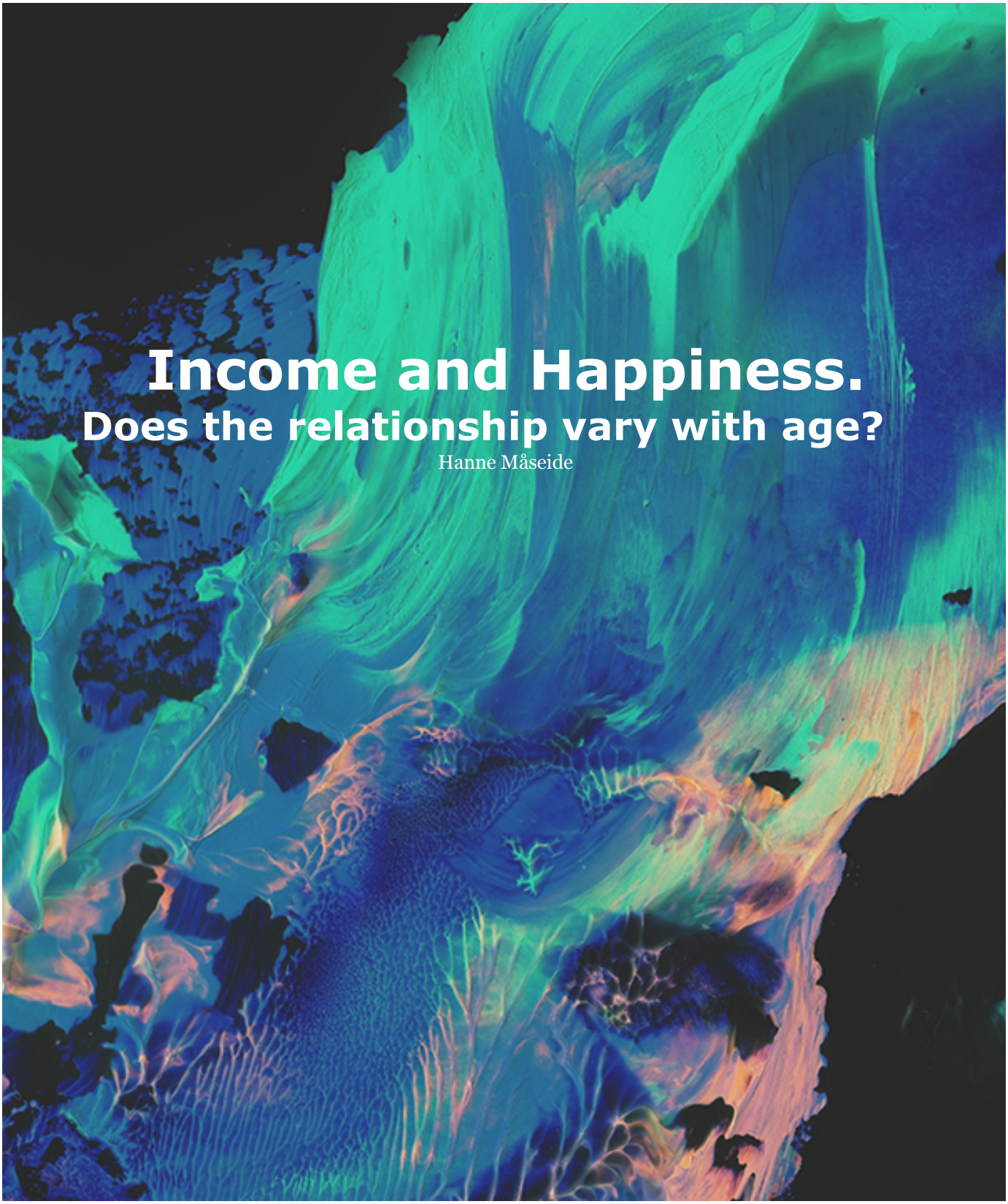
UMEÅ UNIVERSITY



Income and Happiness.

Does the relationship vary with age?

Hanne Måseide

Master thesis, 15hp

Master program, 120 hp

Spring term 2021

Acknowledgement

I would like to thank my supervisor, Giovanni Forchini, for his advice and insightful tips throughout this process.

Umeå University, June 2021
Hanne Måseide

Abstract

The purpose of this study was to examine the relationship between income and happiness across three age groups: young (18-30 years), middle (31-64 years), and old (65 or older). Theory suggests that income has a positive effect on an individual's sense of happiness. The data set in this study contains survey data conducted by European Social Survey on randomly selected Swedish citizens between the years 2010, 2012, 2014, 2016, and 2018. The method used in this analysis is performed using a Generalized Ordered Logit model with *happiness* as the dependent variable. The result shows, after controlling for sociodemographic variables, that income has a positive significant association with happiness in all three age groups. Those with a higher income were more likely to be very happy compared to those in the lowest income group. The study also finds that, for some income levels, there exists a difference in how happiness is affected by income between the middle and old age group while no significant difference was found between the young and old age group.

Keywords: Subjective well-being, happiness, age, income, generalized ordered logit, survey.

Table of content

1. Introduction **1**

2. Theory **3**

2.1 Objective and subjective utility theory *3*

2.2 Measuring subjective well-being *4*

2.3 Income, age, and subjective well-being *5*

2.4 Other determinants of subjective well-being *7*

2.5 Reverse causality *8*

2.6 Theoretical model specification *9*

3. Data **10**

3.1 Data *10*

3.2 Variables *10*

3.3 Descriptive statics *13*

4. Method and model specification **17**

4.1 Ordered logit model and Generalized Ordered logit model *17*

4.1 Marginal effects *18*

4.2 Empirical model *19*

5. Result **21**

5.1 Age group, income, and happiness *21*

5.2 Other determinants of happiness *23*

6. Discussion **29**

6.1 Limitations and further research *31*

6.2 Conclusion *32*

References **33**

Appendix **37**

1. Introduction

The burden of mental illness in Sweden has increased over the past few years. Among those in the age between 18-84 did 49 percent of women and 33 of men stated that they had experienced discomfort with anxiety during 2020. For the same age group, had 4 percent been diagnosed with depression in 2020. Additionally, stated 15 percent that they have had been diagnosed with depression earlier in life (Folkhälsomyndigheten, 2020). Mental illness is today the most common cause of sick leave in Sweden. The costs from this, through loss of productivity, social spending, and healthcare have been estimated to be nearly 8 million EUR per year (OECD, n.d.). Happiness or well-being is, for most individuals, considered as the ultimate goal of life. Being happy is important as it increases the longevity for the general population, creates resilience for mental illness, increases achievements in the workplace, and enhances educational performance (Huppert, 2009). Considering how high the cost of mental illness can be together with the positive aspect of well-being, therefore it is of interest for the government to prevent and address mental health problems. But in order to prevent mental illness, one must know what makes people happy.

A general definition of happiness or subjective well-being, includes an individual's moods and emotions, evaluation of different life events, judgments about fulfillments, and life satisfaction, which together form people's positive evaluation of their lives (Diener et al., 2003). What people perceive as happiness and what makes people happy vary widely from individual to individual, even for those living under similar conditions. However, a common belief is that money makes you happy. More money increases the opportunities to fulfill dreams and buy more goods and services. To what extent money can buy happiness is a well-studied area and a general result is that people who earn more money do, on average, report higher levels of happiness (Frey & Stutzer, 2002b). The perceived sense of happiness has also been found to vary with age. With age comes changes in preferences, circumstances, and material aspirations (Lelkes, 2008). Do these age-related changes influence how happiness is affected form a change in income? And if so, how?

This study aims to examine the relationship between income, happiness, and age among Swedish adults. More specifically, it aims to increase the understanding of how income affects

happiness across three different age groups: young (18-30 years), middle (31-64 years), and old (65 or more).

The questions this research study intends to answer is:

- How does income affect happiness given a certain age group?
- Does the effect of income on happiness differ across age groups?

Previous studies on the relationship between income, happiness, and age have been conducted in the USA as far as I am aware. My contribution to the literature will thus be to identify and investigate the relationship between income, happiness, and age in Sweden.

For this analysis, data from surveys conducted by European Social Survey is used. The data material comprises 7360 observations from randomly selected citizens from question rounds conducted in 2010, 2012, 2014, 2016, and 2018. The empirical analysis is performed using a Generalized Ordered Logit regression with *happiness* as the dependent variable. The result showed that a higher income increased the probability of being very happy and decreased the probability of being unhappy in all three age groups. The result further showed that, for some income levels, there exists a difference in how income affects an individual's sense of happiness between those in the middle and old age group whereas no difference was found between those in the young and old age group. Thus, this result suggests that money can buy happiness regardless of age.

This thesis starts with chapter two where the economic theory about happiness is being presented together with previous literature on happiness research. Chapter three includes a presentation of the data, descriptive statics and a description of variables included in the analysis. The choice of methodology is thoroughly presented in chapter four. The results are presented in chapter five, which is followed by a concluding discussion chapter. Throughout this article, terms such as happiness, well-being, subjective well-being, and life satisfaction are used interchangeably but all of them refer to an individual's well-being.

2. Theory

2.1 Objective and subjective utility theory

Economists have, for the past two decades, started to contribute to the research regarding happiness. An area which, until late 1990, solely was a subject for psychology. The new interest in happiness research takes its standpoint in utility theory (Frey & Stutzer, 2002b). Utility theory is an approach for economists to analyze individual behavior. The standard economic approach to utility theory employs an objective position with a general utility function:

$$U = u(q_1, q_2, \dots, q_n) \tag{2.1}$$

where an individual is assumed to maximize their utility, *U,* given a budget constraint. The utility is assumed to solely depend on the quantity of tangible goods, leisure, and services, q_n, from decisions that an individual makes. This is based on the premise that an individual's utility or well-being is determined by the extent to which the individual's preferences are satisfied (Dolan et al., 2008). Given that individuals are rational, fully informed, and seek to maximize utility, the choices that one makes are then those that maximize utility. This type of utility is typically referred to as *decision utility,* a term coined by Kahneman (1994). However, numerous scholars have challenged this standard economic utility theory as they argue that preferences do not offer complete insight into how well-being is associated with the consequences of choices (Dolan et al., 2008).

Frey & Stutzer (2002) argues that the possibility of understanding human well-being is restricted by the objective standard economic theory approach. The utility should be seen from the subjective perspective as well as that give a complementary way of study an individual's behavior. Subjective utility, also known as *experienced utility*, is the hedonic experience from an outcome that is often measured by subjective well-being (Frey & Stutzer, 2002a). Common distinguishes between decision utility and experienced utility, is that decision utility is inferred from an individual's observed choices while the experienced utility is more in line with the core concepts of happiness (Kahneman, 1994). The general form of subjective well-being, presented by Dolan et al., (2008), looks as follow:

$$SWB_{report} = r(h) \tag{2.2}$$

where SWB_{report} represents the self-reported subjective well-being, which can be captured from a response to a question where individuals are asked to rate how satisfied or happy, they are with their life. r represents some reporting function of the true subjective well-being, h, which is determined by a range of sociodemographic factors.

Diener et al., (2003) define subjective well-being as an individual's evaluation of their life. These evaluations contain individual's moods and emotions as well as the evaluations of different life events and judgments they have about their fulfillments and life satisfaction. Unlike the objective measure of utility, SWB captures the overall assessment of an individual's life (Dolan et al., 2008).

