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The Non-Economic Effect of Education: An Analysis of Italians Health and Well-being

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The Non-Economic Effect of Education: An Analysis of Italians Health and Well-being

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Abstract

This article analyses the impact of education on the noneconomic effects. Specifically, on the health and well-being perceived. In addition, the role that employment status and earnings play in this relationship for Italians aged 25-68 is examined. The hypotheses are twofold. The first is that the level of education attained (on which social origin exerts a known weight) may affect the level of perceived happiness and satisfaction throughout life. Another suggests that education's impact is influenced by one's position and earnings in the labour market. The relationships are investigated from Italian data from the European Social Survey (ESS) for the years 2012; 2016; 2018; 2020 and using the well-known Health Attainment model (Lucchini and Sarti, 2009) The goal is to study the impact (direct or indirect) of education on health and well-being, and how economic conditions mediates these relationships. In line with the literature, the results suggest that education levels can help understand variations in health and psycho-social well-being. Higher education leads to greater satisfaction with health and living conditions. These effects appear mediated by economic conditions (employment and income), which contribute to constructing one's imaginary psycho-social well-being.

1. Introduction

Research on education outcomes and social background has focused on both the economic impact of educational attainment and earnings from years of education (Ballarino et al.,2014; Budoki e Goldhtorpe, 2016; Bernardi & Ballarino, 2016; Giancola & Salmieri, 2021; Hällsten & Yaish, 2022; Rizzi, 2023) both in terms of overall economic growth through the accumulation of human capital (Schultz, 1971; Becker, 1975; Hanushek & Woßmann, 2010). Education's impact on health, happiness, and living conditions, which refer to the non-economic effects of educational investment, has received less attention (Heckman et al., 2018; Brannlund, 2014). The benefits of education are defined as "non-monetary" when their impact "eludes monetary measurement" and spills over into dimensions beyond the economic one (Vila, 2000:22). Their influence leads to economic growth (individual and collective) but also improves social cohesion, civic participation, health, and well-being (Wharcol & Malicka, 2018).

When we talk about health, we're not just talking about not being sick – it means being in a good state physically, mentally, and socially. According to this definition (WHO, 1948), the state of health is characterised as a condition of psychophysical balance of individuals that is integrated as much with the social environment in which it is embedded as with all the social and economic elements that contrast it (Giancola & Colarusso, 2021). It is, therefore, a negative polysemic concept where there is an absence of disease and positive as a dynamic state of general well-being (Sarti e Terraneo, 2023 Well-being involves emotional, physical, mental, social, and spiritual aspects that allow people "*to reach their fullest potential and enjoy a better quality of life*"[1]. Well-being can be subjective, based on how someone perceives their living conditions, or "objective", founded on the material conditions that enable it (Kahneman et al, 1999).

Empirical research over time has shown how levels of education can influence both factual and perceived health status in the sense of well-being. Less educated people are more likely to experience worse health, both self- rated and in terms of reported chronic morbidity (Cardano, 2008; Ross e Wu; 1996). This is because they have unhealthy behaviors and lifestyles and are more likely to feel distressed (Brannlund, 2014). In contrast, higher education seems to have a positive effect on health by encouraging healthy habits like eating well, not smoking or using drugs, and being physically active (Jungbauer-Gans e Gross 2009; Giancola & Colarusso, 2021). Since health appears to be correlated with age, because it worsens as age increases, many analyses have shown that both education levels and income can slow the decline and reduce the gap. The literature suggests that formal education can influence health through various factors such as work, economic conditions, socio-psychological resources, and social capital. Having a higher education is linked to higher social support (Ross e Wu, 1995; Ross e Van Willigen, 1997), better job prospects, less economic stress, and healthier habits and lifestyles (Grossman 2006; Mirowsky e Ross, 2005). Having a strong social network helps with finding employment because it brings advantages from family and education. However, several studies oppose these positive effects of education on health by showing that it can negatively impact perceived satisfaction. The expectations system, which increases with educational attainment, generates a sense of dissatisfaction with one's aspirations and achievements (Blossfled e Maurice, 2019). In recent decades in Italy, researchers have found sharp disparities that affect both the ability to have social, economic, and cultural resources available and the ability to enjoy them for psycho-physical well- being, although a steady improvement in the general health of the population (lower infant mortality, increased life expectancy) (Sarti, 2018: 668; Giancola & Colarusso, 2021). Disparities, including the territorial gap between North and South, post-pandemic psychological effects (especially in young people), and differences between social groups, have highlighted

