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The impact of computers on Life Satisfaction: evidence from the World Value Survey

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1 INTRODUCTION

The happiness theory is a recent branch of economics dedicated to the analysis of the determinants of subjective well-being.

After the first empirical study of Easterlin in 1974, and the theorization of the Happiness paradox, more and more scholars have been interested in this field.

The purpose of this subject is to understand the way to pursue a happier life and recognize which are the factor that influence most happiness.

Happiness in economics is known as subjective well-being and its first aim is to study a function that describe the perception of satisfaction in life of individuals. The empirical analysis of the life satisfaction function starts with the tupical question "All things considered, how satisfied are you with your life as a whole these days?".

Thanks to the large amount of data available today, scholars all over the world could implement studies about happiness and life satisfaction starting from the previous question. They try to explain why some factors, for example age or the income level, have effect on the perception of satisfaction in life.

This is what we will do in this thesis: to try to understand, thanks to the World Value Survey dataset, the main determinant of happiness but adding one more element: the role of personal computers in the life satisfaction function.

Technological progress can be a way to simplify life and make easier and happier the everyday way of living but, like everything else, it can have also a dark side. For example, recent studies demonstrate that the overuse of IT (Information Technology) produces addiction, anxiety and stress.

So, our intent is to prove or dispel this negative idea behind the PC use. We will study the period from 2005 to 2014: in this period IT and Internet have achived a large diffusion in world-wide society.

From 1993, after the invention of the HTTP protocol, the Internet starts to spread at a rapid rate and when in 2000 (when Google was born), a large fraction of the world owns a PC and an Internet connection.

We want to investigate on the role of PC use frequency on life satisfaction analysing the World Value Survey (WVS) database in the wave 5 and 6 (corresponding to the period we have already mentioned) by controlling for the other factors that the literature considers relevant for the study of happiness.

They can be classified into three macro group: demographic factors (age, gender and family circumstances, as well as nationality and education), economic factors (such as unemployment, and social class) and political factors (like the participation in politics, and the degree of governmental decentralisation/democracy).

By implementing an econometric analysis of the WVS data, we will understand which effect of the use of computer plays on life satisfaction, and which are its joint effects once other happiness drivers are considered. Our empirical analysis has a strong policy-oriented importance, since it can clarifies the pros and cons of today massive usage of IT in society, and to guide more evidence-based policy-making for the digital age.

2 LITERATURE REVIEW

2.1 HAPPINESS THEORY

"Measure of individual well-being, also connected with genetic characteristics, socio-demographic and cultural factors, religious faith, political orientation, economic factors, including income level and employment status" (Derek, 2010)

This is the way that in the Treccani dictionary is define the word happiness in the economic field.

In a period of great uncertainty and confusion about wealth and income like the 21st century it is more and more relevant that human being is searching for a new dimension of stability and happiness.

Happiness is a concept that has always been considered important since the time of the ancient Greeks, with Aristotle and so on.

Aristotle in fact in 350 B.C. says: "Happiness is the meaning and the purpose of life, the whole aim and end of human existence."

Despite this word in the economics filed sound strange for many economists, it is used many times during the history.

Ancient and modern philosophy had a different idea of happiness. For the ancient philosophers happiness is a form of virtue while for the modern philosophers happiness is an advance towards future things.

For the ancients an individual must not have the pretence of wanting something different from what one has: a poor man should think that his wealth lies in what he possesses.

Furthermore, for Aristotle, Plato and Socrates, happiness is in virtue, a state that does not change even if external fact occurs. Virtue and happiness coincide in ancient world ideas.

In the modern age, happiness must instead be found individually. Modern happiness is in fact in motion, it is dynamic.

In Italy and in France in the fifteenth century there was talk of "felicità pubblica", in particular the economic tradition of Antonio Genovesi (in Naples) and Pietro Verri (in Milan). Happiness is the cornerstone of Italian economic thought in the second half of the eighteenth century. Two main Italian groups of political economists of the time developed the theme of happiness.

The Milanese group worked along eudemonistic[1] lines of the eighteenth century, that is, individual happiness as the starting point for public happiness. The Neapolitan part was based on a reinterpretation of the Aristotelian tradition, aligning it with the new scientific method. Both the Italian theories focused on the role of happiness on the political life, for this reason they considered the public sphere of happiness (Bruni & Porta, 2003).

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[1] Eudemonia: an ethical doctrine holding that the value of moral action lies in its capacity to produce happiness.

The theme of happiness has always been discussed by the philosophical thought of the Western world, and beyond, and since the 1970s it has become the subject of interdisciplinary study by psychologists, sociologists and economists.

But the first time that this concept is used in an economic prospective was in 1972 when the Bhutan's former king, Jigme Singye Wang Chuck, introduce the Gross national Happiness (GNH) at an international conference.

After that important declaration the Economics of happiness was born as a branch of the economics and thousands of scholars started to study this phenomenon; but many others continued to declare it is not worth.

To better understand the purpose of the following analysis we need to make an overview of the different approaches in this field, the main determinants, and the measurement of happiness.

The economics of happiness is a branch of the economics that is influenced by a lot of other disciplines, like demography, sociology and psychology¸ it combines the typical economic techniques with those used by psychologists. It relies on surveys measuring extended notions of utility, that look for the role of economic, social, political and other factors that may affect wellbeing.

Data are collected across countries and in all the continents hundreds of thousands of people are interviewed.

Thanks to this huge amount of data, for example those collected by the World Bank open data or the ones of the World Value Survey, scholars try to analyse causes and implications of happiness, looking for a correlation between the declared subjective well-being and social/economic variables (for example: income or living condition).

The first empirical evidence, from which the happiness theory started, was the non-existent or too small correlation between income and happiness, or between economic welfare and well-being. It became known as the paradox of happiness in economics, or Easterlin's paradox.

In 1974, the American economist and demographer Easterlin, imagined something that for the economists of his time was simply naive if not provocative: quantitatively measuring happiness.

Easterlin's first statistical analysis substantially arrived at the following results (Easterlin, 1974): while within a single country, at any given time, the richest people declare themselves happier than the poorest, the increase in income over time does not produce increases in subjective well-being in countries with a high average level of income.

Furthermore, in the comparison between countries, there is no significant correlation between income and happiness, and the poorer countries do not appear to be significantly less happy than the richer ones.

In other words, when you are poor (both individually and as a country) the increase in goods easily translates into an increase in well-being; when a wealth threshold is exceeded, the one that allows you to meet the ordinary needs of life, the increase in income no longer translates into happiness.

The data collected by Easterlin was based on subjective self-assessments, interviewing people on their perception of happiness asking them questions such as: "overall, do you consider yourself very happy, happy enough, or not very happy?".

Easterlin himself together with Daniel Kahneman and Robert H. Frank tried to explain the paradox by considering the consequences of increasing income/wealth as if we were unconsciously running on a rolling carpet, calling this metaphor the "treadmill effect".

Daniel Kahneman (Kahneman, 1999) in his works distinguishes between two types of treadmill effects: the hedonic treadmill and the aspiration treadmill.

Firstly, the hedonic treadmill (or the theory of the level of adaptation, or set point theory), that can be summarized as follows: the human being adapts to changes and, increases in income/improvements in living standards produce variations in well-being (or happiness) only in the short or very short period, after which we return to an initial level of happiness (set point), which basically depends on genes and culture. Kahneman explains this psychological mechanism by linking happiness (simply call pleasure) with the novelty of having or do something.

Secondly, the satisfaction treadmill, on the other hand, depends on the level of aspiration, which marks the boundary between satisfactory and unsatisfactory results. When income increases, as material conditions improve, aspirations for the goods we would like to consume also increase, and this induces consumers to demand continuous and more intense pleasures to maintain the same previous level of satisfaction.

The aspirations treadmill, which normally is added to the hedonic one, therefore works so that subjective happiness (the self-assessment of one's own happiness) remains constant, despite the quality of the goods we can improve.

A further theory on the treadmill effect developed by Thorstein Bunde Veblen emphasizes positional effects or a sort of “positional treadmill”. This theory states that the well-being we have from consumption depends above all on the relative value of consumption itself or on the comparison with the consumption standards of others. In other word individual happiness depends on how much the absolute level of our consumption differs from that of the others with whom we normally compare ourselves.

These theories are based on the need for sociability, and moreover based on feelings of rivalry or envy. The individual who is the subject of those theories is basically envious and likes to rival others through goods. Many economists point out that frustration and dissatisfaction are often caused by these lofty aspirations and positional confrontation with others.

The economist Tibor Scitovsky, who was among the first to study the relationship between economics and happiness around the mid-1970s, explains that the pleasure perceived by a good is entrusted only to self-evaluation. He states that there is a strong tendency to replace the goods of creativity, that is, those that generate emotions, with the goods of comfort, which at first may appear equivalent but their effect is not lasting but only illusory.

So, it can be seen as a systematic “myopia” mistake in consumption. This tendency on replacement of emotion with material goods is called Scitovsky effect (Scitovsky, 1976).

Secondly, we could call the Kahneman effect the important cognitive errors in the self-assessment of subjective happiness. Kahneman with his studies has shown that when people have to express an evaluation of an experience, they fall into two systematic errors: they attach too much importance to the last phase of the experience (end) or to the emotionally strongest moment (peak). So, the ending moment or a particular event inside an experience determine the final perception of it. All these characteristics influence the evaluation and perception of the feeling of happiness or the perception of the satisfaction in life.

Object of study by many other scholars are the variables on which happiness, also understood as subjective well-being, depends.

Lots of scholars introduced almost simultaneously the term "relational good" as a solution of the happiness paradox. The philosopher Martha Nussbaum (1986), the sociologist Pierpaolo Donati (1986), and the economist Benedetto Gui (1987) and

Carole Uhlaner (1989) almost in the same years originate their own definition of this term.

Uhlaner defines relational goods as something that «can only be "possessed" by mutual agreement that they exist after appropriate joint actions have been taken by a person and non-arbitrary other."» (Uhlaner, p.254, 1989)

She and Benedetto Gui call relational goods those relationships that cannot be produced or consumed by a single individual, because they depend on the modalities of interactions with others and can only be enjoyed if shared. In Gui's theory, the relational good is distinguished from the subjective characteristics (affective states and motivations) of agents.

In particular, he proposes to analyse the form of interaction as a particular production process, which he calls "encounter". He suggests that in a meeting of any kind in addition to traditional outputs other types of intangible outputs are also "produced", something that has a relational nature. These are the changes in the human capital of interacting subjects and, indeed, relational goods. (Gui, 1987)

Therefore, for Gui and Uhlaner, relational goods do not coincide with the relationship itself: friendship cannot be defined as a relational good, but an interaction, an encounter, of which the relational good is only one component.

From Pierpaolo Donati's point of view, relational goods are found within a relational approach to social relationships. In this context, relational goods are defined as "caused" effects of the action, not the effect of the individual's choices, nor of the environment. (Donati, 1986)

Finally, for Martha Nussbaum, relational goods are those human experiences where the relationship itself constitutes the good; inter-subjective relationships are "relational goods", the relationship is the good and not a functional instrument for economic exchange. Furthermore, the dimension of reciprocity is fundamental. (Nussbaum, 1986)

A recent point of view is that of Luigino Bruni (Bruni, 2006); he explains that strong evidence emerged from theory and empirical studies that there is a close relationship between relational goods and people’s well-being or happiness. Bruni gives a lot of importance on this type of goods.

He defines relational goods as non-material goods that can only be produced and consumed within groups, and which are intrinsically linked to relationships and interaction. Moreover, he supposed some basic characteristics of relational goods that are:

- Identity, in the sense that people involved in a relationship need to be known and not anonymous,
- Reciprocity, since the relationship is the basis of good, it must be enjoyed in reciprocity.

- Simultaneity, relational good are produced and consumed at the same time, moreover, "free riding" is not possible in the act of consumption because the relational good to be enjoyed requires that you get involved in a relationship,
- Emerging fact, it means that this kind of good can emerge in every type of relationship even if the original purpose of the meeting between people do not have relational determination,
- Gratuitousness, the relationship is sought as a good in itself, not used for alternative scope.
- Goods, in the sense that it is a good, but it is not a commodity, it has a value (because it satisfies a need) but does not have a market price.

This is a small review on the theme of happiness, I try to expose the main topics of this field, the origin and the theories concerning it.

2.2 DEVELOPING THE ECONOMICS OF HAPPINESS

Since 1974 the study of happiness has met with many successes and more and more scholars have become interested in this phenomenon trying to explain what the determinants of happiness and subjective well-being were.

In scientific term happiness is also known as subjective well-being and it must respect some characteristics to be measured.

It needs to be subjective; an objective analysis would not be able to describe a subjective state of mind. It has to consider positive and negative aspect of life and all the area of life of individuals.

Moreover, it has to capture two basic component of happiness the “affect component” that represent the feelings and the “cognition component” that describe the rational and intellectual way in which human being evaluate happiness (Frey, 2018).

In the study of happiness lots of scholars focus their research on subjective life satisfaction that is the output produce by the answers given to the question: “Taken overall, how satisfied are you with the life you lead?”.

It gives a short run feeling answer because interviewed people consider their situation “overall”, and with respect to the life they live in a precise moment.

Thanks to this answer scholars have been able to study one of the most important tasks of happiness research: determining, isolating, and measuring the various determinants of human well-being.

In 2002, B. S. Frey and his colleague Alois Stutzer in the paper “Economics of happiness”, try to make a step further.

They try to create a happiness function to establish an econometric relationship between the happiness measure and the determinants of happiness. They consider three macro-group of variables: socio-demographic variable, economic variable, political variable.

All this set of variables contain aspect that can influence the perception of the individual happiness, for example in the demographic field age, marital status or education level can influence happiness.

With the economic factor they want to consider income, employment and even if it could seem strange inflation.

Lastly, for political variable they focus the attention on the role of democracy. Their opinion is that people's happiness is influenced by the kind of political system they live in, the trust on authorities and the degree of decentralization. (Frey & Stutzer, 2002)

Moreover, Bruno S. Frey in 2018 provide a list of areas and variables that can be considered the determinants of happiness. (Frey, 2018)

He divides the determinants of subjective life satisfaction in five different areas:

- Genetic endowment
- Economic factors
- Socio-demographic influences
- Culture and religion
- Political conditions.

Frey define the genetic endowment as something that constitute the personality structure and highlight the role of inheritance of genetic factor. Moreover, he specifies that «Psychological studies suggest that the differences in happiness between persons that are attributable to variations in genetic inheritance amount to forty–sixty per cent of the total differences». (Frey, p. 14, 2018)

This means that most of the perception of happiness/satisfaction derive on the attitude/approach in life of people and depend on the way individuals face the "unexpected" in life.

Regarding the economic factor, he underlines four relevant aspects to consider: income and its distribution, work and economic development of the country.

The relationship between income and subjective well-being has been studied by lots of scholars and the result of their empirical research state that apparently rich people feel their self more satisfied of their life. The reason why the poor are less happy is that the scarcity of resources affects their way of life and an increase in income would cause a consequent increase in happiness but, as R. Easterlin theorized, this growth will end at a certain level of income.

Frey says that «the relationship between income and happiness is characterized by decreasing marginal utility», both from a micro-economic and a macro-economic point of view. (Frey, p.15, 2018)

Concerning the income distribution as the literature state income inequality affect happiness of inhabitants of a country but this sense of discontent also applies to inequalities between nations not just within a single country (Sala-i-Martin,2002).

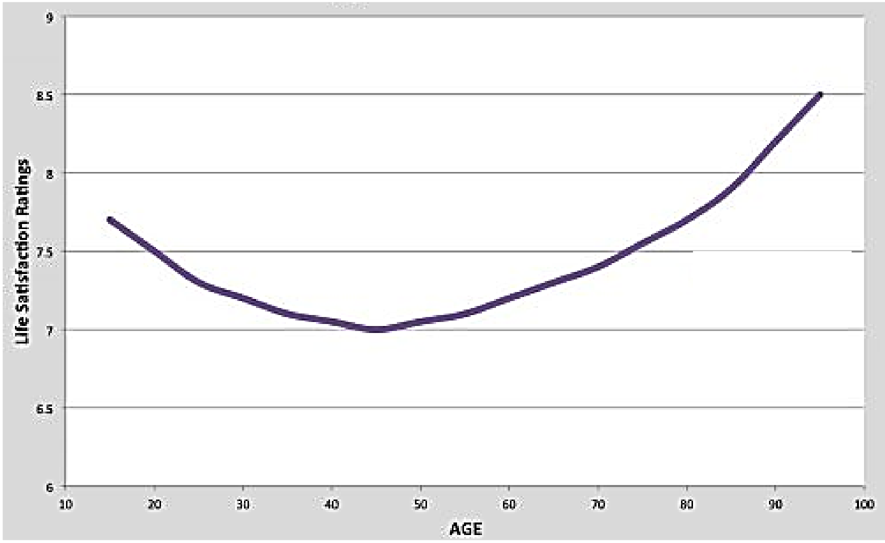
The working status is one of the characteristics that has a strong impact on happiness. Research underlines that people who lose their jobs are much more dissatisfied with their lives than are those who hold jobs even if they still have another form of constant income. Again, Frey says that answer will be found on sociological and psychological factors, in fact, he says: «People without work lose their self-confidence and feel excluded from the rest of society, which is largely composed of employed people. Unemployed people living in a region with many other unemployed therefore feel less unhappy than those living in regions in which most people are employed » (Frey, p.15, 2018).

Lastly, the economic development in the short run period increases the life satisfaction because improvement is always translated welfare and economic growth but in long term, also due to comparisons with other countries, satisfaction does not change much.

Moving on to the socio-demographic factor Frey as many other scholars identify a list variable that influence the subjective well-being, first of all, the age of respondent.

In literature it has been seen that the relationship between happiness and age is represented by a U-shaped curve, in fact, as you can see from the graph in the years of youth, happiness is high and the closer you get to adulthood the more it decreases and then starts again to rise with increasing age.

Figure 1: Happiness-age U-shape curve



Source: Margit Henderson, The Paradox of Aging: the Happiness U-Curve. (2018)

The U-shape curve of happiness seems to be partly determined by life experience and the biological, cognitive and emotional changes of aging itself that result in better emotional regulation and greater involvement with the present.

Family status is another important determinant, in fact, people that are married or live in a relationship as married seems to have a greater life satisfaction because they use the relationship as a counterweight to the stress of working life.

Furthermore, the presence of children slightly reduces the happiness, but it tends to rise again when children left house.

Another important social aspect to consider are the relationship that people have during their life.

As we already said in the previous paragraph, relational goods are fundamental to happiness. Intensive and regular social interactions within the family and among friends and contacts contribute strongly to happiness.

Education is important too, in fact, most educated people have more opportunity in work and in daily life. Also, from the point of view of leisure activities, they can be pursued more actively and diversified way.

Lastly, Frey said that «Health is one of the most important contributors to well-being. This is true for both physical and psychological health. Subjectively perceived good health and subjective life satisfaction are closely related» (Frey, p.18, 2018).

Physical and psychological disturb affect the daily life of individuals, temporarily if the diseases are transient, but permanently if these are incurable.

