Econ 203: Investigating the Relationship Between Higher Education and Overall Happiness

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I. Introduction

Our research endeavors to understand the direct relationship between education level and happiness level. Among previously published academic articles, the direct relationship between educational level and income level has been established: higher education level leads to higher income level; the direct relationship between income level and happiness level has also been established: people with higher income report higher happiness level. However, the direct relationship between education level and overall happiness level in life has often been neglected. Therefore, the motivation for our research is to investigate the direct relationship between education level and happiness level. The database used in this study is the "international research program devoted to the scientific study of social, political, economic, religious and cultural values of people in the world", colloquially known as the World Values Survey (WVS). We will divide our database by additional factors including marital status, age and health status. By conducting these group tests, we seek to establish a deeper understanding of the relationship between educational level and happiness level.

Based on previous research and our intuition, we hypothesize that the correlation between the level of education and the level of happiness differs for individuals of different income brackets. For high income individuals, higher levels of education would correlate with higher levels of happiness. However, for lower income individuals, higher levels of education would correlate with lower levels of happiness. This is due to a sense of dissatisfaction with life trajectory because the general perception of the society dictates that higher levels of education correlates with higher levels of income. The failure to meet such expectations might result in a lower level of happiness. At a mid level of income we expect that people of higher education will be happier, although we expect this subgroup to be the most variable among our results.

However, based on the examination of our data, our hypothesis is proven to be incorrect. There is no significant or direct relationship between the level of education and the level of happiness. Even after conducting group tests in which we divided our samples according to additional factors including marital status, age and health status, no significant relationship could be established. We suspect that this is due to the limited scope of time and resources we have for this research project.

II. Questions, Motivation and Context

Research Question

Conventional wisdom suggests that "money can't buy you happiness". However, a report published by the Pew Research Center in 2016 refutes this idea and suggests that a higher income level is linked to higher overall happiness in life. This report has shown that adults with less than $30,000 annual household income are three times more likely than those with more than $75,000 annual household income to report that they are unsatisfied with their lives (21% vs. 7%). Previous studies have also established that education and income are closely related. Although it is difficult to quantify the full value of education, data from the U.S. Bureau of Labor Statistics (BLS) consistently demonstrates that higher education generates higher income. According to a study conducted by BLS in 2017, the median usual weekly earnings for an individual with a doctoral degree is $1,743 while it is only $520 for those who obtained less than a high school diploma (BLS, 2017). It is worth mentioning that although education has long been touted as a pathway to reach the "American Dream" and a key to individual success, the success of the American dream is not limited to monetary success, but happiness as well. Previous studies have generally attributed high levels of happiness to high income and high income to

high levels of education, rendering education an indirect factor to the general happiness level of life. Thus, the possibility of education being an independent variable for happiness is often neglected in previous studies. The motivation for this research is to fill in this gap in the academic literature. This research project endeavors to hold education as an independent variable for happiness with income as a controlled variable while adding marital status, age and health as additional factors. The research question we seek to investigate is whether a higher education level leads to a higher overall level of happiness in life? We suspect that within a high-income cohort, people with a greater level of education would report higher levels of overall happiness. This positive, direct correlation is due to the increased level of self-confidence and self-estimation that those who have acquired knowledge tend to exhibit. We suspect that within a low-income cohort, people with more advanced education levels would still report higher levels of overall happiness. This negative, direct correlation is due to the fact that acquiring knowledge itself produces a unique sense of accomplishment. In conclusion, we suspect that education levels and happiness levels demonstrate a positive and direct relationship regardless of other factors like income levels. Higher levels of education are always going to produce higher levels of happiness.

Motivation and Context

In the previous section, we have established that the motivation for this research project is to investigate the often neglected direct relationship between education levels and happiness levels.

In “Does Education Affect Happiness: Evidence for Spain.” (Cuñado and Pérez de Gracía, 2012), Pérez de Gracía and Cuñado study the impact of education on happiness in Spain

using individual-level data from the European Social Survey. They conclude that education has direct and indirect effects on happiness. People with a higher education level have higher levels of income and a higher level of labor security which results in a higher level of happiness. This indirect relationship between education and happiness corroborates with previous studies which our research is grounded in. More importantly, after controlling for income levels, labor status and other socio-economic variables, Pérez de Gracía and Cuñado conclude that education has a direct and positive impact on happiness (Cuñado and Pérez de Gracía, 2012). This research influences our research substantially because it demonstrates to us that a key factor towards reaching a fruitful correlation between education level and happiness level is to control for socioeconomic factors such as income levels. In our research, we endeavor to establish different income levels to investigate the effect education has on a person's overall happiness within distinct income levels.

Researchers Tan, Luo and Zhang study the correlation between education level, health status and happiness in their essay "Higher Education, Happiness and Residents' Health." (Tan, Luo, Zhang 2020). The empirical results from this study show that individuals with higher education are in better health conditions, both mentally and physically, than those with lower education levels. The mental health conditions in their study includes perception of happiness in life. The research also shows that an individual's happiness level significantly affects their overall health conditions. The researchers further conduct grouping tests in this study by categorizing sample cohorts according to additional factors including age, income level, gender, marriage and occupation. Of all the aforementioned factors, dividing by age groups produces the most noticeable effect.The results demonstrate that with the increase in age, the influence of individuals' happiness on subjective health assessment is more salient. With the increase in age,

those with higher education level report higher levels of happiness than those with lower levels of education. However, the sample population used in this study is individuals in mainland China. Nevertheless, this study inspired us to conduct group tests in our research and divide our sample population into different age groups to further investigate the relationship between education level and happiness level.

According to "How Education Enhances Happiness" (Chen, 2012), Taipei researcher Chen concludes that education improves a person's capacity to establish and maintain high quality connections in marriage which produces a higher level of overall happiness in life. Chen admits that although marriage was not originally intended to be the focus of her study, throughout the course of research, she was able to establish important findings between education level, marriage status and happiness level. Those individuals who have obtained higher education levels are able to establish and maintain higher quality marriage which produces a higher level of happiness in life. The result of this study inspired us to conduct group tests in our research and divide the sample population according to marital status to better understand the connection between education level and happiness level.

Our research project seeks to fill in the often neglected academic research on the direct relationship between education levels and happiness level. Several previously published academic research inspired our research, especially the group test where we divide our samples according to additional variables including marital status, age and health.