[11] The concept of quality of life itself is defined from the way the individual perceives himself and his existence. This is done in reference to the cultural context, the value system in which he or she is embedded and in relation to what are one's goals, expectations and so on (WHO, 1948).

that individuals with more socioeconomic resources tend to have better health conditions. (Marmot & Wilkinson, 2006). This has an effect not only on reproducing and maintaining social inequalities but also on the welfare of the entire population. It is, therefore, crucial to shift attention to dimensions beyond purely economic ones. For these reasons, the paper explores the dimensions of mental and physical well-being and health (given the level of happiness and perceived satisfaction) for individuals aged 25 to 68 in Italy. The aim is to examine how education is linked to perceived health and well-being and to observe the role that educational background and position taken in the labour market play in this relationship.

Does a higher level of education correlate with increased happiness and satisfaction with living conditions? And what is the relationship between these two dimensions net of a known socioeconomic background and position taken in the labour market? The hypothesis suggests that the level of education achieved, influenced by social background, may affect one's perceived happiness and satisfaction in life. Furthermore, it may be mediated by job status and earnings, which are affected by both socioeconomic background and individual education attained.

2. Theoretical framework

When we consider social health inequalities, we usually refer to an "*unfair distribution of social, economic and cultural resources and goods that allow to fully enjoy the physical psycho-efficiency of the body*" (Sarti, 2018). This definition highlights unfair differences between people that are not due to biology or genetics and can be avoided (WHO, 1990). Sociological research has analysed and explained health disparities using the selection/causation framework. Supporters of the first paradigm (difference model) believe that health inequalities are influenced by both biology and lifestyle choices. The differences are usually due to individual factors and behaviours, reflecting the "victim blaming" attitude (Cardano, 2008). This trend includes explanations based on genetics or nature that involve lifestyles and attribute health states starting from a stochastic process in a sort of "*luck lottery*" (Sarti, 2018:670) or because of a process of free choice (smoking, drinking, etc). On the other hand, the model of causation, (Spadea, 2004; Phelan et al., 2010), or of inequalities (Wickrama et al., 1997) instead considers health as a reflection of the social position assumed in social stratification. Health disadvantages can come from inherited social context and various factors that directly impact health. From this point of view, variations in health are determined by social factors (or "social determinants"), by material and immaterial resources that individuals implement based on initial advantages/disadvantages, and by social contexts, in which they share similar characteristics and risk factors. Supporters of the causation model believe that education is a key factor in health inequalities because it affects access to resources that can help

improve health. Resources like jobs, power, reputation, and social connections affect people's socioeconomic status, which in turn influences their health levels. Most of these studies identify in the working condition a principle of differentiation on the one hand through earnings (and therefore using income as a proxy for social position) and on the other through gained status (Sarti, 2018). What has been said is placed in a structural approach. (Costa et al., 2004; Cardano, 2008). Health and well-being disparities stem from social position, influencing access to resources and ability to manage health risks. The Health Attainment model proposed by Lucchini and Sarti in 2009 fits into this paradigm. Inspired by the OED triangle of Blau and Duncan (1967)[2], the model assumes that differences in socio-economic status or "*differenziali di tensione*" affect well-being through family, education, and work cumulatively (p.63). Furthermore, cultural capital can be transformed into tools for health protection and prevention[3].

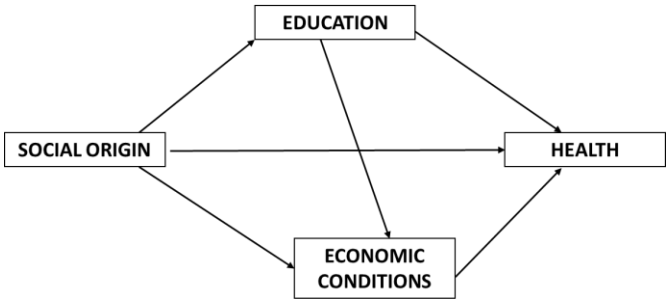

Figure 1. The Health Attainment Model
Source: Author's elaboration from Lucchini e Sarti scheme (2008)

