Ageing & Society **31**, 2011, 1289–1306. © Cambridge University Press 2011
doi:10.1017/S0144686X10001431

Money and happiness: does age make a difference?

CHANG-MING HSIEH*

ABSTRACT
Although the factors that influence people's perception of happiness have long been a focus for scholars, research to date has not offered conclusive findings on the relationships between income, age and happiness. This study examined the relationship between money and happiness across age groups. Analysing data from United States General Social Surveys from 1972 to 2006, this study finds that even after controlling for all the major socio-demographic variables, income (whether household income or personal equivalised income) had a significant positive association with happiness for young and middle-age adults, but it was not the same case with older adults. After controlling for the major socio-demographic variables, there was no evidence of a significant relationship between income (whichever definition) and happiness for older adults. The results also showed that the effect of household income on happiness was significantly smaller for older adults than for young or middle-age adults in the model controlling for major socio-demographic variables. The relationship between household income and happiness no longer differed significantly across age groups after social comparison variables were included. The relationship between equivalised income and happiness did not vary significantly by age group after controlling for the major socio-demographic variables.

KEY WORDS – subjective wellbeing, ageing, income, quality of life.

Introduction

To many Americans, achieving the national dream means gaining personal wealth, being happy and satisfied with life. A popular belief among Americans has been that money is essential for happiness, but not all people see it this way. People's perceptions of happiness vary widely even among those who live under similar economic and financial conditions. Therefore, to what degree money can (or cannot) buy happiness, or more specifically, under what circumstances money promotes happiness is not self-evident (George 1992). The factors that influence people's perception of happiness have long been the focus of scholars and philosophers. Social

* Jane Addams College of Social Work, University of Illinois at Chicago, USA.

https://doi.org/10.1017/S0144686X10001431 Published online by Cambridge University Press

scientists in particular have devoted a great deal of effort to the topic (*e.g.* Campbell, Converse and Rogers 1976; Diener 1984; Feist *et al.* 1995; George and Bearon 1980; Myers and Diener 1995). Although social gerontologists have for years researched the relationship between age and ageing and happiness, life satisfaction and subjective wellbeing, most studies have centred only on older adults (Cutler 1992). Research to date has yet to offer conclusive findings on the effect of age on happiness (Felton 1987; La Barbera and Gürhan 1997; Shmotkin 1990; Stock *et al.* 1983; Yang 2008).

This study focuses on the relationships between money, happiness and age among American adults. More specifically, it aims to increase understanding of the relationship between money and happiness across three commonly recognised adult age groups: young (18–44 years), middle-age (45–64 years) and older (65 or more) (*cf.* Cutler 1992). The research question addressed is: does the relationship between money and happiness differ by age group?

Literature review

According to Maddox (1992), studies of happiness and satisfaction have been merged with studies of wellbeing since the work of Campbell, Converse and Rogers (1976). One result is that researchers generally use the rubric of subjective wellbeing to include both studies of happiness, which concentrate on the balance between the positive and negative components of mood, and studies of satisfaction that focus on the extent to which hopes and aspirations are perceived to be fulfilled (Diener 1984; George 1992; Maddox 1992).

Researchers have devoted a great deal of effort to studying happiness or subjective wellbeing (Campbell, Converse and Rogers 1976; Di Tella, MacCulloch and Oswald 2003; Diener 1984; Feist *et al.* 1995; Frey and Stutzer 2002; George and Bearon 1980; Myers and Diener 1995; Robinson and Martin 2008; Tran 1992; Yang 2008). Some studies have examined subjective wellbeing from an aggregate aspect; that is, they focus not on individuals but on social groups, such as countries or specific populations. Most such research has centred on trends in subjective wellbeing in an entire society or in populations with certain characteristics (*e.g.* Myers and Diener 1995; Rodgers 1982), or has compared mean subjective wellbeing and other factors (such as gross domestic product) among countries (*e.g.* Diener, Diener and Diener 1995; Layard 2005; Myers and Diener 1995). Layard (2005), for example, argued although richer people tend to be happier than poor people, increases in wealth in already rich

https://doi.org/10.1017/S0144686X10001431 Published online by Cambridge University Press

countries have not increased happiness over the past several decades. Other individual-level factors, such as family, friendship and health should not be overlooked.

A large body of research focuses on identifying factors associated with subjective wellbeing at the individual level. There are many ways to examine the associations. Some studies concentrate on the directions (positive or negative) and magnitude that particular variables (*e.g.* health, gender, marital status, and so on) have on subjective wellbeing, and many report the predictive (or explanatory) power of the combination of a set of variables. For example, Fengler and Jensen (1981) assessed the effects of objective conditions and subjective perceptions of factors such as income, health, transportation and housing on life satisfaction of urban and non-urban older people and found that subjective perceptions were better predictors of life satisfaction. Ruffing-Rahal and Anderson (1994) developed a regression model to predict subjective wellbeing, and reported that the combination of five significant variables (number of health concerns, perceived ability actively to practise religion, age, length of residence at present address and education) accounted for 34 per cent of the variance in subjective wellbeing. La Barbera and Gürhan (1997) studied the effects of materialism and religiosity on subjective wellbeing. They found materialism to be positively related to subjective wellbeing among people with low religiosity but negatively related to subjective wellbeing among people with high religiosity. In addition, studies have proposed and examined the possible causal relationships between the associated factors and subjective wellbeing (*e.g.* Donnenwerth and Petersen 1992; Elwell and Maltbie-Crannell 1981; Liang 1982; Markides and Martin 1979; McKenzie and Campbell 1987).