2.2 Measuring subjective well-being

Subjective well-being is often captured by an answer, on an ordinal scale, to specific happiness or life satisfaction questions. For example, *"All things considered, how happy are you with your life?"* or *"Taken all things together, how happy would you say that you are?"*. Frey & Stutzer (2002b) states that persons take regard to circumstances, comparisons to other, past experiences, and future expectations when evaluating their level of subjective well-being.

However, there still exists some criticisms and concerns against the use of subjective well-being and whether it can work as a good proxy for utility. Firstly, the criticism concerns whether asking a simple happiness question provides a good measure of an individual's well-being. However, measures of subjective well-being such as the perceived level of happiness, are shown to be correlated with non-self-reported measures such as expression of positive emotions, level of the stress hormone cortisol, and left/right brain activity (Boarini et al., 2012).

Secondly, the criticism regards whether it is possible, based on a response to a simple happiness question, to say that one individual is happier than another. The risk is that individuals might have different perceptions of the response scale alternatives. What an individual refers to be "4" on the scale might be referred to as a "6" for another. In other words, is it possible to compare happiness scores between individuals? It has been found that individuals have a common human language of happiness since individuals tend to, roughly, translate their feelings into the same numerical values on an ordinary scale. This result suggests that subjective

well-being can be compared between individuals. Boarini et al., (2012) also argue that, for large samples, the effect from this will average out and thereby have a limited impact to bias the population averages.

A potential risk of measuring well-being subjectively is that an individual's current mood can be influenced by factors such as today's weather or the local football team's recent result when answering the question (Clark et al., 2006). However, Boarini et al., (2012) argue that the fact that interviews often take place over an extended period of time ensures that questions are not influenced by these types of factors.

2.3 Income, age, and subjective well-being

What affects an individual's well-being varies widely from individual to individual. However, factors that are suggested to be the key drivers for subjective well-being are age, gender, health, social interactions, education, income, marital status, and employment status (Fleche et al., 2011; Frey & Stutzer, 2002a; Hsieh, 2011). Although all these factors are important and will be controlled for, this study will focus on income and age.

A general and robust result regarding the relationship between absolute income and well-being is that richer people do, on average, report higher levels of well-being (Frey & Stutzer, 2002b). For instance, in the US found Yang & Morgan (2008) that being in the lowest income quartile decreased the odds of being happy by 26 percent while being in the highest income quartile increased the odds of being happy by 13 percent, compared to those in the middle quartile. However, the relationship between income and happiness is found to be nonlinear. There exists a diminishing marginal utility as income increases. In a study over several OECD countries found Helliwell (2002) that the same proportional increase in income was associated with higher levels of happiness for those with a lower income level compared to those with a higher level of income.

The absolute income affects an individual's well-being in the way that it enables people to reach goals, achieve dreams and buy more goods and services. However, that is not the only way in which income affects well-being. First, studies have shown that well-being is strongly affected by income compared to others, for example, family, friends or work colleagues. Stutzer (2004) states that a higher level of happiness is reported for those with a higher income than others in

the society and Caporale et al., (2009) found in their study, which included 19 European countries, that absolute income had a positive effect on well-being, but the effect became smaller when relative income was controlled for. Secondly, people adapt to an increase in income. Easterlin (2001) states that people with higher income tend to report higher levels of well-being than those with lower income, but only at a point in time. He argues that material aspirations grow in proportion to income and thereby suggests that, even though higher income yields a higher ability to fulfill one's aspirations, the effect is transitory as people want more as they progress through life. Thereby is well-being not only affected by the absolute income per se but moreover from relative income and adaptation.

Studies consistently show an existing relationship between age and well-being. Although, the results regarding how well-being is affected by age are rather mixed. Some studies have found a negative relationship between age and happiness (e.g Ferrer-i-Carbonell & Gowdy, 2007) whereas others have found a positive relationship (Shmotkin, 1990). These two findings have been challenged by other studies which have found that the relationship between subjective well-being and age may not be linear but rather U-shaped (Gerdtham & Johannesson, 2001; Helliwell, 2008; Steptoe et al., 2015). People seem thereby to be happier at younger and older ages. Fleche et al., (2011) found a minimum around 40-45 years of age on an aggregated level in OECD whereas Gerdtham & Johannesson (2001) found happiness to be lowest for those in the 45-64 years of age in Sweden.

Lelkes (2008) argues that the U-shaped relationship between age and happiness can be explained by heterogeneity in preferences and changes in circumstances across age groups. For instance, being unemployed was showed to hit the well-being harder for those in the young and middle age group whereas the well-being of the elderly was showed to be less affected by this. He also found that being widowed has a larger effect on well-being for those in the middle age group compared to those in the young and old age group. A potential explanation could be that having a partner that dies hurts less at an older age.

As a conclusion from what is mentioned above, both income and age influence one's sense of happiness. Income has a positive effect on happiness, but only at a point in time as the effect is transitory since material aspirations grow with income. Age is shown to affect happiness differently depending on where in the life cycle one might be. But does income affect happiness differently across age groups? Easterlin (2001) argues that people in the same age range have

fairly similar material aspirations. Thereby, those with a higher income have more economic opportunities to fulfill their aspirations than those with a lower income. In the US, Hsieh (2011) examine if the relationship between income and happiness differed between three different age groups: young, middle and old. The results showed that income had a positive effect on happiness but did not vary between the three different age groups when socio-demographic variables were controlled for.

2.4 Other determinations of subjective well-being

Women tend to report higher levels of happiness than men. This may be explained by the fact that women expect less from life compare to men or that women have a higher genetic capacity to feel happy and have lower aspiration levels. However, women do also have a higher tendency to report being unhappy than men (Frey & Stutzer, 2002a). Frey and Stutzer (2002a) mention that one explanation for that is the fact that women, on average, experience more extreme feelings, both positive and negative, than men. Graham & Chattopadhyay (2013) studies differences in well-being between men and women when controlling for socioeconomic and demographic factors. They found that women around the world, are in general happier than men and that the gap is greater among those who are educated, those in the age of 25 and over, and for those living in urban areas. Married women are also shown to be happier than married men.

Being married implies a mutually rewarding exchange with the spouse and provides benefits in form of love, gratitude, and a higher household income. Thereby, marriage is suggested to have a positive effect on well-being (Frey, 2008). Results from a study made in the US by Yang & Morgan (2008) showed that those who were widowed or divorced were 70 and 60 percent, respectively, less likely to be happy compare to those who were married.

Health is an important predictor for well-being and is shown to be positively correlated with well-being (Fleche et al., 2011). Yang & Morgan (2008) found that compared to those with good health, those who had excellent health were twice as likely to be happier and those with poor health were 70 percent less likely to be happy.

Having attained an education level higher than high school was found to be associated with higher levels of well-begin in the OECD (Helliwell, 2008). While studies have found a positive

relationship between education and well-being, other studies have found a non-existing relationship after controlling for other factors such as income and health. This suggests that, as higher education leads to higher income and better health, it may exist a possibility that educations affect well-being indirectly via income and health (Dolan et al., 2008).

Being unemployed has a negative and long-lasting effect on happiness (Dolan et al., 2008). Lelkes, (2006) found in his study, on 22 countries in Europe, that unemployed people were 15 percent less likely to score high levels of happiness. Frey & Stutzer, (2002b) also mentions that studies have found that being unemployed hits the well-being harder for men than for women and for those in the middle of their working life.

Social interactions have been shown to have a positive effect on well-being (Fleche et al., 2011). Social contact can make people feel supported when they need it, and it gives a sense of being of importance to another person. People who state that they have satisfactory relationships are more satisfied with their lives, are happy more often, and less sad compared to those that are not satisfied with their relationship (Siedlecki et al., 2014).

2.5 Reverse causality

There exists potential issues with reverse causalities in happiness research. Whether one individual is happy or not plays an important role in how they live their life. Unhappy people are less productive, have a reduced initiative to apply for jobs or have poorer health and thereby, are more likely to become unemployed (Dolan et al., 2008). However, Lucas et al., (2004) found in their study made in Germany that people had more than half as low levels of well-being after becoming unemployed compared to the period before they became unemployed.

Problems with reverse causality might exist in the case of income and happiness as well. It has been shown that a higher income makes people happier, but happy people might like to and have the phycological ability to work harder, and thereby, earn more money. However, Gardner & Oswald (2001) studies the direction of causality by looking at the effect on well-being from windfalls. They found that British people who won a lottery or received an inheritance reported higher levels of well-being the following year. This result suggests that the causal relationship goes from income to happiness. Happy people also tend to live longer than unhappy people and this may contribute to the positive relationship between age and well-being. Researches also

suggest that well-being can be seen as a protective factor for health since happiness has been shown to work as a predictor for morbidity and future mortality (Steptoe et al., 2015). These findings may suggest that the causality goes from age and health to happiness.

Even though some studies have provided empirical evidence suggesting the causality running from some of the covariates to well-being, will no conclusions regarding the causal relationship be drawn in this study.

2.6 Theoretical model specification

The theoretical model in this study is expressed in the same way as the general form of subjective well-being presented by (Dolan et al., 2008). Subjective well-being or happiness is assumed to be affected by factors presented earlier in this chapter.

$$SWB_{report} = r(I, A, G, M, H, E, U, S)$$

where subjective well-being is a function of income, I, age, A, gender, G, marital status, M, health, H, education, unemployment, U, and finally social interactions, S.

3. Data

3.1 Data

The data material in this study derives from surveys conducted by European Social Survey (ESS, 2018). The data set consists of 8225 observations from randomly selected Swedish citizens from 2010, 2012, 2014, 2016, and 2018. European Social Survey (ESS) is a cross-national survey about attitudes and behavior conducted in 34 countries every two years since 2001. When conducting samples, ESS must follow key principles such as 70% response rate, a minimum achieved sample size of 1500 individuals, strictly random probability method when individuals are being selected and samples must be representative for individuals over 15 years of age regardless of nationality, language or citizenship (ESS, n.d.).

Non-responses or responses which correspond to *No answer, Refusal,* or *Don't know* have been treated as missing values and have thereby, been omitted from this study. The final number of observations is 7360.

3.2 Variables

In the section that follows, a description of each of the different variables included in the analysis can be found. The response options for some variables had been re-categorized to simplify the analysis and reduce dimensionality.

Happiness

An individual's perceived happiness is used as the dependent variable in this study. The respondent is asked to respond to the question *"Taking all things together, how happy would you say that you are?"* on a 10-point scale where 0 = extremely unhappy and 10 = extremely happy. According to Frey & Stutzer (2002a) happiness works as a good measure of an individual's well-being. Thus, this variable will work as an indicator for an individual's subjective well-being and thereby as a proxy for an individual's subjective utility. The variable has been divided into three categories: *unhappy, happy,* and *very happy* to simplify the interpretation. Category one, *happy,* refers to individuals in the 25th percentiles, category two to those in the 50th percentiles. Finally, category three refers to those who represent the 75th

percentile. The 25th percentile corresponds to response alternatives 0-7, the 50th percentile corresponds to response alternative 8, and the 75th percentile to response alternatives 9-10.

Gender

A dummy variable that works as an indicator for the gender of the respondent. 1 refers to a female and 0 refers to a male.