The model shows that the education achieved is influenced by their family background, which impacts their socio-economic status and overall health. In this way, economic conditions can directly impact health conditions. This approach recalls Bourdieu's theory of social and cultural reproduction, which involves the concepts of cultural capital and habitus. According to some authors (Bartley, 2016; Sarti, 2018), people develop shared habits through socialisation, which enhances their sense of belonging to specific groups in a process of social distinction. This relates to network theory (Christakis e Fowler, 2010), which suggests that close relationships are important in the spread of health differences. Additionally, it lets to examine how social origin influences overall health and well-being, alongside factors like education and work. In this viewpoint, the variables relating to social and economic conditions, interpreted as the reflection of an unequal distribution of material and not resources (Sarti 2018), could explain the link between education and health and well-being, mediated by income and occupational role (Sarti & Terraneo, 2023). Another perspective is

[2] The status attainment model by Blau and Duncan (1967) shows how social origin, education, and life outcomes are linked. An individual's final social position would be influenced by family (father's) status and education and thus by class. The father's education mediates the relationship between individual education and labour status (Bernardi & Ballarino, 2016; Meraviglia, 2017; Rizzi, 2023).
[3] Clarification is needed because causality in this model is controversial, and it's difficult to measure factors like morbidity.

Mirowsky and Ross's (2005) "structural amplification" and DiPrete and Eirich's (2006) "cumulative advantage model," which emphasize the cumulative nature of health disparities and socioeconomic advantages. According to the Bourdiesian approach, this concept sees health as a type of capital that individuals accumulate over time, influenced by their social standing and reproductive practices. Supporters believe that there is a threshold where inequalities begin to reverse. It is hypothesised that the advantages end their utility function in old age, coinciding precisely with the decline in health[4].

In Italy, the study of social inequalities in health and well-being started in the 1990s, influenced by research in England and Scandinavia). This delay is mainly because of limited data sources and their unequal distribution across the territory (Cardano, 2008). In Italy, the main analyses conducted during that period were thanks to ISTAT and the ongoing "*Multiscopo– Condizioni di salute e ricorso ai servizi sanitari*" (the latest edition of the survey was conducted in 2019). Currently, there are many surveys that gather information on people's health and well-being. One of these is the European Social Survey, which will be used for this research.

3. Data and Methods

The data used comes from the last four waves (2012; 2016; 2018; 2020) of the European Social Survey (ESS) in which Italy took part (N= 20,686). This choice was reached to combine disparate surveys to yield a larger sample size and minimise the risk of statistical power loss. The survey includes information about social background, employment, earnings, and people's perception of health and living conditions. This allows to identify both the economic and non-economic effects of educational levels. The sample used for the analysis includes only subjects aged between 25 and 68, for 14.098 of which 49.2% men and 50.4% women it was excluded younger and older subjects from the analysis to purify the spurious effect of the impact of those in training and those who are retired. This choice is aimed at avoiding distortions both in the relationship between education and economic returns and regarding the estimated effects on health due to natural aging (Willson et al, 2007; Lucchini e Sarti, 2009)[5]. Given the well-known relationship between social origin and educational levels and between these and the status achieved in the labour market (net of the previous two), it was chosen to directly observe the impact of educational qualifications and employment on health and well-being self- perceived conditions. In fact, studies have widely shown that social background affects educational attainment. Higher social status leads to higher chances of achieving higher qualifications. Similarly, education

[4] The above passage is taken from a study on how health disparities are inherited across generations. It suggests that there is a connection between social background and health inequalities, which become more pronounced as time passes.

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levels impact job prospects and mitigate the influence of social background in this aspect (Zella, 2010 Ballarino et al, 2016; Rizzi, 2023). By using the Health Attainment model in this research, it can be estimating how educational qualifications affect well-being, including general health and happiness with living conditions. The impact of employment outcomes (being employed and earnings) on the health and psychophysical well-being of interviewees can be examined, considering the influence of social origin on qualifications and life trajectories via education.

