenous time preference in estimating health leads to mixed results. Since most of the schooling

coefficient in the time preference formation equation have the expected sign, we may conclude that schooling has an impact on patience formation. However, use of predicted proxies in estimating health does suggests that the parameters of the model may be inconsistent due to existence of multicollinearity. Finally, when time preference, schooling and health are assumed to be endogenous, the effect of time preference proxy on health diminishes and we argue that this is due to the stronger role of schooling.

These conclusions are made subject two caveats. First, in two stage estimations, the second stage parameters should be corrected for heterogeneity. This should purge the parameters of any inefficiency that may result from a high correlation between the predicted variable and other variables in the health equation. Finally, a criteria should be set up to evaluate the 'right' proxy for time preference. As noted, different proxies gives different results. Once a stable proxy is developed, the above analysis could provide more definitive conclusions. Future research could be made to address these issues.

Table 1. Past Studies on Time Preference, schooling and Health

Study	Data	Health Measure	Time Preference measure	Conclusion/ Comment
Ward(1979)	Survey of College Students	None	Implicit discount rate	Inconsistent responses
West(1978)	Seattle Denver Income Maintenance Study	None	Implicit Discount Rate	positive correlation between low income and high discount rate
Thaler (1979)	Survey Of College students	None	Implicit discount rate	high correlation. B/w lower waiting period and high disc.
Fuchs (1982)	Pilot Survey	Smoking, dental care, Exercise, seat belt use	Implicit discount Rate	Schooling and time preference has a negative and insignificant relationship
Farrel & Fucs(1982)	Stanford Heart Disease Prevention Program	none	Cigarette. Smoke at 17 and 24	Schooling and Time Preference relation does not change with additional schooling.
Dolan & Gudex (1995)	Pilot Survey	Health Status dimensions	Implicit discount Rate	25% has positive discount rate, 40 % has negative discount rate
Viscuci and Moore (1989)	PSID, 1982	Occupational Risk	Parameters from Euler equation	Positive correlation between discount rate and schooling and income
Lawrence (1991)	PSID, 1974-82	none	Parameters from Euler equation	Finds correlation between discount rate and schooling, income, race and gender
Berger & Leigh (1989)	NHANES, 1974; NLS, 1966-76	Blood pressure, self reported health	Residual from Schooling equation	Schooling is exogenous.
Leigh (1990)	PSID, 1968-72	Seat-belt use	Time preference, Risk Avoidance index	Schooling is exogenous, Time Preference, Risk Avoidance have expected signs
Sander (1995)	NORC, 1986-1991	Quit Smoking	none	Schooling is exogenous, choice of instruments has no impact
Evans and Montgomery (1994)	NHIS, 1987 NMES, 1987 CPS, 1987 PSID, 1986	none	Smoking at 18	Use smoke at 18 as instruments for schooling
Becker & Mulligan (1994)	PSID, 1975-1985	none	food-consumption growth, non-durable consumption growth.	Positive and weak correlation between consumption growth and father's schooling and income
Leigh & Dhir(1997)	PSID, 1986	ADL, Exercise frequency.	Horizon Proxy, Risk Avoidance index	Schooling is exogenous, coefficient decrease with the addition of indexes

Table 2. Time Preference Proxies.

NLSY	PSID
Saving: Equals 1 if respondent/spouse have any money assets like savings	**Horizon Proxy**: Equals 1 to 8. Higher values reflect higher levels of patience.
Health Insurance: Equals 1 if respondent has any kind of private or governmental health plans	**Risk Avoidance**: Equals 0 to 8. Higher values reflect higher risk avoidance.
Food Consumption Growth: Rate of real food consumption growth between 1992 and 1993	**Food Consumption growth**: Rate of real food consumption growth between 1991 and 1992
Hours OF Work Growth: Log of hours worked in year t over hours worked in year t-1.	**Non-durable Consumption growth**: Rate of real non-durable consumption growth between 1991 and 1992.

Table 3. Simple Correlation Between Time Preference Indicators.

NLSY

	Food consumption growth	Saving	Health Insurance	Hours of Work Growth
Food consumption growth	1			
Saving	0.030	1		
Health Insurance	0.031	0.190	1	
Hours of Work Growth	0.001	0.042	0.016	1

PSID

	Food consumption growth	Non-durable consumption growth	Horizon Proxy	Risk Avoidance
Food consumption growth	1			
Non-durable consumption growth	0.667	1		
Horizon Proxy	0.018	0.004	1	
Risk Avoidance	-.027	-0.059	0.302	1

Table 4.Health Measures.

PSID

Past health Limitation: Condition that limit work,1968	Values	%	**Health Status:** Condition of Health,1992	Values	%	**Health Limitation:** If Health limits type or amount of work,1992	Values	%
complete limitation	1	1	excellent	1	28.7	No	0	89.4
severe limitation on work	2	2.1	Very Good	2	37	Yes	1	10.6
some limitation	3	5.7	Good	3	26.2			
some, but no limitation on work	4	1.1	Fair	4	7.1			
no limitation	5	89.1	Poor	5	0.9			
yes, N. A. limitation on work	7	0.9						

NLSY

Past Health Limitation: If complete, severe or some health limitation, 1979	Values	%	**Health Limitation:** Health limits type or amount of work,1993	Values	%
Yes	1	.042	Yes	1	.028
No	0	.958	No	0	.972

TABLE 5: SUMMARY STATISTICS

	PSID		NLSY	
VARIABLE	MEAN	STD	MEAN	STD
HEALTH LIMITATION	0.106	0.308	0.028	0.166
PAST HEALTH LIMITATION	4.788	0.764	0.042	0.201
HEALTH STATUS	2.145	0.946		
SCHOOLING	13.491	2.518	13.747	2.309
TIME PREFERENCE	4.740	1.079		
RISK AVOIDANCE	5.105	1.621		
FOOD CONSUMPTIOON GROWTH	0.002	0.395	-0.007	0.407
NON-DURABLE CONS. GROWTH	-0.024	0.273		
HOUSING EXPENDITURE GROWTH	-0.054	0.431		
HEALTH INSURANCE			0.898	0.303
SAVINGS			0.860	0.347
HOURS WORK GROWTH	-0.004	0.320	0.049	0.312
AGE	43.335	10.661	31.953	2.234
AGESQ	1991.6	1015.1	1026.0	143.4
MARRIED	0.851	0.357	0.630	0.483
NUMKIDS	1.177	1.192	1.106	1.157
FAMILY SIZE	3.252	1.343	2.849	1.447
WEIGHT			169.26	38.08
WAGE	7.226	0.688	7.059	0.566
HOURS WORKED	7.650	0.357	7.657	0.297
PERMANENT INCOME	10.799	0.612		
LABOR INCOME	10.274	0.770		
WHITE	0.813	0.390	0.795	0.404
BLACK	0.171	0.376	0.176	0.381
MALE	0.892	0.311	0.518	0.500
MOTHER'S SCHOOLING	12.943	2.303	11.682	2.796
FATHER'S SCHOOLING	13.537	2.682	11.898	3.670
SCHOOLING, 1968	13.214	2.395		
SCHOOLING,1979			10.734	1.946
PROFESSIONAL	0.233	0.423	0.234	0.423
MANAGER	0.204	0.403	0.144	0.351
SALES WORKER			0.045	0.207
CLERICAL WORKER	0.113	0.317	0.205	0.403
CRAFTSMAN	0.184	0.387	0.059	0.236
OPERATIVE WORKER	0.131	0.337	0.095	0.293
LABORER	0.084	0.278	0.051	0.220
FARMER	0.013	0.113		
FARM LABORER			0.005	0.067
NUMBER OF OBSERVATION	1693		1760	

TABLE 6: Results of Probit estimation explaining health limitation and health status.(Absolute values of t-statistics in parenthesis).

	PSID						NLSY		
	DEP. VAR: HEALTH LIMITATION			DEP. VAR: HEALTH STATUS			DEP. VAR: HEALTH LIMITATION		
	1[a]	2[b]	3[b]	1[a]	2[b]	3[b]	1[a]	2[b]	3[b]
WHITE	0.194	0.215	0.228	0.328	0.311	0.307	0.068	0.080	0.084
	(1.670)	(1.836)	(1.901)	(4.712)	(4.455)	(4.122)	(0.426)	(0.499)	(0.490)
MALE	-0.135	-0.080	-0.028	0.174	0.117	0.189	-0.270	-0.243	-0.251
	(0.61)	(0.36)	(0.12)	(1.159)	(0.774)	(1.233)	(1.88)	(1.64)	(1.58)
PAST HEALTH LIMITATION	-0.102	-0.099	-0.104	0.024	0.022	0.022	0.169	0.158	0.180
	(2.01)	(1.95)	(2.04)	(0.690)	(0.627)	(0.626)	(0.639)	(0.600)	(0.680)
SCHOOLING	-0.046	-0.034	-0.054	0.108	0.093	0.106	-0.062	-0.056	-0.075
	(2.73)	(1.92)	(2.68)	(9.740)	(7.988)	(8.017)	(2.01)	(1.73)	(2.03)
MARRIED	-0.221	-0.234	-0.254	0.192	0.201	0.180	-0.202	-0.197	-0.189
	(1.02)	(1.07)	(1.16)	(1.350)	(1.406)	(1.262)	(1.24)	(1.21)	(1.12)
FAMILY SIZE	-0.046	-0.040	-0.018	-0.011	-0.014	-0.006	-0.051	-0.053	-0.062
	(0.53)	(0.46)	(0.21)	(0.20)	(0.25)	(0.11)	(0.64)	(0.67)	(0.75)
NUMKIDS	0.077	0.073	0.055	-0.005	-0.004	-0.011	0.067	0.066	0.065
	(0.825)	(0.779)	(0.588)	(0.08)	(0.07)	(0.19)	(0.764)	(0.761)	(0.723)
WAGE		-0.156			0.167			-0.093	
		(2.41)			(3.897)			(0.74)	
				1.049	1.055	1.050			
				29.2	29.2	29.2			
				2.2	2.2	2.2			
				39.2	39.2	39.2			
				3.2	3.2	3.2			
				30.1	30.2	30.1			
LNLIKE	-541.38	-538.42	-534.73	-2091.4	-2083.8	-2088.9	-220.4	-220.09	-215.6
N	1693	1693	1693	1693	1693	1693	1760	1760	1760

a: Othe covariates include intercept, age, agesq.
b: Other covariates include intercept,age, agesq, seven occupational dummies and three regional . dummies
c: Othe covariates include intercept, age, agesq, weight
d: Other covariates include intercept,age, agesq, seven occupational dummies and three regional dummies and a SMSA dummy.

Table 7. OLS Estimation of Years Of Completed Schooling(Absolute values of t-statistics in parenthesis) 58

DEPENDANT VARIABLE:	PSID[a] SCHOOLING	NLSY[b] SCHOOLING
WHITE	0.557	-0.967
	(3.027)	(7.657)
PAST HEALTH LIMITATION		-0.160
		(0.768)
MOTHER'S SCHOOLING	0.057	0.102
	(2.199)	(5.091)
FATHER'S SCHOOLING	0.057	0.016
	(2.549)	(0.948)
MANAGERIAL FATHER	0.702	0.443
	(2.933)	(2.279)
PROFESSIONAL FATHER		0.250
		(1.411)
SALES WORKER FATHER		0.284
		(1.138)
CLERIACAL FATHER	0.261	-0.252
	(1.141)	(1.094)
CRAFTSMAN FATHER	-0.803	-0.256
	(5.100)	(1.464)
ARMED FORCES FATHER		-0.121
		(0.237)
OPERATIVE FATHER		-0.283
		(1.625)
LABORER FATHER	-1.095	-0.406
	(5.248)	(1.768)
FARMER FATHER	-1.244	0.392
	(6.831)	(1.335)
FARM LABORER FATHER		0.288
		(0.869)
SERVICE WORKER FATHER		0.047
		(0.220)
ASVAB1		0.095
		(5.739)
ASVAB2		0.004
		(0.316)
ASVAB3		0.019
		(1.569)
ASVAB4		0.061
		(2.698)
ASVAB5		0.008
		(1.324)
ASVAB6		0.010
		(2.468)
ASVAB7		-0.066
		(4.678)
ASVAB8		0.128
		(9.992)
ASVAB9		0.003
		(0.176)
ASVAB10		-0.037
		(1.968)
F-Statistics	5.864	20.150
R-Squared	0.170	0.473
N	1693	1760

a: other covariates include intercept, age, agesq, male, 47 state dummies and a foreign dummy. Ommitted state is NY.
a: other covariates include intercept, age, agesq, male, 47 state dummies and SMSA'79 dummy. Ommitted state is NY.