In the literature, at least nine major variables are considered to be correlates of subjective wellbeing, including income, other socio-economic status attributes (such as education and social status), health, age, gender, race, work/employment, marital status and social interaction (Beatty and Tuch 1997; Burton *et al.* 1993; Campbell, Converse and Rogers 1976; Diener 1984; Feist *et al.* 1995; George and Bearon 1980; McKenzie and Campbell 1987; Mookherjee 1992; Myers and Diener 1995; Shmotkin 1990; Stevens 1993). Although all the major correlates are important for studying subjective wellbeing, this study focuses on two variables, income and age.

Income

Most subjective wellbeing studies have used income as a proxy for money or wealth (George 1992; Yang 2008). George (1992) reviewed more than

https://doi.org/10.1017/S0144686X10001431 Published online by Cambridge University Press

20 studies and found that the bivariate relationship between income and subjective wellbeing to be positive and often strong. The relationship between income and subjective wellbeing is less apparent, however, in multivariate relationships. For example, Elwell and Maltbie-Crannell (1981) reported a significant direct effect between income and subjective wellbeing for older men but not for older women. La Barbera and Gürhan (1997) found that income was positively correlated with subjective wellbeing for people with low religiosity but negatively correlated to subjective wellbeing for people with high religiosity. Veenhoven (1991) suggested that income helped people meet certain needs and, therefore, should be a cause of subjective wellbeing, but Myers and Diener (1995) suggested that although the absence of income could be misery, the relationship between income and subjective wellbeing by no means should be a positive linear one. Researchers have also argued the importance of social comparison in examining the relationship between income and happiness (*e.g.* Ferrer-i-Carbonell 2005; George 1992; Layard 2005; Liang and Fairchild 1979). More specifically, researchers indicate that individual's perception of income is dependent on his/her own income in relation to the past as well as income of other people. Subjective wellbeing is influenced by the perception of income, in addition to actual income (*e.g.* Ferrer-i-Carbonell 2005).

Age

According to Felton (1987) and La Barbera and Gürhan (1997), studies during the 1950s and 1960s generally reported a negative relationship between age and subjective wellbeing, while during the early 1970s, researchers found no relationship between age and subjective wellbeing, although recent studies have found a positive relationship between age and subjective wellbeing (*e.g.* Shmotkin 1990). George (1992, 1996) suggested that the relationship between age and subjective wellbeing may not be linear, a claim that has recently been supported by empirical evidence (*e.g.* Fischer 2009; Yang 2008).

Data, variables and methods

This study carried out a secondary analysis of the cumulative data from the United States General Social Surveys (GSS) from 1972 to 2006 (Davis, Smith and Marsden 2006). To explore the relationship between money and happiness across various age groups, the following variables were used: happiness and a set of explanatory variables (which have been identified as major correlates of subjective wellbeing) including gender,

https://doi.org/10.1017/S0144686X10001431 Published online by Cambridge University Press

race, age, marital status, education, income, perceived health condition, civic organisation memberships, attendance of religious services. The dependent variable *happiness* (HAPPY) was taken from the responses to a single question in the survey, 'Taken all together, how would you say things are these days – would you say that you are very happy, pretty happy, or not too happy?' (Davis, Smith and Marsden 2006). This item has been used in many studies to represent global or overall sense of subjective wellbeing (*e.g.* Beck 1982; Donnenwerth and Petersen 1992; Michalos 2004; Robinson and Martin 2008; Yang 2008). As suggested in the literature, the validity and reliability of single-item measures are adequate (*e.g.* Veenhoven 1996). Instead of treating the responses of the happiness variable as ordinal, this study combined 'very happy' and 'pretty happy' to form a binary dependent variable that distinguished those who were 'happy' ('very' or 'pretty' happy) as against the 'unhappy' ('not too' happy').

Like most previous studies of financial status and subjective wellbeing, *income* was used as the proxy for the former as the independent variable of interest. The GSS collects the respondent's individual income as well as household income. Given that many respondents did not report individual income, household income was used for the analysis. The household income variable (REALINC) was collected from 1972 to 2006, and the National Opinion Research Center (NORC) has converted each of the dollar values into the 1986 inflation-adjusted equivalent (Davis, Smith and Marsden 2006). The income values are therefore comparable throughout the survey years. Also the GSS income variable is in categories, so the values for REALINC are the midpoints of the categories and, for the open-ended upper category the mean of the Pareto curve (Ligon 1989). Many previous subjective wellbeing studies simply used the variable household income without taking household size into account (*e.g.* Beck 1982; Doyle and Forehand 1984; Headey, Veenhoven and Wearing 1991; Yang 2008). It is misleading not to take into account household size because a person living alone with an income of $25,000 clearly has a different level of material wellbeing from people living in a five-person household with the same income. This study used a simple equivalised income, now widely promoted by the Organisation for Economic Co-operation and Development (OECD 2008), that divides household income by the square root of the size of the household (HOMPOP). This study used both household income and the equivalised income for the comparisons. Given the positive skew of the two income distributions, the variables were transformed by taking the logarithm.