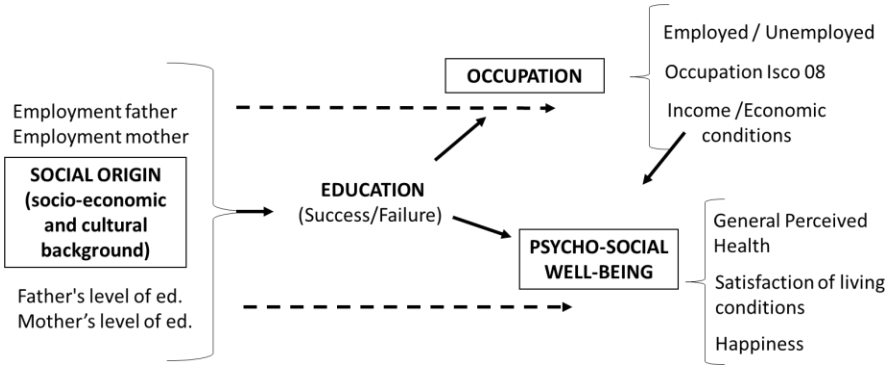

Figure 2. The Health Attainment model revisited.
Source: Author's elaboration from ESS 2012,2016,2018, 2020 dataset

3.1 Socio-economic and health and well-being indicators

3.1.1 Education

Here, as already mentioned (see par.2), education levels are used as an indicator of the social position of the interviewee and a predictor of health. This is because it is known that education can absorb the impact of social origin and transfer it to other dimensions (Rizzi, 2023). Multiple studies prove qualifications (unlike other factors such as employment, income and so on), are stable and apply to everyone (Lucchini et al, 2011). The original variable of the educational qualification distributed in 21 categories (from "No school degree" to "PhD") was re-classified in four classes[6], using the Italian classification scheme.

3.1.2 Occupation

Employment condition was measured using two indicators: employment status and labour market position based on the ISCO classification. To determine respondent's employment status, it was considered the main activity carried out in the last 7 days, excluding "Education", "Permanently sick or disabled", "Retired" "Community or military service". Category "Paid Work" is taken over to construct a dichotomous variable in/out of the labour market. The other categories - "Unemployed, searching for a job", "Unemployed, not searching for a job" and "Housework, looking after children"– have been included and recoded into "non-employment status".

[6] The categories are: "No school degree/ Primary education" (7%); "Secondary education" (41,3%); High School degree (Technical/Vocational) (35,5%); and "University degree and more" (16,1%)

Finally, the ISCO 08 occupation variable was incorporated and recoded sing the ISTAT classification scheme, and then turned into five and three categories[7] from the bottom up. The variable previously recoded into 'non-employment status' (11,7%) was merged into these categories to develop an employment status that included this dimension. Reference tables can be viewed in the appendix (Tab.1).

3.1.3 Income and economic conditions

Family economic conditions are assessed based on both income levels (expressed in ten deciles) and people's perception of those conditions[8]. The first, whose categories range are from 'J' (less than 9,000) to 'H' (over 54,500), it was recoded into five categories[9]. The second was recoded into three categories ranging from 1) "it allows us to live comfortably" (23.4%); 2) "it allows us to meet current expenses" (48.5%) and 3) "we have medium or serious difficulties in meeting our expenses" (28%). The income expressed in bands, in its original form, will be used as an employee in the regression model. The variable relating to the perception of economic conditions, being strongly correlated to income (see Tab.3 Appendix), will be used as an independent proxy in the various proposed models.

3.1.4 Health and pshyco-social well-being

To assess overall health, it was considered self-perceived health on a scale of 1 (very good) to 5 (terrible) [10] and the presence of hindering diseases. The initial recording was transformed into a dummy that perceives good health instead of bad health. Dichotomising the variable helps avoid distortions caused by low percentages in the lowest categories. The variable "diseases" declared is spurious since it cannot be verified (as already shown in other studies, see Facchini & Ruspini; 2001; Lucchini e Sarti, 2009). These reasons should not be considered when estimating the cause-effect relationship between the variables[11]. Along with their general health, the interviewees' perception of their living conditions on a scale of 0-10 were considered. They are asked, on the one hand, how happy they consider themselves to be and on the other, how satisfied they are with their current life. The overall health indicator was recoded into three categories (good, fair, bad) and the variables relating to the "happiness" and "living conditions" were summarised in a single extracted component which covers 83% of the total variance (Tab.9-10 Appendix). The component was

[7] The five categories are distributed as follows: "Low" (11%); "Middle Low" (20,4%); "Middle" (19,4%); "Middle High" (21,7%); "High" (15,7%). The three-category variable, on the other hand: "Low" (32,8%); "Middle" (32,2%); "High" (35%).