TABLE 8 . Probit Estimation Of Health with Endogenous Schooling

	PSID[a]						NLSY[a]		
	DEP. VAR: HEALTH LIMITATION			DEP. VAR: HEALTH STATUS			DEP. VAR: HEALTH LIMITATION		
SCHOOLING	-0.109		-0.115	0.154		0.159	-0.118		-0.115
	(2.052)		(2.155)	(4.668)		(4.808)	(2.318)		(2.229)
PREDICTED SCHOOLING		-0.092			0.110			-0.103	
		(1.752)			(3.405)			(2.117)	
SCHOOLING*RESIDUAL			-0.009			0.007			-0.006
			(1.692)			(2.117)			(0.425)
RESIDUAL	0.060		0.172	-0.053		-0.148	0.070		-0.008
	(1.096)		(1.996)	(1.585)		(2.644)	(1.235)		(0.034)
MU2				1.051	1.032	1.053			
				(29.20)	(29.19)	(29.19)			
MU3				2.156	2.113	2.159			
				(39.20)	(39.25)	(39.21)			
MU4				3.221	3.152	3.222			
				(30.04)	(30.14)	(30.11)			
LNLIKE	-533.57	-536.38	-532.08	-2087.7	-2115.4	-2085.4	-214.82	-215.43	-214.73
N	1693	1693	1693	1693	1693	1693	1760	1760	1760
Wald statistics[c]			5.042						1.709

a: Other covariates include intercept,age, agesq, seven occupational dummies and three regional . dummies

b: Other covariates include intercept,age, agesq, seven occupational dummies and three regional dummies and a SMSA dummy.

c: The statisrics tests the null hypothesis ot zero coetticients on schooling residual interaction term and the residual term. Critical value with 2 degrees ot treedom at the 90% contidence interval is 4.61.

Table 9. Probit Estimation Of Health Using Schooling and Time Preference Proxies(t-statistics in parenthesis)

	PSID[a]						NLSY[b]		
	DEP. VAR: HEALTH LIMITATION			DEP. VAR: HEALTH STATUS			DEP. VAR: HEALTH LIMITATION		
	1	2	3	1	2	3	1	2	3
SCHOOLING	-0.059	-0.058	-0.048	0.106	0.106	0.099	-0.075	-0.105	-0.069
	(2.91)	(2.83)	(2.27)	(7.991)	(7.949)	(7.254)	(2.02)	(2.15)	(1.84)
FOOD CONSUMPTION GROWTH	0.220	0.218	0.204	0.019	0.019	0.027	0.051	0.078	0.055
	(2.052)	(2.036)	(1.896)	(0.291)	(0.290)	(0.405)	(0.339)	(0.519)	(0.363)
TIME PREFERENCE		-0.041	-0.019		0.004	-0.013			
		(1.02)	(0.46)		(0.152)	(0.499)			
RISK AVOIDANCE			-0.059			0.048			
			(1.94)			(2.567)			
HEALTH INSURANCE								0.050	0.104
								(0.236)	(0.487)
SAVING									-0.266
									(1.58)
MU1				1.050	1.050	1.053			
				(29.2)	(29.2)	(29.2)			
MU2				2.154	2.154	2.159			
				(39.2)	(39.2)	(39.2)			
MU3				3.216	3.216	3.219			
				(30.1)	(30.1)	(30.1)			
LNLIKE	-531.94	-531.43	-529.55	-2088.9	-2088.9	-2085.6	-215.53	-215.27	-214.30
N	1693	1693	1693	1693	1693	1693	1760	1760	1760

a: Other covariates include intercept, age, agesq, white, male, past health limitation,married, family size, numkids, seven occupational dummies and three regional dummies.

b: Other covariates include intercept, age, agesq, white, male, past health limitation, married, weight,family size,numkids, five occupational dummies and three regional dummies and SMSA.

Table 10. Probit Estimation of health using Time Preference and Endogenous Schooling.(Absolute values of t-statistics in parenthesis)

	PSID[a]						NLSY[b]		
	DEP. VAR: HEALTH LIMITATION			DEP. VAR: HEALTH STATUS			DEP. VAR: HEALTH LIMITATION		
	1	2	3	1	2	3	1	2	3
YEARS OF SCHOOLING	-0.102		-0.110	0.144		0.149	-0.108		-0.104
	(1.96)		(2.11)	(4.330)		(4.470)	(2.09)		(1.98)
PREDICTED SCHOOLING		-0.084			0.099			-0.094	
		(1.64)			(3.044)			(1.90)	
RESIDUAL	0.060		0.180	-0.050		-0.144	0.063		0.167
	(1.140)		(2.131)	(1.50)		(2.58)	(1.099)		(0.814)
SCHOOLING*RESIDUAL			-0.010			0.007			-0.008
			(1.83)			(2.104)			(0.53)
FOOD CONSUMPTION GROWTH	0.206	0.185	0.202	0.025	0.050	0.027	0.068	0.079	0.069
	(1.913)	(1.736)	(1.875)	(0.380)	(0.752)	(0.397)	(0.451)	(0.526)	(0.461)
TIME PREFERENCE	-0.018	-0.018	-0.017	-0.014	-0.009	-0.014			
	(0.44)	(0.44)	(0.40)	(0.52)	(0.36)	(0.55)			
RISK AVOIDANCE	-0.058	-0.072	-0.057	0.047	0.072	0.047			
	(1.91)	(2.42)	(1.88)	(2.519)	(3.905)	(2.508)			
HEALTH INSURANCE							0.107	0.091	0.107
							(0.500)	(0.426)	(0.498)
SAVING							-0.243	-0.249	-0.249
							(1.43)	(1.48)	(1.47)
INTER.2				1.054	1.038	1.056			
				(29.19)	(29.19)	(29.19)			
INTER.3				2.160	2.125	2.163			
				(39.21)	(39.27)	(39.23)			
INTER.4				3.224	3.163	3.225			
				(30.11)	(30.25)	(30.18)			
LNLIKE	-528.90	-530.79	-527.19	-2084.5	-2107.3	-2082.2	-213.69	-214.22	-213.54
N	1693	1693	1693	1693	1693	1693	1760	1760	1760
WALD STATISTICS			4.611						1.48

Table 12. Probit Estimationn with Endogenous Time Preference Proxies.

	PSID"						NLSY"			
	DEP. VAR:		HEALTH LIMITATION				DEP. VAR:		HEALTH LIM.	
SCHOOLING	-0.044	-0.030	-0.034	-0.019	-0.049	-0.061	-0.064	-0.023	-0.055	-0.085
	(2.62)	(1.60)	(1.92)	(0.71)	(2.87)	(3.24)	(2.02)	(0.60)	(1.74)	(2.15)
TIME PREFERENCE PROXY	-0.045		-0.062		0.191		0.048		-0.220	
	(1.13)		(2.18)		1.81		0.24		(1.35)	
PRED. TIME PREFERENCE PROXY		-0.329		-0.140		2.143		-1.531		0.795
		(2.14)		(1.37)		(1.750)		(1.82)		(0.917)
LNLIKE	-540.63	-538.98	-538.90	-540.33	-539.60	-539.73	-220.3	-218.77	-219.49	-219.93

IV ESTIMATIONS

	TIME PREFERENCE	RISK AVOIDANCE I	FOOD CONSUMPTION GROWTH	H. INSURANCE	SAVING
SCHOOLING	0.010	0.182	0.010	0.128	0.112
	(0.913)	(12.29)	(2.289)	(5.327)	(5.266)
TIME PREFERENCE INDEX		0.351	0.006		
		(10.80)	(1.464)		
RISK AVOIDANCE	0.185		0.002		
	(10.80)		(0.599)		
FOOD CONSUMPTION GROWTH	0.047	-0.186	0.007	0.087	0.075
	(0.749)	(2.14)	(0.749)	(0.835)	(0.790)
			-0.015		
			(2.14)		
SAVING				0.623	
				(5.840)	
HEALTH INSURANCE					0.667
					(5.982)
F-STATISTICS	14.962	40.239	1.856		
R-SQUARE	0.111	0.251	0.015		
F-STAT ON EXCL. INSTRUMENTS (n=9, CRIT. VALUE=.520)	13.339	15.716	1.390		
lnlike				-518.88	-635.02
WALD STATISTICS ON EXCLUDED				51.840	65.939

Structural Equations:

	Health Status		Schooling		Risk Avoidance	
	OLS	2SLS	OLS	2SLS	OLS	2SLS
INTERCEP	2.784	2.917	6.683	13.252	0.576	0.385
	(6.820)	(6.605)	(6.711)	(3.053)	(0.876)	(0.087)
AGE	0.045	0.055	0.238	0.304	0.001	-0.053
	(2.784)	(2.925)	(6.071)	(3.195)	(0.047)	(0.502)
AGESQ	0.000	0.000	-0.003	-0.003	0.000	0.001
	(1.821)	(1.975)	(6.774)	(3.431)	(0.877)	(1.016)
Mother's Schooling	-0.022	-0.018	0.008	-0.138	0.041	0.000
	(2.329)	(1.633)	(0.312)	(2.306)	(2.532)	(0.004)
Father's Schooling	0.009	0.014	0.075	0.052	0.018	-0.002
	(1.119)	(1.509)	(3.538)	(1.094)	(1.292)	(0.053)
White	-0.250	-0.146	0.439	-1.479	0.879	0.307
	(4.264)	(1.227)	(2.724)	(2.526)	(8.910)	(1.245)
Male	-0.130	-0.117	-0.285	-1.576	0.250	-0.003
	(1.051)	(0.906)	(1.557)	(3.114)	(2.102)	(0.008)
Past Health Limitat:	-0.016	0.001				
	(0.578)	(0.041)				
Family Size	0.008	-0.009				
	(0.187)	(0.191)				
Married	-0.168	-0.143				
	(1.442)	(1.206)				
Numkids	0.001	0.013				
	(0.014)	(0.264)				
Health Status			-0.527	-4.407	-0.101	-0.946
			(8.671)	(2.917)	(2.511)	(0.781)
Schooling	-0.082	-0.103			0.189	0.495
	(8.744)	(2.156)			(12.062)	(1.634)
Risk Avoidance	-0.035	-0.107	0.437	1.126		
	(2.403)	(0.853)	(12.132)	(1.800)		
Grew Up in North Central			-0.223	0.214		
			(1.461)	(0.668)		
Grew up in South			-0.457	0.597		
			(2.863)	(1.456)		
Grew Up in West			-0.291	-0.216		
			(1.460)	(0.541)		
Managerial Father					0.109	-0.224
					(0.740)	(0.915)
Craftsman Father					-0.075	0.189
					(0.767)	(0.829)
Clerical Father					-0.281	-0.398
					(2.023)	(2.122)
Laborer Father					0.098	0.620
					(0.753)	(2.654)
Farmer Father					-0.077	0.425
					(0.698)	(1.461)
F-STAT	23.759	15.994	42.536	7.573	32.366	13.442
RSQRD	0.145	0.103	0.218	0.047	0.200	0.094
N	1760	1760	1760	1760	1760	1760

TABLE 5. Summary Staistics.

PSID

Variable	Label	MEAN	STD	MIN	MAX
Health Limitation	Health Limit Type/Amt Wrk	0.106	0.308	0.000	1.000
Past Health Limitati	Health Limitation 1968	4.788	0.764	1.000	7.000
Health Status	Status Of Health	2.145	0.946	1.000	5.000
Schooling	Completed Years Of Schooling, 1992	13.491	2.518	3.000	17.000
Horizon Proxy	Horizon Proxy Index	4.740	1.079	1.000	8.000
Risk Avoidance	Risk Avoidance Index	5.105	1.621	0.000	8.000
Food Consumptioon Gr	Food Consumption Growth, 1991-92	0.002	0.395	-3.025	2.259
Non-Durable Cons. Gr	Non-Durable Consumption Growth, 1991-92	-0.024	0.273	-1.884	1.847
Housing Expenditure (	Housing Expenditure Growth, 1991-92	-0.054	0.431	-3.769	2.995
Hours Work Growth	Hours Of Work Growth, 1991-92	-0.004	0.320	-2.768	2.792
Age	Age Of 1992 Head	43.335	10.661	26.000	81.000
Agesq		1991.6	1015.1	676.0	6561.0
Married	Equals 1 If Married	0.851	0.357	0.000	1.000
Family Size	1992 Family Size	3.252	1.343	1.000	9.000
Numkids	# Children In Fmily Unit	1.177	1.192	0.000	7.000
Permanent Income	Log Permanent Real Income	10.799	0.612	5.705	13.511
Wage	Log Of Houraly Wage, 1992	7.226	0.688	2.708	9.210
Hours Worked	Log Of Hours Worked In Last Year	7.650	0.357	4.868	8.672
Labor Income	Log Of Labor Income	10.274	0.770	6.031	13.305
Male	Equals 1 If Male	0.892	0.311	0.000	1.000
Fem	Equals 1 If Female	0.108	0.311	0.000	1.000
White	Equals 1 If White	0.813	0.390	0.000	1.000
Black	Equals 1 If Black	0.171	0.376	0.000	1.000
Mother's Schooling	Education Of Mother	12.943	2.303	0.000	17.000
Father's Schooling	Education Of Father	13.537	2.682	0.000	17.000
Schooling, 1968	Schooling 1968	13.214	2.395	10.000	17.000
Professional	Equals 1 If Occupation Is Proff, Tech, Kindred	0.233	0.423	0.000	1.000
Manager	Equals 1 If Occupation Is Manag,Official,Prop.	0.204	0.403	0.000	1.000
Clerical Worker	Equals 1 If Occupation Is Clerical And Sales	0.113	0.317	0.000	1.000
Craftsman	Equals 1 If Occupation Is Crafts Man, Foreman	0.184	0.387	0.000	1.000
Operative Worker	Equals 1 If Occupation Is Operat,Kindred	0.131	0.337	0.000	1.000
Laborer	Equals 1 If Occupation In Is Laborers, Service	0.084	0.278	0.000	1.000
Farmer	Equals 1 If Occupation Is Farmeres And Farm Amangers	0.013	0.113	0.000	1.000
Household Worker	Equals 1if Occupation Is Household Worker	0.0053	0.0727	0.000	1.000
South	Equals 1 If Region Is South	0.387	0.487	0.000	1.000
West	Equals 1 If Region Is West	0.162	0.368	0.000	1.000
North East	Equals 1 If Region Is North East	0.184	0.387	0.000	1.000
Proffessional Father	Equals 1if Father's Occupation Is Proff, Tech, Kindred	0.120	0.326	0.000	1.000

TABLE 5. Summary Staistics.