The other variables used in the analysis are itemised with their categories in Table 1. Most are standard measures and self-evident, but some

https://doi.org/10.1017/S0144686X10001431 Published online by Cambridge University Press

TABLE 1. *Sample characteristics*

Variables	N	%
Gender:		
Male	4,829	44.7
Female	5,982	55.3
Race:		
White	9,107	84.2
Non-White	1,704	15.8
Marital status:		
Married	6,537	60.5
Widowed	1,049	9.7
Divorced	1,019	9.4
Separated	368	3.4
Never married	1,838	17
Employment:		
Full-time	5,343	49.4
Part-time	1,038	9.6
Retired	1,194	11
Keeping house	2,223	20.6
Other	1,013	9.4
Perceived health:		
Excellent	3,457	32
Good	4,682	44.3
Fair	2,087	19.3
Poor	585	5.4
Attendance at religious services:		
Never	1,378	12.7
Less than once a year	819	7.6
Once or twice a year	1,466	13.6
Several times a year	1,495	13.8
Once a month	838	7.8
2–3 times a month	998	9.2
Nearly every week	628	5.8
Every week	2,335	21.6
Several times a week	854	7.9
Comparison of household income:		
Far below average	508	4.7
Below average	2,562	23.7
Average	5,578	51.6
Above average	1,989	18.4
Far above average	184	1.7
Comparison of personal finance:		
Better	4,205	38.9
Worse	2,411	22.3
Stay the same	4,195	38.8
Happiness:		
Happy	9,509	88.0
Not happy	1,032	12.0

https://doi.org/10.1017/S0144686X10001431 Published online by Cambridge University Press

Table 1. *(Cont.)*

	Mean	SD
Age (years)	44.3	17.2
Household income[1]	30,314.1	25,343.5
Equivalised income[1,2]	18,816.7	15,814.4
Years of schooling	12.3	3.2
Number of organisations	1.8	1.9
Sample size	10,811	

Note: SD: standard deviation. 1. Annual in US dollars at 1986 value. 2. Equivalised income of an individual in a household.

require further explanation. The respondents' *health status* (HEALTH) is the GSS self-assessment measure, being the responses to the question, 'would you say your own health, in general, is excellent, good, fair, or poor?' (Davis, Smith and Marsden 2006). Previous studies have found this variable to be a strong correlate of subjective wellbeing (*e.g.* Hennon and Burton 1986; Tran 1992). Turning to work or occupational status, the 'other' category includes 'temporarily not working' and 'unemployed'.

The *social interaction* measure follows Beatty and Tuch (1997) and is based on two variables, the number of voluntary civic organisations the respondent belonged to (MEMNUM), and the frequency of attendance at religious services (ATTEND). The organisations included fraternal groups, service clubs, veterans' groups, political clubs, labour unions, sports groups, youth groups, school service groups, hobby or garden clubs, school fraternities or sororities, nationality groups, farm organisations; literary, art, discussion or study groups; professional or academic societies, church-affiliated groups, and any other groups. The question on religious service participation is, 'how often do you attend religious services?' The available responses were 'never', 'less than once a year', 'about once or twice a year', 'several times a year', 'about once a month', '2–3 times a month', 'nearly every week', 'every week' and 'several times a week'. Since each of these variables represented a different domain of social interaction, they were included as two separate variables in the analysis.

A *social comparison* measure was derived from two GSS variables (Davis, Smith and Marsden 2006) based, respectively, on the responses to two questions: 'during the last few years, has your financial situation been getting better, worse, or has it stayed the same?' (comparison of personal finance), and 'compared with American families in general, would you say your family income is far below average, below average, average, above average, or far above average?' (comparison of household income).

https://doi.org/10.1017/S0144686X10001431 Published online by Cambridge University Press

These two variables have been used in prior studies as indicators of social comparison or relative deprivation, especially in studies of people's financial satisfaction (Hsieh 2001, 2003; Liang and Fairchild 1979). Since each of these variables represented a different domain of social comparison, they were included as two separate variables in the analysis. In addition, the Consumer Price Index (CPI) compiled by the US Bureau of Labor Statistics (2006) and available on their website was included in the analysis to discount monetary value for inflation.

The GSS accumulated data set from 1972 to 2006 has 46,303 respondents with a happiness score, but there are missing data for other variables required for the analysis. Most importantly, the question on health was not asked in some survey years. There was also a substantial number of missing cases for income. After eliminating the years without the health measure and the cases with missing variables, the analysis sample comprises data for the years 1974, 1975, 1977, 1980, 1984, 1987–1991, 1993 and 1994. Altogether there were 10,811 respondents.

Methods

Before conducting the multivariate analysis and to circumvent multicolinearity, the bivariate correlation matrix was reviewed to identify strong correlations among the independent variables (Allison 1999*b*). A very high correlation ($r = 0.995$) was identified between the survey year and the CPI, a function of incessant inflation during the survey years, which indicates that their distributions can be taken as identical. None of the other correlations exceeded |0.7|. Given that the data span 21 years, 'year' was included to capture possible period effects, and was preferred over the CPI.