III. Input Data

For our input data we will be utilizing specific questions obtained from the World Values Survey (WVS). This database is an "international research program devoted to the scientific study of social, political, economic, religious, and cultural values of people in the world" (WVS). Being an ongoing research project, WVS conducts a social survey every five years which asks people all over the world in-depth, detailed questions about their opinions, political views, religion, income, employment, and many other questions. After collecting all of the surveys from the interviewees, the results are compiled and then separated by country or continent. The unit of observation for this data set is one individual because each data point reflects the specific answers that one person gave to the survey. Therefore, the data is not being generalized and each individual person is represented in the data set. Each of our individual input data files is a separate wave of data which reflects a survey period of about 4 years. Our data is retrieved from three of the waves including wave 4 (1999-2004), wave 5 (2005-2009), and wave 6 (2010-2014).

Since the World Values Organization collects its data from individuals over the age of 18, the respondents used in our research are all above the age of 18 as well. The World Values Organization surveys in almost 100 countries with different political environments and economic and fiscal foundations. However, for our research purposes, we will selectively utilize data from the United States. This ensures uniformity across our data, specifically within income ranges, monetary values, and education levels. Within the data waves we chose are subgroups of data that are specific countries that correspond to the year in which the data was collected. For our wave 4 data, the subgroup is the United States data collected in 1999 specifically. For our wave 5 data, the subgroup is the United States data collected in 2006. Finally, for our wave 6 subgroup the United States data was collected in 2011. These three data sets were used as our input data and were compiled into one data file to utilize in analysis data. Furthermore, the breadth of the

survey that WVS uses is very wide. There are questions pertaining to all aspects of an individual's life, however, we will be focusing on specific questions on the survey directly related to our research question. The variables that we will be using include: income brackets, overall happiness, level of education completed, age group, health status, and marital status.

After compiling the data from all surveys the WVS database created a codebook which is a pdf document crucial to understanding the dataset. This code book is a key that tells us what the values mean on the actual dataset. The questionnaire that was administered was done through participants writing a number as their response, however, the codebook shows the corresponding response that allows for our analysis. For example our happiness and wellbeing question included answers from 1 to 4 which correspond to not at all happy to very happy, respectively.

IV. Analysis Data

In order to obtain the desired analysis data, we worked through each of the six variables in the three waves, partitioning the data and creating consistent labels throughout the waves. This would allow for the data to be appended into one large data set encompassing each of the three waves from the United States in different time frames. This analysis data file, therefore, consisted of six variables: education level, income, happiness, age, health, and marital status each of which being a combination of three rounds of surveying individuals in the United States.

Each of the variables were manipulated to group specific answers together in order to more accurately address our initial question. To begin, we took the answers from the survey question pertaining to education level and renamed it to *ed_level.* We then sorted the nine individual answers into four categories: below high school, high school, some college, and college or higher. These groups were coded as such and were kept constant across the waves.

Next, we looked at the income brackets provided by the survey respondents. Originally, the answer values ranged from one to ten, however, this was coded into five specific income brackets. The variable was renamed *income* and the labeling was simply integers one through five, one indicating the lowest income group and five indicating the highest income group. In a similar fashion, the question of overall happiness (named *happiness)* was coded into four numerical categories ranging from one to four, where one represents the group of respondents with the lowest level of overall life satisfaction and four represents respondents with the highest level of overall life satisfaction. For the age variable, interviewees were able to input any two-digit value, which produced a wide range of responses. In order to consolidate this variable, it was categorized into those below the age of 25, individuals between the age of 25 and 35, individuals between the age of 35 and 45, individuals between the ages of 45 and 55, and finally individuals older than 55. We chose these bounds because we sought to focus on prime working age (25 to 55) in order to get a true sense of the working population and avoid outliers that may skew the results. For the questionnaire variable pertaining to the status of an individual's health, we trisected the responses and labeled them as integers from one to three. One corresponds to people with low overall state of health, two corresponds to individuals with intermediate health level, and three corresponds to individuals with a high overall level of health. This variable was renamed to *health.* Finally, for marital status, the interviewees originally responded with an integer value from one to six each corresponding to an individual marriage situation. To consolidate these answers and group them more effectively, we coded the answers as married, never married, and previously married. "Married" consisted of people who responded simply with married, "never married" contains those who responded with living together as married or single, adn "previously married" contains people who responded with divorced, separated, or

widowed. The variable was labeled as *marital_stat* within each of the data waves. Once we processed each of the separate waves of data, we appended the data sets into one large data set, which was utilized as our analysis data and produced the graphs seen at the end of this report.

Our unit of observation used doing data analysis remained an individual survey respondent, although with many more respondents. The scope of the data set is those who partook in the World Value Surveys during the years 1999, 2006, and 2011 within the United States. This includes people of all ages (18 or older), all different social and economic backgrounds, and in many different locations within the United States. Thousands of responses were recorded for each of the three waves in the United States, which allowed for a large sample that can be generalized for the population.

V. Analysis

For Graph 1 we look at the relationship between education level and happiness. We want to see if there is a trend in how happy an individual is based on how highly educated they are. As we can see, There is a slight upward trend in the data which may infer that our main hypothesis holds and higher education leads to more happiness. One major issue with this data is that it does not take into consideration a very important aspect of higher education, which is a higher income. With this graph it is not possible to deduce whether or not our data is skewed by a dependent relationship between happiness and income.

Figure 2a looks at income vs happiness and Figure 2b looks at income vs education. Figure 2 shows a clear upward trend in happiness as income increases. Figure 2b is less clear, with the second education level having the highest income. The other three education levels do, however, exhibit an upward trend similar to happiness. What we deduce from this is that there is a possible relationship between education and income, and higher income does appear to infer

higher happiness. From this graph it is reasonable to say that these relationships may have contributed to the results in Figure 1, making our findings so far inconclusive.

In figure 3 we separate income into brackets to help isolate the relationship between education and happiness. We split income into evenly distributed quartile percentages, with 1 being the lowest and 4 being the highest. We can see a slight increase in happiness as education rises for the lower two income groups. In general this increase could imply that lower education correlates to lower happiness for lower income individuals and vice versa. The one exception to this is the high education in graph 1, where we see an abrupt and noticeable decrease in happiness. In general these graphs contradict our hypothesis that higher educated individuals would be less satisfied with low pay. For higher income, however, the data becomes more difficult to read. Income graphs three and four appear to fluctuate with their data, and do so in an inverse manner. Income three's four bars go from lowest happiness, to highest, to second lowest, to second highest, while the income 4 graph has its bars going from second highest happiness, to lowest, to highest, to second lowest. Finding a pattern in these two graphs is much more difficult, which may imply that these group's happiness may be less dependent on education level, or at least not dependent in the same way as the lower income brackets. The fluctuation in these graphs do appear substantial, however, but it is hard to say what the meaning behind it is as of now. By looking at all four graphs we can see a more understandable pattern in the first two, which dissipates in the third and fourth. We can conclude from this that degree level and happiness may depend more on each other for lower income individuals. In general all of our findings are at a small scale, and require further exploration into their significance.