Managerial Father	Equals 1if Father's Occupation Is Manag,Official,Prop.	0.070	0.256	0.000	1.000
Clerical Father	Equals 1if Father's Occupation Is Clerical And Sales	0.081	0.273	0.000	1.000
Craftsman Father	Equals 1if Father's Occupation Is Crafts Man, Foreman	0.232	0.422	0.000	1.000
Operative Father	Equals 1if Father's Occupation Is Operat,Kindred	0.166	0.372	0.000	1.000
Laborer Father	Equals 1if Father's Occupation In Is Laborers, Service	0.107	0.309	0.000	1.000
Farmer Father	Equals 1if Father's Occupation Is Farmer And Mangers	0.168	0.374	0.000	1.000
Fso	Equals 1 If Region Grew Up In Is South	0.359	0.480	0.000	1.000
Fwe	Equals 1 If Region Grew Up In Is West	0.114	0.318	0.000	1.000
Fnc	Equals 1 If Region Grew Up In Is Northe Central	0.309	0.462	0.000	1.000
Fo	Equals 1 If Grew Up In A Foreign Country	0.011	0.103	0.000	1.000
Al	Equals 1 If Grew Up In ALABAMA	0.0100	0.0997	0.000	1.000
Ar	Equals 1 If Grew Up In ARKANSAS	0.0213	0.1443	0.000	1.000
Az	Equals 1 If Grew Up In ARIZONA	0.0136	0.1158	0.000	1.000
Ca	Equals 1 If Grew Up In CALIFORNIA	0.0478	0.2135	0.000	1.000
Co	Equals 1 If Grew Up In COLORADO	0.0130	0.1133	0.000	1.000
Ct	Equals 1 If Grew Up In CONNECTICUT	0.0083	0.0906	0.000	1.000
Dc	Equals 1 If Grew Up In COLUMBIA	0.0041	0.0642	0.000	1.000
Fl	Equals 1 If Grew Up In FLORIDA	0.0130	0.1133	0.000	1.000
Ga	Equals 1 If Grew Up In GEORGIA	0.0195	0.1383	0.000	1.000
Hi	Equals 1 If Grew Up In HAWAII	0.0012	0.0344	0.000	1.000
Ia	Equals 1 If Grew Up In IOWA	0.0325	0.1773	0.000	1.000
Id	Equals 1 If Grew Up In IDAHO	0.0006	0.0243	0.000	1.000
Il	Equals 1 If Grew Up In ILLINOIS	0.0431	0.2032	0.000	1.000
In	Equals 1 If Grew Up In INDIANA	0.0301	0.1710	0.000	1.000
Ks	Equals 1 If Grew Up In KANSAS	0.0065	0.0804	0.000	1.000
Ky	Equals 1 If Grew Up In KENTUCKY	0.0230	0.1501	0.000	1.000
La	Equals 1 If Grew Up In LOUISIANA	0.0130	0.1133	0.000	1.000
Ma	Equals 1 If Grew Up In MASSACHUSETTS	0.0354	0.1849	0.000	1.000
Md	Equals 1 If Grew Up In MARYLAND	0.0165	0.1276	0.000	1.000
Me	Equals 1 If Grew Up In MAINE	0.0059	0.0767	0.000	1.000
Mi	Equals 1 If Grew Up In MICHIGAN	0.0496	0.2172	0.000	1.000
Mn	Equals 1 If Grew Up In MINNESOTA	0.0278	0.1643	0.000	1.000
Mo	Equals 1 If Grew Up In MISSOURI	0.0413	0.1991	0.000	1.000
Ms	Equals 1 If Grew Up In MISSISSIPPI	0.0408	0.1978	0.000	1.000
Mt	Equals 1 If Grew Up In MONTANA	0.0006	0.0243	0.000	1.000
Nc	Equals 1 If Grew Up In NORTH CAROLINA	0.0555	0.2291	0.000	1.000
Nd	Equals 1 If Grew Up In NORTH DAKOTA	0.0018	0.0421	0.000	1.000
Ne	Equals 1 If Grew Up In NEBRASKA	0.0083	0.0906	0.000	1.000
Nh	Equals 1 If Grew Up In NEW HAMPSHIRE	0.0006	0.0243	0.000	1.000

TABLE 5. Summary Staistics.

Nj	Equals 1 If Grew Up In	NEW JERSEY	0.0266	0.1609	0.000	1.000
Nm	Equals 1 If Grew Up In	NEW MEXICO	0.0012	0.0344	0.000	1.000
Nv	Equals 1 If Grew Up In	NEVADA	0.0006	0.0243	0.000	1.000
Ny	Equals 1 If Grew Up In	NEW YORK	0.0573	0.2325	0.000	1.000
Oh	Equals 1 If Grew Up In	OHIO	0.0496	0.2172	0.000	1.000
Ok	Equals 1 If Grew Up In	OKLAHOMA	0.0083	0.0906	0.000	1.000
Or	Equals 1 If Grew Up In	OREGON	0.0130	0.1133	0.000	1.000
Pa	Equals 1 If Grew Up In	PENNSYLVANIA	0.0721	0.2587	0.000	1.000
Ri	Equals 1 If Grew Up In	RHODE ISLAND	0.0006	0.0243	0.000	1.000
Sc	Equals 1 If Grew Up In	SOUTH CAROLINA	0.0449	0.2071	0.000	1.000
Sd	Equals 1 If Grew Up In	SOUTH DAKOTA	0.0077	0.0873	0.000	1.000
Tn	Equals 1 If Grew Up In	TENNESSEE	0.0177	0.1320	0.000	1.000
Tx	Equals 1 If Grew Up In	TEXAS	0.0390	0.1936	0.000	1.000
Ut	Equals 1 If Grew Up In	UTAH	0.0077	0.0873	0.000	1.000
Va	Equals 1 If Grew Up In	VIRGINIA	0.0272	0.1626	0.000	1.000
Wa	Equals 1 If Grew Up In	WASHINGTON	0.0154	0.1230	0.000	1.000
Wi	Equals 1 If Grew Up In	WISCONSIN	0.0106	0.1026	0.000	1.000
Wv	Equals 1 If Grew Up In	WEST VIRGINIA	0.0047	0.0686	0.000	1.000
Wy	Equals 1 If Grew Up In	WYOMING	0.0006	0.0243	0.000	1.000
N			1693			

NLSY

Varibale	Label	MEAN	STD	MIN.	MAX
Health Limitation	Equals 1 If Health Limited Type Or Amount Of Work,1993	0.028	0.166	0.000	1.000
Past Health Limitati	Equals 1 If Complete,Or Severe Or Some Health Limit, 1979	0.042	0.201	0.000	1.000
Schooling	Highes Grade Complt 1993	13.747	2.309	4.000	20.000
Food Consumption Gro	Average Yearly Consumption Growth, 1989-93	-0.007	0.407	-2.768	2.785
Health Insurance	Equals 1 If Respondent Has Any Form Of Health Insurance	0.898	0.303	0.000	1.000
Savings	Equals 1 If Respondent Has Any Form Of Money Asset	0.860	0.347	0.000	1.000
Hours Work Growth	Log of Hours Of Work Growth, 1992-93	0.049	0.312	-1.205	4.008
Age		31.953	2.234	28.000	36.000
Agesq		1026.0	143.4	784.0	1296.0
Married	Equals 1 If Respondent Has Any Form Of Health Insurance	0.630	0.483	0.000	1.000
Numkids	Number Of Children In Household	1.106	1.157	0.000	6.000
Family Size	Family Size	2.849	1.447	1.000	9.000
Weight	Weight Of Respondent	169.26	38.08	95.00	326.00
Wage	Log Of Houraly Wage, 1993	7.059	0.566	4.174	11.813

TABLE 5. Summary Staistics.

Hours Worked	Log Of Hours Worked In Last Year	7.657	0.297	6.031	8.516
White	Equals 1 If White	0.795	0.404	0.000	1.000
Black	Equals 1 If Black	0.176	0.381	0.000	1.000
Male	Equals 1 If Male	0.518	0.500	0.000	1.000
Fem	Equals 1 If Female	0.482	0.500	0.000	1.000
Mother's Schooling	Education Of Mother	11.682	2.796	0.000	20.000
Father's Schooling	Education Of Father	11.898	3.670	0.000	20.000
Schooling,'79	Highest Grade Completed 79	10.734	1.946	0.000	16.000
Professional	Equals 1 If Occupation Is Profession	0.234	0.423	0.000	1.000
Manager	Equals 1 If Occupation Is Man,Officials And Prop	0.144	0.351	0.000	1.000
Sales Worker	Equals 1 If Occupation Is Sales Workers	0.045	0.207	0.000	1.000
Clerical Worker	Equals 1 If Occupation Is Clerical And Kindred	0.205	0.403	0.000	1.000
Craftsman	Equals 1 If Occupation Is Craftsmen,Foremen And Kindred	0.059	0.236	0.000	1.000
Operative Worker	Equals 1 If Occupation Is Operatives And Kindred	0.095	0.293	0.000	1.000
Laborer	Equals 1 If Occupation Is Laborers, Except Farm	0.051	0.220	0.000	1.000
Farm Laborer	Equals 1 If Occupation Is Laborers, Except Farm	0.005	0.067	0.000	1.000
North East	Equals 1 If Region Is North East	0.170	0.376	0.000	1.000
North Central	Equals 1 If Region Is North Central	0.273	0.445	0.000	1.000
South	Equals 1 If Region Is South	0.372	0.484	0.000	1.000
West	Equals 1 If Region Is West	0.185	0.388	0.000	1.000
Smsa	Residence In Smsa, 1993	0.793	0.405	0.000	1.000
Professional Father	Equals 1 If Father's Occupation Is Profession	0.143	0.350	0.000	1.000
Managerial Father	Equals 1 If Father's Occupation Is Man,Officials And Prop	0.169	0.375	0.000	1.000
Sales Worker Father	Equals 1 If Father's Occupation Is Sales Workers	0.043	0.202	0.000	1.000
Cleriacal Father	Equals 1 If Father's Occupation Is Clerical And Kindred	0.052	0.221	0.000	1.000
Craftsman Father	Equals 1 If Father's Occupation Is Craftsmen,Foremen And F	0.157	0.364	0.000	1.000
Armed Forces Father	Equals 1 If Father's Occupation Is Armed Forces	0.009	0.095	0.000	1.000
Operative Father	Equals 1 If Father's Occupation Is Operatives And Kindred	0.164	0.371	0.000	1.000
Laborer Father	Equals 1 If Father's Occupation Is Laborers, Except Farm	0.055	0.227	0.000	1.000
Farmer Father	Equals 1 If Father's Occupation Is Farmers And Farm Manage	0.027	0.163	0.000	1.000
Farm Laborer Father	Equals 1 If Father's Occupation Is Farm Laborers And Foren	0.022	0.147	0.000	1.000
Service Worker Fathe	Equals 1 If Father's Occupation Is Service , Except Privat	0.070	0.256	0.000	1.000
Household Worker Fat	Equals 1 If Father's Occupation Is Private Household	0.001	0.024	0.000	1.000
Smsa79	Reside	0.673	0.469	0.000	1.000
Ne79	Equals 1 If Region Is North East 1979	0.191	0.393	0.000	1.000
Nc79	Equals 1 If Region Is North Central In 1979	0.293	0.455	0.000	1.000
So79	Equals 1 If Region Is South In 1979	0.347	0.476	0.000	1.000
We79	Equals 1 If Region Is West In 1979	0.170	0.376	0.000	1.000
Asvab1	Asvab Voc Test Sec 1-Gen Science 81	15.875	4.831	0.000	25.000

TABLE 5. Summary Staistics.