Age and Age^2

The variable captures an individual's age and is calculated from the respondent's stated date of birth. The variable did originally range from 15-114 years of age. However, respondents between 15-17 have been excluded in this study as they are assumed to neither work, have a steady income, or have completed their upper secondary education. As this study puts focus on whether the effect of income on happiness varies with age, the respondents in the sample have been divided into three different age groups: *young, middle,* and *old.* Where *young* represent individuals between 18-30 years of age, *middle* refers to individuals between 31-64 years of age, and *old* represents individuals who are 65 years or older. The first cut-point for the different age groups is based on the fact that the average age for having your first child in Sweden is around 30 years (SCB, 2018). Thereby, those under 30 are assumed to have a relatively young lifestyle. The *middle* age group includes individuals between 31-64 years of age as they are assumed to have started to build a family as well as set into career plans. The last cut-point is set to 65 or older based on the fact that the average age to retire in Sweden in 2018 was around 65 years of age (Pensionsmyndigheten, 2019). To consider that the relationship between age and happiness is nonlinear, a squared age term will be included in the analysis.

Health

A variable that captures an individual's perceived health. The variable is based on the question *"How is your health in general? Would you say it is…"* with the possible answers (1) *Very good, (2) Good, (3) Fair, (4) Bad, (5) Very bad.* Thus, this variable is a subjective measure of an individual's state of health. The variable has been re-categorized into three categories to reduce dimensionality. Category one corresponds to those with Very *good* and *Good* health, category two to those with *Fair* health, and finally, category 3 for those with *Bad* and *Very bad* health.

Marital status

A variable that captures the respondent's marital status. The variable has been divided into four categories. *Married* corresponds to response alternatives 1 and 2, *Divorced* corresponds to response alternatives 3 and 4. Response alternatives 5 refers to those that are *Widowed* and finally, response alternative 6 refers to *Neither* which includes those that are neither married, divorced, or widowed. Thereby, the category *Neither* captures those who have a partner but are not married as well as those who are single which can be a potential measurement error. See appendix table A1 for a complete presentation of the different response alternatives.

Education

Based on the question*" What is the highest level of education you have successfully completed?"* where the respondent could choose among 20 different alternatives. The variable has been re-categorized into three categories. Category one refers to the educational level *Elementary school or lower*, which in this case corresponds to response option 1-3. Category two, *Highschool,* corresponds to response options 4-10 and 12. Finally, *University,* corresponds to response options 11 together with 13-20. For a complete presentation of the different response alternatives the respondents could choose among, see appendix table A2.

Income

The household's total monthly net income. Hence, the income "enjoyed" by the respondent depends on the income of his own as well as from other members of the household. Respondents were asked to choose among ten different income groups where each group represented one decentil. Consequently, income is captured as intervals and not exact income, which to some extent can be seen as a measurement error. Relative income could not be included in this study due to lack of collectible data. Thus, it will not be possible in this study to distinguish between the effect of absolute income and relative income. The variable has been re-coded into five different income groups. Income group one corresponds to individuals with a total monthly income up to 15 999SEK. Group two contains individuals with a monthly income between 16 000 - 23 999SEK, group three of individuals with a monthly income between 24 000 - 30 999SEK. Individuals who stated their monthly income to be between 31 000 – 42 999SEK were categorized as income group four and finally, income group five corresponds to individuals having a monthly income of 43 000SEK or more. For a more detailed explanation of the different income levels the respondents could choose among, see appendix table A3.

Unemployment

A dummy variable that captures whether the respondents have experienced any period of unemployment lasting three months or longer during the past five years.

Social interactions

Variable aimed to capture an individual's social interactions with others. Based on the question *"How often do you meet socially with friends, relatives or work colleagues?"*. The original response options have been re-categorized. Category one, *one time or less per month,* refers to response options 1-3, whereas category two, *several times a month,* refers to options 4 and 5. Finally, category five captures individuals who meet their friends, families, or work colleagues *several times a week,* which correspond to response option 6 and 7.

3.3 Descriptive statics

In table 1 and 2 below, the descriptive statistics and sample characteristics over the different variables included in the analysis is presented.

Table 1 – Descriptive statistics

Variable	Mean	Std. Dev	Min	Max
Happy	2.02	0.81	1	3
Age^2	2949.294	1897.788	324	12 996
Age	51.15	18.22	18	114
Health	1.95	0.84	1	3
Gender	0.49	0.49	0	1
Education	2.14	0.69	1	3
Income	3.33	1.40	1	5
Unemployment	0.09	0.29	0	1
Social interactions	2.48	0.64	1	3
Married	2.24	1.35	1	4
N 7360				

Table 2 – Sample characteristics

Variable	Response option	(%)	N
Happy	Unhappy	31.91	2348
	Happy	33.44	2461
	Very happy	34.66	2551

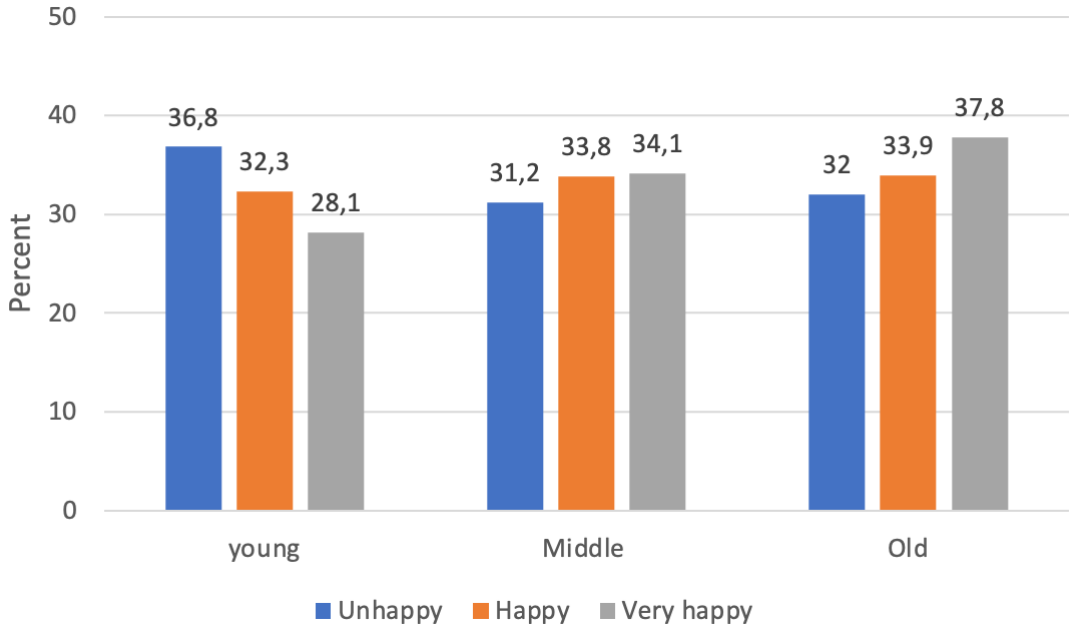
Table 2 continuing – Sample characteristics

Variable	Response option	(%)	N
Age	Young	16.71	1230
	Middle	55.33	4072
	Old	27.96	2058
Health	Good	77.38	5695
	Fair	18.34	1350
	Bad	4.28	315
Gender	Women	49.38	3726
	Man	50.62	3634
Education	Elementary school	18.07	1330
	Highschool	49.43	3638
	University	32.50	2392
Income	Income group 1	14.48	1066
	Income group 2	16.18	1191
	Income group 3	18.57	1367
	Income group 4	22.38	1647
	Income group 5	28.38	289
Unemployment	Yes	9.92	6630
	No	90.08	730
Social interactions	Low	8.53	628
	Middle	34.44	2535
	High	57.02	4197
Married	Marriage	49.17	3619
	Divorced	11.41	840
	Widowed	5.34	393
	Never married	34.08	2508
N 7360			

The proportion of respondents in each category of happiness is evenly distributed. 31.91 percent are *unhappy,* 33.44 percent are being *happy,* and 34.66 percent are *very happy.* Respondents in the sample are equally distributed over gender where 49.38 percent are females and 50.62 percent are males. Overall, respondents in the sample have a good health status: 77.38 stated their health to be good and only 4.28 said that their health was bad. 28.38 stated their total household income to be in the highest income group, which is 13.9 percentages point more than those in the lowest income group. Most respondents, 57.02 percent, stated that they socialize

with friends, family, or colleagues several times a week or more. The average age in the sample is 51.15 years. A vast majority, 90.08 percent, have not been unemployed for a period of three months in the last five years. 32.50 percent have attained the highest educational level and 49.17 percent of the respondents are married.

Figure 1. Distribution of happiness among the different age groups



In figure 1 above, the distribution of happiness among the respondents in each age group are presented. The share of respondents among the different levels of happiness in each age group is relatively equally distributed. One can see that there exists a potential positive pattern between age group and being *very happy*. Those who were in the old age group, did 37.8 percent stated that they were *very happy* which is 3.7 and 9.7 percentage points more than those in the middle and young age group, respectively. The share of respondents who stated that they were *unhappy* was highest among those who are in the young age group, 36.8 percent, and lowest for those who are in the middle age group, 31.2 percent. 32.3 percent at the young age group stated that they feel *happy* while that share amounted to 33.8 and 33.9 percent for the middle and old age group respectively.

Figure 2. Distribution of happiness among the different income groups

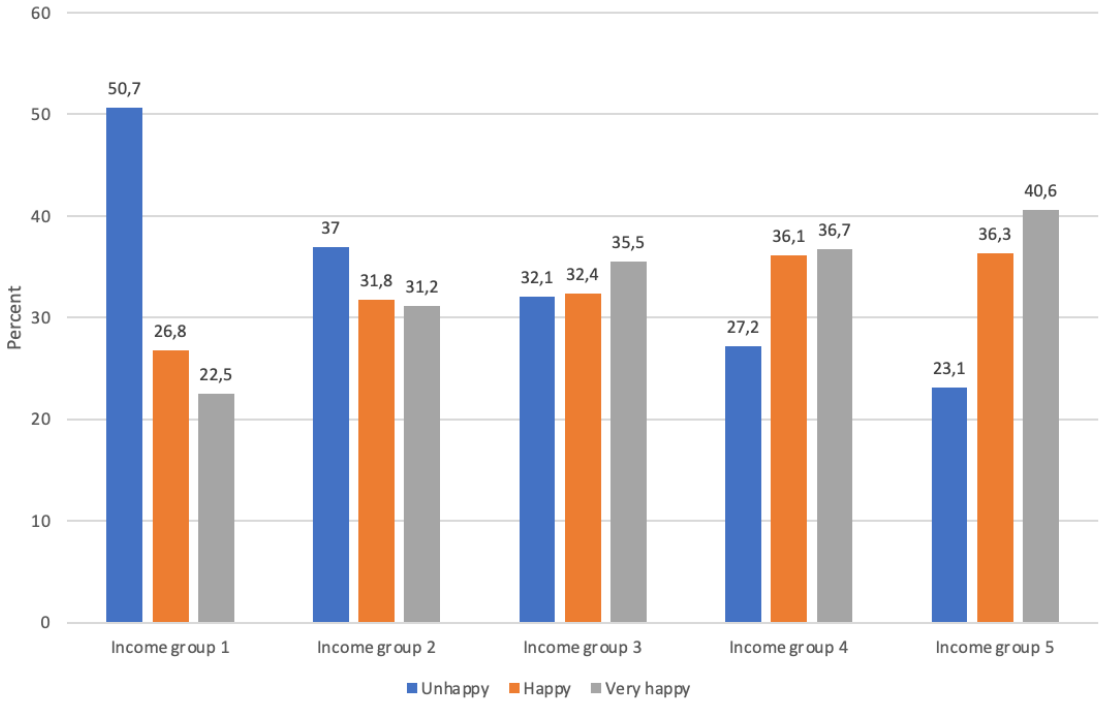


Figure 2 above, shows the distribution of each of the different levels of happiness in each of the different income groups. From a descriptive point of view, income seems to have a positive effect on happiness. The highest share of individuals who stated that they were *very happy* belongs to income group five and the lowest share in income group one. In income group one did a majority of the respondents, 50.7 percent, stated that they were unhappy while the proportion of unhappy respondents were 23.1 percent in income group 5.