The fourth area of determinants is the culture and religion. Different cultures influence the subjective well-being, so that it differs from country to country.

Religious people, instead, have been shown to be happier than those who do not belong to a religious community. People believing and trusting in a higher being are better able to cope with the adversities of life and relate to other.

The fifth and last macro area is the political condition of a country of residence.

Research has established that economic activity fares better in democratic rather than authoritarian societies. Frey points out that there is a mutual enforcing causal relationship between subjective well-being and democracy, in fact, if democracy increase happiness in turn, happy people will support democracy and institutions more.

Moreover, he states that in a federalist society the local level decision making process influence positively happiness, so, individuals are incentivized to participate in political life.

This is what Frey, but even the great majority of scholars, has found analysing the determinants of happiness. So, happiness is influenced from both genetics and external factors.

Moreover, well- being is something subjective so, determinants influence every human being, but every individual is influenced from different aspect in different measures.

On the idea of this result, I want to build my analysis by adding one more element: analysing how computer use affects happiness and in what way. But before is essential understand the PC revolution phenomenon and its meaning.

2.3 TECHNOLOGY AND ITS MEANING

Standard of living of 21st century is higher with respect of the past generation. There is a wider range of consumption good and living opportunities nowadays and in standard economics this means that, if it is accompanied by rising per capita income, the indifference curve[2] is positioned in a higher level, so people happiness is increasing.

However, lots of recent econometrics analysis have denied what the traditional economy says.

These studies explain that there is no positive relationship between economic growth and happiness, the marginal contribution of additional wealth on happiness for rich individuals is not so relevant and that the reduction of social life and social capital may reduce individuals' happiness (Easterlin, 2010).

One way to understand and explain this paradox is to look at the effects of two driving forces of economic and social change: technological progress and the information and communication technology revolution.

These forces have changed some aspects of our life in positive or negative way.

The advantages derived from the advent of the IT technology are various, and the benefit of it are spread in different sector, from the individual sphere to the collective one.

Technological progress has a positive effect because it provides to us a wide range of new products or by improving the quality of them.

[2] An indifference curve is a graph showing combination of two goods that give the consumer equal satisfaction and utility. Each point on an indifference curve indicates that a consumer is indifferent between the two and all points give him the same utility.

Digital life transforms business, consumer and personal logistics, opening up a world of opportunity and options. Connection is one of the most evident positive effect of digital technology. Thanks to the advent of social media and communication platform people can looking for individuals who share same interest or passion and that live in different state or continent.

It links people to people, contributing to spread the knowledge, facilitating education and supplying entertainment globally. (Mochón, 2018)

Moreover, advances in computer science have meant that information is increasingly distributed globally and openly, and it destroy a lot of barriers to education and by enhance scientific progress thanks to the share experiences that allows to create networks. But as we know technology and social media also have some disadvantages. The main critic of technology is about its impact on our humanity (Heidegger, 1977).

Some scholars have pointed out that technology is contributing to the reduction in all the forms of in-person social intercourse and that provoke a fragmented society in which traditional relationships are harder to sustain, more specifically the Internet supposedly isolates people to "the real world".

The ideas that psychologist and sociologist have on the use of communication tools is that people's cognitive capabilities will be challenged in multiple ways.

In fact, digital society is characterized by an intrusive connectivity that has different cognitive and emotional consequences.

One of this effect is the addiction that lot of social media produce on users, and mostly on the young generation. Teenagers and children are the most damaged by social and internet platforms, in support of this definition are available lot of data regarding the rate of depression and suicide in this age group. There are organizations that are actively competing people´s attention, distracting them with smartphone notifications, highly personalized news, addictive games and fake news. (Mochón, 2018)

Moreover, to produce negative effect on the emotions are the comparison with the wellness of others.

In fact, nowadays technological change takes place so quickly and who's that are not able to "keep up with the times" experiences feelings of inferiority.

This feeling produced a reduction of perceived happiness or subjective well-being.

Isolation, high standard to reach to be "enough", addiction on use are the most evident negative factor of IT technology.

Understand to what extent the use of these devices affect happiness is the objective of this thesis. The idea behind the analysis was born due to the current situation.

The recent pandemic has closed all of humanity within the walls of their homes and the only way to communicate with the outside world has become the use of telephones and computers.

This sparked a question in my head: “did the use of IT technologies affect people behaviour and attitudes?” and most important, “how much happiness is influenced by technology?”.

The role of PC use is not very present yet in research. A possible explanation could be that this phenomenon is recent and above all in continuous evolution.

At first sight scholars have found that the relationship between PC use and happiness is positive, so, the increasing use of PC produce higher level of life satisfaction because it influences, and it is influenced by other set of variables as income and education.

Scholars also found that there are differences between people's behaviour in face-to-face contexts and interactions behind a PC. In face-to-face situations there are handed down social norms that "govern" these relationships. In principle, people might expect users of social networks to behave according to the same social norms generally recognized in physical interactions. However, in online environments, people feel "invisible" and their reaction to provocative behaviour can be exaggerated in some respects. (Sabatini & Sarracino, 2014)

In the online world, people care less about the risk of offending others in a conversation. In online interactions, dealing with strangers who put forward opposing opinions in an aggressive and offensive way appears to be a widespread practice, whatever the topic of discussion.

Moreover, Sabatini and Sarracino say that online interaction may cause anxiety, distress, and deterioration in trust towards unknown others (Sabatini & Sarracino, 2014).

This tendency to be aggressive and indifferent to the opinions and characteristics of others is particularly evident in young generation.

Another interesting point to analyse can be the way in which technologies are used to inform themselves about current events, politics, health etc.

Propaganda, disinformation, and hoaxes have always been present even in "traditional" sources of information such as newspapers, magazines, and books. but with the rise of social media, it has become possible for the bad guys to manipulate the media in new and new ways. (Dupuis & Williams, 2019)

As we said before, people are bombarded with information that most of the time they do not need, or they are searching for something on the net and the huge number of websites do not always provide news based on reliable or truthful facts.

The point of this large amount of information, very often incorrect, is that it is not the result of external tampering, but instead this misinformation is the result of the natural behaviour of ordinary users.

Social media like Facebook, Twitter and Instagram all allow you to interact with various users "anonymously" or have designed their interfaces to allow them degrees of freedom in the ways they can manipulate their identity.

These manipulations sometimes give content creators a semblance of trustworthiness that does not guarantee the truthfulness of the information they produce.

All these topics will not be discussed in detail in the following paragraphs, we will focus on the study and analysis of the influence of the frequency of use of computer on happiness and its major determinants. This decision is guided by the composition of the survey that we use. In fact, our variable of interest analyses how much interviewed people use this device. We say that the internet effect it will be not studied but we can understand the use of it thanks to the use of computer.

If someone use frequently personal computer, especially for the 6^{th} wave (2010-2014), it could be using the internet and all the social platforms. So, we can indirectly understand how the Internet and social media influence happiness.

3 TREND OF HAPPINESS AND ITS DETERMINANTS

3.1 INTRODUCTION TO OUR DATASET

The purpose of this thesis is to go inside the relationship between happiness and the use of PC. To undertake this analysis, we take in consideration one of the most important and biggest survey of the recent years.

The World Value Survey is an international research program devoted to the scientific and academic study of social, political, economic, religious, and cultural values of people in the world.

The project's goal is to assess which impact values stability or change over time has on the social, political and economic development of countries and societies. It is organized in waves conducted every five years.

The survey contains data of about 120 countries that represent the 94,5% of the world population, over 600 indicators and hundreds of thousands of data.

For each wave, suggestions for questions are solicited by social scientists from all over the world and a final master questionnaire is developed in English but before to be asked the questions of the questionnaires need to be translated in the languages of the respondent.

After that, each country is left with a representative national sample of its public.

The survey is carried out by professional organizations using face-to-face interviews or phone interviews for remote areas.

The waves are seven starting from 1981 to 2020. Each wave has some questions in common and other that contain new theme that are asked only in a period. The seven waves are: 1981-1984, 1989-1993, 1994-1998, 1999-2004, 2005-2009, 2010-2014, 2017-2020 (in progress).

Lots of scholars has used this database in research on happiness field analysing how subjective well-being varies across country, for different income category and in many cases searching correlation with contemporary problems or phenomena.

Ngamaba & Soni (2018), for example, have examined whether different religions experience different levels of happiness and life satisfaction and in case this is affected by country economic and cultural environment.

This study explores the variability in happiness and life satisfaction across religious groups and whether the variability is affected by country-specific/contextual factors such as cultural and economic development. Nine religious groups were investigated: Buddhist, Hindu, Jew, Muslim, Roman Catholic, Orthodox, Protestant, Other religions and Nonreligious.

They use a multilevel mixed-effects regression analysis because WVS executed six different surveys from 1981 to 2014 and they want to analyse the time effect, moreover, in this study, individuals who were affiliated to religious groups were nested by country.

Bruni & Stanca (2006) instead studied the effects of television on the aspirations of individuals focusing on the impact of television viewing on income aspirations using this database.

They estimate this relationship using individual data from the World Values Survey. They could only use the third and fourth waves because the other waves do not contain information about television viewing. Moreover, they use to represent TV consumption levels the variable constructed from answers to the question ‘‘Do you ever watch television? If yes: How much time do you usually spend watching television on an average weekday (Not weekends)?”.

From this variable, they constructed a dummy variable then run a OLS regression for the pooled sample (waves 3 and 4), using life satisfaction as dependent variable. The regression is estimated on about 55,000 individual observations and include continent specific geographic dummy variables to control for cultural and societal differences.

Always about the WVS database, it contains more than a thousand variables, many of these are repeated in all the waves, but others are requested only in certain periods.

Data for the use of PC, for example, are available only in two of the six waves: WVS wave 6 (2010-14) and WVS wave 5 (2005-08) so I decide to focus on this time-period.

Moreover, basing the thesis on literature, I decided to select variables considering the macro areas theorized by Frey (2018), that I will explain in the next sections.

3.2 HAPPINESS TRENDS

A model of subjective well-being describes how people experience the quality of their life and includes both emotional reactions and cognitive judgments.
SWB poses distinct but often interrelated components of well-being which can be divided into two extreme forms of happiness:

- Affective balance, which is composed of momentary feelings of pleasure, which in turn in psychology are called "positive affects", and of momentary feelings of distress, called "negative affect".
- Eudaimonia, from the Greek and means eternal bliss. This is the state of mind that we will consider shortly before died. Often also considered as Life satisfaction that is a global judgment of one's life. (Diener, 1984)

Modern happiness literature, in fact, uses a subjective concept of happiness. Each person must establish what happiness means to him or her by considering several factors that change from one individual to another.

Empirical research in happiness focuses on an intermediate form of it, subjective life satisfaction. It reflects the answers given to the question: "Overall, how satisfied are you with the life you lead? ".

People who answer this question do not look at short-term feelings because they are asked to consider the "life you lead" so their "overall" situation that is, considering the general assessment.

Using life satisfaction, happiness is measured by extensive surveys of a representative group of people where careful questions are used to collect the self-evaluated well-being of individuals.

These questionaries are studied to involve a cognitive process in which the respondents undertake comparisons with others, consider experiences in the past, and evaluate expectations in the future. (Frey, 2018).

The tables below show the frequencies and the main statistics obtained from processing of the WVS database for this variable.

Table 1:Summary statistics of life satisfaction by wave

	Mean	**Min**	**Max**	**Sd**
2005-2009	6.70	1	10	2.34
2010-2014	6.83	1	10	2.27
Total	6.77	1	10	2.31

Source: our elaboration on WVS database.

This first table reports some of the descriptive statistics of this variable in relation to the wave. As we could assume from the composition, life satisfaction is increasing in the sixth wave, because the number of people that answer from 6 to 10 is increasing. Furthermore, this slight growth between the 5th and 6th wave is visible both from the average (from 6.7 to 6.8) and, also the value of the standard deviation demonstrates an increase in happiness in the sixth wave, as the dispersion of the single observations around the arithmetic mean decreases.

Table 2: Composition of life satisfaction by wave

LIFE SATISFACTION	**WAVE**		
	2005-2009	**2010-2014**	**Total**
DISSATISFIED	2,955	2,818	5,773
2	2,071	1,828	3,899
3	3,885	3,426	7,311
4	4,609	4,561	9,170
5	11,261	11,535	22,796
6	9,451	10,611	20,062
7	13,424	15,156	28,580
8	16,469	17,800	34,269
9	8,434	9,167	17,601
SATISFIED	10,449	12,077	22,526
TOTAL	83,008	88,979	171,987

Source: our elaboration on WVS database.

In the second table we can see the composition of life satisfaction in relation of the period of the interview, the wave.

It is useful to get an idea of the size of the sample we are going to study and how the life satisfaction variable is structured.

The life satisfaction variable is made up of 10 values where the lowest is associated with dissatisfaction in life and going up to 10 where we have the value that represents satisfaction in life.

The graph below represents the frequency distribution of the life satisfaction in the WVS. It shows us a summarized grouping of data divided into mutually exclusive classes and the number of occurrences in a class.

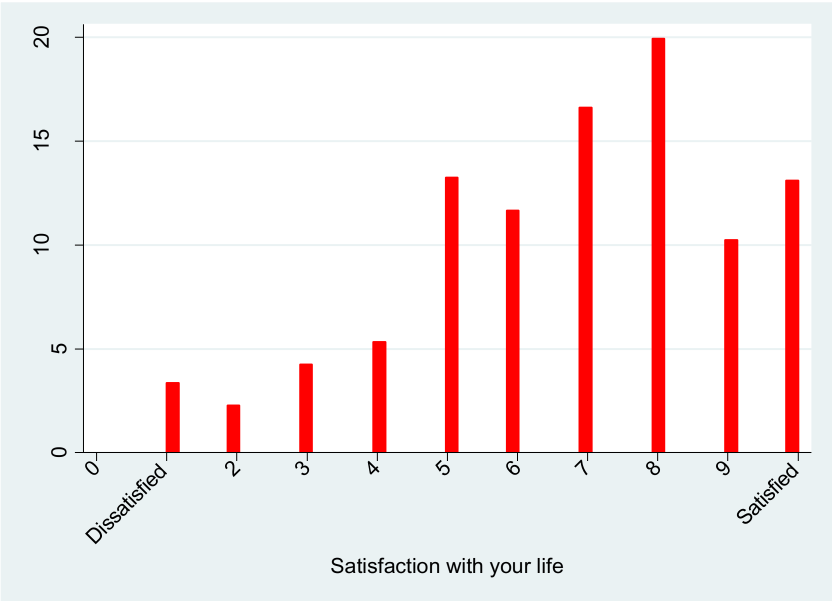
It describes the composition of this variable of the 5^{th} wave and the 6^{th} wave that means it consider the period from 2005 to 2014.

The table represent a 10-scale answer on the question: "All things considered, how satisfied are you with your life as a whole these days?".

As we can see, the graph shows us that the interviewed people in this survey are on average happy because the mean is almost 6.7.

The graphical representation of percentage frequency distribution allows us to make some consideration about the composition of satisfaction in life. Almost the 20% of respondent in the period considered have answered 8; more than 80% of the total observation are grouped in the value from 5 to 10 and for value from 1 to 4 people that does not feel itself happy are very few.

Figure 2: Frequency distribution of life satisfaction



Source: our elaboration on WVS database.

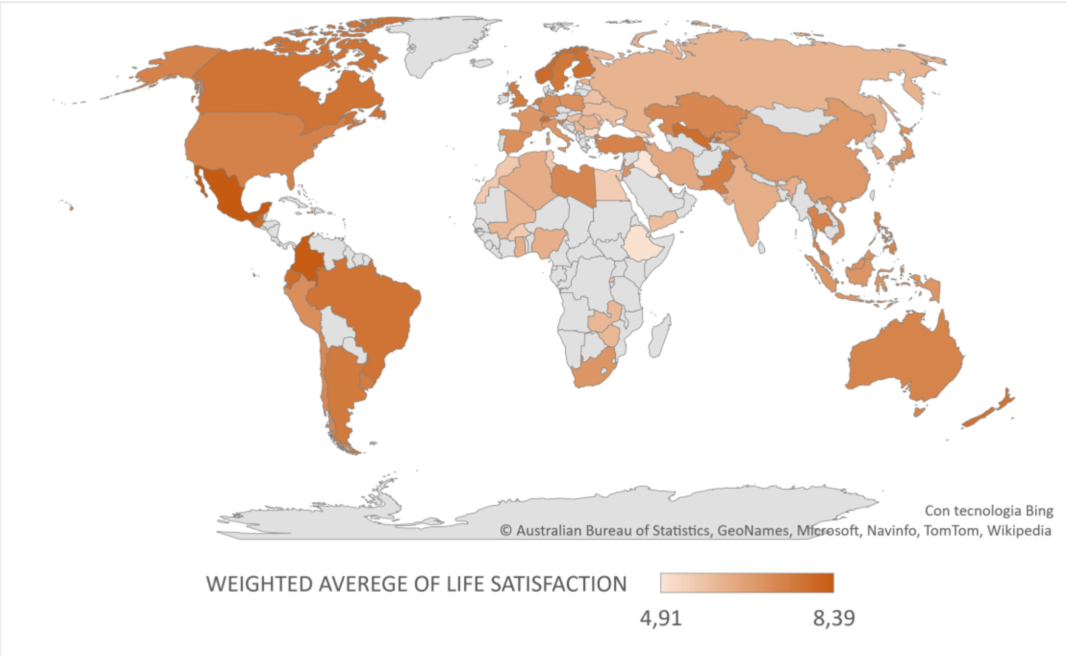
Since the scope of these analysis is to understand how happiness/life satisfaction is influenced by other variable, by the country of origin of the respondent and finally the role that PC use I decide to use the satisfaction of life questions as dependent variable because in the WVS it can be considered as a subjective well-being indicator.

Moreover, I decide to not use the data of the question "How happy are you in your life?" for two reasons: firstly, because even in literature life satisfaction is considered a more exhaustive indicator of SWB and above all for analytical purpose. If we were to use happiness, we would have to make a regression with only 3 point-scale that are very happy, quite happy, and not very happy. For this reason, it is convenient to use life satisfaction as a dependent variable because it enables us to run ordered probit as well as linear regression.

After that, it is interesting to understand with the data at our disposal which are the countries where the interviewees feel most satisfied with their lives.

In this regard, below we have a geographical map that represents the weighted average of happiness in different countries through different color intensities.

Figure 3: Average life satisfaction by country



Source: our elaboration on WVS database

The average was weighted according to the interviewees for each country and as we can see from the legend in the image, for all the countries interviewed, the averages range from a minimum value of 4.9 to a maximum of approximately 8.

We would expected to have South America, like Africa, in the least happy countries among those considered. In contrast, Mexico in this database records the highest life satisfaction value.

Northern Europe, on the other hand, confirmed our expectations, as it is known that Scandinavian countries have the highest levels of happiness in recent years.

The World Happiness Report is a survey prepared by the United Nations, which examines the happiness of citizens in 156 countries, with reference to their economic prosperity, life expectancy, welfare state and individual freedom.