Asvab2	Asvab Voc Test Sec 2-Arith Reason 81	18.241	7.102	2.000	30.000
Asvab3	Asvab Voc Test Sec 3-Word Knowledge 81	26.251	6.969	0.000	35.000
Asvab4	Asvab Voc Test Sec 4-Paragraph Comp 81	11.118	3.132	0.000	15.000
Asvab5	Asvab Voc Test Sec 5-Numeric Opers 81	35.723	10.013	1.000	50.000
Asvab6	Asvab Voc Test Sec 6-Coding Speed 81	47.246	14.980	0.000	84.000
Asvab7	Asvab Voc Test Sec 7-Auto+Shop Info 81	13.979	5.362	0.000	25.000
Asvab8	Asvab Voc Test Sec 8-Math Knowledge 81	14.281	6.223	1.000	25.000
Asvab9	Asvab Voc Test Sec 9-Mech Comp 81	14.065	5.197	2.000	25.000
Asvab10	Asvab Voc Test Sec 10-Elctrnic Info 81	11.224	4.236	1.000	20.000
Ak	Equals 1 If State Of Residence At 14 Years (Arkansas	0.003	0.053	0.000	1.000
Ar	Equals 1 If State Of Residence At 14 Years (Alaska	0.010	0.098	0.000	1.000
Az	Equals 1 If State Of Residence At 14 Years (Arizona	0.011	0.103	0.000	1.000
Ca	Equals 1 If State Of Residence At 14 Years (California	0.080	0.272	0.000	1.000
Co	Equals 1 If State Of Residence At 14 Years (Colorado	0.021	0.144	0.000	1.000
Ct	Equals 1 If State Of Residence At 14 Years (Connecticut	0.022	0.147	0.000	1.000
Dc	Equals 1 If State Of Residence At 14 Years (Columbia	0.005	0.067	0.000	1.000
De	Equals 1 If State Of Residence At 14 Years (Delaware	0.002	0.048	0.000	1.000
Fl	Equals 1 If State Of Residence At 14 Years (Florida	0.040	0.197	0.000	1.000
Ga	Equals 1 If State Of Residence At 14 Years (Georgia	0.024	0.154	0.000	1.000
Ia	Equals 1 If State Of Residence At 14 Years (Idaho	0.014	0.118	0.000	1.000
Il	Equals 1 If State Of Residence At 14 Years (Illinois	0.038	0.190	0.000	1.000
In	Equals 1 If State Of Residence At 14 Years (Indiana	0.020	0.140	0.000	1.000
Ks	Equals 1 If State Of Residence At 14 Years (Kentucky	0.006	0.075	0.000	1.000
Ky	Equals 1 If State Of Residence At 14 Years (Kansas	0.001	0.024	0.000	1.000
La	Equals 1 If State Of Residence At 14 Years (Louisiana	0.003	0.053	0.000	1.000
Ma	Equals 1 If State Of Residence At 14 Years (Massachusetts	0.018	0.134	0.000	1.000
Md	Equals 1 If State Of Residence At 14 Years (Maryland	0.010	0.101	0.000	1.000
Me	Equals 1 If State Of Residence At 14 Years (Maine	0.001	0.024	0.000	1.000
Mi	Equals 1 If State Of Residence At 14 Years (Michigan	0.056	0.229	0.000	1.000
Mn	Equals 1 If State Of Residence At 14 Years (Minnesota	0.027	0.161	0.000	1.000
Mo	Equals 1 If State Of Residence At 14 Years (Mississippi	0.018	0.134	0.000	1.000
Ms	Equals 1 If State Of Residence At 14 Years (Missouri	0.004	0.063	0.000	1.000
Mt	Equals 1 If State Of Residence At 14 Years (Montana	0.010	0.101	0.000	1.000
Nc	Equals 1 If State Of Residence At 14 Years (North Carolina	0.034	0.182	0.000	1.000
Nd	Equals 1 If State Of Residence At 14 Years (North Dakota	0.001	0.034	0.000	1.000
Nh	Equals 1 If State Of Residence At 14 Years (New Hampshire	0.001	0.034	0.000	1.000
Nj	Equals 1 If State Of Residence At 14 Years (New Jersey	0.047	0.212	0.000	1.000
Nm	Equals 1 If State Of Residence At 14 Years (New Mexico	0.010	0.098	0.000	1.000
Ny	Equals 1 If State Of Residence At 14 Years (New York	0.060	0.238	0.000	1.000

TABLE 5. Summary Staistics.

Oh	Equals 1 If State Of Residence At 14 Years (Ohio	0.072	0.259	0.000	1.000
Ok	Equals 1 If State Of Residence At 14 Years (Oklahoma	0.008	0.089	0.000	1.000
Or	Equals 1 If State Of Residence At 14 Years (Oregon	0.003	0.053	0.000	1.000
Pa	Equals 1 If State Of Residence At 14 Years (Pennsylvania	0.045	0.208	0.000	1.000
Ri	Equals 1 If State Of Residence At 14 Years (Rhode Island	0.001	0.024	0.000	1.000
Sc	Equals 1 If State Of Residence At 14 Years (South Carolina	0.031	0.173	0.000	1.000
Sd	Equals 1 If State Of Residence At 14 Years (South Dakota	0.002	0.048	0.000	1.000
Tn	Equals 1 If State Of Residence At 14 Years (Tennessee	0.013	0.114	0.000	1.000
Tx	Equals 1 If State Of Residence At 14 Years (Texas	0.065	0.247	0.000	1.000
Ut	Equals 1 If State Of Residence At 14 Years (Utah	0.001	0.024	0.000	1.000
Va	Equals 1 If State Of Residence At 14 Years (Vermont	0.030	0.171	0.000	1.000
Vt	Equals 1 If State Of Residence At 14 Years (Virginia	0.001	0.024	0.000	1.000
Wa	Equals 1 If State Of Residence At 14 Years (Washington	0.015	0.123	0.000	1.000
Wi	Equals 1 If State Of Residence At 14 Years (West Virginia	0.045	0.208	0.000	1.000
Wv	Equals 1 If State Of Residence At 14 Years (Wisconsin	0.019	0.136	0.000	1.000
N		1760			

TABLE 6: Probit Estimation Of HEalth.

PSID

	Dependant Variable: Health Limitation							Dependant Variable: Health Status				
	1.00	2.00	3.00	4.00	5.00	6.00	7.00	1.00	2.00	3.00	4.00	5.00
Intercep	-0.47	-0.14	-0.15	-0.19	-0.27	0.36	-0.01	-1.10	-1.09	-1.08	1.74	-1.05
	-0.66	-0.19	-0.20	-0.26	-0.36	0.46	-0.02	-2.33	-2.29	-2.27	-3.45	-2.06
Age	-0.02	-0.01	-0.01	-0.01	0.00	0.01	0.00	-0.06	-0.06	-0.06	-0.07	-0.06
	-0.64	-0.36	-0.33	-0.37	-0.16	0.20	-0.16	-3.04	-2.93	-2.88	-3.45	-2.93
Agesq	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1.30	0.96	0.93	0.99	0.81	0.42	0.76	2.16	2.01	2.00	2.57	2.01
White	0.13	0.19	0.19	0.20	0.19	0.21	0.21	0.33	0.33	0.33	0.31	0.31
	1.14	1.65	1.68	1.72	1.67	1.84	1.70	4.82	4.72	4.71	4.46	4.12
Male	-0.38	-0.37	-0.15	-0.14	-0.13	-0.08	-0.01	0.18	0.17	0.17	0.12	0.19
	-3.06	-3.02	-0.69	-0.64	-0.61	-0.36	-0.06	1.23	1.16	1.16	0.77	1.23
Past Health Limita	-0.12	-0.10	-0.10	-0.10	-0.10	-0.10	-0.11	0.02	0.02	0.02	0.02	0.02
	-2.32	-2.06	-2.05	-2.03	-2.01	-1.95	-2.08	0.71	0.69	0.69	0.63	0.63
Schooling		-0.05	-0.05	-0.05	-0.05	-0.03	-0.06	0.11	0.11	0.11	0.09	0.11
		-2.70	-2.70	-2.68	-2.73	-1.92	-2.74	9.78	9.75	9.74	7.99	8.02
Married			-0.24	-0.27	-0.22	-0.23	-0.26	0.17	0.20	0.19	0.20	0.18
			-1.21	-1.29	-1.02	-1.07	-1.21	1.28	1.41	1.35	1.41	1.26
Family Size				0.02	-0.05	-0.04	-0.02		-0.01	-0.01	-0.01	-0.01
				0.45	-0.53	-0.46	-0.25		-0.60	-0.20	-0.25	-0.11
Numkids					0.08	0.07	0.06			0.00	0.00	-0.01
					0.83	0.78	0.62			-0.08	-0.07	-0.19
Wage						-0.16					0.17	
						-2.41					3.90	
Manager							-0.24					0.02
							-1.82					0.28
Clerical Worker							-0.21					0.03
							-1.39					0.29
Craftman							-0.29					0.01
							-1.95					0.09
Operator							-0.12					-0.01
							-0.77					-0.12
Service Worker							-0.15					0.01
							-0.86					0.06
Farmer							0.21					0.04
							0.62					0.18
Household Worker							0.97					0.19

TABLE 6: Probit Estimation Of HEalth.

							2.09					0.51
North Central							-0.12					0.02
							-0.96					0.22
South							-0.11					-0.02
							-0.93					-0.22
West							-0.08					0.15
							-0.58					1.62
Mu2								1.05	1.05	1.05	1.05	1.05
								29.20	29.20	29.20	29.20	29.20
Mu3								2.15	2.15	2.15	2.16	2.15
								39.22	39.21	39.21	39.22	39.20
Mu4								3.21	3.21	3.21	3.22	3.22
								30.11	30.13	30.12	30.23	30.07
Lnlike	-546	-543	-542	-542	-541	-538	-534	-2092	-2091	-2091	-2084	-2089
N	1693	1693	1693	1693	1693	1693	1693	1693	1693	1693	1693	1693

NLSY
Dependent Variable: Health Limitation.

	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00
Intercep	8.01	9.05	8.96	8.90	8.34	8.41	9.28	11.03	10.01
	0.63	0.71	0.70	0.69	0.64	0.65	0.72	0.84	0.76
Age	-0.63	-0.65	-0.64	-0.63	-0.60	-0.62	-0.64	-0.78	-0.72
	-0.80	-0.81	-0.79	-0.79	-0.74	-0.77	-0.79	-0.95	-0.88
Agesq	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	0.82	0.84	0.83	0.82	0.77	0.79	0.82	0.97	0.90
White	0.00	0.00	0.04	0.04	0.05	0.07	0.08	0.11	0.08
	0.03	0.02	0.28	0.26	0.31	0.43	0.50	0.65	0.49
Male	-0.17	-0.19	-0.18	-0.19	-0.19	-0.27	-0.24	-0.24	-0.25
	-1.36	-1.49	-1.48	-1.48	-1.51	-1.88	-1.64	-1.52	-1.58
Past Health Limita	0.28	0.25	0.20	0.20	0.19	0.17	0.16	0.18	0.18
	1.11	1.00	0.78	0.78	0.72	0.64	0.60	0.68	0.68
Schooling		-0.06	-0.07	-0.07	-0.06	-0.06	-0.06	-0.07	-0.08
		-2.05	-2.21	-2.18	-2.03	-2.01	-1.73	-1.98	-2.03
Married			-0.23	-0.22	-0.21	-0.20	-0.20	-0.20	-0.19
			-1.79	-1.38	-1.26	-1.24	-1.21	-1.23	-1.12
Family Size				-0.01	-0.05	-0.05	-0.05	-0.06	-0.06
				-0.11	-0.60	-0.64	-0.67	-0.71	-0.75
Numkids					0.07	0.07	0.07	0.07	0.07
					0.76	0.76	0.76	0.76	0.72

TABLE 6: Probit Estimation Of HEalth.

Weight						0.00	0.00	0.00	0.00
						1.15	1.08	1.20	1.27
Wage							-0.09		
							-0.74		
Professional								0.20	0.20
								0.91	0.91
Manager								-0.08	-0.06
								-0.33	-0.26
Sales Worker								-4.93	-4.94
								0.00	0.00
Clerical Worker								0.05	0.06
								0.23	0.27
Craftmen								-0.18	-0.16
								-0.54	-0.48
Operative Worker								0.23	0.26
								1.04	1.13
Non-Farm Laborer								-0.13	-0.13
								-0.37	-0.37
Northe East									0.18
									0.83
South									0.07
									0.31
West									0.20
									0.90
Smsa									0.10
									0.59
Lnlike	-225	-223	-221	-221	-221	-220	-220	-216	-216
N	1760	1760	1760	1760	1760	1760	1760	1760	1760

Table 7. OLS Estimation Of Years of Completed Schooling.