4. Method and model specification

4.1 Ordered logit model and Generalized Ordered logit model

The dependent variable, *happiness,* is constructed in a way that fits the characteristics of a discrete ordered choice variable. A discrete ordered choice variable is a variable in which values are categorical and ordered on a scale (Stock & Watson, 2015). The dependent variable, *happiness*, used in this study ranges from *unhappy* to *extremely happy* were being *extremely happy* is clearly better than being *unhappy.* Which thereby makes a discrete choice model an appropriate procedure to use (Hilbe, 2009). Many different models have been designed to deal with dependent variables of this nature and the most popular method is the ordered logit model (Williams, 2016).

The ordered logit model can be presented as a latent variable model (Long & Freese, 2003):

$$Y_i^* = \boldsymbol{x_i'\beta} + \varepsilon_i \;\; i = 1, \dots, n \tag{4.1}$$

Where Y_i^* is a continuous, unobserved latent variable. $\boldsymbol{X_i}$ is a vector of explanatory variables and $\boldsymbol{\beta}$ is a vector of regression parameters and ε_i is the error term which has a logistic distribution.

Let Y_i be the observed ordinal variable representing individual *i*'s level of happiness and Y_i^* be the true but unobservable level of happiness for individual *i.* The continuous variable Y_i^* have different threshold, α_j, and the value of the observed variable, Y_i, is determined from the values of the latent variable together with the different cut-points in the following way (Long & Freese, 2003):

$$Y_i = j \text{ if } \;\; \alpha_{j-1} < Y_i^* \leq \alpha_j \tag{4.2}$$

Where j is the observed category for the level of an individual's happiness. α_j refers to the j different cut-points and is assumed to meet the restrictions $0 < \alpha_1 < \alpha_2 < \cdots < \alpha_{j-1}$. The value of the observed variable Y_i depends upon whether the latent variable Y_i^* crosses a threshold or not.

In an ordered logit model, the dependence of Y on X can be represented from the following equation (Long & Freese, 2003):

$$\Pr(Y_i \leq j | x_i) = F(\alpha_j - \boldsymbol{x}_i'\boldsymbol{\beta}),\ j = 1, \ldots, 3 \quad (4.3)$$

Where $\Pr(Y_i \leq j | x)$ is the probability of an individual having a certain level of happiness and F refers to the standard logistic cumulative distribution function.

The Ordered logit model relies on the assumptions referred to as the proportional odds assumption (Long & Freese, 2003). This assumption states that the coefficient is equal for each level of response, meaning that the effect from a change in one of the independent variables is equal for each of the response categories. Even though the ordered logit regression is a popular method to use, many researchers suggest that the assumption is frequently violated (Williams, 2016). A brant test has been performed to test for the proportional odds assumption. The test compares the coefficient estimated from the ordered logit model. A significant result indicates a difference between the coefficients. The results showed that the assumption is being violated, see appendix table A5.

A model that relaxes on the proportional odds assumption is the generalized ordered logit model and will thus be the model used in this study. The generalized ordered logit model looks as follow (Williams, 2016):

$$\Pr(Y_i \leq j | x_i) = F(\alpha_j - \boldsymbol{x}_i'\boldsymbol{\beta_j}),\ j = 1, \ldots, 3 \quad (4.4)$$

Where β is allowed to vary with the *j* different categories. It fits *j-1* different binary logistic regressions and thereby estimates *j-1* coefficients, each for the different categories except for the reference category.

4.1 Marginal effects

The coefficients estimated from the generalized ordered logit only show the direction of effect on the probability for an individual being in a specific category from a change in one of the independent variables, holding other variables constant. A positive coefficient reflects that an increase in x makes it more likely that an individual will be in a higher category than the current

one and a negative coefficient reflects that an increase in x increases the probability that an individual will be in the current category or a lower one (Williams, 2016). Thus, the estimated coefficients cannot be interpreted as a magnitude. To do so, marginal effects and partial effects will be calculated. Marginal effects show how a unit change in one of the independent variables affects the probability that an individual is *unhappy, happy,* or *very happy*. Marginal effects will be calculated for continuous variables and average partial effects for dummy variables and those are calculated as follow (Greene & Hensher, 2010):

$$\frac{\partial\, prob(h_i^S=k|\, x_i)}{\partial x_i} = \left[F\left(\alpha_{j-1} - \boldsymbol{x}_i'\boldsymbol{\beta}\right) - F\left(\alpha_j - \boldsymbol{x}_i'\boldsymbol{\beta}\right)\right]\boldsymbol{\beta} \tag{4.5}$$

$$APE_j = \frac{1}{n}\sum_{i=1}^{n}\left[F\left(\alpha_{j-1} - \boldsymbol{x}_i'\boldsymbol{\beta}\right) - F\left(\alpha_j - \boldsymbol{x}_i'\boldsymbol{\beta}\right)\right]\boldsymbol{\beta} \tag{4.6}$$

Marginal effects are calculated for each individual and then an average is taken for these marginal effects. For dummy variables, the partial effects are calculated on discrete changes when the variable goes from 0 to 1. Thus, average marginal and partial effects show the effect on the probability of having a certain sense of happiness from a unit change in one of the independent variables, ceteris paribus.

4.2 Empirical model

The empirical model that will be estimated is presented below followed by a description of the different variables included presented in table 3. To examine how income affects happiness differently when age changes one can either use interaction terms or run regressions on the different age groups separately. To decide which method that fits the data best, Akaike information criterion (AIC) is used (Stata, n.d.). The most suitable model, according to AIC, is the one with the smaller AIC value. The result from the test is presented in table A6 in appendix and shows that running regressions on the different age groups separately is the most suitable method to use.

The empirical model will thus be estimated on the different age groups separately and looks as follow:

Model

$$Happiness_i = \beta_1 \text{ålder}_i + \beta_2 \text{ålder}_i^2 + \beta_3 income2_i + \beta_4 income3_i + \beta_5 income4 + \beta_6 income5_i + \beta_7 health2_i + \beta_8 health3_i + \beta_9 female_i + \beta_{10} unemp_i + \beta_{11} highschool_i + \beta_{12} university_i + + \beta_{13} middlesocial_i + \beta_{14} highsocial_i + \beta_{15} divorced + + \beta_{16} widowed_i + \beta_{17} neither_i + \varepsilon_i$$

Tabell 3 – Definition of variables included in the model.

Variable	Description
Age	Ranges from 18-114 years
Age2	Age*age
Income2	=1 if the individual belongs to a household where the monthly net income is between 16 000-23 999SEK, 0= Otherwise.
Income3	=1 if the individual belongs to a household where the monthly net income is between 24 000-30 999SEK, 0= Otherwise.
Income4	=1 if the individual belongs to a household where the monthly net income is between 31 000-42 999SEK, 0= Otherwise.
Income5	=1 if the individual belongs to a household where the monthly net income is 43 000SEK or more, 0= Otherwise.
Fair health	=1 if the respondent is having a fair health, 0= Otherwise.
Bad health	=1 if the respondent is having a bad health, 0= Otherwise.
Female	=1 if the respondent is a female, 0= Otherwise.
Unemp	=1 if the respondent has been unemployed for a period of three months or more the past five years, 0= Otherwise.
High school	=1 if the respondent has a high school degree, 0= Otherwise.
University	=1 if the respondent has a university degree, 0= Otherwise.
Middle social	=1 if the respondent socializes with friends, family, or colleagues several times a month, 0= Otherwise
High social	=1 if the respondent socializes with friends, family, or colleagues several times a week, = Otherwise.
Divorced	=1 if the respondent is divorced, 0= Otherwise.
Widowed	=1 if the respondent is widowed, 0=Otherwise.
Neither	=1 if the respondent is neither married, divorced, or widowed, 0= Otherwise.

5. Result

As mentioned in the previous section, the results will be presented in terms of average marginal and partial effects. These are interpreted as the average change in the probability of being *unhappy, happy,* or *very happy* given a change in one of the variables, holding the other variables constant. The estimated coefficient from the generalized ordered logit model is found in table A7 in appendix. Average partial effects for each of the different income groups for the young, middle, and old age groups are presented in table 4. In table 5, the marginal and average partial effects for the other variables included in the model are presented.

5.1 Age group, income, and happiness

Table 4 – Average partial effects for income

		Unhappy		Happy		Very happy	
		dy/dx	SE	dy/dx	SE	dy/dx	SE
Young							
	Income 2	-.1211***	.0418	.0387	.0412	.0823**	.0392
	Income 3	-.1396***	.0421	.0176	.0407	.1219**	.0400
	Income 4	-.1318***	.0436	.0237	.0419	.1088***	.0404
	Income 5	-.2092***	.0413	.0806	.0419	.1285***	.0411
Middle							
	Income 2	-.0896***	.0383	.0418	.0356	.0477	.0367
	Income 3	-.1197***	.0363	.0379	.0338	.0817***	.0349
	Income 4	-.2086***	.0356	.0102***	.0336	.0106***	.0340
	Income 5	-.2177***	.0362	.0793**	.0342	.0138***	.0344
Old							
	Income 2	-.0935***	.0299	.0529	.0331	.0405	.0319
	Income 3	-.1227***	.0324	.0540	.0355	.0687**	.0344
	Income 4	-.1174***	.0370	.0390	.0405	.0784**	.0394
	Income 5	-.1594***	.0415	.0377	.0474	.1216***	.0462

$^{*}p$ <0,10 $^{**}p$ <0,05 $^{***}p$ <0,01

N Young: 1230, Middle: 4072, Old: 2058

Note: Standard errors presented in parentheses are clustered at the individual level to consider that observations within the same cluster are not independent.

Income group one works as a reference group, hence the partial effect for income group 2-5 is the average change in the probability of being *unhappy, happy* or *very happy* compared to being in income group one. All dummy variables for the different income groups are significant on at least 5% significance level for the category unhappy and very happy, except for income group

2 in the model estimated for the middle and old age group. Income is thereby showed to have a statistically significant effect on the probability of being unhappy and very happy. Having a higher income decreased the probability of being unhappy and increased the probability of being very happy. Young individuals in income group 5 have, on average, 20.92 percentage points lower probability to be unhappy and 12.85 percentage points, on average, a higher probability to be very happy compared to those in income group 1. Being in income group 5 and between 31-64 years of age decreased the probability of being unhappy by 21.77 percentage point on average, compared to those in income group 1. For the same age and income group, the average effect on the probability of being very happy was 1.38 percentage points. Old individuals in income group 5 have on average 12.16 percentage points higher probability of being very happy compared to those in income group 1. The effect on the probability of being unhappy for those in the old age group who belongs to income group 5 was, on average, -15.94 percentage point. Income was showed to not have any significant effect on the probability of being happy, except for those between 31-64 years of age who were in income groups 4 and 5.