I cited this report because from 2012 to today the Scandinavian countries have always "ranked" among the top positions, first of all Finland, so they are among the happiest countries in the world according to this report (World Happiness Report 2012). The table below shows all the values of the averages calculated using the following formula.

Formula 1:

$$Weighted\ average\ Life\ satisfaction = \frac{\sum Level\ of\ satisfaction * N.of\ observationfor\ that\ level\ in\ that\ country}{Total\ N.of\ observation\ for\ that\ country}$$

The table should be read from left to right and the various intensities of colours divide it according to the level of satisfaction in life.

Table 3: Average life satisfaction weighted by country

Iraq	**4.91**	**Mali**	**6.09**	**Japan**	**6.94**	**Thailand**	7.37
Ethiopia	**4.99**	**Russia**	**6.14**	**Kyrgyzstan**	**6.96**	**USA**	7.38
Georgia	**5.18**	**Romania**	**6.17**	**Singapore**	**6.97**	**Pakistan**	7.48
Bulgaria	**5.22**	**Estonia**	**6.20**	**Malaysia**	**6.99**	**Uruguay**	7.53
Armenia	**5.23**	**Nigeria**	**6.26**	**Poland**	**7.04**	**UK**	7.55
Moldova	**5.45**	**Ghana**	**6.27**	**Spain**	**7.05**	**Netherlands**	7.57
Egypt	**5.52**	**India**	**6.28**	**Peru**	**7.07**	**Argentina**	7.59
Burkina Faso	**5.57**	**Algeria**	**6.30**	**Vietnam**	**7.09**	**Sweden**	7.67
Tunisia	**5.58**	**Iran**	**6.43**	**Andorra**	**7.14**	**Canada**	7.75
Haiti	**5.59**	**South Korea**	**6.50**	**Germany**	**7.16**	**Brazil**	7.75
Morocco	**5.59**	**Lebanon**	**6.50**	**Cyprus**	**7.18**	**New Zealand**	7.78
Palestine	**5.62**	**Hong Kong**	**6.60**	**Kuwait**	**7.21**	**Finland**	7.84
Rwanda	**5.72**	**Azerbaijan**	**6.74**	**Kazakhstan**	**7.25**	**Uzbekistan**	7.89
Belarus	**5.80**	**Taiwan**	**6.77**	**Chile**	**7.26**	**Switzerland**	7.91
Ukraine	**5.86**	**China**	**6.81**	**Libya**	**7.26**	**Ecuador**	7.92
Yemen	**5.89**	**France**	**6.86**	**Slovenia**	**7.30**	**Guatemala**	7.95
Hungary	**5.89**	**Italy**	**6.89**	**Philippines**	**7.34**	**Norway**	7.96
Serbia	**6.01**	**Jordan**	**6.91**	**Australia**	**7.34**	**Qatar**	8.01
Zimbabwe	**6.04**	**Indonesia**	**6.91**	**Turkey**	**7.36**	**Colombia**	8.33
Zambia	**6.06**	**South Africa**	**6.92**	**Trinidad and Tobago**	**7.36**	**Mexico**	8.39

Source: our elaboration of the WVS

Most African countries have the lowest average levels of happiness. The explanation for these values can very often be explained through political and social events that occurred in these regions. For example, between 2003 and 2011, Iraq, which has the lowest value of happiness, was the subject of a war that lasted more than eight years that caused high numbers of deaths, destroyed families, and devastated local economies.

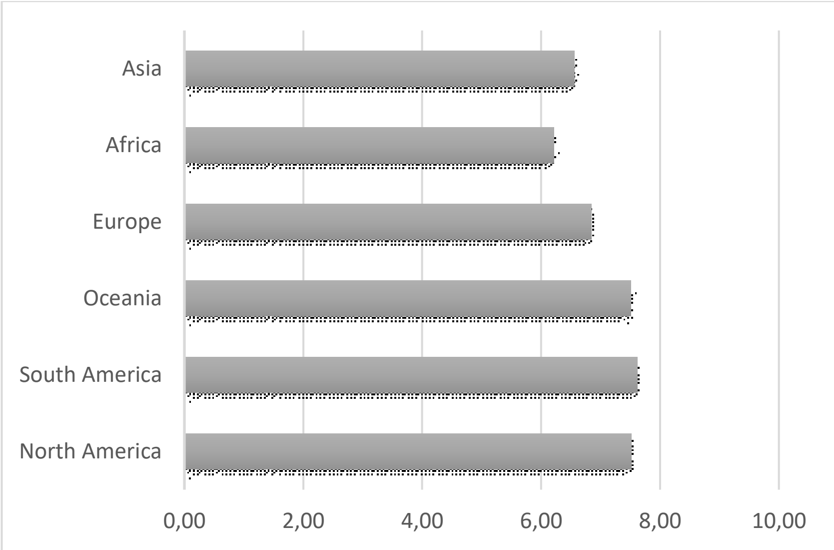
As for the inverse phenomenon, that is the high levels of happiness, the reasons could be the way in which local population approach to life for example South Americans are always surrounded by family and friends, they live most of the time in huge household and they try to make the most of their leisure time. For the Scandinavian country the high level of happiness can be explain by the economic stability of the regions and as in the case of Quatar the reason can be found on the abundance of natural resources and capital.

All these assumptions will then be deepened in the next chapters but to confirm what has been said before, we decid to group the countries considered in the WVS by continent, always considering a weighted average for the interviewees.

The countries have been grouped based on geographic location, that is, considering their geographic composition rather than geo-political composition.

Considering Europe as a whole, the high values of the Nordic countries are not enough to keep the levels of satisfaction in life above 7. Furthermore, as mentioned before, South America has the highest satisfaction value, on the contrary Africa the smallest.

Figure 4: Average life satisfaction weighted by continent



Source: our elaboration on WVS database

From this graph we also note that in order from the most "unhappy" continent we have Africa followed by Asia and Europe which all have values around 6, while the continents considered richer economically, with the exception of South America, reach values above 7.

However, this analysis does not specifically study the income of the interviewees as for the waves we are going to consider there are no economic variables available, but as a variable that can indirectly describe the level of income, we will consider the self-perceived social classes, but it will be explained later.

3.3 EXPLANATORY VARIABLES

This analysis has as objective to find if for some reason the use of PC (understood as use of technology and social media as information tools or for recreational purpose) make some consequences on the perception of happiness or subjective well-being.

A 2011 study by Georgios Kavetsos and Pantelis Koutroumpis, investigate on how the use of new communication sources, from mobile and landline phones to computers with internet access, affect happiness.

Using a European pooled cross-sectional dataset, they run an OLS regression and find that the use of electronic devices such as PCs, televisions and cell phones are associated with significantly higher levels of well-being as measured by the individual's self-reported life satisfaction.

By further monitoring penetration levels in countries where mobile devices and broadband are present, they find evidence to suggest that broadband is important for life satisfaction, especially for users who already owns the relevant devices (Kavetsos and Koutroumpis, 2011).

We will consider the Pc use variable as our key variable, so we focus our attention on how it will change when it is interacted with other descriptive statistics.

The independent variable that we will use in this analysis to study and verify the PCs effect on happiness is the variable in the WVS that ask to the respondent "How often, if ever, do you use a personal computer?" and they need to answer in four point-scale (never, occasionally, frequently, don´t know what a computer is).

Table 4: PC composition by wave

	PC use				
Wave	**Never**	**Occasionaly**	**Frequently**	**Don't know PC**	**Total**
2005-2009	387,335	15,167	18,866	3,120	75,888
2010-2014	35,095	20,222	30,248	2,753	88,318
Total	73,830	35,389	49,114	5,873	164,206

Source: our elaboration on WVS database.

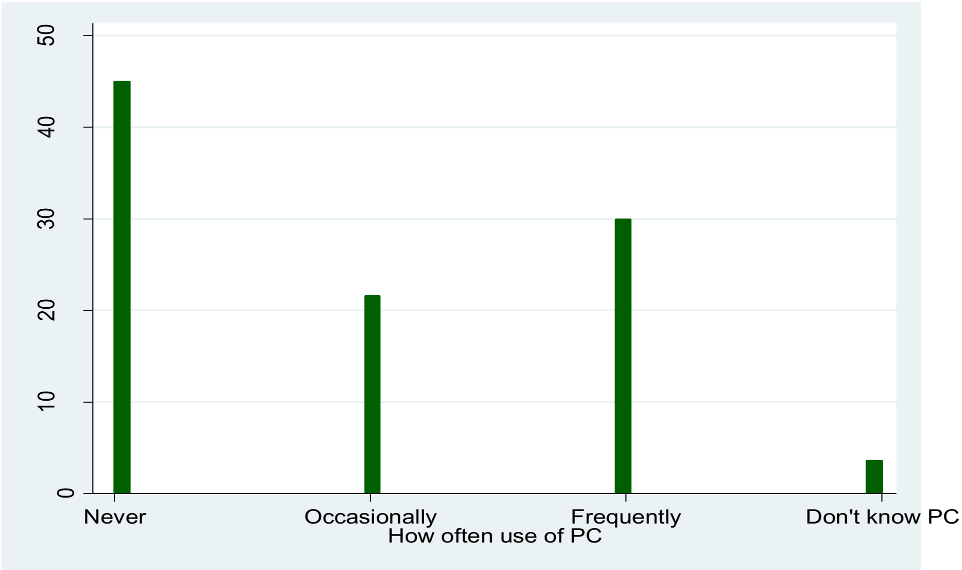
This table is useful to notice that in the 6th wave the use of PC is increasing rapidly. This is because the diffusion of telecommunication networks reached reasonable levels only after 2008.

In fact, in 2008 the Internet users were about 600 million worldwide and from this moment on it will start its exponential growth, thanks to the advent of internet.

Moreover, at first glance, in the below figure it might seem that most of the people interviewed do not use PCs.

But if we combine the frequencies of the individuals who use it occasionally and frequently, we will get more than 50%.

Figure 5: Frequency distribution of the PC use



Source: our elaboration on WVS database.

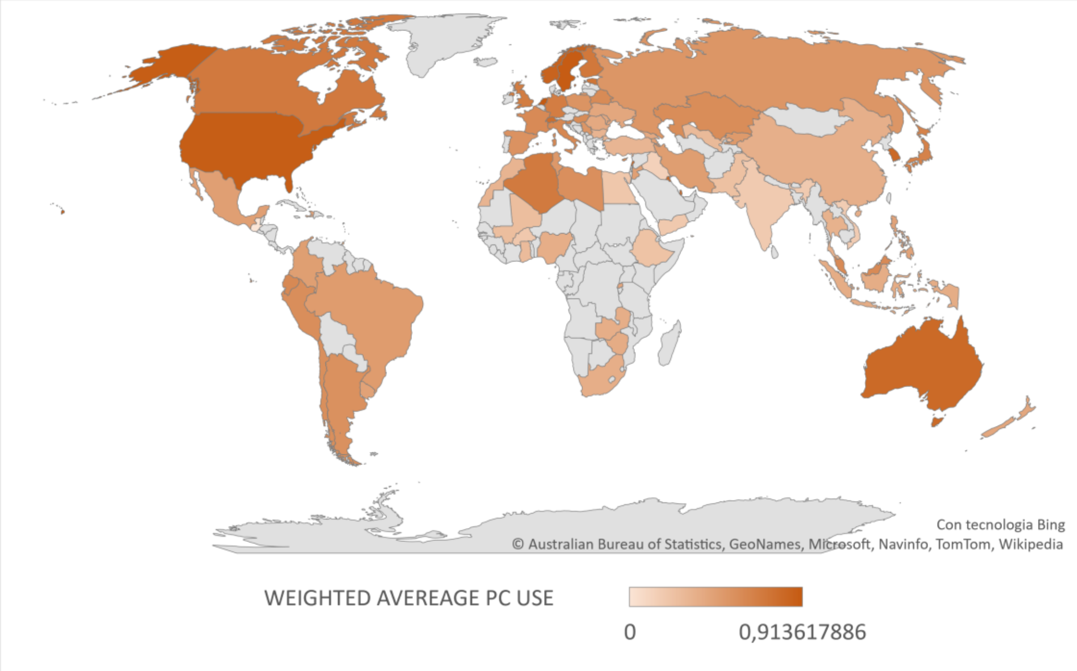
For this reason, in the analysis it will be converted into a dummy variable with value 1 if people use occasionally or frequently PC and 0 the other.

The following map shows the weighted averages of PC usage by country. As in figure 3, the average is calculated by weighing according to the interviewees by country, using the same above formula.

The map tells us that the countries that use the PC the most between 2005 and 2014 are mainly the developed countries, in fact the areas with a lower intensity of colour are countries like India, China and southern Africa.

Even if, as mentioned before, in these ten years that we are going to study the use of the PC it was still not very widespread, it can be seen that in the countries that became the pioneers of the computer world the usage is higher with respect to others.

Figure 6: PC use by country



Source: our elaboration on WVS database

During the analysis we will keep the effects of the country and wave variables constant. These will be our control variables as it does not affect the study objectives, but it must be controlled as it could affect the results.

As mentioned before, the wave variable contains the period in which the interviews were conducted. In this analysis we take in consideration Wave 5 that goes from 2005 to 2009 and wave 6 from 2010 to 2014.

During this time, many events have taken place which in some way influenced happiness.

In 2002, only 3 years before the period that we will consider, the euro becomes the single currency in Europe. Also, in EU in 2007 the Lisbon treaty was signed.

Between 2008 to 2013, the world financial system has faced the long period of financial crisis marked by a liquidity crisis and sometimes by a solvency crisis both at the level of banks and states. The Middle East is in constant war both internally and externally after the attack on the twin towers on 11 September 2001. Many South American states are plagued by poverty and inequality between social classes.

This is the briefly description of the world situation in the period of 2005 to 2014, this is something to take in consideration during the analysis because this event can influence in some way the perception of happiness of respondent.

The country variable contains the name code for every interviewed country that is in the database.

In the 5th wave are considered forty-six country and fifty-six on the 6th wave.

Every wave contains a representation of all continents, from North America to the Asian country.

The other set of variables that I will use are based on the analysis of Bruno S. Frey & Alois Stutzer (2002). This article, that I have already mentioned above, explains the determinant of happiness that are:

- demographic and personality factors, such as age, gender and family circumstances, as well as nationality, education and health
- economic factors, such as unemployment, income, and inflation
- political factors such as the extent of possibilities for citizens to participate in politics, and the degree of governmental decentralisation.

Considering this approach on the estimation of life satisfaction I decide to select a group of variables which may be compatible with Frey and Stutzer's research and which are relevant to our analysis.

3.3.1 Socio-demographic variables

This set of variables are needed to understand the personality and biological aspect of the respondent.

The age variable contains the age of all respondents from the last years of adolescence to the old age, from 15 to 102 years. In the WVS is used the age in completed years which is a quantitative variable that allows us to know exactly how old people taking part in the survey are. This variable will be useful to understand how happiness varies according to age and therefore which is the happiest and least happy age group.

Table 5: Summary statistics by wave

	mean	Min	Max	Sd
2005-2009	41.46	15	98	1.65
2010-2014	41.94	16	102	1.66
Total	41.71	15	102	1.65

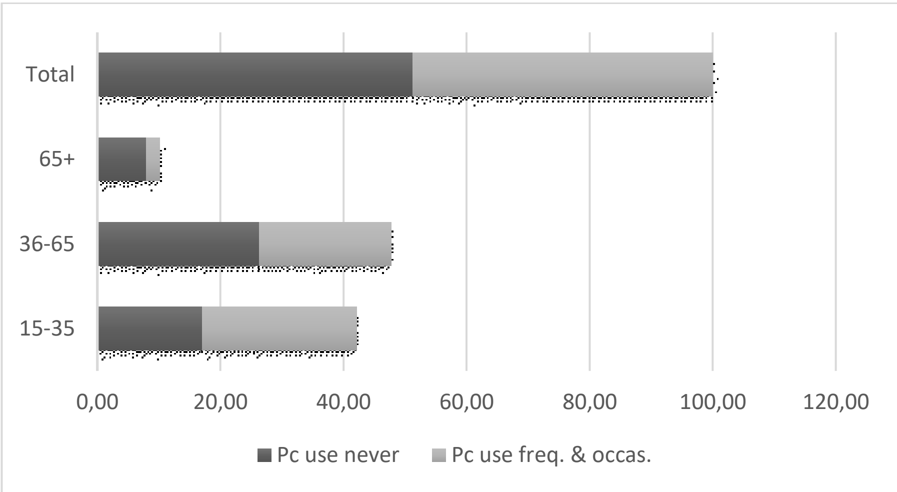
Source: our elaboration on WVS database.

The table contain the main statistics of this variable but taking into consideration the two waves. For both the wave the mean age is about 41 years old and a standard deviation of sixteen means that in the sample the majority of individuals are between 25-57 years old. If we study the PC use among age categories, we find that: the younger generation are those that use mostly personal computers. They are the 42% of the people interviewees and more than half of them use the PC.

Surprisingly, almost half of people between 36 and 65 do not use a PC, but, as we can expect the older generation does not use it very much, in fact, they are almost the 10% of people interviewed, and only about 3800 (2%) reported that they use computers frequently or occasionally.

All of this is explained in the figure below, the graph reports the percentage frequency distribution by age-class and, each group is divided between PC user and not user.

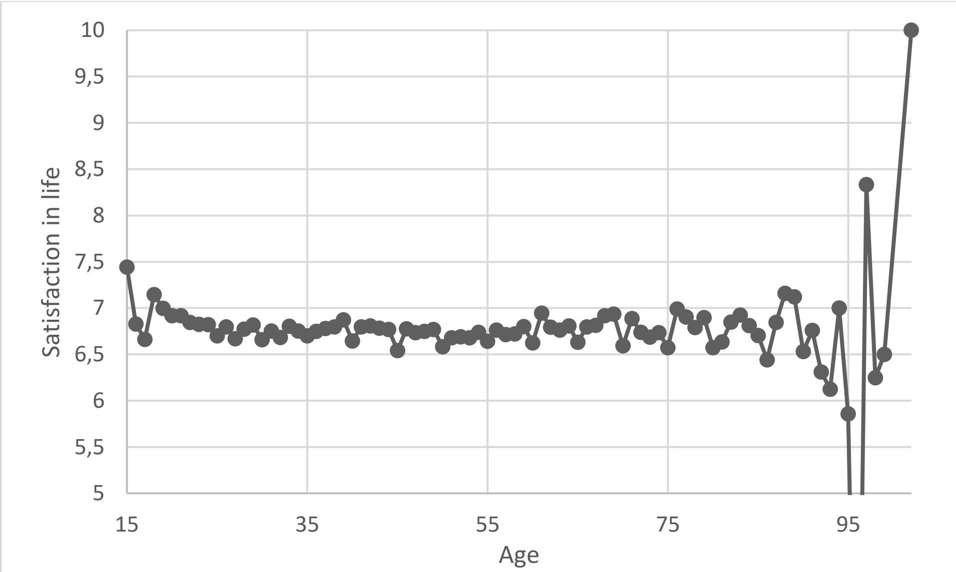
Figure 7: PC use in different age class



Source: our elaboration on WVS.

To link our analysis on happiness literature, we produce a graph that will confirm the phenomenon of U-shaped relationship between age and life satisfaction. Using our dataset this is what we obtain.