	NLSY		PSID
Intercep	11.800		12.456
	(1.344)		(24.055)
Age	-0.143		
	-(0.261)		
Agesq	0.002		
	(0.212)		
Male	0.068		0.256
	(0.595)		(1.370)
White	-0.967		0.557
	-(7.657)		(3.027)
Past Health Limitation	-0.160		
	-(0.768)		
Mother's Schooling	0.102		0.057
	(5.091)		(2.199)
Father's Schooling	0.016		0.057
	-(0.948)		(2.549)
Father's Schooling	0.443	Managerial Father	0.702
	-(2.279)		(2.933)
Managerial Father	0.250	Cleriacal Father	-0.803
	-(1.411)		-(5.100)
Professional Father	0.284	Craftsman Father	0.261
	-(1.138)		(1.141)
Sales Worker Father	-0.252	Laborer Father	-1.095
	-(1.094)		-(5.248)
Cleriacal Father	-0.256	Farmer Father	-1.244
	-(1.464)		-(6.831)
Craftsman Father	-0.121		
	-(0.237)		
Armed Forces Father	-0.283		
	-(1.625)		
Operative Father	-0.406		
	-(1.768)		
Laborer Father	0.392		
	-(1.335)		
Farmer Father	0.288		
	-(0.869)		
	(0.220)		
SERVICE WORKER FATHER	0.095		
	(5.739)		
Voc. Tes-Arith. Reason	0.004		
	(0.316)		
Voc. Test-Word Knowledge	0.019		
	(1.569)		
Voc. Test-Paragraph Comp	0.061		
	(2.698)		
Voc. Test-Numeric Oper.	0.008		
	(1.324)		
Voc. Test-Coding Speed	0.010		
	(2.468)		
Voc. Test-Auto&Shop Infc	-0.066		
	-(4.678)		
Voc Test-Math Knowl. Gen	0.128		
	(9.992)		
Voc Test-Mech Comp	0.003		
	(0.176)		
Voc. Test-Elctrnic Info	-0.037		
	-(1.968)		

Table 7. OLS Estimation Of Years of Completed Schooling.

Resident Of Smsa, 1979	-0.141		
	-(1.389)		
Ak	-1.112	Fo	-1.265
	-(1.400)		-(2.099)
Al	-0.052	Al	-0.462
	-(0.192)		-(0.745)
Ar	0.185	Az	-0.286
	(0.415)		-(0.526)
Az	0.662	Ar	-0.523
	(1.535)		-(1.141)
Ca	0.101	Ca	-0.872
	(0.481)		-(2.467)
Co	0.024	Co	-0.138
	(0.073)		-(0.250)
Ct	0.134	Ct	0.021
	(0.425)		(0.032)
Dc	0.355	Dc	-1.230
	(0.561)		-(1.336)
De	-0.460	Fl	-0.401
	-(0.525)		-(0.724)
Fl	-0.221	Ga	-0.935
	-(0.872)		-(1.952)
Ga	0.056	Hi	0.260
	(0.177)		(0.154)
Ia	0.422	Il	-0.416
	(1.122)		-(1.146)
Il	0.192	Id	3.600
	(0.740)		(1.530)
In	0.089	In	-0.968
	(0.270)		-(2.394)
Ks	0.794	Ia	-1.184
	(1.398)		-(2.936)
Ky	0.145	Ks	-1.722
	(0.084)		-(2.311)
La	0.335	Ky	-0.827
	(0.426)		-(1.864)
Ma	-0.011	La	-0.230
	-(0.033)		-(0.406)
Md	0.204	Me	-1.127
	(0.471)		-(1.447)
Me	2.603	Md	-0.750
	(1.502)		-(1.485)
Mi	0.343	Ma	0.070
	(1.474)		(0.182)
Mn	-0.261	Mi	-0.627
	-(0.877)		-(1.797)
Mo	0.684	Mn	-0.590
	(1.994)		-(1.417)
Ms	1.182	Ms	-1.443
	(1.751)		-(3.690)
Mt	-0.361	Mo	-0.297
	-(0.824)		-(0.806)
Nc	-0.058	Mt	-1.629
	-(0.211)		-(0.692)
Nd	3.213	Ne	-0.288
	(2.600)		-(0.427)
Ne	-0.011	Nv	1.540
	-(0.013)		(0.654)

Table 7. OLS Estimation Of Years of Completed Schooling.

Nh	-0.670	Nh	1.756
	-(0.508)		(0.744)
Nj	0.351	Nj	-0.484
	(1.448)		-(1.148)
Nm	0.455	Nm	-5.474
	(1.012)		-(3.273)
Oh	-0.110	Nc	-0.994
	-(0.513)		-(2.808)
Ok	-0.044	Nd	-1.406
	-(0.091)		-(1.021)
Or	-0.534	Oh	-0.207
	-(0.676)		-(0.594)
Pa	-0.120	Ok	-0.362
	-(0.491)		-(0.541)
Ri	2.209	Or	-0.609
	(1.276)		-(1.102)
Sc	0.885	Pa	-0.804
	(3.109)		-(2.521)
Sd	-1.308	Ri	0.637
	-(1.461)		(0.271)
Tn	-0.732	Sc	-1.824
	-(1.877)		-(4.848)
Tx	0.294	Sd	-0.359
	(1.333)		-(0.515)
Ut	0.648	Tn	-2.022
	(0.361)		-(4.146)
Va	-0.169	Tx	-0.823
	-(0.591)		-(2.163)
Vt	-3.033	Ut	-0.762
	-(1.754)		-(1.103)
Wa	-0.573	Va	-0.727
	-(1.566)		-(1.720)
Wi	-0.715	Wa	-0.035
	-(2.885)		-(0.067)
Wv	-0.322	Wv	-1.847
	-(0.921)		-(2.144)
		Wi	-1.740
			-(2.899)
		Wy	-4.514
			-(1.917)
F	20.150	F	5.864
Rsq	0.473	Rsq	0.170
N	1760	N	1693

TABLE 8 Probit Estimation Health with Endogenous schooling(t-statistics in parenthesis)

PSID

	Dependant variable: Health Limitation			Dependant VAriable: Health Status		
	1	2	3	1	2	3
Intercep	0.433	0.177	0.474	-1.679	-1.346	-1.740
	(0.490)	(0.203)	(0.536)	(2.603)	(2.098)	(2.694)
Age	0.008	0.007	0.012	-0.057	-0.039	-0.060
	(0.237)	(0.221)	(0.364)	(2.886)	(1.982)	(3.007)
Agesq	0.000	0.000	0.000	0.000	0.000	0.000
	(0.257)	(0.290)	(0.175)	(2.000)	(0.985)	(2.066)
White	0.271	0.278	0.268	0.255	0.230	0.258
	(1.991)	(2.053)	(1.963)	(3.134)	(2.830)	(3.166)
Male	-0.012	-0.030	0.017	0.173	0.176	0.158
	(0.053)	(0.132)	(0.077)	(1.126)	(1.147)	(1.026)
Past Health Limitation	-0.106	-0.118	-0.110	0.021	0.044	0.024
	(2.064)	(2.318)	(2.158)	(0.606)	(1.276)	(0.693)
Schooling	-0.109		-0.115	0.154		0.159
	(2.052)		(2.155)	(4.668)		(4.808)
Predicted Schooling		-0.092			0.110	
		(1.752)			(3.405)	
Schooling*Residual			-0.009			0.007
			(1.692)			(2.117)
Residual	0.060		0.172	-0.053		-0.148
	(1.096)		(1.996)	(1.585)		(2.644)
Married	-0.260	-0.269	-0.274	0.178	0.208	0.184
	(1.187)	(1.226)	(1.256)	(1.247)	(1.458)	(1.286)
Family Size	-0.023	-0.013	-0.028	-0.004	-0.024	-0.001
	(0.267)	(0.145)	(0.324)	(0.077)	(0.435)	(0.011)
Numkids	0.058	0.048	0.062	-0.011	0.006	-0.014
	(0.618)	(0.507)	(0.657)	(0.192)	(0.095)	(0.239)
Manager	-0.236	-0.174	-0.266	0.020	-0.099	0.041
	(1.788)	(1.350)	(1.985)	(0.251)	(1.260)	(0.501)
Clerical Worker	-0.208	-0.134	-0.257	0.026	-0.126	0.063
	(1.360)	(0.897)	(1.646)	(0.266)	(1.340)	(0.645)
Craftsman	-0.298	-0.160	-0.343	0.017	-0.269	0.051
	(2.010)	(1.175)	(2.274)	(0.183)	(3.240)	(0.551)
Operative	-0.136	0.021	-0.158	0.002	-0.319	0.027
	(0.853)	(0.145)	(0.994)	(0.020)	(3.438)	(0.258)
Laborer	-0.155	-0.016	-0.189	0.013	-0.269	0.042
	(0.889)	(0.095)	(1.080)	(0.111)	(2.538)	(0.369)

TABLE 8 Probit Estimation Health with Endogenous schooling(t-statistics in parenthesis)

Farmer	0.187	0.279	0.162	0.061	-0.119	0.081
	(0.554)	(0.840)	(0.479)	(0.252)	(0.500)	(0.335)
Household Worker	0.973	1.205	1.015	0.188	-0.285	0.151
	(2.091)	(2.626)	(2.139)	(0.509)	(0.786)	(0.408)
North Central	-0.136	-0.127	-0.140	0.028	0.015	0.031
	(1.067)	(0.999)	(1.098)	(0.353)	(0.191)	(0.383)
South	-0.142	-0.140	-0.137	0.006	0.001	0.001
	(1.140)	(1.132)	(1.097)	(0.079)	(0.009)	(0.016)
West	-0.090	-0.092	-0.089	0.148	0.151	0.147
	(0.637)	(0.654)	(0.625)	(1.641)	(1.681)	(1.632)
Mu2				1.051	1.032	1.053
				(29.198)	(29.192)	(29.193)
Mu3				2.156	2.113	2.159
				(39.198)	(39.254)	(39.210)
Mu4				3.221	3.152	3.222
				(30.038)	(30.138)	(30.112)
Lnlike	-533.57	-536.38	-532.08	-2087.68	-2115.41	-2085.44
N	1693	1693	1693	1693	1693	1693

	NLSY Dependent Variable: Health Limitationn		
	1	2	3
Intercep	10.888	10.795	11.094
	(0.820)	(0.816)	(0.835)
Age	-0.742	-0.747	-0.757
	(0.898)	(0.907)	(0.915)
Agesq	0.012	0.012	0.012
	(0.919)	(0.925)	(0.937)
White	0.066	0.072	0.068
	(0.387)	(0.424)	(0.398)
Male	-0.260	-0.263	-0.257
	(1.637)	(1.655)	(1.608)
Weight	0.002	0.002	0.002
	(1.317)	(1.354)	(1.300)
Past Health Limitation	0.172	0.177	0.171
	(0.652)	(0.671)	(0.647)
Schooling	-0.118		-0.115
	(2.318)		(2.229)
Predicted Schooling		-0.103	
		(2.117)	

TABLE 8 Probit Estimation Health with Endogenous schooling(t-statistics in parenthesis)

Schooling*Resudual			-0.006
			(0.425)
Residual	0.070		-0.008
	(1.235)		-(0.034)
Married	-0.193	-0.195	-0.195
	(1.147)	(1.155)	(1.156)
Family Size	-0.067	-0.067	-0.067
	(0.816)	(0.807)	(0.810)
Numkids	0.070	0.084	0.070
	(0.779)	(0.944)	(0.780)
Professional	0.249	0.181	0.154
	(1.111)	(0.838)	(0.752)
Manager	-0.011	-0.031	0.257
	(0.045)	(0.124)	(1.147)
Sales Worker	-4.911	-4.928	-4.912
	(0.001)	(0.001)	(0.001)
Clerical Worker	0.079	0.073	0.080
	(0.382)	(0.353)	(0.384)
Craftsman	-0.159	-0.133	-0.144
	(0.471)	(0.397)	(0.425)
Operative Worker	0.255	0.271	0.260
	(1.118)	(1.193)	(1.139)
Laborer	-0.146	-0.150	-0.149
	(0.414)	(0.423)	(0.421)
North Central	0.175	0.173	0.172
	(0.823)	(0.815)	(0.806)
South	0.052	0.052	0.051
	(0.247)	(0.250)	(0.245)
West	0.186	0.172	0.188
	(0.823)	(0.767)	(0.832)
Smsa	0.104	0.108	0.108
	(0.627)	(0.645)	(0.646)
Lnlike	-214.8241	-215.434	-214.7292
N	1760	1760	1760