Figures 3a through 3i factor in more variables into Figure 3. These added variables are described in analysis data. Just as we did with income levels, it is useful to assess the relations education and happiness hold with other variables, to better understand their true relationship. In these next nine graphs we will assess all of the same variables as in Figure 3, while looking at a certain subgroup in the total population.

For variables 3a, 3b and 3c we control for marital status as our subgroups. Research suggests that education level may play a role in marriage, therefore it is useful to hold the status constant. All three of these graphs appear to hold a similar shape to Figure 3, with mostly even bars. The one pattern worth mentioning is in Figure 3c, the previously married cohort, there is a very noticeable upward trend between happiness and education in the highest income bracket. It is not possible, however, to say that this is significant, as other graphs also have slight variation among education levels, which together do not form a noticeable connection.

Graphs 3d, 3e, and 3f look at different age cohorts. The reason for this is that money may have different significance to different age groups. Those in a lower income bracket at age 25 may be less unhappy than older individuals. These graphs certainly do show more diversity than marital status, and form more patterns. First let us look at Figure 3d. In this graph it is hard to pick up a meaningful pattern. Graph 3e appears to be fairly even across all income brackets. Graph 3f, however, does appear to give more meaningful information. It represents the 45-55 age range, and it appears to mirror our initial theory that lower income groups may have lower happiness for higher education, while higher income groups may start to experience the opposite. The lower three income groups appear to have a downward slope in the graph, while income level 4 evens out and 5 have an upward trend. A potential explanation for this could be that success connected to income may hold a higher value later in life. An individual who has earned

more throughout their life may live a happier life if they are educated, while those who are educated but do not earn a lot may feel less satisfied with the life they have lived. This is an interesting graph, but does not alone give enough information to prove any theory.

The last three figures, 3g, 3h, and 3i, look at health levels. Similarly to age and marital status, people with different health status may have different priorities, affecting how they perceive happiness and wealth. Also, education may play a role in how healthy an individual is. All three figures hold a constant happiness level across them, and no pattern can be assessed.

VI. Conclusion

It is thought to be common knowledge that a higher income leads to a happier life, yet in many countries, a higher income has a direct relationship with having higher levels of education. Our main focus is understanding the relationship and dynamics between education, income and its correlation to happiness. To simplify our research, we decided to hold income as a constant and explore how much happiness is affected by education level. Although our main focus is income, education and happiness, it is important to note that there are many other factors that contribute to each variable respectively. For our data we decided to strictly use the data given on the United States of America, focusing on three "waves" or periods of time.

For installment four, we sought out to find a concrete relationship between happiness and education level within specific incomes. In our research, we were able to confirm the correlations between income and education along with income and happiness. When looking at happiness and education, there is also a clear positive correlation. Since income was correlated to both, however, it is not possible to confirm our hypothesis from this. When we compared the correlation of happiness and education by income groups to give a more isolated relationship

between the two, we saw almost no correlations in the data. We then controlled for other variables as well, to see if different life experiences would affect the data, but there were still no results. As such, we are confident in saying that our data does not hold any significant correlation between happiness level and education. This is not the result we expected, but it does give us an interesting insight into the topic. Even with holding many factors that could skew our results constant, it does not appear that people are in general more happy based purely on their education level. Although education may increase one's earnings, the idea of higher education itself does not increase happiness. Happiness is a complicated concept, and is hard to both quantify and assess. There are many different types of happiness, and it can be hard to ask about in a survey.

VII. Reference List

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Accessing raw data from website:

WVS wave 6 (2010-2014):

Inglehart, R., C. Haerpfer, A. Moreno, C. Welzel, K. Kizilova, J. Diez-Medrano, M. Lagos, P. Norris, E. Ponarin & B. Puranen et al. (eds.). 2018. World Values Survey: Round Six - Country-Pooled Datafile. Madrid, Spain & Vienna, Austria: JD Systems Institute & WVSA Secretariat.doi.org/10.14281/18241.8

https://www.worldvaluessurvey.org/WVSDocumentationWV6.jsp

Above is the URL to the Wave 6 data from the World Values Survey, however there are further instructions to follow to access the data. The Codebook, which has the keys to understanding the data set, is hyperlinked on the website and available to download. It is linked as "WV6 Codebook v20180912." After reading this document and getting sense of the meaning of the questionnaire responses it will be much easier to interpret the data. The data spreadsheet is also hyperlinked on the URL as "WV6 Results By Country v20180912." Additionally, there is also the option to download the data in stata which is hyperlinked in a .zip file as "WV6 Data stata v20201117.zip"