To be able to see if the probability that an individual has a certain level of happiness differs between the different income group 2,3,4, and 5 additional significance tests have been performed. A significant result indicates that there exists a difference in the probability that an individual has a certain level of happiness. Results from the test are presented in table A8, A9 and A10 in appendix and indicates that there exist differences between several income groups within each age group.

Further regression has been performed to investigate whether there exist any differences regarding how income affects happiness between the different age groups. The result from the test shows that, given that an individual is in income group 5, those who are in the middle age group are less likely to be happy or very happy than those who are in the old age group. Differences exist as well between the different age groups and being in income group 3. Those who are in the middle age group were less likely to be happy or very happy relative to the old age group. No significant difference was found between being young and old. Given those in income group 2, being in the middle age group decreased the likelihood of being happy or very happy compared to those who are in the old age group. However, there exists no difference in the probability of being unhappy between the young and old age group. These results suggest that those who are old, are more likely to be happy or very happy when being in income group 2,3 or 5 compare to those in the same income group but are in the middle years of age. Although,

no difference was found on how income affects happiness differently between the young and old age group. See appendix table A11 for the presentation of the results.

5.2 Other determinants of happiness

Table 5 includes the estimated marginal effects for the rest of the variables included in the model. For making the presentation of the results easy to follow, will the different marginal effects be presented for each of the different age groups separately.

Young

Both dummy variables for health were significant at 1% significance level, which indicates that an individual's state of health affects the probability of being unhappy, happy and very happy. Compared to those with good health, those with fair or bad health were, on average, 30.98 and 48.40 percentage points more likely to be unhappy, respectively. The probability of being very happy decreased, on average, with 20.57 and 32.20 percentage points for those with fair or bad health, respectively, compared to those with good health. Hence, the result provides strong evidence that the perceived health status has an immense influence on a young individual's sense of happiness. Those who socialize with friends, family, or colleagues several times a week were showed to have a decreased probability of being unhappy with 1.27 percentage points on average and an increased probability of being happy with, on average, 15.05 percentage points compared to those who socialize with friends, family, or colleagues once a month or less. Neither unemployment, gender, education, or marital status were shown to have any significant effect on a young individual's sense of happiness.

Middle

Marital status was showed to have a statistically significant effect on the probability of being unhappy and very happy as all dummy variables were statistically significant on at least 5% significance level. Comparison is made against those who are married. The strongest effect on the probability of being unhappy and very happy yields for those that are widowed. They are, on average, 22.41 percentage points more likely to be unhappy and 15.45 percentage points, on average, less likely to be very happy.

Table 5 – Average marginal and partial effects for the other variables included in the model.

Age		Unhappy		Happy		Very happy	
		dy/dx	SE	dy/dx	SE	dy/dx	SE
Young							
	Age	-.0005	.0045	.0387	.0046	-.0033	.0045
	Fair health	.3098***	.0435	-.1040***	.0377	-.2057***	.0326
	Bad health	.4840***	.0770	-.1619***	.0701	-.3220***	.0333
	Female	-.0127	.0264	.0153	.0275	-.0026	.0264
	Unemp	-.0039	.0311	.0285	.0324	-.0245	.0330
	Highschool	.0600	.0452	.0222	.0488	-.0822	.0526
	University	.0509	.0541	.0334	.0578	-.0843	.0615
	Middle social	-.0687	.0790	.1395**	.0687	-.0707	.0793
	High social	-.0127*	.0769	.1505**	.0655	-.0228	.0760
	Divorced	.3007	.1901	-.0857	.1645	-.2149	.1721
	Widowed	.1748	.2773	-.0220	.2654	-.1527	.2364
	Neither	.0423	.0459	.0792	.0437	-.1216	.0460
Middle							
	Age	-.0003	.0007	.0014*	.0000	-.0011	.000
	Fair health	.2088***	.0212	-.0500**	.0205	-.1588***	.0187
	Bad health	.3392***	.0414	-.1532***	.0324	-.1859***	.0343
	Female	-.0431***	.0136	-.0042	.0147	.0473***	.0146
	Unemp	.0628**	.0244	.01766	.0247	-.0805	.0246
	Highschool	.0422*	.0227	.0150	.0264	-.0573**	.0286
	University	.0734***	.0243	.0274	.0276	-.1008***	.0295
	Middle social	-.0300	.0270	.0454	.0277	-.0153	.0283
	High social	-.0841***	.0258	.0516*	.0267	.0324	.0272
	Divorced	.0897***	.0232	-.0128	.0243	-.0768***	.0244
	Widowed	.2241***	.0683	-.0695	.0640	-.1545**	.0620
	Neither	.1410***	.0178	-.0099	.0189	-.1311***	.0173
Old							
	Age	-.0009	.0017	-.0011	.0020	.0021	.0002
	Fair health	.0158***	.0220	.0025	.0237	-.1611***	.0226
	Bad health	.3294***	.0499	-.1239***	.0453	-.2054***	.0457
	Female	.0142	.0191	-.0578***	.0215	.0436**	.0205
	Unemp	.0098	.0946	-.1182	.08315	.0108	.0888
	Highschool	.0445***	.0208	.0221	.0232	-.0667***	.0239
	University	.0355	.0258	.0873***	.0285	-.1228***	.0269
	Middle social	-.1016***	.0338	.0405	.0339	.0610*	.0331
	High social	-.1541***	.0334	.0166	.0338	.1375***	.0331
	Divorced	.0933***	.0294	.0188	.0330	-.1121***	.0330
	Widowed	.1447***	.0322	.0632*	.0333	-.2079***	.0313
	Neither	.1527***	.0392	.1148***	.0421	-.2676***	.0343

$^{*}p$ <0,10 $^{**}p$ <0,05 $^{***}p$ <0,01

N Young: 1230, Middle: 4072, Old: 2058

Note: Standard errors presented in parentheses are clustered at the individual level to consider that observations within the same cluster are not independent.

Being divorced increased the probability of being unhappy by 8.97 percentage points on average and decreased the probability of being very happy by 7.68 percentage points on average. Compared to those who were married, those who were neither widowed nor divorced were shown to be 14.10 percentage points, on average, more likely the be unhappy and, on average, 13.11 percentage points less likely to be very happy. Becoming one year older increased the probability of being happy with 1.4 percentage points on average. However, age was not shown to have any statistically significant effect on the probability of being unhappy or very happy.

As for the young individuals, it is the perceived health status that is the factor that influences strongest the probability of being unhappy or very happy among those in the middle age group. Relative to those with good health, having bad health increased the probability of being unhappy by 33.92 percentage points on average and decreased the probability of being very happy with, on average, 18.59 percentage points. Those with fair health were on average 20.88 percentage points more likely to be unhappy and 15.88 percentage points on average less likely to be very happy, compared to those that had a good health. To socialize with friends, family, or colleagues several times a week were showed to decrease the probability of being unhappy with 8.41 percentage points on average and increase the probability of being happy with 5.16 percentage points on average, relative to those who only socialize once a month. Being female increased the probability of being very happy by 4.73 percentage points on average and decreased the probability of being unhappy by 4.31 percentage points on average, relative to being a male. This indicates thereby that females are more likely to have a higher sense of happiness than men are.

The dummy variable for having attained education from a university or higher was significant at 5% significant level for the category unhappy and very happy. Compared to those with the elementary school as their educational level, individuals with a university degree or higher were, on average, 7.34 percentage points more likely to be unhappy and 10.08 less likely to be very happy, on average.

To have been unemployed for a period of three months or more the during the past five years were showed to increase the probability of being unhappy with 6.28 percentage points on average. However, is it not possible to say anything about how unemployment affects the

probability of being very happy as the dummy variable was not significant.

Old

Health was found to be the factor that affects the probability of being unhappy the most among the old individuals. Similar to the other two age groups, bad health increased the probability of being unhappy and decreased the probability of being very happy compared to those with good health. Relative to those with good health, were those with fair and bad health on average 1.58 and 32.94 percentage points more likely to be unhappy, respectively. The effect on the probability of being very happy was -20.54 for those with bad health and -16,11 for those with fair health, compared to those with good health.

Being female was shown to have a statistically significant effect on the probability of being happy and very happy. Relative to men, were females 5.78 percentage points on average less likely to be happy and 4.36 percentage points on average more likely to be very happy. Having a higher education decreased the probability of being very happy with 6.67 percentage points for those with a high school degree and with 12.28 percentage points for those with a university degree, relative to those with a degree from elementary school.

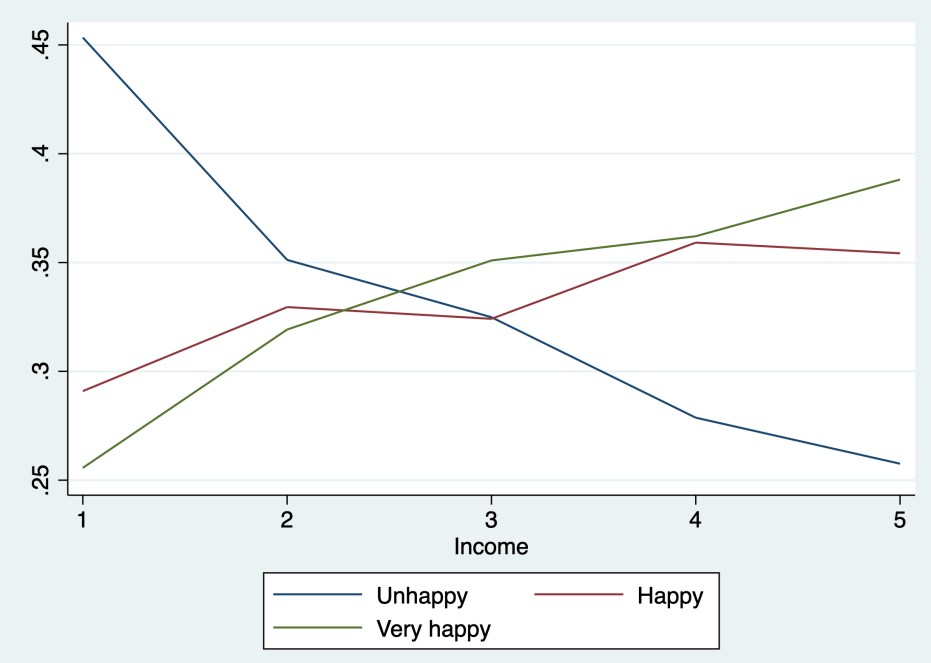
Both dummy variables for an individual's social interactions were significant on at least 10 % significance level for the category unhappy and very happy. The marginal effects for being unhappy were negative and positive for being very happy. This indicates that the probability of having a higher sense of happiness increases as an individual's social interactions increases. Comparisons are made with those that socialize with friends, family, or colleagues once a month or less. Individuals who meet their friends, family, or colleagues several times a week were on average 15.41 percentage points less likely to be unhappy. For these individuals was the effect on the probability of being very happy 13.75 percentage point on average.