Logistic regression models for each of three age groups were estimated to explore whether the relationship between income and happiness differed by age. At the first step (Model 1), the binary happiness variable was the dependent variable and the independent variables were age, (log) income and year. At the second step (Model 2), the rest of the sociodemographic and the health variables were added into the model, and at the final step (Model 3), the two social comparison variables were added. The conventional method to test for significance of differences in coefficients (*e.g.* Allison 1999*a*) was used to compare if the effect of income varied significantly across the age groups. The following formula was used to compare two age groups:

$$(b_i - b_j)^2 / [(\mathrm{se}(b_i))^2 + (\mathrm{se}(b_j))^2] \quad (1)$$

https://doi.org/10.1017/S0144686X10001431 Published online by Cambridge University Press

TABLE 2. *Mean income (in 1986 dollars) by happiness and age group*

Age group (years)	Happy	Unhappy
Household income:		
Young (18–44)***	32,579.67	22,448.65
Middle-aged (45–64)***	37,530.96	23,350.42
Older (65+)***	17,993.17	14,438.56
Equivalised income:		
Young (18–44)***	18,953.48	13,373.25
Middle-aged (45–64)***	24,030.82	15,811.67
Older (65+)**	13,851.88	11,719.73

Note: Sample size 10,811.
Significance levels: ** $p < 0.01$, *** $p < 0.001$.

where b_i is the income coefficient on for age group i, b_j is the income coefficient for group j, and se is the estimated standard error of b_j.

The formula gives a chi-square statistic with one degree of freedom. Given that logistic regression was used in the analysis, Allison's (1999*a*) method of comparing logit coefficients across groups was also used to guard against the potential confounding effects of residual variation to confirm the results of these tests of significance.

Results

Table 1 shows the descriptive statistics of the sample respondents, and Table 2 shows the mean household income and mean equivalised income by happiness by the three age groups. The results presented in Table 2 indicate that those who were happy had significantly higher levels of household income than those who were unhappy across all three age groups. The results also indicate that among young and middle-aged adults, those who were happy had significantly higher levels of equivalised income than those who were unhappy. Among the older adults, however, the difference in equivalised income between those who were happy and those who were unhappy was not statistically significant.

Household income, age and happiness

To further examine the research questions, multivariate logistic regression analysis was conducted. Table 3 shows the results of the regression of happiness on *household income*. Model 1 shows the results of the relationship between (log) household income and happiness after controlling for age and year. The results indicated that there was a significant positive

https://doi.org/10.1017/S0144686X10001431 Published online by Cambridge University Press

TABLE 3. *Estimated effects of household income and other variables on happiness*

	Young		Middle aged		Older	
Model and measures	B	SE	B	SE	B	SE
Model 1:						
Household income (log)	1.18	0.09***	1.53	0.14***	0.60	0.20**
Age	−0.02	0.01**	0.01	0.01	0.01	0.01
Year	0.03	0.01***	0.01	0.01	0.01	0.01
Intercept	−53.70	13.28***	−18.31	18.36	−11.89	23.14
Likelihood ratio χ^2	161.40		132.82		9.56	
Model 2:						
Household income (log)	0.53	0.11***	0.65	0.19***	−0.03	0.26
Age	−0.00	0.01	0.01	0.01	0.03	0.01*
Year	0.03	0.01***	0.01	0.01	0.01	0.01
Female	0.22	0.10*	0.22	0.15	0.12	0.21
Race (White)	0.73	0.10***	−0.14	0.17	0.14	0.23
Marital status:[1]						
Widowed	−0.23	0.35	−1.10	0.18***	−0.87	0.18***
Divorced	−0.56	0.13***	−0.84	0.17***	−0.46	0.36
Separated	−0.63	0.17***	−1.17	0.27***	−1.68	0.41***
Years of schooling	0.06	0.02***	0.04	0.02	0.01	0.03
Work status:[2]						
Work full-time	0.44	0.12***	0.36	0.20	0.62	0.62
Work part-time	0.41	0.17*	0.51	0.27	−0.10	0.58
Retired	0.20	0.72	0.65	0.26*	0.08	0.50
Keeping house	0.30	0.15*	0.62	0.23**	−0.03	0.51
Civic organisation	0.07	0.03*	0.03	0.04	−0.05	0.05
Religious services	0.05	0.02**	0.08	0.02***	0.11	0.03***
Perceived heath	0.58	0.06***	0.53	0.07***	0.35	0.09***
Intercept	−52.67	14.20***	−12.91	19.84	−10.77	24.93
Likelihood ratio χ^2	457.98		290.29		86.44	
Model 3:						
Household income (log)	0.28	0.12*	0.34	0.20	−0.09	0.27
Age	0.00	0.01	0.01	0.01	0.03	0.01*
Year	0.03	0.01***	0.01	0.01	0.01	0.01
Female	0.22	0.10*	0.23	0.15	0.12	0.21
Race (White)	0.67	0.10***	−0.18	0.17	0.13	0.23
Marital status:[1]						
Widowed	−0.19	0.35	−1.11	0.19***	−0.87	0.18***
Divorced	−0.53	0.13***	−0.82	0.18***	−0.46	0.36
Separated	−0.59	0.17***	−1.14	0.27***	−1.67	0.41***
Years of schooling	0.05	0.02**	0.03	0.02	0.01	0.03
Work status:[2]						
Work full-time	0.39	0.12**	0.33	0.20	0.59	0.63
Work part-time	0.40	0.17*	0.50	0.27	−0.11	0.58
Retired	0.13	0.70	0.65	0.26*	0.07	0.50
Keeping house	0.28	0.15	0.60	0.23**	−0.05	0.52
Civic organisation	0.06	0.03*	0.02	0.04	−0.5	0.05
Religious services	0.06	0.02**	0.08	0.02**	0.11	0.03***
Perceived heath	0.55	0.06***	0.50	0.27	0.35	0.09***
Comparison of personal finance	−0.25	0.05***	−0.02	0.08	−0.03	0.10
Comparison of household income	0.29	0.06***	0.36	0.09***	0.07	0.11
Intercept	−48.91	14.26***	−14.14	19.95	−10.53	24.97
Likelihood ratio χ^2	521.19		308.16		87.04	
Sample size	6,060		2,973		1,778	