VIII. Tables and Figures

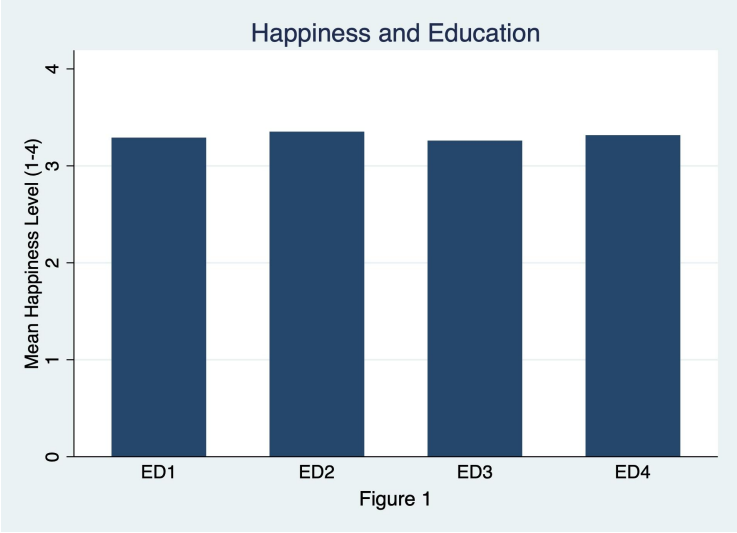

Figure 1: Mean of Happiness vs. Education Levels Disregarding Income

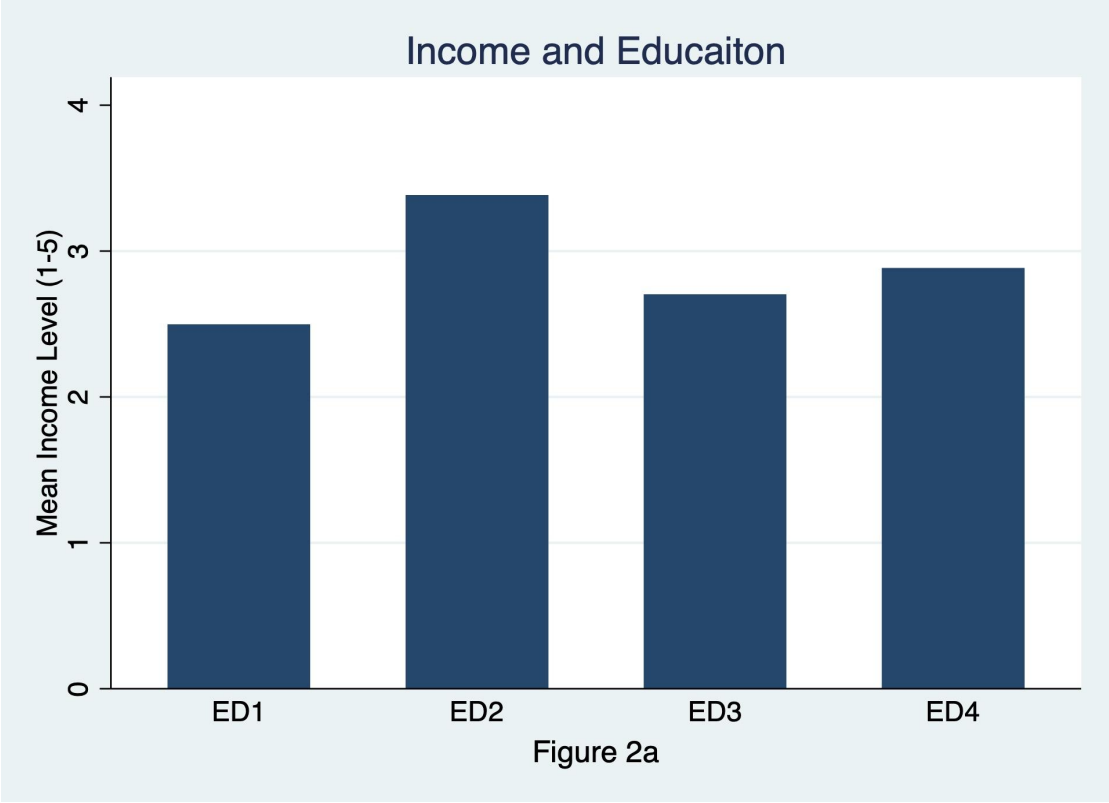

Figure 2a: Mean Income Level vs. Four Education Levels Disregarding Happiness

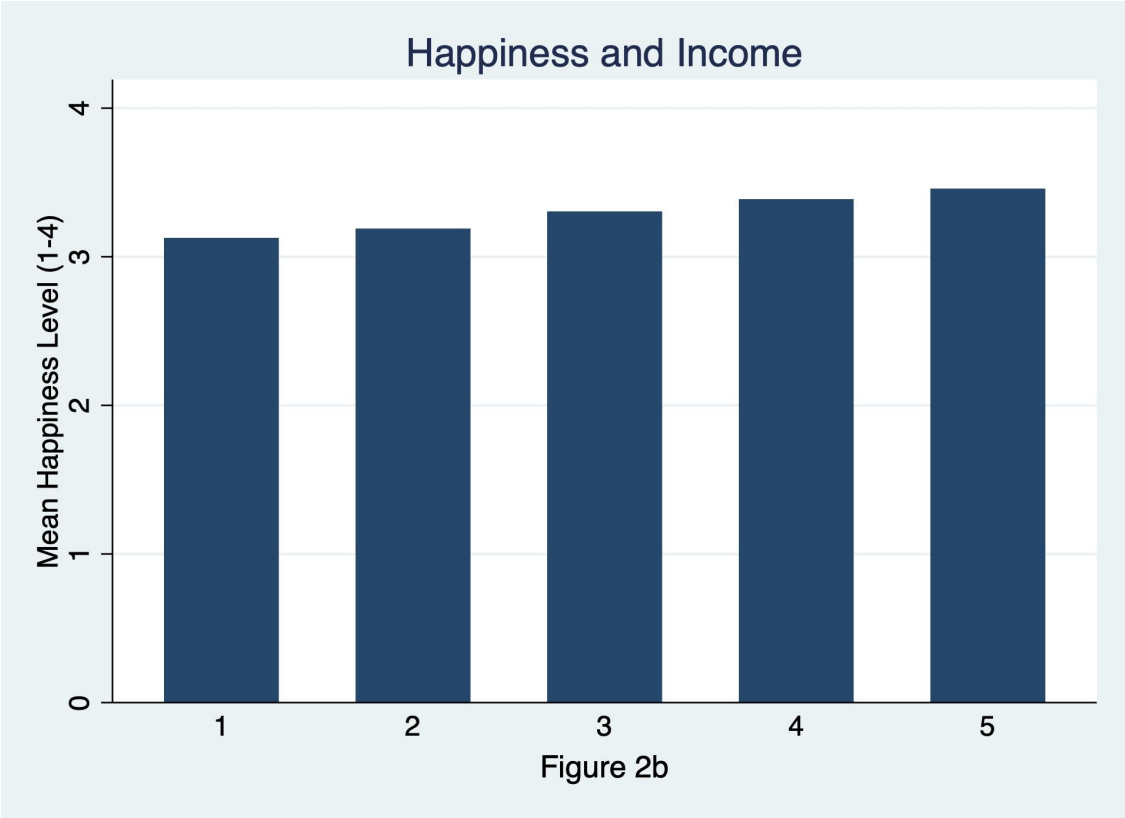

Figure 2b: Mean of Happiness vs. Five Income Brackets Disregarding Education Level