Being divorced, widowed or single increased the probability of being unhappy. Compared to being married, being divorced, or widowed increase the likelihood of being unhappy with, on average, 9.33 and 14.47 percentage point respectively. The average effect on the probability of being very happy was -11.21 for those who were divorced and -20.79 for those who were widowed. Being neither divorced nor widowed increased the likelihood of being unhappy with on average 15.27 percentage points and decreased the likelihood of being very happy with on average -26.76, relative to those who were married. Being neither divorced nor widowed was

thereby the factor that influenced the probability of being very happy the most for those who are in the old age group. Neither age nor unemployment were shown to have any statistically significant effect for an old individual's sense of happiness.

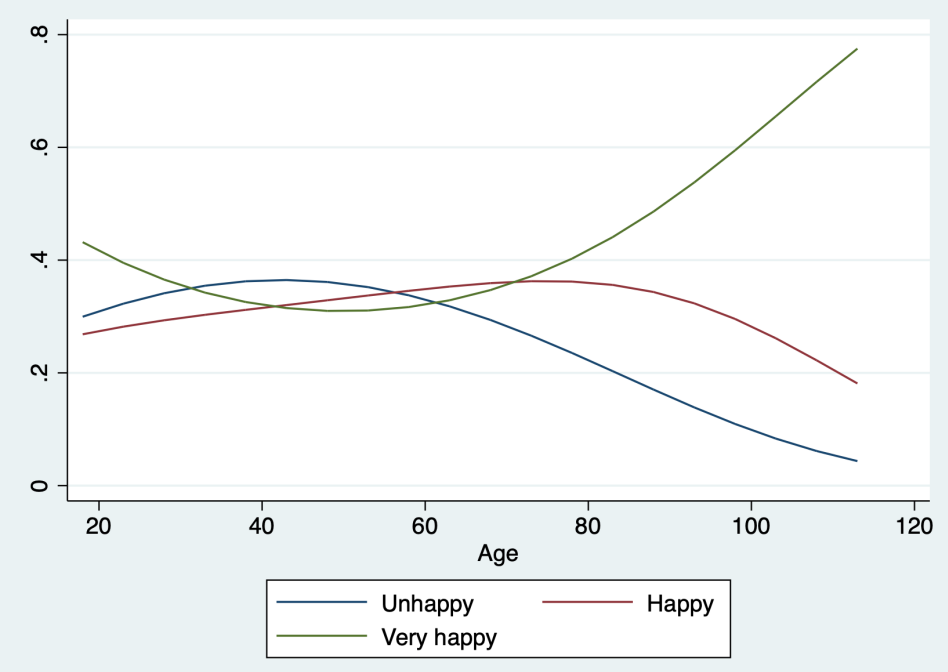
These findings on how education affects an individual's sense of happiness is contrary to what previous studies have found. Helliwell (2008) found a positive relationship between education and happiness whereas this study found a negative relationship. This might be the result from the fact that the share of individuals with a low income decreases as the attained education level becomes higher, and vice versa (see appendix table A12). When income is then controlled for, which is partly determined by the level of education, education no longer increases happiness but actually lowers it.

Graph 1 – The effect of income on happiness for the whole sample



Graph 1 above shows the different probabilities for being *unhappy, happy,* or *very happy* given a certain income group. Probabilities are calculated using the whole sample. One can see that there exists a positive relationship between each of the different income groups and being happy and very happy. The lowest probability of being happy or very happy was found for those who were in income group one and the highest probability for those in income group five.

Graph 2 – The effect of age on happiness for the whole sample



Graph 2 above shows the probability of having a certain sense of happiness given a certain age. The probabilities are calculated using the whole sample. One can see that there exists a distinct U-shaped relationship between age and being very happy with a minimum of around 50 years of age. The probability of being very happy for those in the twenties and eighties is around 40%, while the probability is 30% for those in the fifties. The relationship between age and being unhappy goes in the opposite direction where the highest probability, 35%, for being unhappy yields for those of 40 years of age.

6. Discussion

This study has aimed to investigate how income can affect happiness and also if the relationship varies with age. Theory suggests that characteristics such as education, health, and social interactions, to name a few, can influence an individual's sense of happiness, characteristics which were controlled for in the analysis. The results showed that a higher income increased the likelihood of being very happy and decreased the likelihood of being unhappy. This result corresponds to what Frey & Stutzer (2002a) found in their study regarding the relationship between income and happiness. As mentioned in the theory, relative income also influences an individual's perceived happiness. However, it was not possible to control for relative income in this study due to data limitations. Caporale et al., (2009) found in their study that the effect of absolute income on happiness was positive but the effect became smaller when relative income was controlled for. Thereby, it is possible that the estimated effect of income on happiness would become smaller if relative income was controlled for in this study.

Previous studies have also found that the effect of income on happiness is transitory as material aspirations grow in proportion with income. As the income variable in this study only captures which income group an individual belongs to and no information is given regarding when an individual received a higher income, it is not possible to draw any conclusions for how long the positive effect from an increase in income remains.

In contrast to findings from Hsieh (2011), this study presents evidence implying that there exists a significant difference in how income affects happiness between the old and middle age groups for those in income groups 5, 3, and 2. Those who were in the middle age group were less likely to be happy or very happy relative to those in the old age group. To be able to conclude why the relationship looks the way it does, a more in-depth analysis must be made. A potential explanation could be that older individuals have fewer material aspirations and thereby less money is needed to fulfill those. Another possible explanation for such differences could be that those in the middle age group are more likely to be living in a household where the children are still living at home. Money is then spent on children's activities and interests and consequently, less money is left for fulfilling one's material aspirations.

A U-shape relationship was found between age and being very happy. This relationship can be interpreted as such that individuals living in Sweden are more likely to be happy when they are younger and older. The results correspond to what Gerdtham & Johannesson (2001), Helliwell (2008), and Steptoe et al., (2015) found in their studies. The probability of being very happy was found to be lowest around the age of 50 in this study which is in line with what Gerdtham & Johannesson (2001) found.

Lelkes (2008) argues that the U-shaped relationship can be explained by heterogeneity in preferences and changes in circumstances across age groups. The model was estimated separately for the three different age groups which provides a possibility to see how the different factors affect happiness differently in a certain age group. For instance, unemployment was shown to have a positive effect on the probability of being unhappy for those who were in the middle age group but did not have any significant effect on the probability of being unhappy for the other two age groups. Happiness was affected by being divorced or widowed for those who were in the middle and old age group but not for those at the younger ages. Being female was a significant predictor of the probability of being very happy for those in the middle and old age group but no significant relationship between being female and happiness was found for those who were in the young age group. The U-shaped relationship between age and happiness found in this study can thus potentially be explained by heterogeneity in preferences and changes in circumstances across age groups. This suggests that policy aiming to improve well-being among individuals should not be designed the same way across age groups.

The result from this study presents empirical support for women being more likely to be very happy than men for those who were in the middle and old age group. The result corresponds to what Frey & Stutzer (2002a) and Graham & Chattopadhyay (2013) found. However, it is not possible to determine why women are happier to a greater extent in this study. One way to better understand this is to include an interaction term between gender and the other determinants of happiness. This enables relevant conclusions to be drawn regarding how the different determinants of happiness vary with gender.

The result regarding how social interactions affect happiness is analogous to what previous studies have found (Fleche et al., 2011; Siedlecki et al., 2014). To socialize with friends, family, or colleagues several times a week decreases the probability of being unhappy in all three age groups. Policy implications that put focus on counteracting social exclusion by providing

opportunities for individuals to engage and participate in activities that involve socializing with other's are of importance for increasing well-being in society.

The perceived health status was shown to be one of the factors which had the strongest influence on the probability of being unhappy and very happy. This can be explained by the fact that the variable health is a self-assessed measure of the health status and thereby include both physical and mental health. Thus, does the variable capture both the physical and mental health effects on happiness. A policy aimed to improve an individual's physical and mental health is likely to be effective for improvements in well-being.

Higher education was shown to decrease the probability of being very happy for those in the middle and old age group. A surprising result since higher education is found to be associated with a higher level of happiness (Helliwell, 2008). However, the result from Helliwell's study was obtained without controlling for income. Income is controlled for in this study and the effect on happiness from higher levels of education is then negative. Why this negative relationship exists must be examined more closely but a potential explanation might be that having a higher level of education might imply having a job with high demanding work tasks which can be more time-consuming and drains more mental energy. A situation which results in less time to socialize with friends and family.

6.1 Limitations and further research

Previous studies have found that income affects happiness in both relative and absolute terms and that the effect of an increase in income is transitory. To not include any variable which captures information on how individuals feel about their income relative to others or how long the effect of an increase in income remains is thus a limitation in this study. Due to this, the effect of income on happiness found in this study only shows how absolute income affects happiness at a point in time. To get the full perspective of how income affects happiness further research needs to be made where it is possible to differentiate how happiness is affected by absolute income and relative income. Further research should also be focusing on studying for how long the positive effect from a higher income remains.

Even if this study has provided clear evidence that income, health, social interactions, gender, marital status and education have an impact on one's sense of happiness there exists a lack of

evidence on the direction of causality. Unhappy people might have a reduced initiative to engage in activities such as applying for jobs, socialize with friends or invest in their health which have a positive effect on one's sense of happiness. They might also have a lower phycological ability to work harder to earn more money. Further research is needed to understand the direction of causality.

The results from this study have been discussed and compared with findings from other studies on happiness. However, difficulties exist in comparing results across studies. One source for the disparity between results arises from the use of different variables aimed to capture the same thing. For instance, using an income variable that is divided into groups or as a continuous variable or using an objective or subjective measure of health. Another source for the disparity between results can arise from different categorizations of variables (e.g treating those with good and very good health together or separately). For this reason, care is needed when making comparisons between studies.

6.2 Conclusion

This study has provided statistical evidence that money makes people happy regardless of age. Having a higher income has a positive effect on the probability of being very happy and a negative effect on the probability of being unhappy for all three age groups. To what extent money can buy happiness differs however between the middle and old age group. This information can be of importance when designing policies aimed to increase well-being among individuals. The focus should be put on reducing the unequal distribution in income, increase the size of the pension as well as providing information on the importance of savings.

References

Blanchflower, D. G., & Oswald, A. J. (2004). *Money, Sex, and Happiness: An Empirical Study* (No. 10499). http://www.nber.org/papers/w10499

Boarini, R., Comola, M., Smith, C., Manchin, R., & De Keulenaer, F. (2012). *What Makes for a Better Life? THE DETERMINANTS OF SUBJECTIVE WELL-BEING IN OECD COUNTRIES-EVIDENCE FROM THE GALLUP WORLD POLL*. https://doi.org/10.1787/5k9b9ltjm937-en

Caporale, G. M., Georgellis, Y., Tsitsianis, N., & Yin, Y. P. (2009). Income and happiness across Europe: Do reference values matter? *Journal of Economic Psychology*, *30*(1), 42–51. https://doi.org/10.1016/j.joep.2008.06.004

Clark, A. E., Frijters, P., & Shields, M. A. (2006). Income and Happiness : Evidence, Explanations and Economic Implications. In *Paris-Jourdan Sciences Economiques* (No. 24; Paris-Jourdan Sciences Economiques).