Table 9.Estimation of Health with schooling and Time reference.(t-statistics in parenthesis)

	PSID							
	Dependant variable: Health Limitation				Dependant VAriable: Health Status			
Intercep	-0.061	0.147	0.126	0.170	-1.052	-1.071	-1.064	-1.068
.	-(0.078)	(0.181)	(0.156)	(0.209)	-(2.076)	-(2.052)	-(2.038)	-(2.047)
Age	-0.001	-0.003	-0.002	-0.005	-0.058	-0.057	-0.058	-0.058
.	-(0.019)	-(0.088)	-(0.063)	-(0.174)	-(2.896)	-(2.878)	-(2.927)	-(2.927)
Agesq	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
.	(0.621)	(0.680)	(0.703)	(0.810)	(1.992)	(1.973)	(1.969)	(1.965)
White	0.209	0.224	0.254	0.262	0.307	0.305	0.277	0.280
.	(1.667)	(1.775)	(1.995)	(2.057)	(4.118)	(4.069)	(3.657)	(3.689)
Male	-0.014	-0.017	-0.003	-0.001	0.189	0.189	0.178	0.184
.	-(0.063)	-(0.074)	-(0.013)	-(0.006)	(1.237)	(1.234)	(1.160)	(1.202)
Past Health Limitation	-0.104	-0.102	-0.097	-0.099	0.022	0.022	0.017	0.017
.	-(2.023)	-(1.996)	-(1.899)	-(1.944)	(0.634)	(0.630)	(0.493)	(0.504)
Schooling	-0.059	-0.058	-0.048	-0.044	0.106	0.106	0.099	0.099
.	-(2.909)	-(2.825)	-(2.275)	-(2.107)	(7.991)	(7.949)	(7.254)	(7.277)
Married	-0.270	-0.264	-0.260	-0.255	0.180	0.180	0.175	0.172
.	-(1.230)	-(1.203)	-(1.179)	-(1.160)	(1.257)	(1.254)	(1.219)	(1.203)
Family Size	-0.022	-0.022	-0.030	-0.029	-0.006	-0.006	-0.002	-0.003
.	-(0.257)	-(0.252)	-(0.337)	-(0.333)	-(0.112)	-(0.110)	-(0.031)	-(0.060)
Numkids	0.062	0.056	0.064	0.061	-0.011	-0.010	-0.013	-0.011
.	(0.653)	(0.599)	(0.672)	(0.649)	-(0.183)	-(0.179)	-(0.226)	-(0.196)
Food Consumption Growth	0.220	0.218	0.204		0.019	0.019	0.027	
.	(2.052)	(2.036)	(1.896)		(0.291)	(0.290)	(0.405)	
Non-Durable Consumption Growth				0.075				0.124
				(0.481)				(1.275)
Horizon Proxy	.	-0.041	-0.019	-0.019		0.004	-0.013	-0.014
.	.	-(1.019)	-(0.461)	-(0.467)		(0.152)	-(0.499)	-(0.527)
Risk Avoidance	.	.	-0.059	-0.062			0.048	0.049
.	.	.	-(1.936)	-(2.043)			(2.567)	(2.617)
Manager	-0.246	-0.242	-0.242	-0.239	0.022	0.022	0.026	0.025
.	-(1.861)	-(1.827)	-(1.822)	-(1.797)	(0.271)	(0.269)	(0.320)	(0.315)
Clerical Worker	-0.219	-0.219	-0.225	-0.220	0.028	0.028	0.035	0.034
.	-(1.427)	-(1.427)	-(1.457)	-(1.434)	(0.287)	(0.287)	(0.361)	(0.355)
Craftsmen	-0.284	-0.285	-0.294	-0.298	0.008	0.008	0.019	0.017
.	-(1.914)	-(1.918)	-(1.968)	-(1.999)	(0.088)	(0.090)	(0.206)	(0.188)
Operator	-0.143	-0.142	-0.145	-0.130	-0.013	-0.013	-0.003	-0.006
.	-(0.898)	-(0.888)	-(0.904)	-(0.816)	-(0.127)	-(0.125)	-(0.027)	-(0.062)
Service Laborer	-0.174	-0.174	-0.186	-0.167	0.005	0.005	0.025	0.025
.	-(0.992)	-(0.991)	-(1.063)	-(0.958)	(0.045)	(0.047)	(0.223)	(0.218)
Farmer	0.211	0.209	0.238	0.236	0.044	0.045	0.038	0.034
.	(0.631)	(0.622)	(0.715)	(0.709)	(0.184)	(0.185)	(0.156)	(0.142)

Table 9.Estimation of Health with schooling and Time reference.(t-statistics in parenthesis)

House Hold Worker	1.022	1.013	0.978	0.927	0.193	0.193	0.221	0.217
.	(2.207)	(2.187)	(2.120)	(2.009)	(0.521)	(0.523)	(0.598)	(0.588)
North Central	-0.134	-0.137	-0.148	-0.141	0.017	0.017	0.026	0.022
.	-(1.053)	-(1.082)	-(1.159)	-(1.111)	(0.210)	(0.213)	(0.324)	(0.273)
South	-0.120	-0.121	-0.141	-0.135	-0.017	-0.017	-0.002	-0.001
.	-(0.983)	-(0.989)	-(1.150)	-(1.103)	-(0.226)	-(0.227)	-(0.032)	-(0.018)
West	-0.093	-0.092	-0.091	-0.084	0.146	0.146	0.143	0.141
.	-(0.657)	-(0.649)	-(0.642)	-(0.594)	(1.617)	(1.617)	(1.587)	(1.561)
Inter.2					1.050	1.050	1.053	1.054
					(29.196)	(29.196)	(29.194)	(29.194)
Inter.3					2.154	2.154	2.159	2.160
					(39.203)	(39.202)	(39.216)	(39.220)
Inter.4					3.216	3.216	3.219	3.220
					(30.077)	(30.079)	(30.146)	(30.155)
Lnlike	-531.945	-531.426	-529.550	-531.257	-2088.90	-2088.89	-2085.59	-2084.86
N	1693	1693	1693	1693	1693	1693	1693	1693
			NLSY					
			Dependent Variable: Health Limitationn					
Intercep	10.147	11.295	10.042	9.262				
	(0.766)	(0.849)	(0.752)	(0.690)				
Age	-0.731	-0.778	-0.721	-0.675				
	(0.89)	(0.94)	(0.87)	(0.81)				
Agesq	0.012	0.012	0.011	0.011				
	(0.907)	(0.958)	(0.885)	(0.827)				
White	0.083	0.070	0.110	0.122				
	(0.485)	(0.412)	(0.639)	(0.706)				
Male	-0.250	-0.261	-0.254	-0.265				
	(1.58)	(1.64)	(1.60)	(1.65)				
Weight	0.002	0.002	0.002	0.002				
	(1.261)	(1.338)	(1.193)	(1.183)				
Past Health Limitation	0.180	0.176	0.149	0.148				
.	(0.681)	(0.667)	(0.549)	(0.543)				
Schooling	-0.075	-0.105	-0.069	-0.071				
.	(2.02)	(2.15)	(1.84)	(1.87)				
Married	-0.189	-0.203	-0.183	-0.187				
.	(1.12)	(1.18)	(1.06)	(1.08)				
Family Size	-0.063	-0.067	-0.061	-0.058				
.	(0.76)	(0.80)	(0.74)	(0.70)				
Numkids	0.068	0.086	0.059	0.061				
.	(0.745)	(0.960)	(0.648)	(0.664)				
Consumption Growth	0.051	0.078	0.055	0.053				

Table 9.Estimation of Health with schooling and Time reference.(t-statistics in parenthesis)

.	(0.339)	(0.519)	(0.363)	(0.355)
Health Insurance		0.050	0.104	0.120
.		(0.236)	(0.487)	(0.558)
Saving			-0.266	-0.260
.			(1.58)	(1.55)
Hours Work Growth				-0.353
.				-(1.381)
Professional	0.192	0.165	0.193	0.204
.	(0.875)	(0.754)	(0.868)	(0.909)
Manager	-0.066	-0.041	-0.063	-0.051
.	(0.27)	(0.16)	(0.25)	(0.20)
Sales Worker	-4.945	-4.946	-4.964	-4.964
.	(0.00)	(0.00)	(0.00)	(0.00)
Clerical Worker	0.055	0.067	0.067	0.058
.	(0.270)	(0.321)	(0.321)	(0.279)
Craftmen	-0.163	-0.140	-0.187	-0.151
.	(0.48)	(0.42)	(0.54)	(0.44)
Operative Worker	0.249	0.254	0.260	0.262
.	(1.092)	(1.107)	(1.133)	(1.133)
Non-Farm Laborer	-0.127	-0.156	-0.164	-0.167
.	(0.36)	(0.44)	(0.46)	(0.46)
Northe East	0.174	0.173	0.183	0.175
.	(0.824)	(0.814)	(0.860)	(0.817)
South	0.065	0.053	0.065	0.065
.	(0.312)	(0.254)	(0.311)	(0.308)
West	0.201	0.173	0.211	0.214
.	(0.895)	(0.767)	(0.937)	(0.946)
Smsa	0.097	0.105	0.102	0.120
.	(0.584)	(0.632)	(0.610)	(0.713)
Lnlike	-215.533	-215.275	-214.295	-213.205
N	1760	1760	1760	1760

Table 10. Estimation of Health with Time Preference and Endogenous Schooling(t-statistics in parenthesisi)

	PSID					
	Dependant variable: Health Limitation			Dependant Variable: Health St.		
Intercep	0.841	0.743	0.899	-1.659	-1.407	-1.718
	(0.819)	(0.727)	(0.873)	(2.53)	(2.15)	(2.61)
Age	-0.003	-0.009	0.002	-0.058	-0.041	-0.060
	(0.10)	(0.31)	0.07	(2.89)	(2.07)	(3.01)
Agesq	0.000	0.000	0.000	0.000	0.000	0.000
	(0.716)	(0.983)	(0.604)	(1.960)	(1.010)	(2.026)
White	0.312	0.324	0.304	0.229	0.189	0.232
	(2.272)	(2.372)	(2.212)	(2.779)	(2.303)	(2.814)
Male	0.014	0.011	0.047	0.163	0.159	0.148
	(0.061)	(0.046)	(0.205)	(1.061)	(1.040)	(0.962)
Past Health Limitation	-0.096	-0.105	-0.102	0.016	0.034	0.020
	(1.88)	(2.06)	(1.99)	(0.477)	(0.996)	(0.565)
Married	-0.258	-0.265	-0.273	0.173	0.195	0.178
	(1.17)	(1.20)	(1.24)	(1.206)	(1.365)	(1.245)
Family Size	-0.030	-0.023	-0.038	0.000	-0.016	0.003
	(0.35)	(0.27)	(0.43)	(0.01)	(0.29)	(0.059)
Schooling	-0.102		-0.110	0.144		0.149
	(1.96)		(2.11)	(4.330)		(4.470)
Predicted Schooling		-0.084			0.099	
		(1.64)			(3.044)	
Residual	0.060		0.180	-0.050		-0.144
	(1.140)		(2.131)	(1.50)		(2.58)
Schooling*Residual			-0.010			0.007
			-(1.826)			(2.104)
Food Consumption Growth	0.206	0.185	0.202	0.025	0.050	0.027
	(1.913)	(1.736)	(1.875)	(0.380)	(0.752)	(0.397)
Time Preference	-0.018	-0.018	-0.017	-0.014	-0.009	-0.014
	(0.44)	(0.44)	(0.40)	(0.52)	(0.36)	(0.55)
Risk Avoidance	-0.058	-0.072	-0.057	0.047	0.072	0.047
	(1.91)	(2.42)	(1.88)	(2.519)	(3.905)	(2.508)
Numkids	0.062	0.055	0.069	-0.013	0.001	-0.016
	(0.656)	(0.582)	(0.723)	(0.23)	0.02	(0.27)
Manager	-0.238	-0.187	-0.272	0.024	-0.082	0.044
	(1.79)	(1.44)	(2.01)	(0.293)	(1.03)	(0.541)
Clerical Worker	-0.219	-0.160	-0.275	0.032	-0.099	0.070
	(1.42)	(1.06)	(1.74)	(0.336)	(1.05)	(0.711)

Table 10. Estimation of Health with Time Preference and Endogenous Schooling(t-statistics in parenthesis)