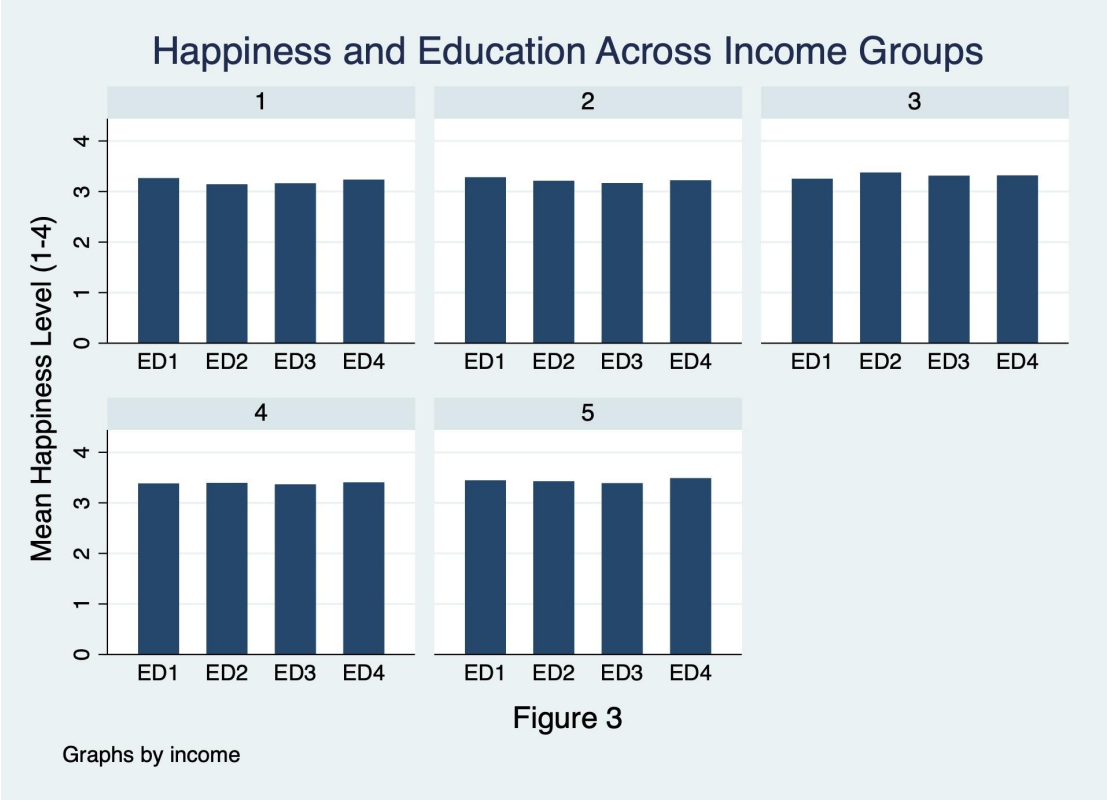

Figure 3: Mean Happiness Level vs. Five Education Brackets Holding Income Level Constant

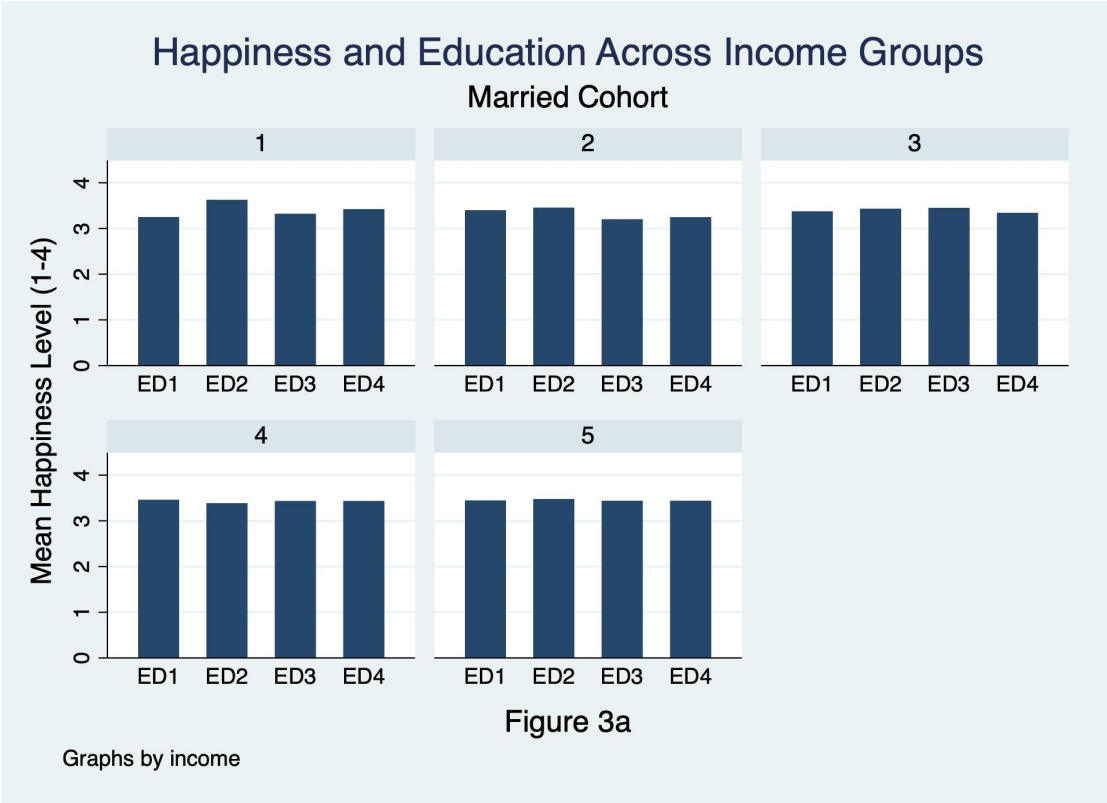

Figure 3a: Mean Happiness Level vs. Five Education Brackets in terms of Married Cohort

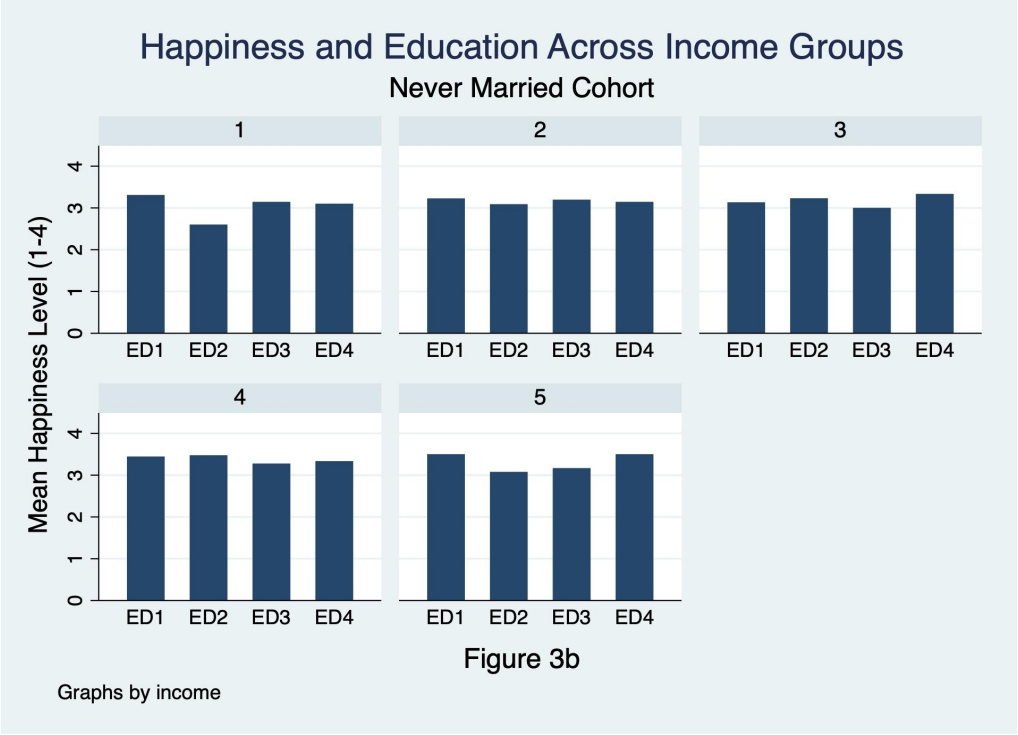

Figure 3b: Mean Happiness Level vs. Five Education Brackets in terms of Never Married Cohort