Figure 8: Satisfaction-age weighted average



Source: our elaboration of WVS dataset.

We know that the U-shape relationship studied by different scholars start considering people from the first years of birth to the retirement age.

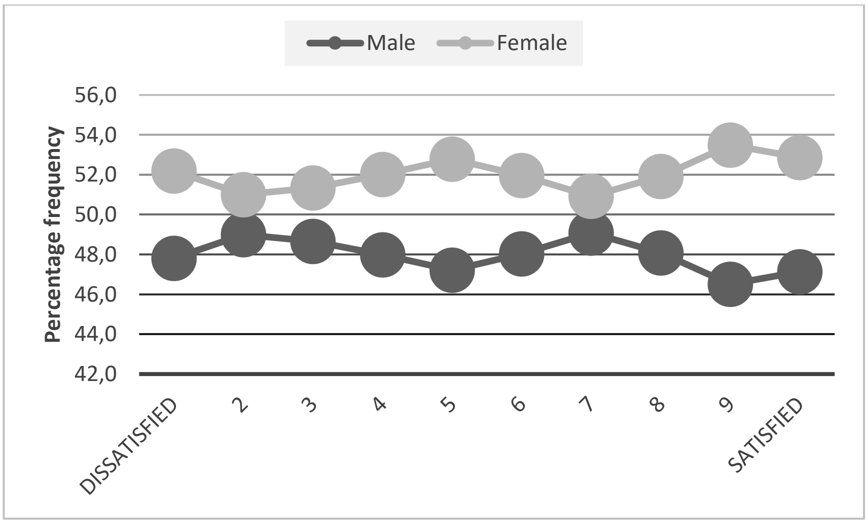
Unfortunately, the respondent in our dataset starts at the age of 15, so, we cannot see well the first decreasing part of the curve. We can see a little decrease in the trend of the curve in the age between 15 to 20 years, in fact the average life satisfaction decreases from 7,5 to almost 7.

Due to the composition of the WVS database the curve seems to be almost linear but as mentioned before the curve starts excluding the happiest generations and the majority of respondent lay in the middle-age class. As we can see the last part of the curve has an increasing trend just as the theory suggest, in fact it states that in the last part of human life happiness start to rise again (Clark & Oswald, 2006). So, even if partially, our dataset confirms the U-shape phenomenon.

An always used variable in econometrics analysis is the gender variable, it is a dummy variable with 1 for woman and 0 for man. In this survey the interviewees are almost perfectly divided in half, in fact the average is about 0.52, in fact more than 90000 interviewee are female.

The following graph shows the percentage frequency distribution of the gender variable.

Figure 9: Gender frequency distribution



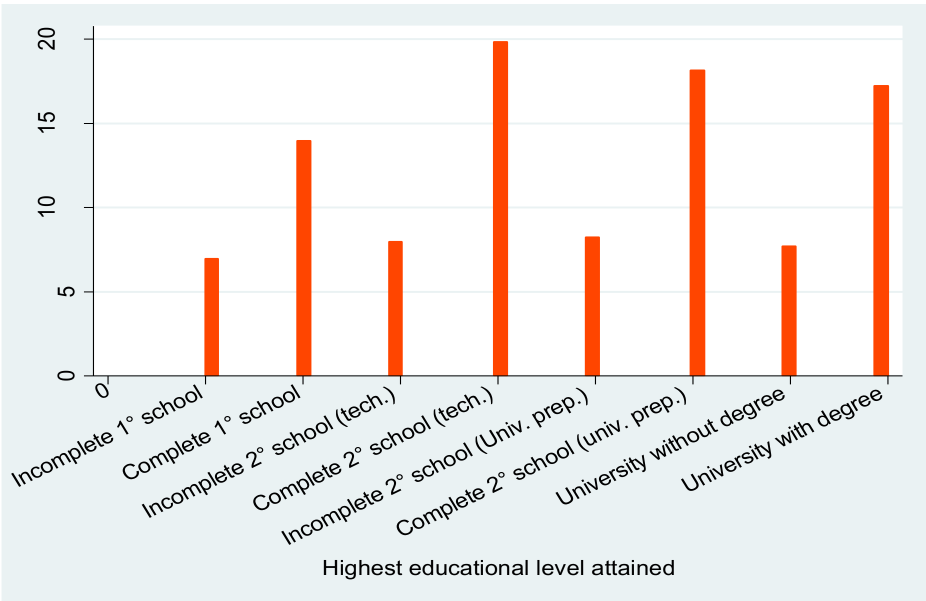
Source: our elaboration of WVS database.

In WVS database for the 5th and 6th wave the number of interviewed women is slightly bigger than men, and if we weight for people in the survey, we find that the mean for women is higher, almost 6.8, with respect to the 6.5 for men.

This result is found in many research, studies undertaken with data for many different countries and periods of time have identified that women report being slightly happier than men (Frey & Stutzer, 2002).

The educational variable collect data on highest educational level attained from respondent. Original data are divided in 8 categories, from the incomplete elementary education to the university education.

Figure 10: Frequency distribution of the education level



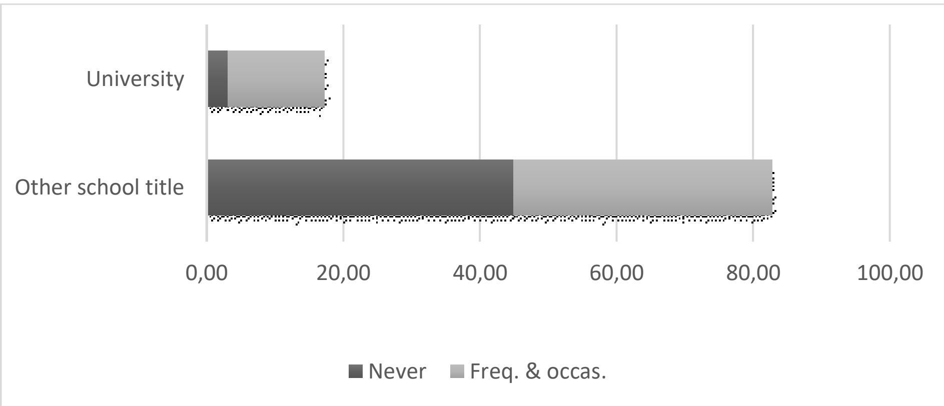
Source: our elaboration on WVS database.

In the graph before there is the percentage frequency distribution of this variable and it shows that the greatest majority of respondent has obtained a level of education below a university degree, only the 17% of the respondent has obtained the university degree.

For the analysis purpose we decide to focus the attention on how the university degree influence the life satisfaction. In other words, we choose to study whether having a higher level of education produces higher levels of happiness. For this reason, we will use this variable as a dummy with value 1 for completed university studies and 0 for the other.

Moreover, it could be interesting to understand if the use of the PC changes according to the qualification obtained, especially for people with the highest level of education.

Figure 11: PC use at different school title



Source: our elaboration of WVS.

In this database only 17% of the respondents have a university degree and more than 14% of these use the PC. Unlike in the remaining 82% of the participants, who do not have a degree, less than half of them use the computer frequently and occasionally.

A very intuitive explanation for these numbers could be the fact that at the university level the PC is used a lot for working on projects, looking for information and studying. Furthermore, the explanation could somehow coincide with the job positions of the interviewees who have finished their university career and have already entered the world of work. Another point of view is the fact that a more advanced education opens more opportunities in life and is conducive to happiness because leisure time activities can be pursued in a more active and diversified manner (Clark et al, 2017).

An interesting study of the relationship between education, income and unemployment of Castriota (2006) states that the education level seems to reduce the weight people attach to the GDP per capita. There are two possible explanations. The first is that people with high education, having on average higher job satisfaction and a more stimulating cultural life, consider less important the consumption level they can achieve. The second possible explanation is that everything else being equal, people with a limited education level have lower employability and in case of dismissal the new unemployed has to live with absolute standard of living that will be at least at a “survivorship” level.

Another important characteristic to take in consideration is the marital status. In the WVS respondent has to detect what type of relation have during the period of the interview. The question ask is: “Are you currently...?”, and it has 6 possible answers: married, living together as married, divorced, separated, widowed, single/never married.

What we are interested in is understanding whether being in a couple produces effects on the life satisfaction.

That is, how the very fact of having a romantic relationship and a figure that can be of support in everyday life, affects the happiness of an individual.

For this reason, the marital status variable will be manipulated to become a dummy variable where value 1 correspond to married or in a couple people and 0 for all other option.

The following chart is used to visualize the trend in relation to the categories. In this case, the categories analysed are the life satisfaction classes (i.e., values from 1 to 10).

The orange line represents the people that are married or in a couple. They are visibly happier; in fact, this line is higher than the blue one which represents all the other categories of "relationships".

It is also interesting to note the trend of these two lines; they follow the same shape, with a peak on the 8 value of life satisfaction and a growing trend.

Figure 12: Marital status and Life satisfaction

Source: our elaboration of WVS.

Married people are happier than those unmarried/widowed/separated/divorced. Those who are married are less oppressed by loneliness of daily life moreover, marriage or a stable partnership to some extent provides a counterbalance to the stress of work life (Clark et al, 2017).

Furthermore, it seems reasonable to assume that happiness will depend on character characteristics of individuals. For example, dissatisfied and introverted people find it more difficult to find a partner. It is more fun to be with extraverted, trusting and compassionate people but careful research has led to the conclusion that this positive association of marriage and happiness is mainly due to the beneficial effects of marriage (Frey & Stutzer, 2002).

In the demographic section we would include even the religion variable. We want to add this variable on the analysis because in our view is interesting to understand how the function will change thanks to faith.

Some research has shown that the religious component can be divided into “internal”, it is defined as faith in God and a confident acceptance of God's will; and “external”, which refers to all observable activities that are undertaken in a religious context.

Happiness researchers also investigated whether reported well-being differs depending on the denomination.

This hypothesis is justified given the difference systems of values and institutional structures of churches. Protestants, for example, seem to be happier than Catholics as the organizational structure draws greater well-being from greater autonomy, in their faith and in their collective identity and better social integration.

Furthermore, Christians in general seem to have an advantage over other religions in subjective well-being. In addition, religiosity can also have an indirect effect on happiness.

Most of the religious rules promotes a healthy lifestyle and communicates values and norms that facilitate e strengthen social connections. Religious often volunteer and this is associated with greater subjective well-being (Greene & Bong, 2004). We will consider in our analysis this component as a dummy variable where 1 is represent the faith of respondent in one of the 97 different religious cults, and 0 for the one with no religious denomination.

3.3.2 Economic variables

The variable always used to analyse the economic dependent of happiness is the income. For the period that we will consider in the WVS there is not an income variable.

For this reason, even if it cannot be considered an economic variable in a strict sense, we can presume the income level of the respondent thanks to the auto-perceived class division.

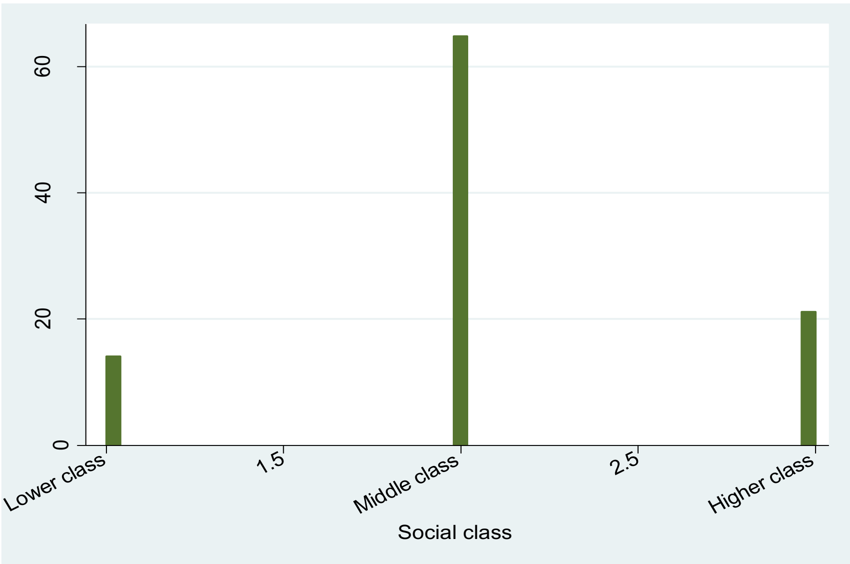
With the term social class, it is defined a group of people within a society who possess the same socioeconomic status.

Not having data on the level of income in the waves considered, to analyse the economic level of the interviewees I select the variable "Would you describe yourself as belonging one of them?" where the pronoun them describe at which class respondent feel to belong between the upper class, upper middle class, lower middle class, working class, lower class.

Moreover, I decide to modify it to make the reading of the analysis simpler; I left the upper-class category unchanged; I merged the upper middle class with the lower middle class, then I meld the working class and the lower class.

This graph shows us, as we might expect, that among the countries considered in the analysis in the period from 2005 to 2014, more than 60% of the population is considered to belong to the middle class

Figure 13: Frequency distribution of social class



Source: our elaboration on WVS database.

From the literature on income distribution, we know that from the fall of the Berlin Wall to the 2008 financial crisis there is a group of people that increase its presence and power: the emerging global middle class (Milanovic, 2012).

Moreover, rising inequality in the recent years contributes to widening this range of populations. This information is relevant for the analysis because we are interested on understand the way in which moving into the upper-level social class affects happiness.

An important economic factor that we know from the happiness literature is work. Employment is one of the determinants that have the greatest influence on happiness.

In fact, unemployment is one of the factors that most negatively affects happiness. Being unemployed does not only mean not receiving an income but also that the individual having no economic availability will have to deprive himself of some “experiences”, such as perhaps taking a vacation or going to a restaurant, which coincide with the need for sociality intrinsic to human nature.

In this survey the question that we take in consideration is “Are you employed now or not? IF YES: About how many hours a week?”. Questioned people, as we can see in the graph below, can chose between 8 possible answers.

The interviewees were able to choose the type of employment also based on the hours worked in fact we will have part-time jobs, self-employed workers and even retirees or students.

Table 6: Frequency distribution of employment status

Empl. Status	Freq.	Percent.	Cum.
Full time	55,169	32.56	32.56
Part time	14,055	8.29	40.85
Self employed	20,947	12.36	53.21
Retired	21,222	12.52	65.73
Housewife	25,741	15.19	80.92
Students	12,242	7.22	88.15
Unemployed	16,514	9.75	97.89
Others	3,570	2.11	100
Total	169,460	100	

Source: our elaboration on WVS database.

It would have been interesting to investigate how happiness changes on the basis of employment status, but the main objective of this analysis is to understand how these variables influence happiness but above all considering their relationship with the use of the PC.

To investigate the role that unemployment has on happiness it will be converted on a dummy with value 1 for the unemployed and 0 for all the others "work status", because as I said before what interests us is to understand to what extent unemployment affects life satisfaction and its relationship with PC use.

It is also important to analyse unemployment because if it increases in a country, not only the unemployed suffer but also other parts of the population. Employed people are less happy because higher unemployment rate is accompanied by greater economic and financial uncertainty, which can threaten their work (Frey, 2018).

3.3.3 Political variables

Concerning the third determinant macro-group, the political factor, the variables that best fit the Frey and Stutzer ideas in my opinion are mainly 2.

In literature the happiness of individuals is influenced by the type of political system in which they live.

Living in a democratic state where people's interests are positively received by the institutions creates a sort of vicious circle of happiness and mutual involvement.

In a democracy people have the faculty to participate in political life and therefore, feeling themselves involved and taken into consideration, the individual is happy.

In the same way, the institutions to remain in office will try to satisfy the interests of the people as much as possible.

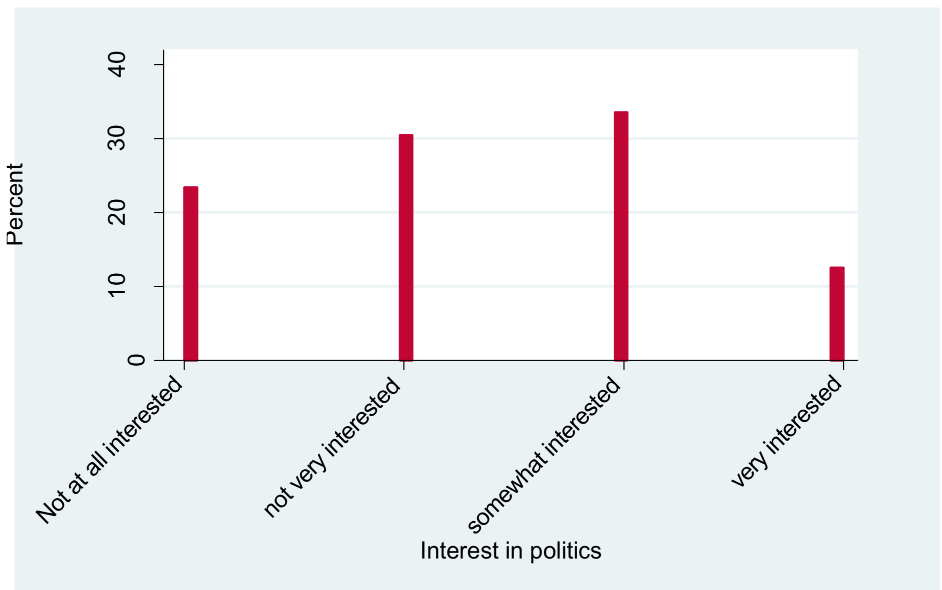
Furthermore, for these two types of agents to interact, the institutions must be as decentralized as possible in order to be in close contact with citizens and create relationships of trust (Frey & Stutzer, 2000).

For this reason, we need to insert two variables in the analysis that will represent, firstly, the level of participation in politics and secondly the level of acceptance of democracy. The variable in the WVS that we will consider analysing political participation is the one that describe the interest on politics of people.

This variable, that ask "How interested would you say you are in politics?", has 4 possible answers: very interested, somewhat interested, not very interested, not at all interested. We choose this variable as high levels of interest in politics can be equated with active participation in political life and low levels on the contrary represent a complete lack of interest in this topic.

In the graph below is represented the percentage frequency distribution of data for this variable in the WVS.

Figure 14: Frequency distribution of the interest in politics



Source: our elaboration on WVS database.