Craftsmen	-0.304	-0.195	-0.355	0.027	-0.221	0.061
.	(2.03)	(1.40)	(2.33)	(0.296)	(2.63)	(0.659)
Operator	-0.159	-0.032	-0.190	0.010	-0.271	0.035
.	(0.99)	(0.22)	(1.18)	(0.099)	(2.89)	(0.334)
Service Laborer	-0.194	-0.082	-0.232	0.030	-0.212	0.059
.	(1.10)	(0.50)	(1.32)	(0.267)	(1.97)	(0.520)
Farmer	0.214	0.294	0.191	0.053	-0.110	0.073
.	(0.639)	(0.892)	(0.571)	(0.220)	(0.46)	(0.302)
House Hold Worker	0.984	1.156	1.030	0.220	-0.178	0.183
.	(2.129)	(2.536)	(2.186)	(0.595)	-(0.488)	(0.495)
North Central	-0.161	-0.154	-0.164	0.036	0.029	0.038
.	(1.26)	(1.21)	(1.28)	(0.449)	(0.365)	(0.477)
South	-0.170	-0.172	-0.165	0.019	0.020	0.014
.	(1.36)	(1.37)	(1.31)	(0.245)	(0.262)	(0.182)
West	-0.099	-0.099	-0.096	0.145	0.146	0.144
.	(0.69)	(0.70)	(0.67)	(1.606)	(1.625)	(1.597)
Inter.2				1.054	1.038	1.056
				(29.195)	(29.188)	(29.191)
Inter.3				2.160	2.125	2.163
				(39.213)	(39.271)	(39.225)
Inter.4				3.224	3.163	3.225
				(30.110)	(30.249)	(30.183)
	-528.900	-530.789	-527.190	-2084.47	-2107.30	-2082.20
N	1693	1693	1693	1693	1693	1693

	NLSY		
Dependent Variable:	Health Limitationn		
Intercep	10.911	10.800	11.149
.	(0.815)	(0.809)	(0.833)
Age	-0.744	-0.746	-0.761
.	-(0.891)	-(0.897)	-(0.912)
Agesq	0.012	0.012	0.012
.	(0.911)	(0.914)	(0.932)
White	0.091	0.096	0.094
.	(0.529)	(0.561)	(0.543)
Male	-0.262	-0.264	-0.257
.	-(1.639)	-(1.657)	-(1.603)

Table 10. Estimation of Health with Time Preference and Endogenous Schooling(t-statistics in parenthesis)

Weight	0.002	0.002	0.002
	(1.242)	(1.279)	(1.221)
Phlim	0.145	0.149	0.143
	(0.538)	(0.556)	(0.529)
Schooling	-0.108	.	-0.104
	-(2.087)	.	-(1.982)
Pred. Years Of Schooling	.	-0.094	.
	.	-(1.897)	.
Married	-0.188	-0.187	-0.190
	-(1.091)	-(1.080)	-(1.098)
Family Size	-0.066	-0.067	-0.066
	-(0.800)	-(0.799)	-(0.795)
Numkids	0.065	0.078	0.064
	(0.709)	(0.868)	(0.707)
Food Consumption Growth	0.068	0.079	0.069
	(0.451)	(0.526)	(0.461)
Health Insurance	0.107	0.091	0.107
	(0.500)	(0.426)	(0.498)
Saving	-0.243	-0.249	-0.249
	-(1.433)	-(1.480)	-(1.470)
Residual	0.063	.	0.167
	(1.099)	.	(0.814)
Schooling*Residual	.	.	-0.008
	.	.	-(0.526)
Professional	0.234	0.173	0.246
	(1.032)	(0.788)	(1.079)
Manager	-0.019	-0.035	-0.015
	-(0.074)	-(0.138)	-(0.058)
Sales Worker	-4.951	-4.959	-4.955
	-(0.001)	-(0.001)	-(0.001)
Clerical Worker	0.085	0.082	0.086
	(0.405)	(0.391)	(0.412)
Craftmen	-0.185	-0.158	-0.164
	-(0.535)	-(0.462)	-(0.476)
Operative Worker	0.254	0.269	0.260
	(1.101)	(1.173)	(1.128)
Non-Farm Laborer	-0.180	-0.183	-0.184
	-(0.497)	-(0.503)	-(0.507)
Northe East	0.182	0.179	0.179

Table 10. Estimation of Health with Time Preference and Endogenous Schooling(t-statistics in parenthesis)

.	(0.854)	(0.841)	(0.834)
South	0.054	0.053	0.053
.	(0.255)	(0.254)	(0.253)
West	0.195	0.181	0.198
.	(0.861)	(0.802)	(0.874)
Smsa	0.107	0.109	0.111
.	(0.637)	(0.654)	(0.662)
Lnlike	-213.690	-214.222	-213.543
N	1760	1760	1760

Table 11. Simple Correlation of schooling residual with other covariates.

	PSID		NLSY
Health Limitation	-0.073	Health Limitation	-0.017
Health Status	-0.207		
Past Health Limitation	0.070	Past Health Limitation	0.000
		Weight	-0.046
Schooling	0.913	Schooling	0.726
Mother's Schooling	0.000	Mother's Schooling	0.000
Father's Schooling	0.000	Father's Schooling	0.000
Married	0.006	Married	-0.047
Family Size	0.018	Family Size	-0.110
Numkids	0.035	Numkids	-0.162
Horizon Proxy	0.000		
Risk Averseness	0.255		
Food Consumtion Growth	0.032	Food Consumtion Growth	-0.024
Non-Durable Consumption Gro	-0.026		
		Health Insurance	0.092
		Saving	0.054
Wage	0.289	Wage	0.121
Manager	0.083	Professional	0.289
Clerical Worker	0.001	Manager	0.025
Craftsman	-0.225	Sales Worker	-0.003
Operative	-0.219	Clerical Worker	-0.091
Laborer	-0.143	Craftsman	-0.083
Farmer	-0.004	Operative Worker	-0.112
		Laborer	-0.042

Table 12. Estimation Of Health with Endogenous Time Preference.(t-statistics in parenthesis)

PSID
Dependant variable: Health Limitation

Intercep	-0.052	1.404	-0.221	-0.134	-0.333	-1.048	-0.278	-0.568
.	-(0.068)	(1.305)	-(0.298)	-(0.180)	-(0.448)	-(1.212)	-(0.376)	-(0.732)
Age	-0.007	-0.026	-0.005	-0.004	-0.001	0.039	-0.004	0.006
.	-(0.225)	-(0.831)	-(0.159)	-(0.147)	-(0.034)	(0.998)	-(0.145)	(0.190)
Agesq	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
.	(0.860)	(1.447)	(0.854)	(0.893)	(0.684)	-(0.487)	(0.788)	(0.353)
White	0.212	0.313	0.243	0.319	0.193	0.182	0.195	0.230
.	(1.808)	(2.428)	(2.055)	(2.159)	(1.656)	(1.561)	(1.677)	(1.923)
Male	-0.136	-0.097	-0.123	-0.101	-0.137	-0.201	-0.133	-0.102
.	-(0.614)	-(0.434)	-(0.552)	-(0.454)	-(0.617)	-(0.892)	-(0.600)	-(0.455)
Past Health Limitat.	-0.100	-0.096	-0.095	-0.100	-0.099	-0.096	-0.101	-0.097
.	-(1.983)	-(1.895)	-(1.882)	-(1.978)	-(1.951)	-(1.902)	-(2.003)	-(1.902)
Schooling	-0.044	-0.030	-0.034	-0.019	-0.049	-0.061	-0.046	-0.041
.	-(2.619)	-(1.604)	-(1.920)	-(0.708)	-(2.874)	-(3.237)	-(2.736)	-(2.345)
Married	-0.216	-0.213	-0.211	-0.214	-0.224	-0.224	-0.222	-0.213
.	-(0.991)	-(0.976)	-(0.963)	-(0.979)	-(1.024)	-(1.023)	-(1.016)	-(0.973)
Family Size	-0.045	-0.052	-0.054	-0.046	-0.048	-0.042	-0.046	-0.048
.	-(0.516)	-(0.600)	-(0.618)	-(0.534)	-(0.556)	-(0.478)	-(0.532)	-(0.547)
Numkids	0.071	0.080	0.082	0.072	0.081	0.074	0.077	0.079
.	(0.757)	(0.854)	(0.871)	(0.764)	(0.862)	(0.785)	(0.826)	(0.841)
Pred. Time Preferen		-0.329		-0.140 .		2.143 .		2.456
.		-(2.136)		-(1.369) .		(1.750) .		(1.301)
Time Preference Pro.	-0.045		-0.062		0.191 .		0.075 .	.
.	-(1.126)		-(2.176)		(1.812) .		(0.489) .	
Lnlike	-540.632	-538.984	-538.897	-540.328	-539.602	-539.734	-541.146	-540.419

Instrumental Variable Estimation

	Horizon Proxy	Risk Avoidance	Cons. Growth	Non-dur. Cons. Grth
Intercep	5.082	-1.460	0.213	0.112
	(11.155)	-(2.247)	(1.169)	(0.892)
Age	-0.064	0.016	-0.020	-0.005
	-(3.496)	(0.623)	-(2.898)	-(0.941)
Agesq	0.001	0.000	0.000	0.000
	(3.237)	(0.270)	(2.756)	(1.157)
Male	0.085	0.235	0.027	-0.014
	(1.015)	(2.048)	(0.851)	-(0.611)

Table 12. Estimation Of Health with Endogenous Time Preference.(t-statistics in parenthesis)

White	0.185		0.784		0.026		-0.009	
	(2.624)		(8.194)		(0.939)		-(0.473)	
Schooling	0.010		0.182		0.010		0.000	
	(0.913)		(12.294)		(2.289)		-(0.069)	
Mother's Schooling	-0.002		0.042		0.006		0.003	
	-(0.177)		(2.704)		(1.464)		(1.067)	
Father's Schooling	-0.007		0.019		0.002		-0.004	
	-(0.710)		(1.398)		(0.599)		-(1.619)	
Managerial Father	0.057		0.089		0.025		0.010	
	(0.548)		(0.619)		(0.632)		(0.370)	
Craftsman Father	0.003		-0.070		-0.011		-0.003	
	(0.045)		-(0.739)		-(0.415)		-(0.156)	
Clerical Father	0.047		-0.274		0.028		0.027	
	(0.478)		-(2.032)		(0.754)		(1.024)	
Laborer Father	-0.064		0.108		0.029		-0.006	
	-(0.707)		(0.858)		(0.830)		-(0.239)	
Farmer Father	-0.096		-0.032		0.050		0.015	
	-(1.237)		-(0.297)		(1.676)		(0.706)	
Time Preference			0.351		0.007		0.007	
			(10.799)		(0.749)		(1.012)	
Risk Avoidance	0.185				-0.015		-0.011	
	(10.799)				-(2.136)		-(2.253)	
Food Consumption Growth	0.047		-0.186					
	(0.749)		-(2.136)					
F-Statistics	14.962		40.239		1.856		1.246	
R-Square	0.111		0.251		0.015		0.010	
F-Stat. For Excluded Instruments(N=9, Criti. Value=.520)	13.339		15.716		1.390		1.215	
N	1693	1693	1693	1693	1693	1693	1693	1693

	NLSY Dependent Variable: Health Limitationn						
Intercpt	8.413	8.636	2.574	7.954	9.086	8.633	7.291
	(0.651)	(0.666)	(0.191)	(0.613)	(0.696)	(0.668)	(0.561)
Age	-0.619	-0.635	-0.214	-0.586	-0.682	-0.632	-0.566
	(0.768)	(0.784)	(0.253)	(0.724)	(0.837)	(0.785)	(0.699)
Agesq	0.010	0.010	0.004	0.009	0.011	0.010	0.009
	(0.795)	(0.811)	(0.291)	(0.749)	(0.865)	(0.811)	(0.728)

Table 12. Estimation Of Health with Endogenous Time Preference.(t-statistics in parenthesis)

White	0.068	0.067	0.109	0.089	-0.029	0.066	0.114
	(0.426)	(0.425)	(0.675)	(0.558)	-(0.153)	(0.415)	(0.703)
Male	-0.270	-0.269	-0.322	-0.282	-0.256	-0.270	-0.243
	(1.875)	(1.865)	(2.165)	(1.945)	(1.758)	(1.874)	(1.666)
Weight	0.002	0.002	0.002	0.002	0.002	0.002	0.002
	(1.149)	(1.142)	(1.156)	(1.120)	(1.122)	(1.148)	(1.200)
Past Health Limita	0.169	0.167	0.123	0.144	0.210	0.170	0.120
	(0.639)	(0.631)	(0.452)	(0.537)	(0.780)	(0.642)	(0.450)
Schooling	-0.062	-0.064	-0.023	-0.055	-0.085	-0.063	-0.052
	(2.012)	(2.021)	(0.603)	(1.744)	(2.146)	(2.020)	(1.628)
Married	-0.202	-0.210	-0.182	-0.182	-0.219	-0.201	-0.194
	(1.235)	(1.259)	(1.119)	(1.112)	(1.329)	(1.225)	(1.185)
Family Size	-0.051	-0.049	-0.053	-0.052	-0.051	-0.053	-0.055
	(0.644)	(0.618)	(0.694)	(0.658)	(0.634)	(0.669)	(0.691)
Numkids	0.067	0.065	0.064	0.061	0.068	0.071	0.067
	(0.764)	(0.746)	(0.738)	(0.697)	(0.771)	(0.806)	(0.761)
Time Preference Proxy		0.048		-0.220		0.090	
		(0.237)		-(1.355)		(0.609)	
Predicted Time Preference Proxy			-1.531		0.795		-2.590
			-(1.808)		(0.917)		-(1.314)
	-220.368	-220.340	-218.773	-219.488	-219.932	-220.183	-219.525