Notes: 1. 'Never married' category omitted. 2. 'Other' category omitted. B: Coefficient. SE: standard error.
Significance levels: * $p<0.05$, ** $p<0.01$, *** $p<0.001$.

https://doi.org/10.1017/S0144686X10001431 Published online by Cambridge University Press

relationship between household income and happiness for all three age groups. Model 2 shows the results of the relationship between (log) household income and happiness after controlling for age, year and additional socio-demographic variables. Model 2 results showed that after controlling for additional socio-demographic variables (including gender, race, marital status, education, working status, social interaction, and health), the significant positive relationship between household income and happiness remained for young and middle-aged adults. However, the significant positive relationship between household income and happiness for older adults disappeared after the inclusion of the additional socio-demographic variables. Model 3 shows the results of the relationship between (log) household income and happiness after controlling for age, socio-demographic variables and the social comparison variables. The Model 3 results show that after the inclusion of the social comparison variables, the significant positive relationship between household income and happiness disappeared for middle-aged adults but remained for young adults.

Applying Equation (1) to the Model 1 results for household income, the chi-squared statistics (with one degree of freedom) for the difference in coefficients between young adults and older adults was 6.73 ($p < 0.01$), between young adults and middle-aged adults 4.67 ($p < 0.05$), and between middle-aged adults and older adults 14.62 ($p < 0.001$) (Table 3). That is, the coefficient for household income in Model 1 was significant for all three age groups. Using the same formula for the results in Model 2, the chi-square difference in coefficients on (log) household income between young adults and older adults was 4.11 ($p < 0.05$), between young adults and middle-aged adults 0.27 ($p > 0.05$), and between middle-aged adults and older adults 4.57 ($p < 0.05$). That is, the coefficient for household income in Model 2 was significantly larger for young and middle-aged adults than for older adults, but there was no significant difference between the coefficients for young adults and middle-aged adults. Although household income remained a significant predictor of happiness in Model 3 for young adults, there was no significant difference in the coefficients on household income across the three age groups when applying the same formula. Allison's (1999*a*) method (results not shown here) produced similar results.

Personal equivalised income, age and happiness

Table 4 shows the regression results of the relationship between personal equivalised incomes and happiness. Model 1 shows the results for the relationship between (log) equivalised income and happiness after controlling for age and year. The results indicated that there was a significant

https://doi.org/10.1017/S0144686X10001431 Published online by Cambridge University Press

TABLE 4. *Estimated effects of equivalised income and other variables on happiness*

	Young		Middle aged		Older	
Model and measures	B	SE	B	SE	B	SE
Model 1:						
Equivalised income (log)	0.04	0.00***	0.04	0.01***	0.02	0.01*
Age	−0.01	0.01	−0.00	0.01	0.01	0.01
Year	0.02	0.01**	0.00	0.01	0.01	0.01
Intercept	−32.22	12.95*	−1.05	18.01	−10.05	23.11
Likelihood ratio χ^2	131.39		82.80		6.56	
Model 2:						
Equivalised income (log)	0.02	0.00***	0.01	0.01**	0.01	0.01
Age	0.00	0.01	0.01	0.01	0.03	0.01*
Year	0.02	0.01***	0.01	0.01	0.01	0.01
Female	0.23	0.10*	0.23	0.15	0.13	0.21
Race (White)	0.74	0.10***	−0.11	0.17	0.12	0.23
Marital status:[1]						
Widowed	−0.28	0.35	−1.23	0.18***	−0.86	0.18***
Divorced	−0.62	0.13***	−0.97	0.17***	0.45	0.36
Separated	−0.71	0.17***	−1.33	0.27***	−1.67	0.41***
Years of schooling	0.06	0.02**	0.04	0.02	0.01	0.03
Work status:[2]						
Work full-time	0.49	0.12***	0.43	0.19*	0.59	0.62
Work part-time	0.43	0.17*	0.51	0.27	−0.08	0.58
Retired	0.17	0.71	0.66	0.26*	0.10	0.51
Keeping house	0.31	0.15*	0.61	0.23**	−0.01	0.51
Civic organisation	0.07	0.03**	0.03	0.04	−0.05	0.05
Religious services	0.06	0.02**	0.08	0.02***	0.11	0.03***
Perceived heath	0.59	0.06***	0.54	0.07***	0.35	0.09***
Intercept	−43.90	13.93**	−8.31	19.77	−10.49	24.91
Likelihood ratio χ^2	451.39		286.69		86.87	
Model 3:						
Equivalised income (log)	0.01	0.00	0.01	0.01	0.00	0.01
Age	0.00	0.01	0.01	0.01	0.03	0.01*
Year	0.02	0.01***	0.01	0.01	0.01	0.01
Female	0.22	0.10*	0.23	0.15	0.13	0.21
Race (White)	0.69	0.10***	−0.16	0.17	0.11	0.23
Marital status:[1]						
Widowed	−0.23	0.35	−1.18	0.18***	−0.86	0.18***
Divorced	−0.57	0.13***	−0.89	0.17***	−0.44	0.36
Separated	−0.63	0.17***	−1.22	0.27***	−1.66	0.41***
Years of schooling	0.05	0.02*	0.03	0.02	0.00	0.03
Work status:[2]						
Work full-time	0.42	0.12***	0.37	0.20	0.57	0.63
Work part-time	0.41	0.17*	0.51	0.27	−0.09	0.58
Retired	0.10	0.70	0.66	0.26*	0.09	0.51
Keeping house	0.29	0.15	0.60	0.23**	−0.02	0.52
Civic organisation	0.06	0.03*	0.02	0.04	−0.05	0.05
Religious services	0.06	0.02**	0.08	0.02***	0.11	0.03***
Perceived heath	0.56	0.06***	0.51	0.07***	0.35	0.09***
Comparison of personal finance	−0.26	0.05***	−0.03	0.08	−0.02	0.10
Comparison of household income	0.31	0.06***	0.38	0.09***	0.05	0.11
Intercept	43.90	14.02**	−12.12	19.91	−10.45	24.95
Likelihood ratio χ^2	508.22		306.53		87.14	
Sample size	6,060		2,973		1,778	