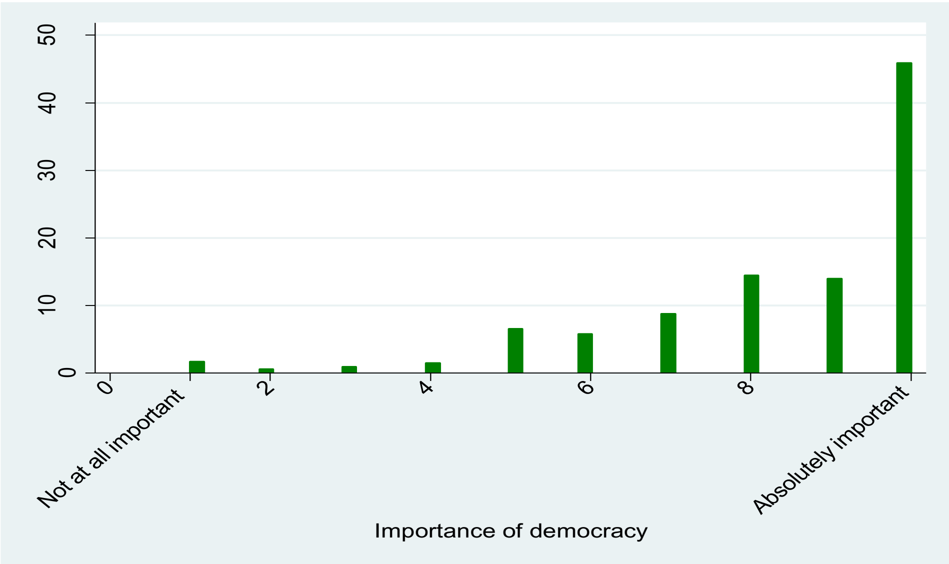
We can see that not a lot of people answer that they are very interested in politics, but the great majority declare themselves they are somewhat interested or not very interested.

Therefore, in the analysis we will study how this variable influence happiness, that is, if high levels of political interest correspond to an increase in happiness or a decrease.

Regarding the government form I suppose that investigate on the acceptance of democracy can fit the purpose of the analysis. In fact, high degree of democracy acceptance can be interpreted as if the interviewee supports a democratic state and accept its fundamental and values. In the WVS the variable that comes closest to this definition is: “How important is it for you to live in a country that is governed democratically? (where 1 means it is “not at all important” and 10 means “absolutely important) what position would you choose?”.

In this graph are represented the percentage frequency of the data of the WVS. Not surprisingly most of the respondent state that democracy is an absolutely important factor. This variable is a 10-level discrete variable. It has a minimum value (1) if people answer is not at all important, and the maximum value (10) if their response is absolutely important.

Figure 15: Frequency distribution of importance of democracy



Source: our elaboration on WVS database.

Including the degree of importance of democracy in this analysis might seem superfluous somehow but, as I explained earlier, the fact that an individual lives in a democratic state and somehow approves the choices of the institutions, it increases their happiness.

Moreover, the decentralisation of decision making is an alternative means for better fulfilment of the voters' preferences, in fact individuals tend to leave dissatisfying jurisdictions, while they are attracted to those caring for the population's preferences (Frey & Stutzer, 2002).

4 EMPIRICAL ANALYSIS

4.1 THE HYPOTHESIS

The idea behind the analysis is to investigate the role of PC use on the life satisfaction function.

We want to understand if in some way the use of computer influence happiness and if individuals are positively or negatively affected by using it.

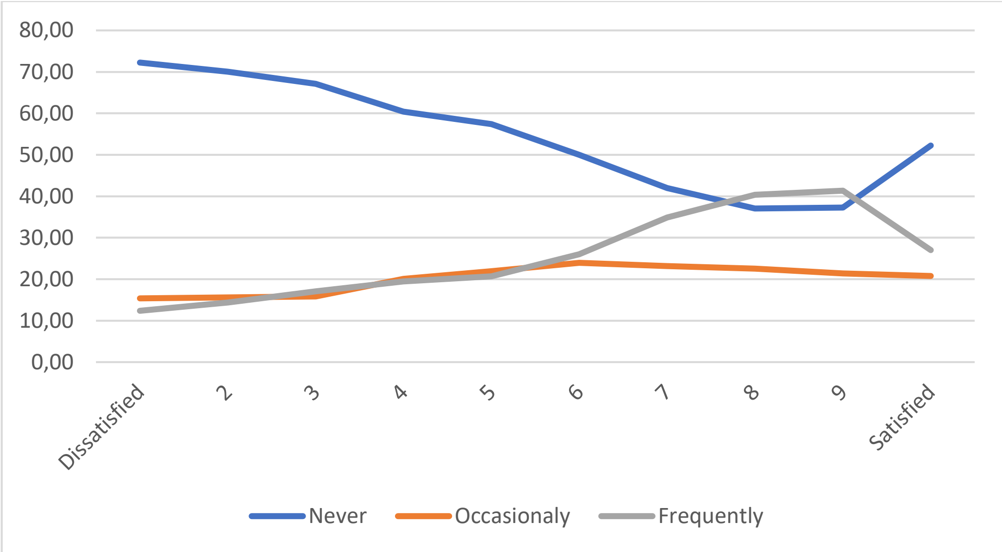
The idea was born from the question: "Given the recent studies on the effects of the PC and especially of social media, how the use of PC influence and to what extent people's happiness?”.

Before moving on to the description of the model and the econometric analysis, I believe it is necessary to linger on the tabulation of the data between PC use and life satisfaction.

The graph below shows three curves that represent the three frequencies of use of the PC (we considered more appropriate to combine the frequency “never” with the “don't know what a computer is” frequency).

These curves report the percentages of the combined frequency of PC use and life satisfaction of the respondents.

Figure 16: Pc use by life satisfaction



Source: our elaboration of WVS database.

The blue line, which represents the answers for "never", has a decreasing trend with a peak at the 10 (satisfied) value of life satisfaction. So, we could hypothesize that those who do not use the PC tend to be less happy.

For the interviewees who use the PC occasionally there seems to be a linear trend, so for each value of life satisfaction there are approximately the same percentages.

As for the last curve, the grey one that represents the interviewees who use the PC frequently, the trend is the opposite, that is, as satisfaction increases, the curve rises.

We have the only "anomaly at value 10, where the latter decreases, so for the highest level of happiness people use less computers.

Our analysis will be based on the considerations made on the previous chart. That is, we will explore in detail all the possible "nuances" of the relationship between PC use and life satisfaction.

4.2 METHODOLOGY

Regarding the methodological considerations I want to start from how I selected the data to carry out the econometric analysis between the use of PC and the satisfaction in life.

The software that I will use to manipulate, transform and analyse data, is STATA.

As I said earlier regarding the data on the use of computer in the WVS, these are present only for two of 7 waves.

Before making any changes to the dataset, the database that the WVS offers is composed of 1074 variables and 423948 observations per variable.

Being such a huge number of variables, it is immediately obvious that it will be necessary to eliminate the ones we do not need.

For the purposes of the analysis, therefore, we are going to keep only 13 variables which are: Life satisfaction, Frequency of PC use, Wave, Country code, Gender, Age, Marital status, Employment status, Education, Religion, Social class, Interest in politics and Democracy acceptance.

After deciding which variables to use, it is time to analyse the data.

Fortunately, all the variables considered do not have values such as "no answer" or "don't know" which could instead be inserted in the answers. In any case, through the tabulation of the data I checked their possible existence.

At this point of the data manipulation, we will therefore have a matrix composed of 13 columns and 173450 rows, that is 13 variables and more than 170 thousand observations per variable.

From now we will use the abbreviation of the name of the variables, and these are reported in the next table.

Table 7: Variable name

NAME	COMPLETE VARIABLE NAME
WAVE	Wave
COUNTRY	Country code/name
SATISF	Satisfaction in life
PC	Pc use frequency
AGE	Age
GEND	Gender
MARIT	Marital status
REL	Religious denomination
UNI	Higher level of education attained
CLASS	Social class
UNEMPL	Employment status
POL	Interest in politics
DEM	Importance in democracy

Another issue io how transform the indicator to fit the econometrics analysis.

The model that I will fit contain two types of variables: binary choice and multiple-choice variable.

I decide to consider some variable as dummy variable, because they allow to describe a phenomenon in a simpler and more intuitive way.

A dummy is a variable that contains values from 0 to one so, it has only two possible answers. Other variables, on the other hand, such as interest in politics, social class and acceptance of democracy, will instead be used in their original form so they will be discrete descriptive variables.

All the manipulation of the variable are explained in the previous chapter and there is a full description table in the appendix (Table 1 in appendix).

Subsequently, I will perform the regression of the variables using life satisfaction as a dependent variable.

Firstly, I will perform a linear regression using the OLS model to broadly understand the relationships between the variables, after which with an Ordered probit model I will analyse the incremental relationship of the function and examine the possible interactions between variables. After that to better investigate the PC phenomenon we perform some robust check and study the marginal effect of the variables.

4.3 THE MODEL

To answer the questions above, we have decided to use a linear approach. When hypothesizing relationships in the social sciences, linearity is often assumed, but this may not always be the case.

When theorising the shape of a relationship between two variables, it is necessary to be guided by both the theory used and an inspection of the data.

For this reason, based on the literature of happiness, most scholars use linear functions to analyse the relationships between happiness and an infinite series of independent variables.

Linear regression analysis is often the starting point of an empirical investigation. Because of its relative simplicity, it is useful for exemplifying the different stages of a typical modelling cycle that involves an initial specification of the model followed by estimation, diagnostic checks, and so on.

The purpose of such linear regression analysis can be to summarize the data, generate conditional predictions, or test and evaluate the role of specific regressors.

The linear function that will be implemented in the following empirical analysis is composed as follow.

LIFE SATISFACTION FUNCTION:

$$LS_i = \beta_0 - \beta_1(PCuse) + \beta_2(Wave) + \beta_3(Country) + \beta_4(Socio\ demographic\ vatiables) + \beta_5(Economic\ variables) + \beta_6(Political\ variables) + e_i$$

As we can see the dependent variable is the Life satisfaction, and the other set of variables represent:

- β, represent the vector of the slope coefficients;
- PCuse, the dichotomous variable of the use of PC;
- wave is the control variable for the period of interest;
- country is the control variable for the nation of belonging of respondents;
- socio demographic variable, it contains the variable gend, age, uni, marit and rel;
- economic variable, it includes the unempl and class variables;
- political variable, within it has the variables of pol and dem.

We decided to use a linear function for the analysis of life satisfaction because in the literature is carried out through this form and because it best suits our data.

In fact, we find repeatedly linear functions to study the relationships between happiness and different variables in literature.

Pérnard et al. (2013), for example, use a linear function composed by six group of variables to empirically examine how Internet use affects life satisfaction. They investigate this question at the individual level using Luxemburgish data from the

2008 European Social Survey. They conduct OLS regressions after an Ordered logit regression, but they found that the results are qualitatively like those obtained with ordered logit models but are more questionable given the ordinal nature of life satisfaction variable.

Other examples of linear function that are conduct using the WVS are: the country level analysis of happiness of Stanca (2010), he follows a two-step methodology, the first step is to analyse the effect of economic conditions on life satisfaction at the individual level, for each country in the sample, controlling for demographic, social, and context-related factors. The second step investigate across countries the relationship between macroeconomic conditions and the effect of individual economic conditions on subjective well-being.

Another example is in the analysis of the relationship between hours spent watching television and SWB (Bruni & Stanca, 2006). In this case they assume firstly that the life satisfaction of individual at time t depends on the gap between his current income and income aspirations.

Then presume that current income aspirations are positively related to past own income and to the current income of others. After that they states that for any given level of actual income, income aspirations are higher for heavy television viewers relative to light-viewers. In this way they create a function that indicates if TV viewing raises material aspirations for any income level. The equation is estimated by OLS, including a time fixed effect to allow for heterogeneity between the two survey waves.

Our first step of this analysis will be to run a linear regression, more precisely an ordinary least squares regression (OLS).

OLS regression is a statistical method of analysis that estimates the relationship between one or more independent variables and a dependent variable; the method estimates the relationship by minimizing the sum of the squares in the difference between the observed and predicted values of the dependent variable configured as a straight line.

The goal of linear regression is to estimate the parameters of the linear conditional mean, that is, in our case, the coefficients that will explain the incidence on the life satisfaction of the independent variables.

Before performing a regression, it may be useful to analyse the correlation between the dependent variable and the key regressors, this step is suggested by the Cameron-Trivedi econometrics handbook.

The table below contains the correlation values between the variables considered. To make it easier to understand, the highest correlation levels have been highlighted, negative correlations in red and positive correlations in green.

Table 8: Correlation matrix

	SATISF	WAVE	COUNTRY	PC	GEND	AGE	MARIT
SATISF	1						
WAVE	0.0287*	1					
COUNTRY	-0.0175*	0,0076*	1				
PC	0.1549*	0,1582*	-0.0487*	1			
GEND	0.0055*	0.0020*	0.0050*	-0.0637*	1		
AGE	-0.0153*	0,0143*	-0.0205*	-0.2498*	0.0075*	1	
MARIT	0.0548*	-0.0049*	-0.0116*	-0.1060*	-0.0189*	0.2275*	1
UNI	0.0658*	0.0413*	-0.0402*	0.2733*	-0.0161*	-0.0294*	-0.0022
REL	-0.0393*	-0.0208*	0.0967*	-0.1359*	0.0514*	-0.0247*	0.0174*
UNEMPL	-0.0893*	-0.0066*	0.0257*	-0.0584*	-0.0322*	-0.1266*	-0.1165*
CLASS	0.2356*	0.0305*	-0.0190*	0.2827*	-0.0162*	-0.0242*	0.0310*
POL	0.0274*	0.0075*	0.0475*	0.0813*	-0.1246*	0.0578*	0.0500*
DEM	0.1255*	-0.0787*	0.0098*	0.0484*	-0.0102*	0.0563*	0.0239*
	UNI	REL	UNEMPL	CLASS	POL	DEM	
UNI	1						
REL	-0,0422*	1					
UNEMPL	-0,0651*	0.0224*	1				
CLASS	0,2456*	0.0011	-0.1333*	1			
POL	0.0976*	-0.0118*	-0.0155*	0.0986*	1		
DEM	0,0723*	-0.0069*	-0,0332*	0,0620*	0.0972*	1	

Source: our elaboration of WVS database.

To generate the correlation matrix the command that we have used is the *pwcorr* and using the option *star(.05)* to produce an output that will contain the significance of the correlation value. The first thing to consider of a correlation table is the fact that almost all values are significant (significance is represented by the * at the top right of the numbers).

First, we point out the fact that we do not need to do a collinearity test because all the correlation values are below the 30%.

Moreover, some of the above values are interesting because we are going to find in the future econometric analysis some assonances.

In fact, as far as life satisfaction is concerned, we have a positive correlation with the use of the PC, of 0.155, so we expect to have an associated positive regression coefficient.

If we focus on the PC variable, however, we can see that AGE, the fact of living in a couple (MARIT) and religion (REL) are negatively correlated with this variable. The negative value of correlation with age does not surprise us.

Furthermore, we are not surprised at all the positive correlation between PC and the variable UNI.

To produce this result, the Stata software use the Pearson correlation index. Mathematically, it is defined as the quality of least squares fitting to the original data. It is obtained by taking the ratio of the covariance of the two variables in question of our numerical dataset, normalized to the square root of their variances.

The next stage of this analysis will be run the OLS regression. To implement this regression, we used the *regress* command which performs the OLS. It yields an analysis of goodness of fit statistics, coefficient estimates, standard errors, t-statistics, p-values, and confidence intervals.

As all the independent cross-section data the approach that we will used is the *vce(robust)* option, which gives standard errors that are valid both if the model error is heteroskedastic or homoskedastic.

As we see before linear model are used to analyse life satisfaction function. I want to perform firstly a linear regression because the great majority of scholars use it. Two examples of OLS regression on the theme of Internet use and happiness are the following.

Rotondi et al. (2017) based their paper on the influence of the Internet and social interactions on SWB by implementing an econometric analysis using OLS.

They present OLS estimation results based on a sample of about 140,000 Italian individuals.

All specifications include region and year fixed effects, as we are going to do. They investigate the role played by the smartphone for the quality of social interactions and subjective well-being.

Their analysis states that the smartphone reduces the quality of face-to-face interactions and, as a consequence, their positive impact on well-being.

They test this hypothesis in a large and representative sample of Italian individuals. The results indicate that time spent with friends is worth less, in terms of life satisfaction, for individuals who use the smartphone.

Kavetsos & Koutroumpis (2011) also use an OLS to analyse the effects on the well-being of technological assets because they state that estimating the model using OLS instead of ordered probit or logit has been shown not to alter results significantly and adds to their interpretability.

Running an OLS they measure the welfare effects of technological goods using a recent European pooled cross-sectional dataset.

They find that fixed and mobile phones, music players and personal computers, including those with an Internet connection, are associated with significantly higher levels of well-being measured by individual self-reported life satisfaction.

Moreover, controlling for mobile and broadband penetration levels in different countries, evidence suggest that the broadbands matter for life satisfaction, especially for the users who already possess the relevant devices.

Table 8 presents the results of the OLS estimate for the linear equation above, based on a sample of approximately 127,000 individuals. All specifications include fixed effects by COUNTRY (with as reference country as Mexico, that on average has the higher level of life satisfaction) and WAVE.

We decided to not insert the entire output so, the outcomes for country and wave are omitted in the table below, but considered in the regression function, only for practical reasons.

The regressor are jointly statistically significant, because the overall F-statistics, that is the Sum of Square Residuals, is equal to 309,72 and it has the corresponding p-value of 0,000.

Table 9: OLS regression

VARIABLES	Satisfaction
PC	0.182***
	(0.0144)
GEND	0.0738***
	(0.0115)
UNEMPL	-0.397***
	(0.0223)
AGE	-0.00772***
	(0.000424)
MARIT	0.307***
	(0.0126)
UNI	0.0783***
	(0.0151)
REL	0.130***
	(0.0163)
CLASS	0.664***
	(0.0113)
POL	0.0363***
	(0.00667)
DEM	0.110***
	(0.00335)
Constant	5.885***
	(0.0636)
Observations	127,940
R-squared	0.168
r2_a	0.167
F	309.7

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1
Country dummy (yes), wave dummy (yes).
Source: our elaboration of WVS.

R^2 measures the fraction of the variance of the dependent variable expressed by the regression. In simple linear regressions it is simply the square of the correlation coefficient and the closer it is to 1, the more well the regressors predict the value of the dependent variable in the sample. So, if our R^2 is equal to 0.17 most of the variation is not explained.

All the regressor are individually statistically significant because their p-value are equal to 0.00. Except for age and unempl, the coefficients of the other regressors are all positive so as happiness increases, the presence of these will lead to a further increase.

The PC regressor has a β=0,182 so the frequent of occasional use of PC has a positive influence on SATISF. It is relevant for our analysis purpose because we want to investigate the role of computer use on happiness.

The CLASS coefficient is the highest obtained, this is not surprising because for higher social status most of the time there is a higher standard of living so, less economic problem and high leisure time to spend with family and friends.

The other high positive coefficient is the one of MARIT. Being married will produce and increase on happiness/satisfaction of 0,307. If we look at the negative one, as we expected, the UNEMPL reduces happiness as well as AGE. But this is a preliminary analysis in fact as we see later in this thesis the age phenomenon on happiness has a particular effect.

Next step of the analysis is to run an ordered probit regression, then make interaction to better understand some phenomenon.

In statistics and econometrics studies the ordered probit model is considered as ordinal regression. It means that it is used for predicting an ordinal variable, i.e. a variable whose value exists on an arbitrary scale where only the relative ordering between different values is significant. In our case the dependent variable, the life satisfaction has a scale of value from 1 to 10, where, as we already know, 1 is dissatisfied of life and 10 is satisfied. So, since our dependent variable is ordinal we can estimate its determinant with ordinal regression types, in particular with an ordered probit model.