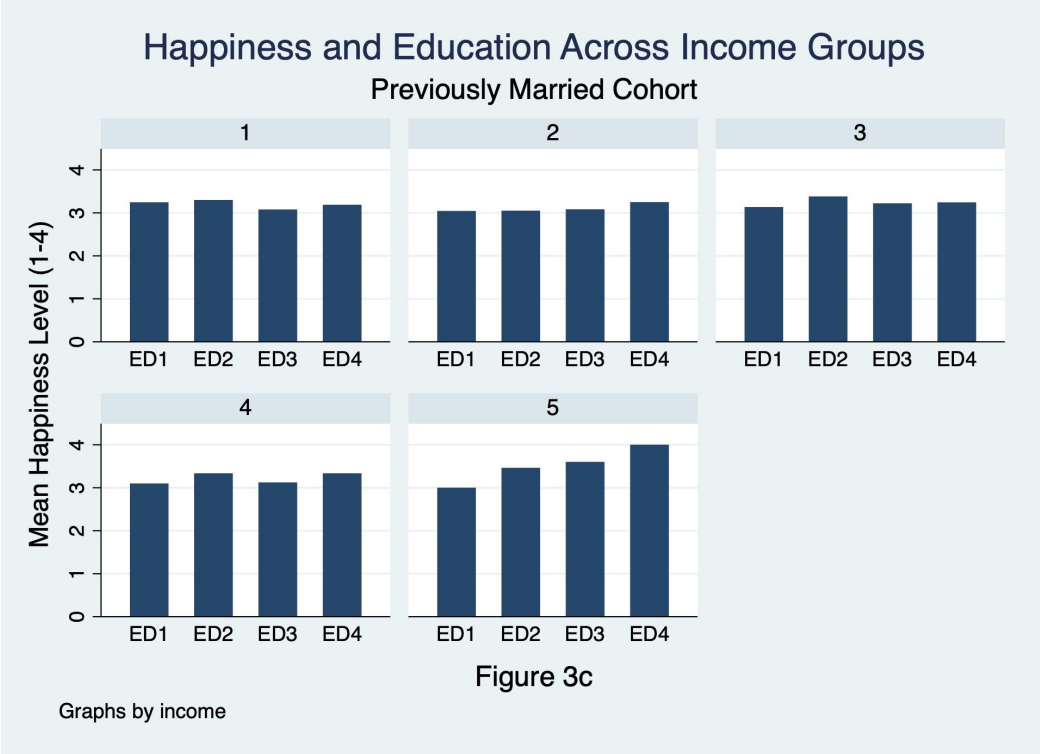

Figure 3c: Mean Happiness Level vs. Five Education Brackets in terms of Previously Married Cohort

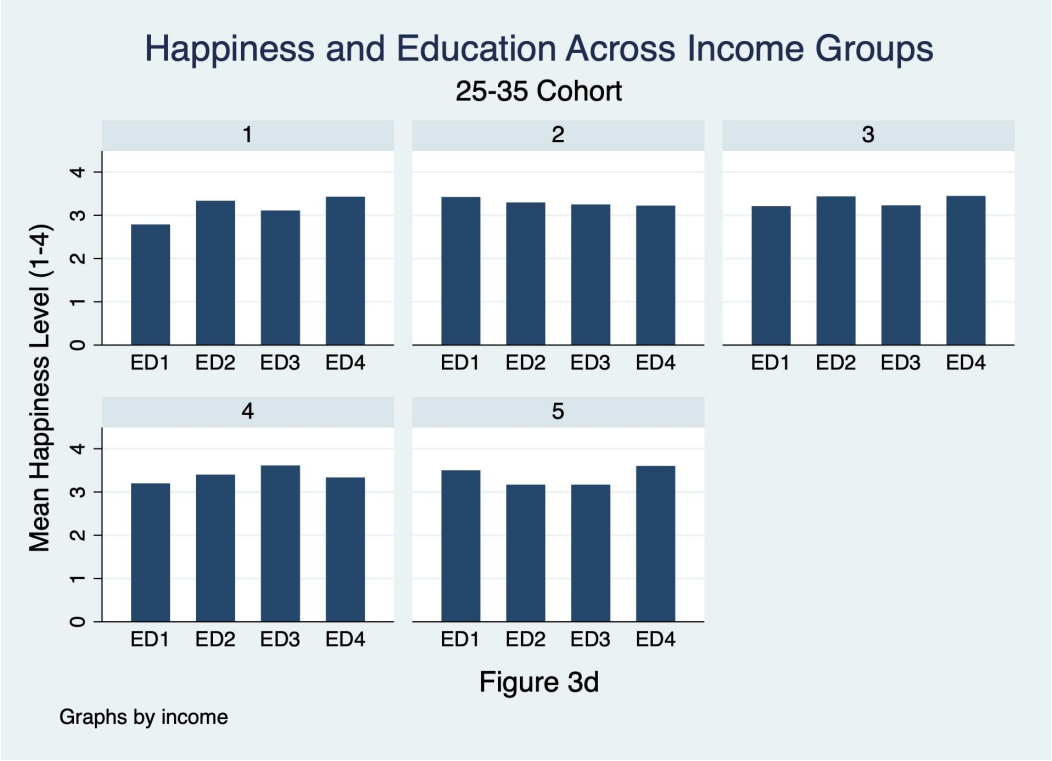

Figure 3d: Mean Happiness Level vs. Five Education Brackets in terms of 25 to 35 year old age group