Notes: 1. 'Never married' category omitted. 2. 'Other' category omitted. B: Coefficient. SE: standard error.
Significance levels: * $p<0.05$, ** $p<0.01$, *** $p<0.001$.

https://doi.org/10.1017/S0144686X10001431 Published online by Cambridge University Press

positive relationship between equivalised income and happiness for young and middle-aged adults, but no significant relationship between equivalised income and happiness for older adults. Model 2 shows the results of the relationship between (log) equivalised income and happiness after controlling for age, year and additional socio-demographic variables. Model 2 results showed that after controlling for additional socio-demographic variables (including gender, race, marital status, education, working status, social interaction, and health) the significant positive relationship between equivalised income and happiness remained for young and middle-aged adults.

Applying Equation (1) to the results in Model 1, the chi-squared difference in coefficients on (log) equivalised income between young adults and older adults was 10.4 ($p < 0.001$), between young adults and middle-aged adults 0.61 ($p > 0.05$), and between middle-aged adults and older adults 5.96 ($p < 0.001$) (*see* Table 4). That is, the coefficient for equivalised income in Model 1 was significantly larger for young adults and middle-aged adults than for older adults, but there was no significant difference between the coefficients for young adults and middle-aged adults. Using the same formula for the results in Model 2 of Table 4, there was no significant difference in coefficients on (log) equivalised income across the three age groups. Again, Allison's (1999*a*) method (results not shown here) produced similar results. Since (log) equivalised income was not a significant predictor of happiness in Model 3 for all three age groups, no comparison of the coefficient was necessary.

Discussion

Using data from the United States General Social Surveys, this study has addressed the research question, 'does the relationship between money and happiness vary by age group?' The results show that even after controlling for all the major socio-demographic variables, income (no matter household income or equivalised income) had a significant positive association with happiness for young and middle-aged adults, but the relationship was not the same for older adults. After controlling for major socio-demographic variables, there was no evidence of a significant relationship between income (no matter household income or equivalised income) and happiness for older adults. In terms of the relationship between household income and happiness, the results showed that the coefficient was significantly smaller for older adults than for young or middle-aged adults in the model controlling for the major socio-demographic variables. The relationship between household income and

https://doi.org/10.1017/S0144686X10001431 Published online by Cambridge University Press

happiness no longer differed significantly by age group when the social comparison variables were included. With respect to equivalised income, results show that the relationship between equivalised income and happiness did not vary significantly across age groups after controlling for major socio-demographic variables.

The empirical evidence presented in this study sheds new light on the age-old question, does money buy happiness? The results indicate that whether or not money (using income as proxy) associates with happiness in the United States of America depends on a person's age group as well as the income measure. More specifically, for young adults, household income significantly associates with happiness, even after controlling for socio-demographic variables and social comparison variables. Although equivalised income (household size-adjusted) significantly associated with happiness after controlling for socio-demographic variables among young adults, the association disappeared with the inclusion of social comparison variables. For middle-age adults, both household income and equivalised income significantly associated with happiness even after controlling for socio-demographic variables, but the association disappeared after controlling for the social comparison variables. For older adults, the association between income (both household income and equivalised income) and happiness disappeared after controlling for the socio-demographic variables.

To summarise, money, using household income as a proxy measure, had a significantly smaller effect on happiness for older adults than for young or middle-aged adults. No evidence suggests, however, that the association between household income and happiness differs across the three age groups after controlling for both socio-demographic and social comparison variables. When measured by equivalised income, the association between money and happiness did not vary significantly across the three age groups once socio-demographic variables are taken into account.

The results point to the importance of the selected income measure and the included control variables. If social comparison variables are taken into account (as controls), there is no evidence to suggest a significantly different relationship between money (using either household income or equivalised income as proxy) and happiness by age group. These results support the comparison income effect that previous researchers have identified (*e.g.* Ferrer-i-Carbonell 2005) in examining the relationship between income and happiness. If, on the other hand, social comparison variables are not taken into account, it is important to recognise that the type of income selected would have consequences on whether or not one can assume a constant relationship between income and happiness at all

https://doi.org/10.1017/S0144686X10001431 Published online by Cambridge University Press

ages. Assuming a constant relationship between income and happiness at all ages is problematic if household income is chosen, given the strong evidence that the relationship between (family) income and happiness is significantly weaker for older adults than for young or middle-aged adults. If equivalised income is chosen, then there does not appear to be any evidence against assuming a constant relationship between income and happiness across age groups. Using equivalised income in addition to household income, this study offered comparative results on the relationship between money and happiness. Equivalised income is not, however, without controversy. The two major issues associated with this equivalised income are: it assumes an equal share of income among all family members; and it does not take into account the age of various family members.