The answer of our dependent variable might fall between the value 1 to 10. Hence, it can be noted that there are ten possible alternatives and there is a logical ordering in options since $y_1=1$ refers to minimum satisfaction in life whereas $y_{10}=10$ expresses maximum value. Therefore, the model possesses intermediate categories such as $y_i==2$, $y_i=3$, $y_i=4$, $y_i=5$, $y_i=6$, $y_i=7$, $y_i=8$, $y_i=9$.

Furthermore, as Veerbek (2012) argued this kind of models based on underlying, unobserved latent variables. The latent variable will be denominated y^* whereas dependent variable is denominated by y. The theory also tells that there are certain boundaries of the latent variable at which outcome variable change. Hence, the boundaries can be named as "cut points." The cut points are related to alternatives of the dependent variable. Hence, if dependent variable y has alternatives the number of k, thus, number of the cut points will be k-1. In our case, the model possesses nine cut points since there are 10 alternatives for dependent variable.

Basically, the cut points are estimated boundaries on the underlying latent variable used to distinguish the alternatives from each other.

As it can be seen below, another remarkable difference is that the model does not have a constant. Actually, there are constants which can be named as "cut points in the ordered probit model.

Before to analyse the coefficients, it is appropriate to focus our attention on two values on the next table: the Wald Chi-Square & Pr > ChiSq.

These are the test statistics and p-values, respectively, for the hypothesis test that an individual predictor's regression coefficient is zero given the rest of the predictors are in the model. The Wald Chi-Square test statistic is the squared ratio of the estimate to the standard error of the respective predictor. The probability that a particular Wald Chi-Square test statistic is as extreme as, or more so, than what has been observed under the null hypothesis is given by Pr > ChiSq.

In our regression the Wald chi-squared is equal to 21002,6 and it has a P-value (Prob>chi2) equal to zero. If we set our alpha level to 0.05, we would reject the null hypothesis and conclude that the regression coefficient has been found to be statistically different from zero.

Going back to the coefficients the first thing to notice is that all the P-value associated with the regressors are all highly significant and equal to zero, but the interpretation of the coefficients is slightly different in Ordered Probit Model than linear OLS.

Table 10a: Ordered probit model

VARIABLES	SATISF
PC	0.0818***
	(0.00734)
GEND	0.0395***
	(0.00584)
UNEMPL	-0.181***
	(0.0110)
AGE	-0.0266***
	(0.00107)
AGE2	0.000250***
	(1.13e-05)
MARIT	0.208***
	(0.00683)
UNI	0.0388***
	(0.00772)
REL	0.0616***
	(0.00828)
CLASS	0.323***
	(0.00579)
POL	0.0157***
	(0.00338)
DEM	0.0586***

Robust standard errors in parentheses *** $p<0.01$, ** $p<0.05$, * $p<0.1$
Standard error corrected for heteroskedasticity.
Country dummy (yes), wave dummy (yes).
Source: our elaboration of WVS database.

Table 10b: Ordered probit model (constant cuts)

Constant cut1	-2.214***
	(0.0420)
Constant cut2	-1.944***
	(0.0418)
Constant cut3	-1.600***
	(0.0416)
Constant cut4	-1.296***
	(0.0416)
Constant cut5	-0.781***
	(0.0415)
Constant cut6	-0.403***
	(0.0415)
Constant cut7	0.0910**
	(0.0415)
Constant cut8	0.738***
	(0.0415)
Constant cut9	1.181***
	(0.0416)

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Standard error corrected for heteroskedasticity.

Source: our elaboration of WVS database.

Again, the PC use coefficient is positive, so, when people use computers, ceteris paribus, SATISF will increase. We have only two negative coefficients: the

UNEMPL that has decreasing effect on happiness and the AGE coefficient so the elder is the respondent the less happy he/she will be.

It can be seen that the model does not have R-square. However, Verbeek (2012) argued that apart from linear OLS, probit models use the maximum log likelihood function for the estimation.

Hence, log-likelihood can be used in order to measure the significance of the model when it is the probit model. The interception of the log-likelihood cannot analyse individually.

Hence, as Verbeek (2012) stated that the log-likelihood function of the model could be used in a comparative analysis of the model itself excluding all the variables except constant.

The significance of the whole model can be estimated by asking the following question: Is there an increase in the log-likelihood of the model in comparison to the model only with constant?

Note that, the aim is the maximize the log-likelihood. Thus, more increase in log-likelihood makes the model more significant.

As it can be seen below, iteration 0 refers to "empty" model which includes only constant whereas iteration from 1 to 3 corresponds "full" model which has all explanatory variables including control ones.

To sum up as it can be seen above the model is explained quite well by the explanatory variable since the difference between interaction is equal to 11324,9.

To better understand some effect of the independent variable we decide to add some interaction on the regression analysis.

Firstly, we decide to insert the age squared to understand if the U-shape theory is confirmed. Secondly, we add interaction between some explanatory variable.

Our first aim is understanding how PC use influence life satisfaction, for this reason we found interesting analyse the interaction between PC and other relevant variable: UNEMPL, UNI and AGE. Then we want to interact the GEND, class and UNI variable with the UNEMPL to investigate on other aspect of the analysis.

These two tables contain the ordered probit regression with the interaction.

The first one contains the variable interacted with PC to better understand this phenomenon. In the second one are insert other set of interacted variable to understand the major influencing factor of the life satisfaction.

The first thing to highlight is the fact that all the interacted variables are not statistically significant, it means that we cannot reject the null hypothesis.

We decide to show these results because they are interacted variables and it is interesting to control their effect even if they are not significant.

This variable will allow us to have a deep understanding of the model and the effect that computer use produce on life satisfaction.

Table 11a: Orderd probit interaction with PC

VARIABLES	Satisfaction	Satisfaction	satisfaction	satisfaction
PC	0.0818***	0.0835***	0.0741***	0.0828***
	(0.00734)	(0.00763)	(0.0184)	(0.00760)
GEND	0.0395***	0.0396***	0.0395***	0.0395***
	(0.00584)	(0.00584)	(0.00584)	(0.00584)
UNEMPL	-0.181***	-0.175***	-0.181***	-0.181***
	(0.0110)	(0.0151)	(0.0110)	(0.0110)
AGE	-0.0266***	-0.0267***	-0.0269***	-0.0266***
	(0.00107)	(0.00107)	(0.00118)	(0.00107)
AGE2	0.000250***	0.000251***	0.000252***	0.000250***
	(1.13e-05)	(1.13e-05)	(1.18e-05)	(1.13e-05)
MARIT	0.208***	0.208***	0.207***	0.208***
	(0.00683)	(0.00683)	(0.00684)	(0.00683)
UNI	0.0388***	0.0386***	0.0387***	0.0467**
	(0.00772)	(0.00773)	(0.00772)	(0.0191)
REL	0.0616***	0.0616***	0.0615***	0.0616***
	(0.00828)	(0.00828)	(0.00828)	(0.00828)
CLASS	0.323***	0.323***	0.323***	0.323***
	(0.00579)	(0.00579)	(0.00579)	(0.00580)
POL	0.0157***	0.0156***	0.0156***	0.0156***
	(0.00338)	(0.00338)	(0.00339)	(0.00338)
DEM	0.0586***	0.0586***	0.0586***	0.0586***
	(0.00170)	(0.00170)	(0.00170)	(0.00170)
PCempl		-0.0144		
		(0.0210)		
PCage			0.000189	
			(0.000403)	
PCuni				-0.00975
				(0.0206)

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1
Country dummy (yes), wave dummy (yes).
Source: our elaboration of WVS database.

Table 3b: Ordered probit interaction with PC (constant cuts)

Constant cut1	-2.214***	-2.214***	-2.222***	-2.214***
	(0.0420)	(0.0420)	(0.0455)	(0.0420)
Constant cut2	-1.944***	-1.944***	-1.952***	-1.944***
	(0.0418)	(0.0418)	(0.0453)	(0.0418)
Constant cut3	-1.600***	-1.600***	-1.608***	-1.600***
	(0.0416)	(0.0416)	(0.0451)	(0.0417)
Constant cut4	-1.296***	-1.295***	-1.303***	-1.295***
	(0.0416)	(0.0416)	(0.0450)	(0.0416)
Constant cut5	-0.781***	-0.780***	-0.788***	-0.780***
	(0.0415)	(0.0415)	(0.0450)	(0.0415)
Constant cut6	-0.403***	-0.403***	-0.411***	-0.403***
	(0.0415)	(0.0415)	(0.0450)	(0.0415)
Constant cut7	0.0910**	0.0914**	0.0836*	0.0917**
	(0.0415)	(0.0415)	(0.0449)	(0.0415)
Constant cut8	0.738***	0.738***	0.730***	0.738***
	(0.0415)	(0.0415)	(0.0450)	(0.0415)
Constant cut9	1.181***	1.182***	1.174***	1.182***
	(0.0416)	(0.0416)	(0.0450)	(0.0416)

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1
Country dummy (yes), wave dummy (yes).
Source: our elaboration of WVS database.

Table 4a: Ordered probit with other interaction

VARIABLES	(2) Satisfaction	(6) Satisfaction	(7) satisfaction	(8) satisfaction
PC	0.0818***	0.0818***	0.0818***	0.0818***
	(0.00734)	(0.00734)	(0.00734)	(0.00734)
GEND	0.0395***	0.0374***	0.0395***	0.0395***
	(0.00584)	(0.00608)	(0.00584)	(0.00584)
UNEMPL	-0.181***	-0.191***	-0.183***	-0.214***
	(0.0110)	(0.0149)	(0.0116)	(0.0354)
AGE	-0.0266***	-0.0266***	-0.0266***	-0.0266***
	(0.00107)	(0.00107)	(0.00107)	(0.00107)
AGE2	0.000250***	0.000250***	0.000250***	0.000250***
	(1.13e-05)	(1.13e-05)	(1.13e-05)	(1.13e-05)
MARIT	0.208***	0.207***	0.208***	0.208***
	(0.00683)	(0.00683)	(0.00683)	(0.00683)
UNI	0.0388***	0.0387***	0.0378***	0.0391***
	(0.00772)	(0.00772)	(0.00786)	(0.00773)
REL	0.0616***	0.0616***	0.0615***	0.0615***
	(0.00828)	(0.00828)	(0.00828)	(0.00828)
CLASS	0.323***	0.323***	0.323***	0.321***
	(0.00579)	(0.00579)	(0.00579)	(0.00605)
POL	0.0157***	0.0156***	0.0156***	0.0157***
	(0.00338)	(0.00338)	(0.00338)	(0.00338)
DEM	0.0586***	0.0586***	0.0586***	0.0586***
	(0.00170)	(0.00170)	(0.00170)	(0.00170)
GEMPL		0.0204		
		(0.0208)		
UNIEMPL			0.0161	
			(0.0329)	
CLEMPL				0.0172
				(0.0175)

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.
Country dummy (yes), wave dummy (yes).
Source: our elaboration of WVS database.

Table 12b: Ordered probit interaction with other variable (cutpoint)

Constant cut1	-2.214***	-2.216***	-2.215***	-2.218***
	(0.0420)	(0.0420)	(0.0420)	(0.0421)
Constant cut2	-1.944***	-1.946***	-1.944***	-1.948***
	(0.0418)	(0.0418)	(0.0418)	(0.0419)
Constant cut3	-1.600***	-1.602***	-1.601***	-1.604***
	(0.0416)	(0.0417)	(0.0416)	(0.0417)
Constant cut4	-1.296***	-1.298***	-1.296***	-1.299***
	(0.0416)	(0.0416)	(0.0416)	(0.0416)
Constant cut5	-0.781***	-0.782***	-0.781***	-0.784***
	(0.0415)	(0.0415)	(0.0415)	(0.0416)
Constant cut6	-0.403***	-0.405***	-0.404***	-0.407***
	(0.0415)	(0.0415)	(0.0415)	(0.0415)
Constant cut7	0.0910**	0.0892**	0.0908**	0.0875**
	(0.0415)	(0.0415)	(0.0415)	(0.0415)
Constant cut8	0.738***	0.736***	0.738***	0.734***
	(0.0415)	(0.0415)	(0.0415)	(0.0416)
Constant cut9	1.181***	1.179***	1.181***	1.178***
	(0.0416)	(0.0416)	(0.0416)	(0.0416)

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.
Source: our elaboration of WVS database.

4.4 MAIN FINDINGS

In order to understand the econometric result performed in previous section, it is necessary to take in consideration literature and recent research which can give a possible explenation for the findings of this work. Through references to the literature on the topic of happiness and its determinants, we will explain the relationship between the dependent variable, life satisfaction, and the independent variables, in particular that of the use of the PC.

Before starting with the explanation of the effects of the variables it is important to say that since life satisfaction is an ordered qualitative variable, the results of both models used show equal coefficient signs, between the OLS model and the ordered probit model will only change the intensities of the coefficients.

The first indicator that we are going to explain is certainly that of the use of the PC. The coefficient in both regressions has a positive sign and a p-value equal to zero, so we can assume that, ceteris paribus, frequent or occasional computer use positively influences the life satisfaction of the respondents. The coefficient is equal to 0.08 that means as we already said that ,ceteris paribus, the use of personal computers increase the life satisfaction, so it makes people "happier".

To enforce our result we decide to report the estimated outcomes on computer ownership in Georgios Kavetsos & Pantelis Koutroumpis (2011). They suggest that a personal computer is significantly associated with higher levels of subjective well-being, people who own a PC is happyier of about 3.3%. Moreover, the estimated coefficient increases by about 50% when PC is accompanied by an internet connection. They investigate even the role of Internet connection on mobile phone and many other amenities; and they found that the devices that more influce the SWB are the personal computer or mobile phones but with an Internet connection.

The role of Internet on happiness is becoming more and more studied and relevant. Many people all over the world have access to the Internet and spend a large number of hours surfing on the Net or on social media. Higher number of hour on PC is associated with higher level of life satisfaction. On the contrary, social network users are more likely to be less happy becouse their addiction to Internet platforms reduces self-regulation and self-awareness, that instead increase aggressive and offensive behaviours in face-to-face interactions. (Frey, 2018).

Because of the composotion of our dataset and the absece of variable that ask about Internet use and social media, we can only focus our attention on the variable PC, and the frequency of use of PC of respondent. The absence of other variable, in our opinion can be explained by the time considered. In fact, we study a period of time (from 2005 to 2014) that is the starting point of the spread of broadband connection and smarthohones.

For this reason, to make the most of the data at our disposal we have decided to interact it with variables that will allow us to understand some combined effects. Unfortunatly, we found that there are not significant but despite this they deserve an explenation.

It is interesting to notice that except for PCAGE coefficient that is almost zero the interaction with the UNI and UNEMPL, two dummy variable, have negative coefficient.

The interaction between two dummies implay that we have four possibilities to consider but 3 of the four produce output zero. For example in the case of PCUNI interaction the coefficient that we will have is the result of this 4 combination:

Table 13: Interaction interpretation

	Freqeuntly or occasionally use of PC= 1	Never use of PC=0
University with degree=1	β_0	$\beta_0 + \beta_1$
Other level of education=0	$\beta_0 + \beta_2$	$\beta_0 + \beta_1 + \beta_2 + \beta_3$

Source: our elaboration.

Our coefficient result say to us that people that use PC and are graduated have a decrease on happiness/life satisfaction. The same consideration will have to be make for the coefficient of the interaction with UNEMPL, such as unemployed that use PC frequently or occasionally will be less satisfied of life. Obviously since the P-value are highly greater than 0.05, this result are not significant so we can not say that this phenomenon is true.

Turning to the study of the other independent variables of the model, the first that deserves an explanation is the AGE of the interviewees. In fact, in both regressions this has a negative coefficient which would mean that, due to increasing age, satisfaction will decrease. But as we have already seen in the literature, the relationship between these two variables has a U-shape trend, so to confirm what scholars have learned about the subject through the manipulation of the variable AGE, making its square, we have been able to ascertain that even in our database the trend is U-shaped (Henderson, 2018).

Infact in the ordered probit model the AGE^2 coefficient is significant but very closed to zero. It is very important that it turns into positive in the squered version because it means that as people get older the effect on life statisfaction is stronger, so after a decreasing trend in the middle age the life satisfaction return to grow in the retirement age.

The second explenatory variable to analyse is the GEND variable. We can say that in the WVS, in the fifth and sixth wave, women are happier than men. Moreover, looking at the the gender-unemployment interaction (GEMPL), again even if it is not significant, it says that if the respondent is female and unemployed its happiness will increse.

Another very studied variable is the marital status of interviewed (the variable MARIT), there are studies showing that the satisfaction of life in cohabitation is identical to the satisfaction of life in registered marriages, for this reason our dummy for the value 1 contains people that are married and that live together as married. In our analysis we expect to find positive coefficient for that variable because in the literature more scholars have verified that being in a couple despite the presence of children raises happiness, while other types of family status such as single or divorced / widowers report lower levels of happiness. Those who are married or in a couple are less oppressed by loneliness and can faced the everyday problem with someone (Frey, 2018). Our analysis confirm that result, because in both the regressions the coefficients are significant and positive so, it means that, as we have already say, be in a couple increase the life satisfaction.

Having obtained a university degree is our UNI variable, we want to study whether having the highest level of study influences satisfaction. The coefficient associated with this variable in our analysis is positive and significant in both the regressions. In the ordered probit model we interact it, as well as with that of the use of the PC, also with the unemployment. As we already know the interaction is not significat but its coefficient is positive and it can explaine the fact that being gradueated attenuetes the negative effect of unemployment. So, if graduated people are unemployed their happiness can increase, in this case of 0.016.

Empirical studies usually find a positive effect of education on happiness.

For Castiota (2002) the main reasons why education should improve life satisfaction are that: the acquiring knowledge provides direct utility per se, education is a signal and people get indirect utility from being highly educated, higher education level make easier to be employed and sometimes with higher expected salary and quality of job.

Other studies, instead,(Clark & Oswald, 1996) find opposite results: controlling for the income, in this studies, the most educated individuals are positionated in a lower level of satisfaction.

The outcome could depend on two main factors. Firstly, highly educated people have higher job expectations which are more difficult to meet and moreover to be more qualified for a job that does not need it generates frustration. Secondly, the comparison with people who have the same level of education but a higher salary can has a negative effect on happiness. So, our analysis confirm partially the literature findings, and furthermore the results of the literature, as regards our interaction, are opposite, so we can confirm that the absence of significance is explained by the theory.

For what concern the REL variable, in our analysis its coefficient is positive and significant. Positive religion coefficient means that if people belive in some faith their level of happiness/life satisfaction increase.

The explenation of positivity comes from literature. Indeed, empirical research on the relationship between happiness and religion explains that religious groups promote good values such as freedom of choice, freedom of emotions, gratitude and social connections. All these characteristics make the member of a group feel part of a community and are more satisfied with their life (Ngamaba & Soni, 2018).

Regarding the variable CLASS, which due to the absence of an income indicator we have included in the analysis, we can say that it increase the life satisfaction because the effect described by the coefficient is posive and means that, ceteris paribus, the more the social class is high the more life satisfaction increase. In literature, scholars study the income effect on happiness so, this affects happiness in a particular way.