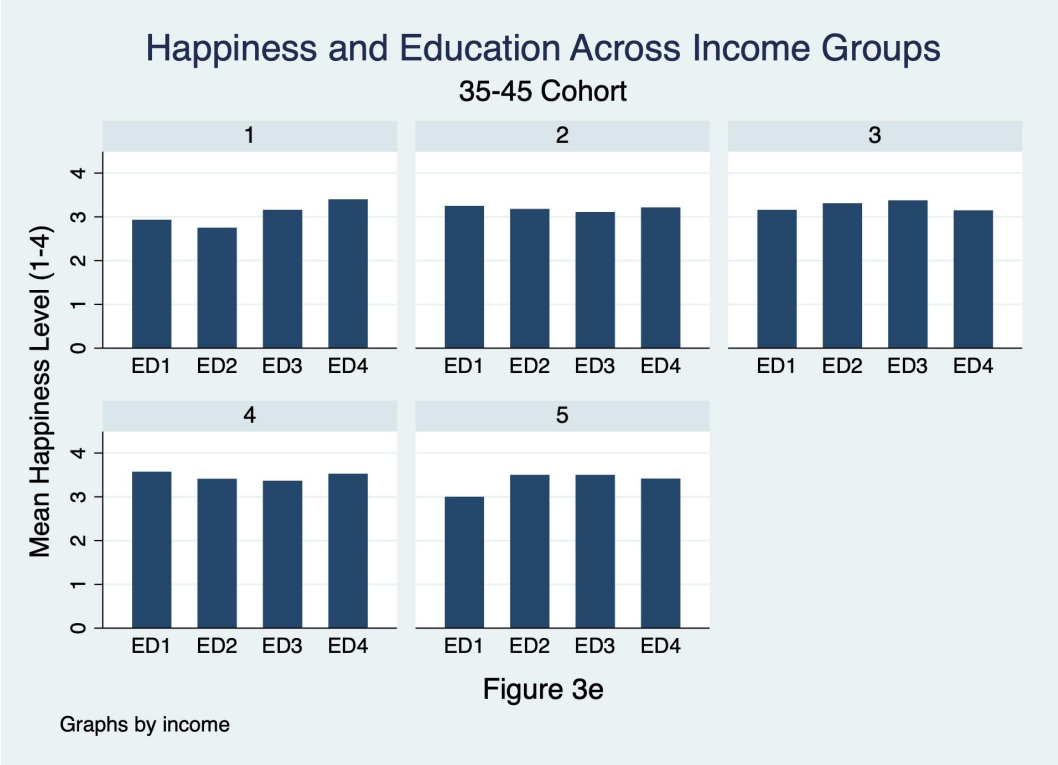

Figure 3e: Mean Happiness Level vs. Five Education Brackets in terms of 35 to 45 age group

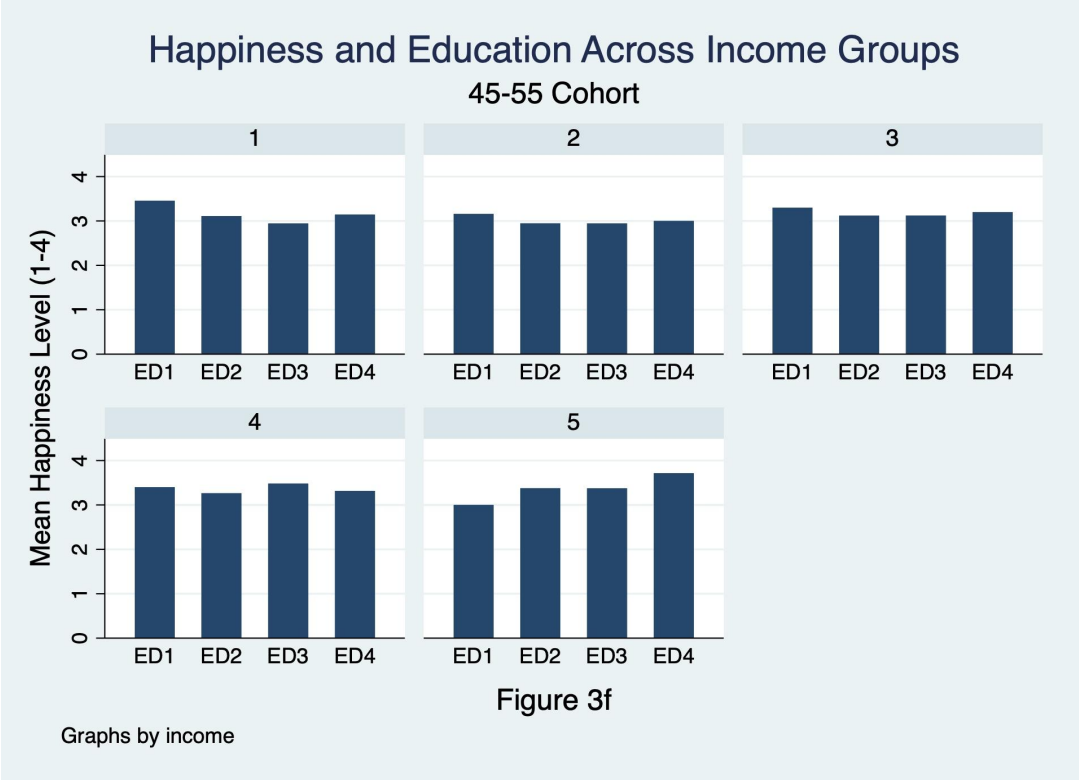

Figure 3f: Mean Happiness Level vs. Five Education Brackets in terms of 45 to 55 age group