It should be noted that the GSS data used in the analysis were from repeated cross-sectional surveys. As from any such data, the findings could be influenced by ageing, period and cohort effects, so the results should be interpreted with caution. In addition, given the secondary analysis, two major issues should be borne in mind. First, this study dichotomised the responses of the dependent variable into 'happy' and 'unhappy' but most previous analyses have considered the level of happiness. The results of this study should be interpreted with caution when compared with other studies. Second, the available dependent and independent variables were limited. The relationship between money and happiness was assessed using only income as proxy for money in this study. It is clear that money or wealth covers more than just income. However, this study could analyse only the variables included in the GSS data set. Given the study's limitations, the findings are not conclusive. Future research should employ refined measures of happiness and examine more covariates for, as mentioned earlier, income is neither a comprehensive measure of material standing not does it fully account for self-rated wellbeing or happiness. Given the age effect in income and financial resources, it will be important to explore the relationships between happiness and other financial resources, in addition to income.

References

Allison, P. D. 1999*a*. Comparing logit and probit coefficients across groups. *Sociological Methods and Research*, **28**, 2, 186–208.

Allison, P. D. 1999*b*. *Logistic Regression Using the SAS System*. SAS Institute, Cary, North Carolina.

Beatty, P. and Tuch, S. A. 1997. Race and life satisfaction in the middle class. *Sociological Spectrum*, **17**, 1, 71–90.

Beck, S. H. 1982. Adjustment to and satisfaction with retirement. *Journal of Gerontology*, **37**, 5, 616–24.

https://doi.org/10.1017/S0144686X10001431 Published online by Cambridge University Press

Burton, R. P. D., Rushing, B., Ritter, C. and Rakocy, A. 1993. Roles, race and subjective well-being: a longitudinal analysis of elderly men. *Social Indicators Research*, **28**, 2, 137–56.

Campbell, A., Converse, P. E. and Rogers, W. L. 1976. *The Quality of American Life: Perceptions, Evaluations, and Satisfactions*. Russell Sage, New York.

Cutler, N. E. 1992. The emerging dynamics of financial gerontology: individual aging and population aging in the new century. In Cutler, N. E., Gregg, D. W. and Lawton, M. P. (eds), *Aging, Money, and Life Satisfaction: Aspects of Financial Gerontology*. Springer Publishing Company, New York, 1–21.

Davis, J. A., Smith, T. W. and Marsden, P. V. 2006. *General Social Surveys, Cumulative Codebook 1972–2006*. National Opinion Research Center, Chicago. Machine-readable data file distributed by the Interuniversity Consortium for Political and Social Research (ICPSR), Ann Arbor, Michigan.

Di Tella, R., MacCulloch, R. and Oswald, A. 2003. The macro economics of happiness. *Review of Economics and Statistics*, **85**, 4, 809–27.

Diener, E. 1984. Subjective well-being. *Psychological Bulletin*, **95**, 3, 542–75.

Diener, E., Diener, M. and Diener, C. 1995. Factors predicting the subjective well-being of nations. *Journal of Personality and Social Psychology*, **69**, 5, 851–864.

Donnenwerth, G. V. and Petersen, L. R. 1992. Institutionalization and well-being among the elderly. *Sociological Inquiry*, **62**, 4, 437–49.

Doyle, D. and Forehand, M. J. 1984. Life satisfaction and old age: A reexamination. *Research on Aging*, **6**, 3, 432–448.

Elwell, F. and Maltbie-Crannell, A. D. 1981. The impact of role loss upon coping resources and life satisfaction of the elderly. *Journal of Gerontology*, **36**, 2, 223–32.

Feist, G. J., Bodner, T. E., Jacobs, J. F., Miles, M. and Tan, V. 1995. Integrating top-down and bottom-up structural models of subjective well-being: a longitudinal investigation. *Journal of Personality and Social Psychology*, **68**, 1, 138–50.

Felton, B. J. 1987. Cohort variation in happiness: some hypotheses and exploratory analyses. *International Journal of Aging and Human Development*, **25**, 1, 27–42.

Fengler, A. P. and Jensen, L. 1981. Perceived and objective conditions as predictors of the life satisfaction of urban and non urban elderly. *Journal of Gerontology*, **36**, 6, 750–2.

Ferrer-i-Carbonell, A. 2005. Income and well-being: an empirical analysis of the comparison income effect. *Journal of Public Economics*, **89**, 6, 997–1019.

Fischer, J. A. V. 2009. *Happiness and Age Cycles: Return to Start … On the Functional Relationship Between Subjective Well-being and Age*. OECD Social, Employment and Migration Working Paper 99. Available online at http://www.oecd.org/officialdocuments/ [Accessed 8 November 2010].

Frey, B. S. and Stutzer, A. 2002. *Happiness and Economics: How the Economy and Institutions Affect Well-being*. Princeton University Press, Princeton, New Jersey.

George, L. K. 1992. Economic status and subjective well-being: a review of literature and an agenda for future research. In Cutler, N. E., Gregg, D. W. and Lawton, M. P. (eds), *Aging, Money, and Life Satisfaction: Aspects of Financial Gerontology*. Springer Publishing Company, New York, 66–99.

George, L. K. 1996. Perceived quality of life. In Binstock, R. H. and George, L. K. (eds), *Handbook of Aging and the Social Sciences*. Sixth edition, Elsevier, San Diego, California, 320–36.