Diener, E., Oishi, S., & Lucas, R. E. (2003). Personality, Culture, and Subjective Well-being: Emotional and Cognitive Evaluations of Life. *Annual Review of Psychology*, *54*(December 2015), 403–425. https://doi.org/10.1146/annurev.psych.54.101601.145056

Dolan, P., Peasgood, T., & White, M. (2008). Do we really know what makes us happy? A review of the economic literature on the factors associated with subjective well-being. *Journal of Economic Psychology*, *29*(1), 94–122. https://doi.org/10.1016/j.joep.2007.09.001

Easterlin, R. A. (2001). Income and Happiness: Towards a unified theory. *The Economic Journal*, *111*, 465–484. https://doi.org/10.4324/9781315786018

ESS. (n.d.). *Sampling | European Social Survey (ESS)*. Norwegian Centre for Research Data, Norway. Retrieved April 26, 2021, from https://www.europeansocialsurvey.org/methodology/ess_methodology/sampling.html

ESS. (2018). *ESS rounds 5, 6, 7, 8, 9| European Social Survey (ESS)*. Norwegian Centre for Research Data, Norway. https://www.europeansocialsurvey.org/

Ferrer-i-Carbonell, A., & Gowdy, J. M. (2007). Environmental degradation and happiness. *Ecological Economics*, *60*(3), 509–516. https://doi.org/10.1016/j.ecolecon.2005.12.005

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*. https://doi.org/10.1787/220573570724

Fleche, S., Smith, C., & Sorsa, P. (2011). *Exploring determinants of subjective wellbeing in OECD countries: Evidence from the World Values Survey* (No. 921; OECD Economics Department Working Paper). https://doi.org/10.1332/175982712X652122

Folkhälsomyndigheten. (2020). *Statistik psykisk hälsa — Folkhälsomyndigheten*. Folkhälsomyndigheten. https://www.folkhalsomyndigheten.se/livsvillkor-levnadsvanor/psykisk-halsa-och-suicidprevention/statistik-psykisk-halsa/

Frey, B. S. (2008). Marriage and Happiness. In *Happiness. A Revolution in Economics* (pp. 87–92).

Frey, B. S., & Stutzer, A. (2002a). *Happiness and Economics. How the economy and institutions affect human well-being.* Princeton University Press.

Frey, B. S., & Stutzer, A. (2002b). What Can Economists Learn from Happiness Research? *Journal of Economic Literature*, *40*(2), 402–435.

Frey, B. S., & Stutzer, A. (2002c). What Can Economists Learn from Happiness Research? *Journal of Economic Literature*, *40*(2), 402–435. https://doi.org/10.1257/002205102320161320

Gardner, J., & Oswald, A. (2001). *Does Money Buy Happiness? A Longitudinal Study Using Data on Windfalls* (No. 2233; Discussion Paper Series).

Gerdtham, U. G., & Johannesson, M. (2001). The relationship between happiness, health, and socio-economic factors: Results based on Swedish microdata. *Journal of Socio-Economics*, *30*(6), 553–557. https://doi.org/10.1016/S1053-5357(01)00118-4

Graham, C., & Chattopadhyay, S. (2013). Gender and well-being around the world. *International Journal of Happiness and Development*, *1*(2), 212. https://doi.org/10.1504/ijhd.2013.055648

Greene, W. H., & Hensher, D. A. (2010). *Modeling Ordered Choices*. Cambridge University Press.

Helliwell, J. F. (2002). How's life? Combining individual and national variabels to explain subjective well-being. *Economic Modelling*, *20*, 331–360. https://doi.org/10.1177/001979391006300202

Helliwell, J. F. (2008). Life Satisfaction and Quality of Development. In *NBER Working Papers* (No. 14507). https://doi.org/10.1093/acprof:oso/9780198758730.003.0008

Hilbe, J. M. (2009). Ordered Logistic Regression. In *Logistic Regression Models* (pp. 371–402). CRC Press LLC. https://doi.org/10.1201/9781420075779-12

Hsieh, C. (2011). Money and happiness: does age make a difference? *Ageing and Society*, *31*(8), 1289–1306. https://doi.org/10.1017/S0144686X10001431

Huppert, F. A. (2009). Psychological Well-being: Evidence Regarding its Causes and Consequences †. *Applied Psychology: Health and Well-Being*, *1*(2), 137–164. https://doi.org/10.1111/j.1758-0854.2009.01008.x

Kahneman, D. (1994). New Challanges to the Rationality assumption. *Journal of Institutional and Theoretical Economics.*, *150*(1), 18–36.

Lelkes, O. (2006). Knowing what is good for you Empirical analysis of personal preferences and the "objective good." *Journal of Socio-Economics*, *35*(2), 285–307. https://doi.org/10.1016/j.socec.2005.11.002

Lelkes, O. (2008). *Happiness over the life cycle : exploring age-specific preferences* (No. 7302; MPRA Paper).

Long, J. S., & Freese, J. (2003). Models for Ordinal Outcomes. In *Regression models for categorical dependent variables using Stata.* (pp. 137–170). Stata Press.

Lucas, R. E., Clark, A. E., Georgellis, Y., & Diener, E. (2004). Unemployment Alters the Set Point for Life Satisfaction. *Psychological Science*, *15*(1), 8–13. https://doi.org/10.1111/j.0963-7214.2004.01501002.x

OECD. (n.d.). *Sweden: Tackling mental health problems is critical to boosting job prospects of young Swedes - OECD*. Retrieved March 11, 2021, from https://www.oecd.org/sweden/swedentacklingmentalhealthproblemsiscriticaltoboostingjobprospectsofyoungswedes.htm

Pensionsmyndigheten. (2019). *Medelpensioneringsålder, uträdesålder m.m. Svar på regleringsbrevsuppdrag 2019*.

SCB. (2018). *Medelåldern vid barnets födelse efter ordningsnummer, region och kön. År 2000 - 2019. PxWeb*. https://www.statistikdatabasen.scb.se/pxweb/sv/ssd/START__BE__BE0101__BE0101H/MedelAlder1/

Shmotkin, D. (1990). Subjective Well-being as a function of age and gender: A multivariate look for differentiated trends*. *Social Indicators Reserach*, *23*, 201–230.

Siedlecki, K. L., Salthouse, T. A., Oishi, S., & Jeswani, S. (2014). The Relationship Between Social Support and Subjective Well-Being Across Age. *Social Indicators Research*, *117*(2), 561–576. https://doi.org/10.1007/s11205-013-0361-4

Stata. (n.d.). *estat ic - Display information criteria*. Stata Manuals. https://www.stata.com/manuals/restatic.pdf

Steptoe, A., Deaton, A., & Stone, A. A. (2015). Subjective wellbeing, health, and ageing. *The Lancet*, *385*, 640–648. https://doi.org/10.1016/S0140-6736(13)61489-0

Stock, J. H., & Watson, M. W. (2015). *Introduction to Econometrics* (3rd ed.). Pearson Education Limited.

Stutzer, A. (2004). The role of income aspirations in individual happiness. *Journal of Economic Behavior and Organization*, *54*(1), 89–109. https://doi.org/10.1016/j.jebo.2003.04.003

Williams, R. (2016). Understanding and interpreting generalized ordered logit models. *The Journal of Mathematical Sociology*, *40*(1), 7–20. https://doi.org/10.1080/0022250X.2015.1112384

Yang, Y., & Morgan, P. (2008). Social Inequalities in Happiness in the United States, 1972 to 2004: An Age-period-Cohort Analysis. *American Sociological Review*, *73*, 204–226.

Appendix

Tabell A1 – Response options for marital status

maritalb: Legal marital status, post coded		
Question:	**ESS5, ESS6, ESS7, ESS8, ESS9:** POST CODE: MARITAL STATUS	
Values and categories:	1	Legally married
	2	In a legally registered civil union
	3	Legally separated
	4	Legally divorced/Civil union dissolved
	5	Widowed/Civil partner died
	6	None of these (NEVER married or in legally registered civil union)
	77	Refusal
	88	Don't know
	99	No answer

Tabell A2 – Response options for completed educational level.

edlvdse: Highest level of education, Sweden		
Question:	**ESS9:** What is the highest level of education you have successfully completed? (Sweden)	
Values and categories:	1	Ej avslutad folkskola/grundskola skolår 1-6
	2	Avslutad Folkskola, Grundskolan skolår 7-8
	3	Avslutad Grundskola skolår 9
	4	Fackskola (1963-1970) - 2-årig gymnasielinje, 2-årig yrkesskola
	5	Studieförberedande gymnasieprogram (3 år)
	6	Gamla gymnasieutbildningar på två år
	7	Yrkesinriktade gymnasieprogram (3 år)
	8	4-årig gymnasielinje (före 1995)/Tekniskt basår
	9	Universitet/Högskola, 1 år, med examen
	10	Eftergymnasial utbildning, ej Universitet/Högskola, 1 år (t ex KY-utbildning, militärutbildning)
	11	Universitet/Högskola, 2 år, med examen (högskoleexamen)
	12	2-3 år KY-utbildning, Eftergymnasial utbildning, ej Universitet/Högskola 3 år
	13	Kandidat och/eller yrkesexamen från Högskola, 3-4 år
	14	Kandidat och/eller yrkesexamen från Universitet, KTH, CTH, Handelshögskolan, 3-4 år
	15	Magisterexamen och/eller yrkesexamen från Högskola, >4 år
	16	Mastersexamen från Högskola
	17	Magisterexamen och/eller yrkesexamen från universitet, KTH, CTH, Handelshögskolan >4 år
	18	Mastersexamen från Universitet, KTH, CTH, Handelshögskolan
	19	Forskarutbildning: Licentiatexamen
	20	Forskarutbildning: Doktorsexamen
	5555	Other
	7777	Refusal
	8888	Don't know
	9999	No answer

Table A3 – Income decentil for household's total net income.

	Income deciles
J	Upp till 11 999
R	12 000 - 15 999
C	16 000 - 19 999
M	20 000 - 23 999
F	24 000 - 26 999
S	27 000 - 30 999
K	31 000 - 35 999
P	36 000 - 42 999
D	43 000 - 52 999
H	53 000 eller mer

Table A4 – Response options for social interactions

sclmeet: How often socially meet with friends, relatives or colleagues		
Question:	**All rounds:** Using this card, how often do you meet socially with friends, relatives or work colleagues?	
Values and categories:	1	Never
	2	Less than once a month
	3	Once a month
	4	Several times a month
	5	Once a week
	6	Several times a week
	7	Every day
	77	Refusal
	88	Don't know
	99	No answer

Table A5 – Brant test for the proportional odds assumption

Brant test of parallel regression assumption

	chi2	p>chi2	df
All	67.66	0.000	17
agea	0.51	0.476	1
c.agea#c.agea	0.03	0.867	1
2.income	1.59	0.207	1
3.income	1.59	0.207	1
4.income	9.08	0.003	1
5.income	8.92	0.003	1
2.heatlh	3.59	0.058	1
3.health	12.49	0.000	1
1.female	1.37	0.243	1
1.unemp	0.15	0.696	1
2.edu	1.15	0.285	1
3.edu	3.59	0.058	1
2.social	5.02	0.025	1
3.social	5.97	0.015	1
2.married	0.87	0.352	1

```
3.married |       0.00       0.984        1
4.married |       0.26       0.608        1

A significant test statistic provides evidence that the parallel
regression assumption has been violated.
```

Tabell A6 – AIC for the different models

Model*	N	df	AIC
1	1230	36	2609.135
2	4072	36	8456.827
3	2058	36	4215.222
4	7360	56	15246.35