Instrumental Variable Estimation

	Saving	Health Insurance	Consumption Growth
Intercpt	-22.363	-3.050	-0.268
	(2.566)	(0.367)	-(0.129)
Age	1.318	0.081	0.008
	(2.414)	(0.157)	(0.059)
Agesq	-0.020	-0.001	0.000
	-(2.335)	-(0.169)	-(0.052)
White	0.032	0.519	0.012
	(0.293)	(5.605)	(0.612)
Male	-0.113	-0.048	0.013
	-(1.295)	-(0.598)	(0.520)
Past Health Limitation	-0.040	-0.296	-0.013
	-(0.197)	-(1.676)	-(0.273)
Schooling	0.128	0.112	-0.001
	(5.327)	(5.266)	-(0.147)
Mother's Scholing	0.014	0.014	0.007
	(0.694)	(0.752)	(1.452)

Table 12. Estimation Of Health with Endogenous Time Preference.(t-statistics in parenthesis)

Father's Schooling		0.005	0.017		-0.001	
		(0.281)	(1.089)		-(0.276)	
Professional Father		-0.471	0.031		0.014	
		-(2.142)	(0.167)		(0.319)	
Managerial Father		-0.294	-0.018		0.010	
		-(1.452)	-(0.110)		(0.230)	
Sales Worker Father		-0.511	0.425		-0.008	
		-(1.901)	(1.530)		-(0.134)	
Clerical Father		-0.599	0.133		-0.072	
		-(2.565)	(0.629)		-(1.324)	
Craftsman Father		-0.459	0.347		-0.005	
		-(2.389)	(2.131)		-(0.128)	
Armed Forces Father		-1.119	6.053		-0.037	
		-(2.838)	(0.001)		-(0.341)	
Operative Father		-0.277	0.069		-0.008	
		-(1.430)	(0.449)		-(0.205)	
Laborer Father		-0.183	0.110		0.005	
		-(0.742)	(0.552)		(0.086)	
Farmer Father		0.238	0.121		-0.039	
		(0.583)	(0.428)		-(0.582)	
Farm Laborer Father		-0.422	0.288		0.019	
		-(1.360)	(1.028)		(0.245)	
Service Worker Father		-0.128	-0.006		0.028	
		-(0.540)	-(0.034)		(0.574)	
Smsa79		-0.123	0.083		0.011	
		-(1.276)	(0.973)		(0.530)	
Food Consumtion Growth		0.087	0.075			
		(0.835)	(0.790)			
Saving		0.623			0.024	
		(5.840)			(0.801)	
Health Insurance			0.667		0.030	
			(5.982)		(0.913)	
		-518.883	-635.016	R-square	0.007	
				F-stat	0.520	
Wald Stat For Exclu		49.251449	51.684396		9.3599464	
N	1760	1760	1760	1760	1760	1760

APPENDIX. A

Suppose life time utility is given by

$$V = \sum_{t=0}^{T} \beta^{t} U(C_t)$$

Where β stands for discount factor, c is the per period levels of consumption. Define the per period utility as

$$U(C_t) = \frac{C_t^{1-\theta}}{1-\theta}$$

Where r is the rate of per period interest and θ is the intertemporal rate of substitution. The lifetime wealth equation is given by

$$C_t + \frac{C_{t-1}}{1+r} = A_0$$

Then the Euler equation for intertemporal optimization is given by

$$\beta(1+r)\left(\frac{C_1}{C_0}\right)^{-\theta} = 1$$

$$\ln\left(\frac{C_1}{C_0}\right) = \frac{1}{\theta}\left[\ln\beta + \ln(1+r)\right]$$

If r and θ do not vary among people then variation of time preference among people can be measured by variation in consumption growth. Since β is the discount factor, we can simplify the expression, and express consumption growth in terms of the rate of time preference for the present. Let time preference for presented be denoted by t. Then the Euler equation can be expressed in the form,

$$\ln\left(\frac{C_1}{C_0}\right) = \frac{1}{\theta}\left[\ln(1+r) - \ln(1+t)\right]$$

If more schooling leads to more patience, then S and t will have a negative correlation. Since r is assumed to be positive and constant, a negative correlation between S and ρ imply a positive correlation between consumption growth and schooling.

$$d\ln\left(\frac{C_1}{C_0}\right) / dS = -\frac{1}{\theta} d\ln(1+t) / dS$$

if $d\ln(1+t) / dS < 0$

then $d\ln\left(\frac{C_1}{C_0}\right) / dS > 0.$

Appendix. B.

Garen-Berger-Leigh Method(Garen, 1985):

The basic motivation for this method is that unobserved variables may be affecting both schooling and health. In Garen's paper the endogenous variables were schooling and Income.

Suppose,

$$H = R\beta + \varepsilon + \phi S \; ; \; R=\{ X_1, S, \ldots \} \quad (1)$$

$$S = X\pi + \eta \; ; \; X=\{ X_1 , X_2 \} \quad (2)$$

where

H is a measure of health, S is years of completed schooling, and X_1 and X_2 are appropriate exogenous variables.

Also assume,

$\varepsilon \sim N(0,\sigma_\varepsilon^2)$, $\eta \sim N(0,\sigma_\eta^2)$, $\phi \sim N(0,\sigma_\phi^2)$,

and

$Cov(\varepsilon,\eta) \neq 0$; $Cov(\phi,\eta) \neq 0$; $Cov(\varepsilon + \phi S, R) = 0$

Therefore,

$$\begin{aligned} E(H \mid S,X_1) &= R\beta + E(\varepsilon + \phi S \mid S,X_1) \\ &= R\beta + E(\varepsilon + \phi S \mid S= X\pi + \eta, X_1) \\ &= R\beta + E(\varepsilon + \phi S \mid \eta = S - X\pi, S, X_1) \\ &= R\beta + (Cov(\varepsilon,\eta)/Cov(\eta))\eta + (Cov(\phi,\eta)/Cov(\eta))\eta S \end{aligned} \quad (3)$$

Since, $Cov(\varepsilon,\eta) \neq 0$ and $Cov(\phi,\eta) \neq 0$, the last two terms in equation 3 does not add up to zero. This causes the estimates of β to be biased and inconsistent.

Suppose,

$$H = R\beta + \gamma_1\eta + \gamma_2\eta S + v \text{ where } v \sim N(0,\sigma_v^2),$$

add and subtract to get

$$H = R\beta + \gamma_1\eta + \gamma_1\eta^* - \gamma_1\eta^* + \gamma_2\eta^* S - \gamma_2\eta^* S + \gamma_2\eta S + v$$

where $\eta^* = S - X\pi^*$, is the OLS residual from equation 2. Simplifying the above expressions leads to

$$\begin{aligned} H &= R\beta + \gamma_1\eta^* + \gamma_1(\eta - \eta^*) + \gamma_2(\eta - \eta^*)S + \gamma_2\eta^* S + v \\ &= R\beta + \gamma_1\eta^* + \gamma_2\eta^* S + \theta \end{aligned}$$

where $\theta = \gamma_1(\eta - \eta^*) + \gamma_2(\eta - \eta^*)S + v$ and

$E(\theta) = E(\gamma_1(\eta - \eta^*) + \gamma_2(\eta - \eta^*)S + v) = 0$

OLS estimate of

$$H = R\beta + \gamma_1\eta^* + \gamma_2\eta^* S + \theta \quad (4)$$

is consistent but inefficient as the error θ depends on S. The inefficiency can be removed by correcting for the heteroscedasticity.

APPENDIX C. Time Preference in the PSID.

In the 1972 survey, the PSID investigators created 'Risk Avoidance" variable. The variable was created from answers to questions that were asked to individuals in the survey. The questions included:

1. Newest(assumed to be best) car in good condition.
2. Neutralize non-car owner
3. All car insured
4. Uses seat belt some of the time
5. Uses seat belt all of the time
6. Has medical insurance or way to get free care
7. Smokes less than one pack a day
8. Has sŏme savings but less than two months pay
9. Has more than two months of pay saved.

Each of the above nine items was assigned one or two points by the PSID investigators.(Leigh, 1990).

I use Horizon Proxy as indicator of time preference. The Horizon Proxy index was created in a similar manner and the questions included.

1. Is sure whether will or will not move
2. Has explicit plans for children's education
3. Neutralize those with no children
4. Has plans for an explicit kind of new job
5. Knows and mentions what kind of training new job requires
6. Has substantial saving relative to income
7. Expects to have a child more than one year hence, or expects no more children and is doing something to limit the number of children.
8. Neutralize those who expect child within one year and in approximate cases.

Again, PSID investigators assigned values of one and twos to these response and a cumulative index was created for Time preference.

The table below describes the values and their distribution of these indexes in our sample of 1693 individuals.

Horizon Proxy		Risk Avoidance	
Value	Percent	Value	Percent
1	0.3	0	0.2
2	1.7	1	1.7
3	10.3	2	5.1
4	28.3	3	9
5	33.1	4	17.7
6	23.9	5	22.5
7	2.4	6	23.9
8	0.1	7	14.2
		8	5.7

BIBLIOGRAPHY

Becker, Gary S and Casey Mulligan , 1993, " On the Endogenous Determination of Time Preference', Working Paper, Department of Economics, University Of Chicago (December, 1994)

Berger, Mark and Paul Leigh, 1989, " Schooling, Self-Selection and Health,' Journal Of Human Resources 24:3(Summer), 433-455

Bound, John, David A. Jaeger and Regina Baker "Problems With Instrumental Estimation", Journal Of American Statistical Association Vol. 90, No. 430, June, 1990.434-450

Card, David " Earnings, Schooling, And Ability Revisited", in Research in Labor Economics., Edited by Solomon W. Polachek. Volume 14, 1995. JAI Press Inc.

Dolan, Paul and Claire Gudex 'Time preference , Duration and Health State Valuation', , Health Economics, Vol. 4: 289-299, 1995

Evans, W and E Montgomery, "Education and Health : Where There's Smoke There's Instrument" Working Paper 1994.

Fuchs, V , 1982, " Time Preference and Health; An Explanatory Study,' in Economics Aspects of Health, edited by V. Fuchs, Chicago: University of Chicago Press.

Grossman, Michael, "The Demand for Health: A Theoretical and Empirical Investigation. New York: NBER, 1972

Grossman, Michael, " The Correlation between Health and Schooling ," In Household Production and Consumption ,, edited by Nestor E. Terleckyj. New York: Columbia University Press for the National Bureau of Economic Research, 1975

Garen, John, "The Returns to Schooling: A Selectivity Bias Approach With a Continuous choice Variable", Econometrica, (September, 1984), 1199-218

Hauseman, J.S., "Specification Tests in Econometrics," Econometrica 46 (1978), 1251-1276.

Hotz, V Joseph, Finn E Kydland and Guilherme L Sedlack "Intertemporal Preferences and Labor Supply", Econometrica, v56 (march,88) 335-60.

Lawrence, Emily " Poverty and the Rate of Time Preference: Evidence from Panel Data" Journal Of Political Economy, 1991, vol 99, no.1 54-77.

Leigh, J. Paul, 1990, " Schooling and Seat Belt Use," Southrn Economic Journal 57:1 (July) 195-207.

Leigh, J. Paul and Rachina Dhir "Schooling And Frailty Among Seniors", 1997. Econdmics of Education Review. Vol. 16 No 1. Pp. 45-57

Mullahy, J and J Sindelar, " Health, Income, and Risk Aversion : Assessing Some Welfare Costs of Alcoholism and Poor Health " 1995. Journal Of Human Resources ,XXX.3 439-458

Murphy, Kevin M. And Robert H. Toppel "Estimations and Inference in Two-Step Econometric Models" 1985 Journal Of Business & Econnomic Statistics, V3, #4, pg 370-379.

Taubman, Paul and Sherwin Rosen "Healthiness, Education, and Marital Status",in Economics Aspects of Health, edited by Victor R.Fuchs. University of Chicago Press, 1982.

Thaler, Richard. Individual intertemporal choice: a preliminary investigation. Research memorandum (memeographed). 1979

Thomas, Ewart A.C. , and Ward, Wanda E. Time orientation, opyimism, and quasi-economic behavior. Stanford University(memeographe). 1979

Viscusi, Kip and Michael Moore, " Rates of Time preference and valuation of the duration of life". Journal Of Public Economics 38 (1989) 297-317. North-Holland.

West, Richard. The rate of time prefernce and families inthe Seattle and Denver income maintenance experiment. Research Memorandum 51, SRI International.1978