George, L. K. and Bearon, L. B. 1980. *Quality of Life in Older Persons: Meaning and Measurements*. Human Sciences Press, New York.

Headey, B., Veenhoven, R. and Wearing, A. 1991. Top-down versus bottom-up theories of subjective well-being. *Social Indicators Research*, **24**, 1, 81–100.

Hennon, C. B. and Burton, J. R. 1986. Financial satisfaction as a developmental task among the elderly. *American Behavioral Scientist*, **29**, 4, 439–52.

https://doi.org/10.1017/S0144686X10001431 Published online by Cambridge University Press

Hsieh, C. M. 2001. Correlates of financial satisfaction. *International Journal of Aging and Human Development*, **52**, 2, 135–53.
Hsieh, C. M. 2003. Age, income and financial satisfaction. *International Journal of Aging and Human Development*, **56**, 2, 89–112.
La Barbera, P. A. and Gürhan, Z. 1997. The role of materialism, religiosity, and demographics in subjective well-being. *Psychology and Marketing*, **14**, 1, 71–97.
Layard, R. 2005. *Happiness: Lessons from a New Science*. Penguin, New York.
Liang, J. 1982. Sex differences in life satisfaction among the elderly. *Journal of Gerontology*, **37**, 1, 100–8.
Liang, J. and Fairchild, T. J. 1979. Relative deprivation and perception of financial adequacy among the aged. *Journal of Gerontology*, **34**, 5, 746–759.
Ligon, E. 1989. *The Development and Use of a Consistent Income Measure for the General Social Survey*. GSS Methodological Report 64, National Opinion Research Center, Chicago.
Maddox, G. L. 1992. Aging and well-being. In Cutler, N. E., Gregg, D. W. and Lawton, M. P. (eds), *Aging, Money, and Life Satisfaction: Aspects of Financial Gerontology*. Springer Publishing Company, New York, 53–68.
Markides, K. S. and Martin, H. W. 1979. A causal model of life satisfaction among the elderly. *Journal of Gerontology*, **34**, 1, 86–93.
McKenzie, B. and Campbell, J. 1987. Race, socioeconomic status, and the subjective well-being of older Americans. *International Journal of Aging and Human Development*, **25**, 1, 43–61.
Michalos, A. C. 2004. Social indicators research and health-related quality of life research. *Social Indicators Research*, **65**, 1, 27–72.
Mookherjee, H. N. 1992. Perceptions of well-being by metropolitan and non-metropolitan populations in the United States. *Journal of Social Psychology*, **132**, 4, 513–24.
Myers, D. G. and Diener, E. 1995. Who is happy? *Psychological Science*, **6**, 1, 11–19.
Organisation for Economic Co-operation and Development (OECD) 2008. *Growing Unequal? Income Distribution and Poverty in OECD Countries*. OECD, Paris. Available online at www.oecd.org/els/social/inequality [Accessed 1 February 2009].
Robinson, J. P. and Martin, S. 2008. What do happy people do? *Social Indicators Research*, **89**, 3, 565–71.
Rodgers, W. 1982. Trends in reported social inequalities in happiness within demographically defined subgroups, 1957–78. *Social Forces*, **60**, 3, 826–42.
Ruffing-Rahal, M. A. and Anderson, J. 1994. Factors associated with qualitative well-being in older women. *Journal of Women and Aging*, **6**, 3, 3–18.
Shmotkin, D. 1990. Subjective well-being as a function of age and gender: a multivariate look for differentiated trends. *Social Indicators Research*, **23**, 2, 201–30.
Stevens, E. S. 1993. Making sense of usefulness: an avenue toward satisfaction in later life. *International Journal of Aging and Human Development*, **37**, 4, 313–25.
Stock, W. A., Okun, M. A., Haring, M. J. and Witter, R. A. 1983. Age differences in subjective well-being: a meta-analysis. In Light, R. J. (ed.), *Evaluation Studies Review Annual*. Volume 8, Sage, Beverly Hills, California, 279–302.
Tran, T. V. 1992. Subjective health and subjective well-being among minority elderly: measurement issues. *Journal of Social Service Research*, **16**, 3/4, 133–46.
US Bureau of Labor Statistics 2006. *Consumer Price Index – All Urban Consumers*. Statistics web pages, Bureau of Labor Statistics, Washington DC. Available online at http://stats.bls.gov/cgi-bin/surveymost [Accessed 30 January 2009].
Veenhoven, R. 1991. Questions on happiness: classical topics, modern answers, blind spots. In Strack, F., Argyle, M. and Schwarz, N. (eds), *Subjective Well-being: An Interdisciplinary Perspective*. Pergamon, New York, 7–26.

https://doi.org/10.1017/S0144686X10001431 Published online by Cambridge University Press

Veenhoven, R. 1996. Happy life expectancy: a comparative measure of quality of life in nations. *Social Indicators Research*, **39**, 1, 1–58.
Yang, Y. 2008. Social inequalities in happiness in the US 1972–2004: an age-period-cohort analysis. *American Sociological Review*, **73**, 2, 204–26.

Accepted 8 November 2010; first published online 7 February 2011

Address for correspondence:
Chang-Ming Hsieh, Jane Addams College of Social Work,
University of Illinois at Chicago, 1040 West Harrison Street (MC 309),
Chicago, IL 60607, USA.

E-mail: chsieh@uic.edu

https://doi.org/10.1017/S0144686X10001431 Published online by Cambridge University Press