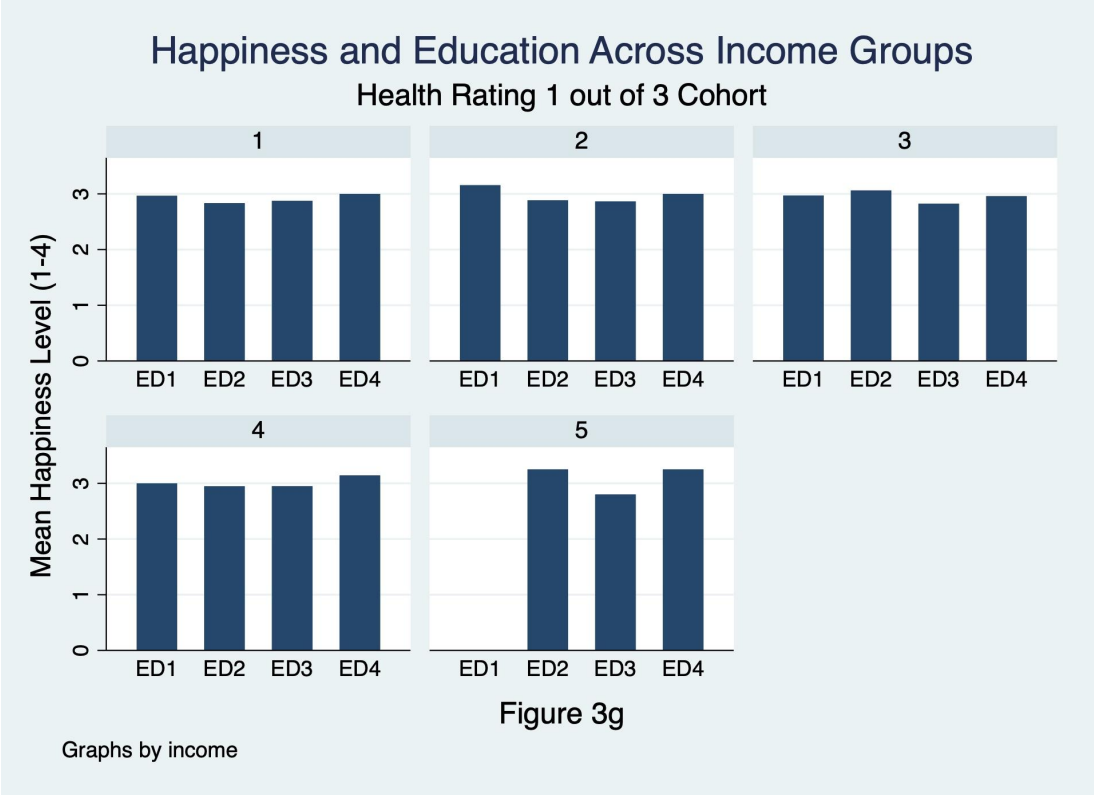

Figure 3g: Mean Happiness Level vs. Five Education Brackets Holding in terms of low health status

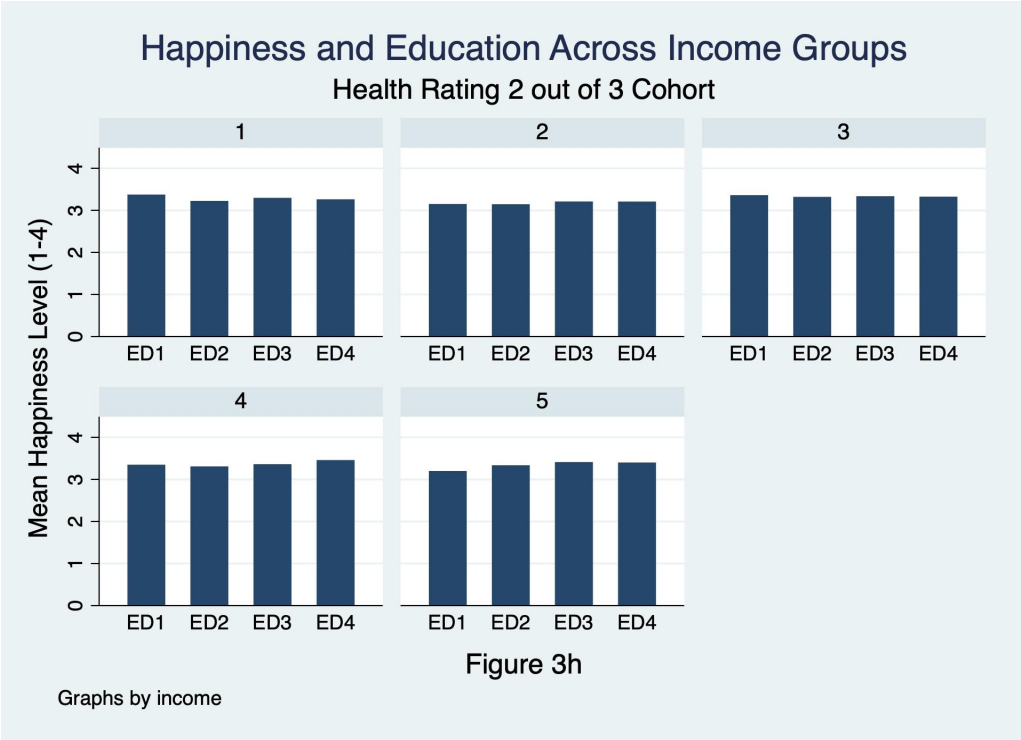

Figure 3h: Mean Happiness Level vs. Five Education Brackets in terms of intermediate health status

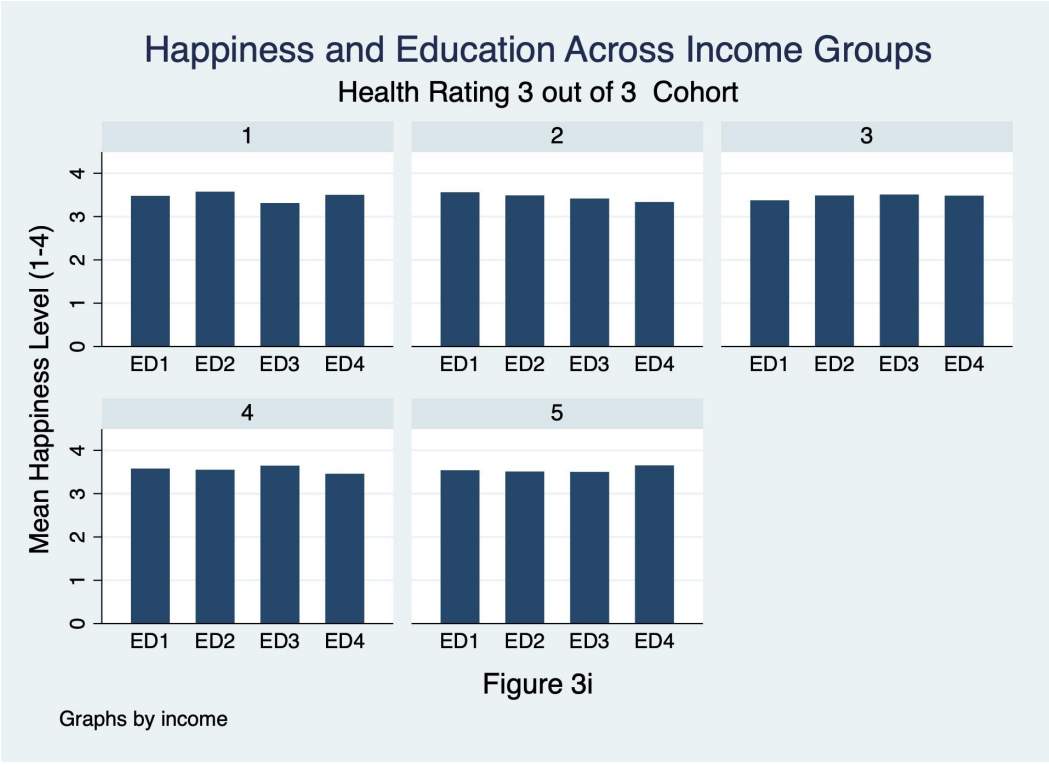

Figure 3i: Mean Happiness Level vs. Five Education Brackets in terms of good health status