**Models 1, 2 and 3 are for the three different age groups and model 4 are for the whole sample with interactions.*

Tabell A7 – Regression output for the generalized ordered logit model

	Young		Middle		Old	
Unhappy vs happy/very happy						
Age	-0.0278	(0.290)	-0.0893**	(0.0404)	-0.245	(0.160)
Age^2	0.000624	(0.00597)	0.000953**	(0.000422)	0.00169	(0.00104)
Income1	0	(.)	0	(.)	0	(.)
Income2	0.538***	(0.189)	0.396**	(0.169)	0.479**	(0.151)
Income3	0.626***	(0.192)	0.534***	(0.160)	0.647***	(0.170)
Income4	0.589***	(0.197)	0.975***	(0.158)	0.616**	(0.196)
Income5	0.982***	(0.200)	1.025***	(0.160)	0.879***	(0.246)
Good health	0	(.)	0	(.)	0	(.)
Fair health	-1.335***	(0.194)	-0.973***	(0.0946)	-0.840***	(0.112)
Bad health	-2.245***	(0.496)	-1.543***	(0.187)	-1.591***	(0.222)
Female	0.0615	(0.127)	0.225***	(0.0717)	-0.0808	(0.109)
Unemp	0.0190	(0.150)	-0.315***	(0.118)	-0.0557	(0.528)
Elementary	0	(.)	0	(.)	0	(.)
High school	-0.297	(0.232)	-0.234*	(0.130)	-0.255*	(0.120)
University	-0.254	(0.274)	-0.396**	(0.138)	-0.205	(0.148)
Low social	0	(.)	0	(.)	0	(.)
Middle social	0.307	(0.349)	0.147	(0.131)	0.515**	(0.166)
High social	0.585*	(0.339)	0.428***	(0.126)	0.820***	(0.168)
married	0	(.)	0	(.)	0	(.)
Divorced	-1.367	(0.879)	-0.466***	(0.115)	-0.518***	(0.155)
Widowed	-0.807	(1.222)	-1.074***	(0.300)	-0.769***	(0.160)
Neither	-0.208	(0.231)	-0.705***	(0.0875)	-0.807***	(0.189)
_cons	0.453	(3.411)	2.419	(0.945)	9.545	(6.079)
Unhappy/happy vs very happy						
Age	-0.225	(0.288)	-0.143***	(0.0385)	-0.103	(0.123)
Age^2	0.00429	(0.00588)	0.00143***	(0.000400)	0.000773	(0.000803)
1.income	0	(.)	0	(.)	0	(.)
2.income	0.434**	(0.206)	0.260	(0.205)	0.196	(0.155)
3.income	0.621***	(0.205)	0.430**	(0.194)	0.326**	(0.164)
4.income	0.560***	(0.209)	0.548***	(0.190)	0.371**	(0.186)

5.income	0.652***	(0.209)	0.694***	(0.192)	0.565**	(0.213)
Good health		(.)	0	(.)	0	(.)
Fair health	-1.189***	(0.249)	-0.818***	(0.111)	-0.765***	(0.113)
Bad health	-2.948***	(1.058)	-0.995***	(0.231)	-1.011***	(0.265)
Female	-0.0128	(0.130)	0.226**	(0.0701)	0.206**	(0.0972)
Unemp	-0.121	(0.165)	-0.402**	(0.131)	0.495	(0.399)
Elementary	0	(.)	0	(.)	0	(.)
High school	-0.385	(0.239)	-0.262**	(0.129)	-0.311***	(0.113)
University	-0.396	(0.285)	-0.472***	(0.135)	-0.589***	(0.133)
Low social	0	(.)	0	(.)	0	(.)
Middle social	-0.349	(0.377)	-0.0754	(0.138)	0.307*	(0.172)
High social	-0.108	(0.357)	0.154	(0.131)	0.664***	(0.171)
Married	0	(.)	0	(.)	0	(.)
Divorced	-1.071	(1.047)	-0.353***	(0.116)	-0.502***	(0.153)
Widowed	-0.719	(1.235)	-0.761**	(0.354)	-0.996***	(0.167)
Neither	-0.560**	(0.205)	-0.630***	(0.0870)	-1.373***	(0.224)
_cons	2.845	(3.384)	2.770**	(0.910)	2.894	(4.732)
N	1230		4072		2058	

Standard errors in parentheses
* $p < 0.001$, ** $p < 0.05$, *** $p < 0.01$

Table A8, A9 and A10 - Postestimation test for income.

	Contrast	Std. Err.	Unadjusted z	Unadjusted P>|z|	Unadjusted [95% Conf.	Interval]
Young Income group						
4 vs 3	-.0370455	.2053939	-0.18	0.857	-.4396102	.3655191
4 vs 2	.050884	.204893	0.25	0.804	-.350699	.4524669
3 vs 2	.0879295	.2052984	0.43	0.668	-.3144479	.4903069
5 vs 3	.356047	.2139621	1.66	0.096	-.063311	.775405
5 vs 4	.3930925	.2058162	1.91	0.056	-.0102998	.7964849
5 vs 2	.4439765	.2113301	2.10	0.036	.0297772	.8581759
2 vs 1	.5383058	.1885572	2.85	0.004	.1687405	.907871
4 vs 1	.5891897	.1968382	2.99	0.003	.203394	.9749855
3 vs 1	.6262353	.1916926	3.27	0.001	.2505247	1.001946
5 vs 1	.9822823	.2002698	4.90	0.000	.5897606	1.374804

	Contrast	Std. Err.	Unadjusted z	Unadjusted P>|z|	Unadjusted [95% Conf.	Interval]
Middle Income group						
5 vs 4	.0493248	.0934967	0.53	0.598	-.1339253	.2325749
3 vs 2	.1382689	.1319485	1.05	0.295	-.1203455	.3968833
2 vs 1	.395554	.1686189	2.35	0.019	.065067	.7260409
4 vs 3	.441557	.1121874	3.94	0.000	.2216736	.6614403
5 vs 3	.4908817	.1080113	4.54	0.000	.2791834	.70258
3 vs 1	.5338228	.1598533	3.34	0.001	.2205162	.8471295
4 vs 2	.5798258	.127722	4.54	0.000	.3294953	.8301564
5 vs 2	.6291506	.1272708	4.94	0.000	.3797045	.8785967
4 vs 1	.9753798	.1582144	6.16	0.000	.6652852	1.285474
5 vs 1	1.024705	.1603694	6.39	0.000	.7103863	1.339023

	Contrast	Std. Err.	Unadjusted z	Unadjusted P>|z|	Unadjusted [95% Conf.	Interval]
Old incomegroup						
4 vs 3	-.0315101	.1839478	-0.17	0.864	-.3920411	.3290209
4 vs 2	.1371757	.1816323	0.76	0.450	-.218817	.4931684
3 vs 2	.1686858	.1570468	1.07	0.283	-.1391204	.4764919
5 vs 3	.2311865	.2338863	0.99	0.323	-.2272221	.6895952

5 vs 4	.2626966	.2414826	1.09	0.277	-.2106006	.7359938
5 vs 2	.3998723	.2318228	1.72	0.085	-.0544921	.8542367
2 vs 1	.4786536	.1512638	3.16	0.002	.182182	.7751252
4 vs 1	.6158293	.1960685	3.14	0.002	.231542	1.000117
3 vs 1	.6473393	.1699772	3.81	0.000	.3141901	.9804886
5 vs 1	.8785259	.2455436	3.58	0.000	.3972692	1.359783

Table A11 – Generalized ordered logit with interaction term between income group and age group.

	Income group 5 and age group 3 as reference.	
Unhappy vs happy/very happy		
Age	-0.0280*	(0.0143)
Age^2	0.00032**	(0.000135)
1.income	-1.037***	(0.230)
2.income	-0.507**	(0.225)
3.income	-0.323	(0.231)
4.income	-0.317	(0.241)
5.income	0	(.)
Good health	0	(.)
Fair health	-0.958***	(0.0666)
Bad health	-1.644***	(0.135)
female	0.114**	(0.0538)
unemp	-0.193**	(0.0899)
Elementary	0	(.)
Highschool	-0.240***	(0.0791)
University	-0.323***	(0.0865)
Low social	0	(.)
Middle social	0.299***	(0.0978)
High social	0.592***	(0.0956)
married	0	(.)
Divorced	-0.474***	(0.0909)
Widowed	-0.815***	(0.136)
Neither	-0.661***	(0.0752)
1.income#1.age	-0.198	(0.235)
1.income#2.age	-0.337*	(0.204)
1.income#3.age	0	(.)
2.income#1.age	-0.207	(0.239)
2.income#2.age	-0.477***	(0.173)
2.income#3.age	0	(.)
3.income#1.age	-0.257	(0.245)
3.income#2.age	-0.520***	(0.173)
3.income#3.age	0	(.)
4.income#1.age	-0.330	(0.254)
4.income#2.age	-0.0898	(0.181)
4.income#3.age	0	(.)
5.income#1.age	-0.272	(0.297)
5.income#2.age	-0.377*	(0.221)
5.income#3.age	0	(.)
cons	2.230***	(0.452)
Unhappy/happy vs very happy		
Age	-0.0506***	(0.0136)
Age^2	0.00045** *	(0.000126)
1.income	-0.664***	(0.191)
2.income	-0.362**	(0.171)
3.income	-0.227	(0.168)
4.income	-0.175	(0.179)
5.income	0	(.)

Good health	0	(.)
Fair health	-0.828***	(0.0746)
Bad health	-1.177***	(0.168)
Female	0.173***	(0.0518)
Unemp	-0.249**	(0.0969)
Elementary	0	(.)
Highschool	-0.307***	(0.0758)
University	-0.493***	(0.0824)
Low social	0	(.)
Middle social	0.0653	(0.103)
University	0.327***	(0.0996)
married	0	(.)
Divorced	-0.412***	(0.0904)
Widowed	-0.862***	(0.145)
Neither	-0.726***	(0.0741)
1.income#1.age	-0.378	(0.248)
1.income#2.age	-0.234	(0.237)
1.income#3.age	0	(.)
2.income#1.age	-0.253	(0.238)
2.income#2.age	-0.281	(0.173)
2.income#3.age	0	(.)
3.income#1.age	-0.179	(0.227)
3.income#2.age	-0.262	(0.154)
3.income#3.age	0	(.)
4.income#1.age	-0.301	(0.233)
4.income#2.age	-0.216	(0.155)
4.income#3.age	0	(.)
5.income#1.age	-0.352	(0.248)
5.income#2.age	-0.272*	(0.162)
5.income#3.age	0	(.)
cons	1.552***	(0.417)
N	7360	

Standard errors in parentheses
$^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$

Table A12 – The share of individuals with a specific education level in each income group.

Tabulation of income edu

Income group	Education level			
	1	2	3	Total
1	380	514	172	1066
	28.57%	14.13%	7.19%	14.48
2	326	638	227	1191
	24.51%	17.54%	9.49%	16.18
3	284	716	367	1367
	21.35%	19.68%	15.34%	18.57
4	193	891	563	1647
	14.51%	24.49%	23.54%	22.38
5	147	879	1063	2089
	11.05%	24.16%	44.44%	28.38
Total	1330	3638	2392	7360
	100.00	100.00	100.00	100.00

First row has *frequencies,* and second row has *column percentages*