In fact, as Easterlin theorized in 1972, the relationship between these two variables is called the "happiness paradox", since as income grows, happiness grows to a certain level, that is, as long as individuals are able to satisfy their basic needs , after which it will begin to decrease. Furthermore, the paradox explains that between countries there is not much difference in happiness but this varies within individual countries.

Moreover, as we said before, we do the interaction with the CLASS variable and the UNEMPL one. Interact a dummy variable and a categorical variable has a different interpretation with respect to interact two dummy.

To understand the coefficient that we obtain we need to look at the function that there is behind. To better explain it we make some explicative examples.

We are going to analyze how the satisfaction function will change if we add the integration term.

In the table below I will instert the value of the coefficient that we obtain if we look at the life satisfaction fanction before only for employed people and then for the unemplyed.

Table 14: Interaction with categorical variable class

If unempl=0	Y= α+ β_1 class
If unempl=1	Y= (α+ β_2) + (β_1 +β_3) class

Source: our elaboration.

The scope of an interaction of this type is to understand how the slope is different for the unemployed and employed people, in fact, β_3 represent the difference in slope between the two function. The coefficient that we recived from the regression is the sum of this two function and so it is that boosted the effect of class on unemployment by an amount equal to β_2+ β_3.

In this case our coefficient is 0.0172. Like all the other interracted variables it is not significant but a possible explenation will be that for the unemployed individuals in the database an increase in class level produce a positive increment on life satisfaction.

Unemployment is one of the factors that most affects happiness. In both the OLS and the probit ordered model, the coefficient of the UNEMPL variable is negative. In linear regression this is equal to -0.39, in probit it is about -0.18.

So, the negative effect on life satisfaction is quite strong. Studies have clearly established that, for many different countries and time periods, personally experiencing unemployment makes people very unsatisfied with their life. Being without a job reduces well-being more than any other factor. Research shows that not only job loss, and consequent decrease in income, affects happiness but also some indirect effects.

There is evidence that unhappy people are indeed not performing well in the labor market, so it can be seen as a reverse causation due to the approach that individuals has with life.

Moreover, people are unhappy about unemployment, even if they themselves are not put out of work. Becouse people may feel bad about those that are unemployed and they may worry about the possibility of becoming unemployed themselves in the future because they are also aware of repercussions on the economy and on society as a whole (Frey & Stutzer, 2002).

Concerning the two political factor, DEM and POL, the aim is to understand how the political world influence life satisfaction. In "Economics of happiness" of Frey (2018) is explained that "the importance of democracy for subjective life satisfaction has been demonstrated by cross-section analyses for a large number of countries. The more extensively democratic the political institutions are, the happier are people living under them".

To explain the relationship between happiness and politics interest we use the Swiss example made by Veenhoven (2000).

He states that in cantons in which the citizens have greater opportunities to directly participate in political decisions through initiatives and referendums, people are more satisfied with their lives than in cantons where the direct participation rights of citizens are less extensive.

So literature confirm the result of our regressions. In fact, both in the OLS and in the ordered probit model the coefficiente associated with these two variables are positive.

Hence, democracy importance has increasing effet on life satisfaction, that means that the more people are on favor of democracy the more their satisfaction function will increase. Same result are presented for the interest in politics, the interest and the consequent partecipation in politics has benefical effect on life satisfaction, and people who are more interested in politics will be happier.

4.5 ROBUSTNESS CHECKS AND MARGINAL ANALYSIS

To test the significance of the model we use two different approaches. We decide to start with some robustness checks.

The first step is to run an Ordered probit regression, equal to the previous ones but with a key variable slightly different.

We will use the PCFREQ variable that contains three values. It has value 1 for the respondent that never use PC, value 2 for the occasional use and value 3 for the frequent use of computers.

With this procedure we want to investigate if at different intensity of use of personal computers, the influence that it has on life satisfaction change.

This doubt comes in ours mind when we are looking on the Fig. 16 in the above paragraph. We noticed that for higher frequency of use of PC the number of individuals that answers to be satisfied of life decrease, and on the contrary, for people that never use computers lots of the respondent answer to be satisfied. We want to investigate even if we do not have data for the Internet connection, if in some way the solo use of PC contains the effect, like addiction or social distancing, that some scholars discover nowadays.

So, we hypothesized that probably we could have a different value for the coefficient if we had inserted a discrete variable instead of a binary one in our regression.

Surprisingly, the results confirm what we have already seen in OLS and the other Ordered probit regression. In fact, the coefficient for PCFREQ remains positive and significant. It is almost 0.09, so if people use frequently computers, they will have positive effect on their life satisfaction. Based on our dataset we can state that there is no evidence that high use of computers produces negative externalities because the PCFREQ variable increase the variance/variability of the dependent variable, the SATISF variable (Table 2 in Appendix).

Next step is to verify why the interaction that we made are not significant. We decide to make a robust check running ordered probit regressions and filtering for each variable that we want to test.

Firstly, we decide to start filtering for GEND, we run the model only considering the women. The result that we obtain are very close to the original ones. Focusing on the PC coefficient we notice that ceteris paribus, the coefficient is little decreasing. So, a possible explanation can be that female respondents that use PC receive less positive effect.

In the previous paragraph we have treated the interaction of the GEND variable with the UNEMPL one. We found that if the interviewed are female and unemployed their happiness/life satisfaction will increase. From this robustness check we can state that even if the previous coefficient is not significant the result that we obtain confirm partially this effect. In fact, the coefficient for UNEMPL now is negative but it is lower than the one on the Ordered probit model done at the beginning (Table 3 in appendix).

Secondly, we focus on the UNEMPL variable. In literature this variable is considered as the one that influence mostly, in negative way, the satisfaction function.

If we consider the unemployed people in the database, the result that we obtain are the following: the coefficient of PC increase. This is the opposite of what we found when we interact these two variables previously. In fact, the coefficient of the interacted variables is negative, so we had assumed that the more individuals use computers the less are happy. On the contrary, the checks result displays a positive coefficient, almost 0.1, it means that the use of computers makes people more satisfied with their life and mitigate the effect of unemployment.

Always because unemployment has strong effect of happiness, we had done interaction even with the variables UNI and CLASS.

Concerning the CLASS variable, the effect produced by a greater class level is positive and that confirm what we had discovered in the interaction before.

The effect of the UNI variable instead reinforces the result obtained by the interaction. The "new" coefficient is 0.0733, it is significant because its p-value is below the 5%, and it imply that the positive effect that a university degree has on unemployment is greater than we already had imagined (Table 4 in appendix).

The last interaction that remains to investigate is the one between PC and UNI variables. Surprisingly, the coefficient of PC use in this check remains positive and significant, it is almost 0.1. We are surprised of this result because the interaction coefficient is negative. Thanks to this check we can state that the opposite is true. So, based on our dataset if an individual has a university degree the more use computers the more its satisfaction increase (Table 5 in appendix).

The next step of this post estimation check is to analyse the average marginal effect after the Ordered probit regression. Calculate the marginal effect after a Probit/Logit model is important because the coefficient that we found from the regression can not be automatically interpreted as useful to estimate the effect of an independent variable on the dependent one.

Marginal effects show the change in probability when the predictor or independent variable increases by one unit.

We decide to use the command "*margins dydx(*) predict (outcome())*" where the outcomes represent every value for life satisfaction from 1 to 10. With the dydx (*) option we want to estimate the marginal effect of variables in varlist (Table from 6 to 6i in appendix).

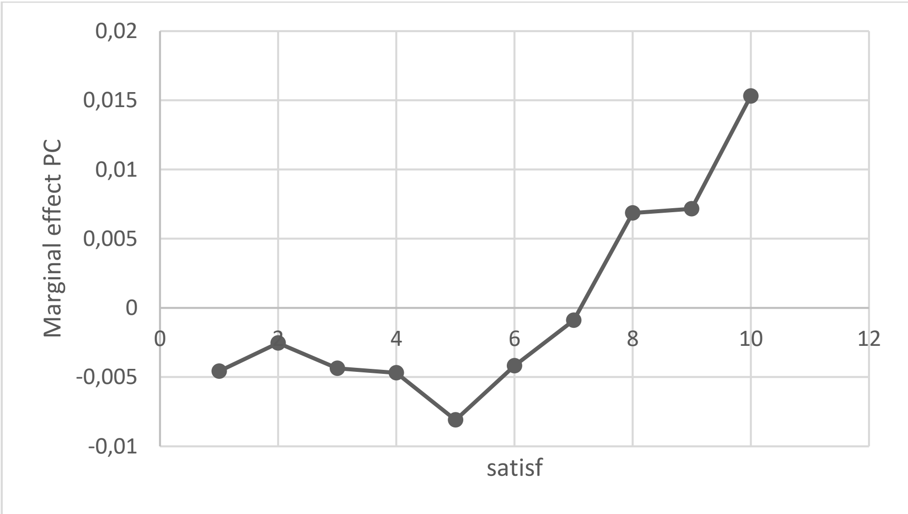
Lastly with the command predict we specify the variable that we will use in the responde, we will consider the effect of the increment of one unit of the dependent variable and with all other variables in the model. So, we will see for each unit of increment on satisfaction in life the effect on the other variables.

The first thing that we look at are the p-values, that in all the margins outcomes are significant. Than we focus our attenction on the sign of the independent variables. Analyzing the average marginal effect from the outcome 1 to 7 the sign of the results are negative for the variables that in our regressions are positive and positive for AGE and UNEPL that we know that have negative influence. From the outcome 8 to 10 the signs return to be what we have already see in the Ordered probit model. To explain the PC phenomena we think its useful look at the extreme value of life satisfaction and at value 5. In this way we can see how PC marginal effect change along the satisfaction curves. So we are going to analyze what append if at each level of satisf the independent variables increase of one unit.

We immediately notice that for value 1 on life satisfaction the dydx coefficient is negative and equal to -0.0046 circa. It means that the change in probability for one instant change in PC is almost 0.46 percentage points. If we look at the coefficient for value 5 of satisf, it continues to be negative and equal to -0.008. So the effect is stronger in negative way. When we consider the value that represent the maximum level of satisf we find out that the marginal effect becames positive. It has value 0.015, so its change in probability became 1.5 percentage points.

As I have already said this change in sign appear after the 8 level of life satisfaction.

Figure 17: Marginal effect of PC



Source: our elaboration of WVS database.

The graph before shows the value that we will obtain from the mariginal analysis of the PC variable with respect to the dependent variable satisf. From the result that we found we can suppose that for higher level of life satisfaction the use of computers influence positively the happiness of respondents.

This marginal effects analysis was useful for ascertaining the goodness of our empirical stady. Infact we found that the model is significat and it comfirm the result of our coefficients. An increasing unit of our independent variables, exept for unemployment and age, after the value 7 of satisf produce a positive effect on happiness. On the contrary as we expect unempl and age has the opposite effect, so, they decrease the satisfaction of respondents.

5 CONCLUSION

Today, personal computers have an important role in the everyday life of people around the world. Countries and nations are linked to each other's with an invisible net: the Internet. The medium used to connect people that use the net are computers. For this reason and considering that one of the most important factors of happiness are relational goods, that are the non-material goods that are intrinsically linked to relationships and interaction (Bruni, 2006), we will focus our analysis on the role of PC on life satisfaction/happiness.

Empirical evidence has highlighted that the use of PC has a positive impact on life satisfaction: the more individuals use PC, the more their happiness function increases.

This positive effect grows if computers are connected to the Internet, this phenomenon can be explained by the increment on relationship that the broadband can provide (Kavetsos & Koutroumpis, 2011).

Moreover, we know from the recent studies on social media that an overuse of these platforms of communication has negative consequences on people attitude with others, and consequently on happiness because it creates stress, anxiety and aggressiveness (Rotondi et al, 2017).

Happiness, as we know from literature, is influenced even by a series of variables known as determinants. They consider all aspect of human sphere from the demographic point of view to the state influence on life. Some scholars have theorized three macro areas related to the determinants of happiness. These are, as we had already said in the previous chapter, the demographic factor, the economic factor and political factor (Frey & Stutzer, 2002).

Considering this background, firstly, we focus our attention on the explanatory power of the variable PC, that is a dummy variable with value one when an individual answers that use personal computer occasionally or frequently; furthermore, we want to investigate on some of the determinants of life satisfaction. Concerning the manipulation of the dataset our analysis is closely related to the study by Frey & Stutzer (2002); regarding the methodology used, we follow the modus operandi of almost all the empirical research on that theme. They use linear regression or ordered logit/probit model (or both, like we did) to understand the phenomena of happiness.

For the purposes of the analysis, we select 13 variables which are: Life satisfaction, Frequency of PC use (PC), Wave (WAVE), Country code (COUNTRY), Gender(GEND), Age (AGE), Marital status (MARIT), Employment status (UNEMPL), Education (UNI), Religion (REL), Social class (CLASS), Interest in politics (POL) and Democracy acceptance (DEM).

As we said, we run firstly an OLS regression to make some first consideration on the effect that all the variables considered have on life satisfaction, then we run an ordered probit regression.

Our results, based on a sample composed by a matrix of 13 columns and 173,450 observations (individuals), are the following.

Based on both models (OLS and probit), considering as fix effect the survey wave and the country of respondent, the PC variable has a positive influence on life satisfaction. So, by increasing the use of PC, people are more satisfied of their life. The result seems to confirm the evidence expressed on literature (Kavetsos & Koutroumpis, 2011).

Regarding the other variables selected as potential determinants of happiness, considering the data that the WVS provide, we can say that:

- The GEND variable is positive: so, the female respondents are more satisfied of their life with respect to male ones.
- The age of individuals is a very interesting variable. In literature it is represented by a U-shaped curved, once plotted against the life satisfaction. It means that in the younger age people happiness is high, after the teenage the curve starts to decrease until the retirement age where it goes up again (Clark & Oswald, 2006) (Rauch, 2018). Studying the AGE and AGE^2 variable we find that the behaviour course of the curve is similar to the one studied by many scholars.

- Being in a couple or being married (MARIT) according to our analysis has a positive impact on happiness. This result is in line with the literature results. In fact, evidence demonstrates that being married is a way to divide problems derived by the difficult situation of everyday life, people tend to consider marriage or stable love relationship as a sort of "safe place" (Frey, 2018).
- Being graduated is another significant variable. It is relevant for both the life satisfaction function and the PC variable. Regarding the satisfaction function our analysis shows positive effect of university education (UNI), this result explains only part of the literature evidence. Scholars have found that at higher level of education, at first sight it seems that the satisfaction function increases, but a deeper control, mostly between the education level and income, highlights that if graduated people do a less paid job or they are not at the career position desired their satisfaction is decreasing (Castriota, 2006). We do not have enough information using our dataset, in the WVS in those years there is not an income variable to disentangle to analyse this aspect. So, we can simply make supposition on what we find.
- UNEMPL is probably the variable that has the strongest effect on happiness. We find out that being unemployed has a strong negative effect on the satisfaction function. This is a not a surprise: in fact, scholars find that being unemployed has negative repercussions on the satisfaction of the single

individual and on the surrounding society. Unemployment depresses the economy of a nation and generates discontent and worries among the population (Frey, 2018).

- In the regressions we find out that high class level corresponds to higher levels of life satisfaction, but the CLASS variable is not useful to explain the happiness paradox proposed by the literature (Easterlin, 1974). Easterlin states that at a point in time happiness varies directly with income both among and within nations, but over time happiness does not trend upward as income continues to grow. Having no income data, we can only suppose that if higher social class correspond to higher levels of income the first part of the paradox is confirmed, so, if we consider only these 2 waves, so a given point in time, the satisfaction of individuals seams to grow in relation to income/class position.
- The religion factor is related to a personal sphere of happiness. Have a faith is something that produce stability and confidence in people. The REL variable shows positive coefficients in the model studied. So, religious people, influenced by the belief of their faith, seem to be happier with respect to people that are atheist.
- POL and DEM capture the political factors of this thesis. They represent respectively the interest in politics and the degree of importance of democracy perceived by the respondents. Both of them have positive effect

on happiness: it means that the more people are involved/interested in politics and consider democracy important, the more satisfaction increase. The political aspect of happiness is the most studied topics by Bruni & Porta (2006) and by Frey & Stutzer (2000). They focus their attention on the interconnection between state institutions and population, population more involved in politics population are happiest and satisfied with their institution and life.

To verify the goodness of the model we did some robustness checks. We decided to transform the dummy variable of PC into a discrete variable composed by three possible answers. Value 1 correspond to people that do not use computers, value 2 for persons that use occasionally PC and 3 for those that use it frequently. The coefficient for PCFREQ (our new discrete variable) remains positive and significant. It is almost 0.09. Based on our dataset we can state that there is no evidence that high use of computers produces negative externalities because the PCFREQ variable increase the variance/variability of the dependent variable (SATISF).

To be sure of what we find in the ordered probit model we decide to calculate the marginal effect for all the values of our dependent variable (SATISF). Analyzing the average marginal effect from the outcome 1 to 7, we find that the sign of the results are negative for the variables that in our regressions are positive and positive for AGE and UNEPL that we know that have negative influence. From the outcome 8 to 10 the signs return to be what we have already see in the ordered probit model. It can be interpreted as for higher levels of satisfaction in life the trend of all the independent variables follows the result of the regressions made before. So, we can state that the model presented is significant.

To conclude, the final aim of that analysis is to understand the role on PC use on life satisfaction. We find out that, based on our dataset, individuals that use more computers have a positive influence on their happiness. We can assume that a frequent use of PC is related to the use of the Internet, but we can not investigate on the negative aspects of it because we do not have data for more specific usages of PC, such as the social media use, that may present negative sides of IT technology usage.

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8 APPENDIX

Table 1

NAME	COMPLETE VARIABLE NAME	DESCRIPTION	VALUE
WAVE	Wave	In the World Value Survey database waves are 4 years interval groups that goes from 1981 to 2020. In the WVS there are 7 waves but for the scope of the analysis we are forced to use only the 5^{th} and the 6^{th}.	Wave 5 that goes from 2005 to 2009 and wave 6 from 2010 to 2014.
COUNTRY	Country code/name	It contains the name code for every interviewed country that is in the database. (Countries in wave 5 and 6 are: Andorra, Argentina, Australia, Brazil, Bulgaria, Burkina, Canada, Cyprus, Chile, China, Egypt, Ethiopia, Finland, Georgia, Germany, Ghana, Hungary, India, Indonesia, Iran, Italy, Japan, Malaysia, Mali, Moldova, Morocco, Norway, Peru, Poland, Romania, Rwanda, Serbia, Slovenia, South Africa, South Korea, Spain, Sweden, Switzerland, Taiwan, Thailand, Trinidad & Tobago, Ukraine, USA, Uruguay, Vietnam, Zambia, Algeria, Armenia, Azerbaijan, Belarus, Colombia, Ecuador, Estonia, Haiti, Hong Kong, Iraq, Jordan, Kazakhstan, Kyrgyzstan, Lebanon, Libya, Mexico, Netherland, New Zealand, Nigeria, Pakistan, Palestine, Philippines, Russia, Singapore, Tunisia, Turkey, Uzbekistan, Yemen, Zimbabwe).	There are 46 countries that participate to the survey in wave 5 and 56 in wave 6 but a lot of countries participate in both the waves.
SATISF	Satisfaction in life	The question asked to the interviewed is: *"All things considered, how satisfied are you with your life as a whole these days?"*. It can be used to approximate the value of happiness of the individual.	It a 10-scale discrete variable, where 1 means dissatisfied, and 10 means satisfied.
PC	Pc use frequency	This variable is useful to understand the frequency of PC use, in fact the question in the questionaries is "*How often, if ever, do you use a personal computer?*".	Originally it contains a 4-level answer: never, occasionally, frequently and don´t know what a computer is. For the analysis it will be converted in a dummy variable with value 1 if people use occasionally or frequently Pc and 0 the other.
AGE	Age	It contains the age of all respondents from the last years of adolescence to the old age.	The age considered are from 15 to 102.
GEND	Gender	This variable says to us the gender of the respondents.	It will be a dummy variable with value 1 for female and 0 for male.

MARIT	Marital status	For marital status we want to take in consideration the affective relationship of the interviewed and the role that it has on the perception of happiness/satisfaction in life.	In WVS the possible answers are 5: married, living together as married, divorced, separated, widowed, single/never married. In the analysis it will be considered as a dummy variable, where for value 1 are represented married and cohabitants and 0 for the other.
REL	Religious denomination	This variable investigates on the belonging to a religion or religious denomination.	For the analysis purpose we consider it as a dummy variable with value 1 for some religion faith and 0 for no denomination.
EDU	Higher level of education attained	This variable contains information about the highest level of education attained by the interviewed. It is composed by 8 categories from inadequately completed elementary education to university with degree/Higher education - upper-level tertiary certificate.	It originally contains 8 category from elementary education to university. In the analysis we will use this variable as a dummy with value 1 for university education and 0 for the other.
CLASS	Social class	This variable will inform us about the social class level perceived by the respondent. It can be seen as indicator of the income of the individual.	Originally it is formed by 5 categories: upper class, upper middle class, lower middle class, working class, lower class. For the analysis purpose we merge the middle class and the working and lower class.
EMPL	Employment status	This variable classifies the interviewed people in full time employed, part time employed, self-employed, retired, housewife, students, unemployed and other.	To investigate the role that job have on happiness it will be converted on a dummy with value 1 for the unemployed and 0 for the other.
POL	Interest in politics	The question asked to the interviewed is: "*How interested would you say you are in politics?*". I select this variable to analyse the participation on politics. People that are very interested as active participant and the others with a decreasing participation value.	The values of this variable are: very interested, somewhat interested, not very interested, not at all interested.
DEM	Importance in democracy	To understand the degree of decentralization of the state I suppose that investigate on the acceptance of democracy between the respondent can be a good indicator to use. In my opinion if democracy is accepted can be interpreted as if the interviewee lived in a democratic state and support its fundamental and values. The question on the WVS is: "*How important is it for you to live in a country that is governed democratically? On this scale where 1 means it is "not at all important" and 10 means "absolutely important" what position would you choose?*"	This variable is a 10-level discrete variable. It has a minimum value (1) if people answer is not at all important, and the maximum value (10) if their response is absolutely important.

Table 2: PC robustness check

VARIABLES	satisfaction
Pcfreq	0.0923***
	(0.00739)
gend	0.0404***
	(0.00589)
unempl	-0.179***
	(0.0110)
age	-0.0266***
	(0.00107)
age2	0.000248***
	(1.14e-05)
marit	0.209***
	(0.00688)
uni	0.0338***
	(0.00786)
rel	0.0626***
	(0.00832)
class	0.327***
	(0.00580)
pol	0.0171***
	(0.00341)
dem	0.0576***
	(0.00171)
Constant cut1	-2.228***
	(0.0421)
Constant cut2	-1.956***
	(0.0420)
Constant cut3	-1.612***
	(0.0418)
Constant cut4	-1.307***
	(0.0417)
Constant cut5	-0.790***
	(0.0416)
Constant cut6	-0.412***
	(0.0416)
Constant cut7	0.0830**
	(0.0416)
Constant cut8	0.731***
	(0.0416)
Constant cut9	1.175***
	(0.0417)
Observations	125,792
Country dummy (yes) wave dummy (yes)	

Table 3: Ordered probit with gender filtered

VARIABLES	Satisfaction
PC	0.0678***
	(0.0103)
o.gender	-
unempl	-0.171***
	(0.0157)
age	-0.0264***
	(0.00147)
age2	0.000247***
	(1.58e-05)
marit	0.229***
	(0.00921)
uni	0.0445***
	(0.0109)
rel	0.0590***
	(0.0119)
class	0.321***
	(0.00805)
pol	0.0190***
	(0.00480)
dem	0.0587***
	(0.00236)
Constant cut1	-2.193***
	(0.0597)
Constant cut2	-1.934***
	(0.0596)
Constant cut3	-1.593***
	(0.0593)
Constant cut4	-1.288***
	(0.0592)
Constant cut5	-0.763***
	(0.0591)
Constant cut6	-0.386***
	(0.0591)
Constant cut7	0.0998*
	(0.0591)
Constant cut8	0.745***
	(0.0591)
Constant cut9	1.199***
	(0.0592)
Observations	65,307
Country dummy (yes) wave dummy (yes)	

Table 4: ordered probit with unempl filtered

VARIABLES	satisfaction
PC	0.0988***
	(0.0217)
gend	0.0468**
	(0.0188)
o.unemployed	-
age	-0.0344***
	(0.00402)
age2	0.000342***
	(4.78e-05)
marit	0.174***
	(0.0209)
uni	0.0733**
	(0.0317)
rel	0.141***
	(0.0290)
class	0.312***
	(0.0171)
pol	0.0353***
	(0.0102)
dem	0.0357***
	(0.00494)
Constant cut1	-2.159***
	(0.126)
Constant cut2	-1.893***
	(0.125)
Constant cut3	-1.522***
	(0.125)
Constant cut4	-1.214***
	(0.125)
Constant cut5	-0.712***
	(0.125)
Constant cut6	-0.361***
	(0.125)
Constant cut7	0.0624
	(0.125)
Constant cut8	0.570***
	(0.125)
Constant cut9	0.914***
	(0.125)
Observations	12,807
Country dummy (yes) wave dummy (yes)	

Table 5: Ordered probit with uni filtered

VARIABLES	satisfaction
PC	0.0978***
	(0.0242)
gend	0.0483***
	(0.0143)
unempl	-0.195***
	(0.0347)
age	-0.0322***
	(0.00295)
age2	0.000301***
	(3.16e-05)
marit	0.287***
	(0.0164)
o.university	-
rel	0.0887***
	(0.0180)
class	0.336***
	(0.0139)
pol	-0.00112
	(0.00851)
dem	0.0659***
	(0.00463)
Constant cut1	-2.220***
	(0.113)
Constant cut2	-1.934***
	(0.113)
Constant cut3	-1.598***
	(0.112)
Constant cut4	-1.279***
	(0.111)
Constant cut5	-0.775***
	(0.111)
Constant cut6	-0.396***
	(0.111)
Constant cut7	0.177
	(0.111)
Constant cut8	0.956***
	(0.111)
Constant cut9	1.522***
	(0.111)
Observations	22,344
Country dummy (yes) wave dummy (yes)	

Table 6: Marginal effect (for satisfaction equal to 1)

	dy/dx	Delta-method Std. Err.	z	P>|z|	[95% Conf.	Interval]
Pcuse	-.0045779	.0004164	-11.00	0.000	-.0053939	-.0037618
gender	-.0022095	.0003276	-6.75	0.000	-.0028516	-.0015675
unemployed	.010139	.0006294	16.11	0.000	.0089054	.0113725
age	.0014905	.0000629	23.70	0.000	.0013672	.0016137
age2	-.000014	6.60e-07	-21.21	0.000	-.0000153	-.0000127
married	-.011611	.0004137	-28.06	0.000	-.0124219	-.0108001
university	-.0021704	.0004335	-5.01	0.000	-.0030201	-.0013206
religion	-.003444	.0004657	-7.40	0.000	-.0043567	-.0025314
socialclass	-.0180766	.0004056	-44.57	0.000	-.0188716	-.0172817
political	-.0008754	.0001896	-4.62	0.000	-.001247	-.0005038
democracy	-.0032774	.000103	-31.82	0.000	-.0034793	-.0030756

Note: dy/dx for factor levels is the discrete change from the base level.

Country dummy (yes) wave dummy (yes)

Table 6a: Marginal effect (for satisfaction equal to 2)

	dy/dx	Delta-method Std. Err.	z	P>|z|	[95% Conf.	Interval]
Pcuse	-.0025474	.0002335	-10.91	0.000	-.003005	-.0020898
gender	-.0012295	.0001833	-6.71	0.000	-.0015888	-.0008702
unemployed	.0056419	.0003556	15.87	0.000	.004945	.0063388
age	.0008294	.0000364	22.80	0.000	.0007581	.0009007
age2	-7.79e-06	3.78e-07	-20.59	0.000	-8.53e-06	-7.05e-06
married	-.006461	.000244	-26.48	0.000	-.0069392	-.0059828
university	-.0012077	.0002413	-5.00	0.000	-.0016807	-.0007348
religion	-.0019165	.0002602	-7.37	0.000	-.0024264	-.0014065
socialclass	-.0100589	.0002612	-38.50	0.000	-.0105709	-.0095468
political	-.0004871	.0001058	-4.60	0.000	-.0006946	-.0002797
democracy	-.0018238	.0000617	-29.54	0.000	-.0019448	-.0017027

Note: dy/dx for factor levels is the discrete change from the base level.

Country dummy (yes) wave dummy (yes)

Table 6b: marignal effect (for satisfaction equal to 3)

	dy/dx	Delta-method Std. Err.	z	P>|z|	[95% Conf.	Interval]
Pcuse	-.0043566	.000395	-11.03	0.000	-.0051307	-.0035825
gender	-.0021027	.0003119	-6.74	0.000	-.002714	-.0014914
unemployed	.0096489	.0005962	16.18	0.000	.0084804	.0108174
age	.0014184	.0000593	23.94	0.000	.0013023	.0015346
age2	-.0000133	6.23e-07	-21.40	0.000	-.0000145	-.0000121
married	-.0110498	.0003878	-28.49	0.000	-.0118099	-.0102897
university	-.0020654	.0004122	-5.01	0.000	-.0028733	-.0012576
religion	-.0032776	.0004429	-7.40	0.000	-.0041456	-.0024095
socialclass	-.0172029	.0003763	-45.72	0.000	-.0179404	-.0164654
political	-.0008331	.0001805	-4.62	0.000	-.0011868	-.0004793
democracy	-.003119	.0000975	-32.00	0.000	-.00331	-.002928

Note: dy/dx for factor levels is the discrete change from the base level.

Country dummy (yes) wave dummy (yes)

Table 6c: Marginal effect (for satisfaction equal to 4)

	dy/dx	Delta-method Std. Err.	z	P>|z|	[95% Conf.	Interval]
Pcuse	-.0046844	.0004233	-11.07	0.000	-.005514	-.0038548
gender	-.002261	.000335	-6.75	0.000	-.0029175	-.0016044
unemployed	.0103749	.0006364	16.30	0.000	.0091275	.0116223
age	.0015251	.0000632	24.13	0.000	.0014013	.001649
age2	-.0000143	6.66e-07	-21.52	0.000	-.0000156	-.000013
married	-.0118812	.0004116	-28.87	0.000	-.0126878	-.0110745
university	-.0022209	.0004428	-5.02	0.000	-.0030887	-.001353
religion	-.0035242	.0004754	-7.41	0.000	-.0044559	-.0025925
socialclass	-.0184972	.0003867	-47.83	0.000	-.0192552	-.0177393
political	-.0008958	.0001939	-4.62	0.000	-.0012759	-.0005156
democracy	-.0033537	.0001033	-32.47	0.000	-.0035561	-.0031513

Note: dy/dx for factor levels is the discrete change from the base level.

Country dummy (yes) wave dummy (yes)

Table 6d: Marginal effect (for satisfaction equal to 5)

	dy/dx	Delta-method Std. Err.	z	P>|z|	[95% Conf. Interval]	
Pcuse	-.0080987	.0007279	-11.13	0.000	-.0095253	-.006672
gender	-.0039089	.0005776	-6.77	0.000	-.005041	-.0027767
unemployed	.0179367	.0010877	16.49	0.000	.0158049	.0200686
age	.0026368	.0001067	24.71	0.000	.0024276	.0028459
age2	-.0000248	1.13e-06	-21.93	0.000	-.000027	-.0000226
married	-.0205409	.0006852	-29.98	0.000	-.021884	-.0191979
university	-.0038396	.0007651	-5.02	0.000	-.0053392	-.0023399
religion	-.0060928	.0008202	-7.43	0.000	-.0077003	-.0044853
socialclass	-.0319792	.0005995	-53.35	0.000	-.0331541	-.0308042
political	-.0015487	.0003349	-4.62	0.000	-.0022051	-.0008922
democracy	-.0057981	.0001715	-33.81	0.000	-.0061342	-.005462

Note: dy/dx for factor levels is the discrete change from the base level.

Country dummy (yes) wave dummy (yes)

Table 6e: Marginal effect (for satisfaction equal to 6)

	dy/dx	Delta-method Std. Err.	z	P>|z|	[95% Conf. Interval]	
Pcuse	-.0041846	.0003762	-11.12	0.000	-.004922	-.0034472
gender	-.0020197	.0002988	-6.76	0.000	-.0026053	-.0014341
unemployed	.0092679	.0005647	16.41	0.000	.0081611	.0103747
age	.0013624	.0000558	24.40	0.000	.001253	.0014718
age2	-.0000128	5.90e-07	-21.70	0.000	-.000014	-.0000116
married	-.0106135	.0003597	-29.51	0.000	-.0113185	-.0099085
university	-.0019839	.0003951	-5.02	0.000	-.0027583	-.0012095
religion	-.0031481	.000424	-7.42	0.000	-.0039792	-.0023171
socialclass	-.0165236	.000324	-51.00	0.000	-.0171587	-.0158886
political	-.0008002	.0001731	-4.62	0.000	-.0011394	-.000461
democracy	-.0029959	.0000914	-32.77	0.000	-.0031751	-.0028167

Note: dy/dx for factor levels is the discrete change from the base level.

Country dummy (yes) wave dummy (yes)

Table 6f: Marginal effect (for satisfaction equal to 7)

	dy/dx	Delta-method Std. Err.	z	P>|z|	[95% Conf.	Interval]
Pcuse	-.0008873	.0000873	-10.16	0.000	-.0010584	-.0007162
gender	-.0004283	.0000661	-6.48	0.000	-.0005577	-.0002988
unemployed	.0019653	.0001472	13.35	0.000	.0016767	.0022538
age	.0002889	.0000174	16.57	0.000	.0002547	.0003231
age2	-2.71e-06	1.74e-07	-15.61	0.000	-3.05e-06	-2.37e-06
married	-.0022506	.0001243	-18.11	0.000	-.0024942	-.002007
university	-.0004207	.000085	-4.95	0.000	-.0005873	-.0002541
religion	-.0006676	.0000945	-7.06	0.000	-.0008528	-.0004824
socialclass	-.0035038	.000167	-20.98	0.000	-.0038312	-.0031765
political	-.0001697	.0000373	-4.55	0.000	-.0002428	-.0000966
democracy	-.0006353	.0000348	-18.26	0.000	-.0007035	-.0005671

Note: dy/dx for factor levels is the discrete change from the base level.

Country dummy (yes) wave dummy (yes)

Table 6g: Marginal effect (for satisfaction equal to 8)

	dy/dx	Delta-method Std. Err.	z	P>|z|	[95% Conf.	Interval]
Pcuse	-.0008873	.0000873	-10.16	0.000	-.0010584	-.0007162
gender	-.0004283	.0000661	-6.48	0.000	-.0005577	-.0002988
unemployed	.0019653	.0001472	13.35	0.000	.0016767	.0022538
age	.0002889	.0000174	16.57	0.000	.0002547	.0003231
age2	-2.71e-06	1.74e-07	-15.61	0.000	-3.05e-06	-2.37e-06
married	-.0022506	.0001243	-18.11	0.000	-.0024942	-.002007
university	-.0004207	.000085	-4.95	0.000	-.0005873	-.0002541
religion	-.0006676	.0000945	-7.06	0.000	-.0008528	-.0004824
socialclass	-.0035038	.000167	-20.98	0.000	-.0038312	-.0031765
political	-.0001697	.0000373	-4.55	0.000	-.0002428	-.0000966
democracy	-.0006353	.0000348	-18.26	0.000	-.0007035	-.0005671

Note: dy/dx for factor levels is the discrete change from the base level.

Country dummy (yes) wave dummy (yes)

Table 6h: Marginal effect (for satisfaction equal to 9)

	dy/dx	Delta-method Std. Err.	z	P>|z|	[95% Conf.	Interval]
Pcuse	.0071678	.0006451	11.11	0.000	.0059034	.0084322
gender	.0034596	.0005118	6.76	0.000	.0024565	.0044626
unemployed	-.015875	.0009657	-16.44	0.000	-.0177679	-.0139822
age	-.0023337	.0000948	-24.63	0.000	-.0025194	-.002148
age2	.0000219	1.00e-06	21.88	0.000	.00002	.0000239
married	.0181799	.0006108	29.76	0.000	.0169828	.0193771
university	.0033982	.0006772	5.02	0.000	.002071	.0047255
religion	.0053925	.000726	7.43	0.000	.0039695	.0068155
socialclass	.0283034	.0005408	52.34	0.000	.0272435	.0293633
political	.0013707	.0002965	4.62	0.000	.0007894	.0019519
democracy	.0051316	.0001527	33.61	0.000	.0048323	.0054309

Note: dy/dx for factor levels is the discrete change from the base level.

Country dummy (yes) wave dummy (yes)

Table 6i: Marginal effect (for satisfaction equal to 10)

	dy/dx	Delta-method Std. Err.	z	P>|z|	[95% Conf.	Interval]
Pcuse	.0153161	.0013719	11.16	0.000	.0126272	.018005
gender	.0073924	.0010922	6.77	0.000	.0052517	.0095331
unemployed	-.0339217	.0020518	-16.53	0.000	-.0379432	-.0299003
age	-.0049866	.0002006	-24.86	0.000	-.0053797	-.0045935
age2	.0000468	2.13e-06	22.02	0.000	.0000427	.000051
married	.0388468	.0012844	30.25	0.000	.0363294	.0413641
university	.0072613	.0014445	5.03	0.000	.0044302	.0100924
religion	.0115226	.0015505	7.43	0.000	.0084837	.0145615
socialclass	.0604786	.0011038	54.79	0.000	.0583152	.062642
political	.0029288	.0006331	4.63	0.000	.001688	.0041696
democracy	.0109653	.0003208	34.18	0.000	.0103365	.011594

Note: dy/dx for factor levels is the discrete change from the base level.

Country dummy (yes) wave dummy (yes)