[8] The construction of the income for ESS, anchors in the European Statistical System (ESS). Regards economic conditions, respondents are asked about their perception and disposable income. The response modes range from 1-4 where 1 equal "*allows us to live comfortably*"; 2 to "*allows us to meet current expenses*" and finally, 3 and 4 "*we have difficulties*" and "*great difficulties*.".

[9] The categories are: "Low" (23%); "Middle Low" (28%); "Middle" (21,7%); "Middle High" (19%) and "High" (8,2%) (see.Tab.2 Appendix)

[10] The referenced question is "Currently, how is your health in general? Would you describe it as..." with response mode "*very good*; *good; fair; bad; very bad*".

[11] However, to utilize it as a proxy in regression models, the original three-mode variable "diseases" was recoded into a dichotomous variable contrasting diseases versus non-diseases.

labelled "satisfaction with living conditions" and used in multivariate models of analysis. The correlation matrix shows a significant correlation between all three variables, with the strongest correlation between "happiness" and "living conditions" (Table 8 in the Appendix). The literature on the subject highlights the indispensability of the subjective dimension in the analysis because of its strong correlation with objective health measures, such as mortality and morbidity (Rogers, 1995). It is a warning sign that shows previous health issues affecting well-being. The subjective dimension of health looks at how a person feels and thinks about themselves, rather than just their physical health. A person's health is only partially explained by the objective dimension, such as diseases (Sarti e Terraneo, 2023). The representation of subjectivity shows how individual experiences are influenced by the structure they are in (with its limitations and resources).
Finally, it is observed how these relationships behave net of control variables such as

- Age detected by open-ended question, was recoded into four groups, distributed as follows 25-34 (17.6%); 35-44 (22.3%); 45-54 (28.3%) e 55-68 (31.9%). The choice recalls the methodological criteria by which the selection of a sample for the analysis was constructed.
- Gender; was dummized to use it in multivariate analysis models where 1 for males and 0 for females.
- Lifelong learning; was also dummizzed where 1 for yes and 0 for no.
- Social Capital, inferred by employing three indicators, referring to: a) friends circle; b) frequency of intimate contacts and c) participation in social life[12]. This information was subjected to correlation analysis (Tab.12 appendix) and synthesised by Principal Component Analysis (ACP) which produced a regressor for the models.

4. Empirical Analysis

4.1 Descriptive statistics

This section reports on the first-level analyses highlighting the relations between the variables considered. These relations have been assessed via bivariate analyses and estimations, which allows to fulfil the preliminary research goal objectives and the baseline for regression models.

[12] The social capital dimension was inferred from the following questions, "*Using this card, can you show how often do you get together with friends, relatives, or co-workers to hang out in your free time*?" from 0 (never) to 7 (every day); from the frequency of intimate contacts asked, "*Do you have people with whom you discuss intimate and personal things? If yes, how many*?" from 0 (none) to 6 (ten or more people). Finally, for social participation, asked respondents "*Compared to other people your age, how often do you feel you take part in social life*?" On a five-point scale ranging from 0 (much less than others) to 5 (much more than others).

The distributions of health perception for the variables mentioned are observed column-wise. Women (Tab.13 Appendix) report good health to a lesser extent than men (69.5% vs 74.7%). This figure reflects Italian trends related to mental health and multicronicity. In fact, although women in Italy have healthier lifestyles than men (in terms of lower alcohol, smoking consumption, and healthier activities) they are subject to more psychological distress and additional limitations as elderly compared to men (BES, 2022). As age group increases, the percentage of people reporting good and excellent health decreases (see Tab. 1). If for the youngest age group (25- 34) 87.8% express themselves positively, only 53.8% of the most adult group (55-68) are in this category. 46.2% of them define their health status as bad or terrible vs. only 12.2% of the younger age group. The two variables are found to be strongly associated with each other (.282).

		Age (25-68)				
		25-34	**35-44**	**45-54**	**55-68**	Total
Good health vs Bad	**Bad Health**	12.2%	18.2%	24.7%	46.2%	27.9% (3927)
	Good Health	87.8%	81.8%	75.3%	53.8%	72.1% (10135)
Total		100.0% (2468)	100.0% (3131)	100.0% (3977)	100.0% (4486)	100.0% (14062)

*Table 1. Pivot table: Health *Age group*
N: 14062; Chi-square: 1212.489; df:3; sign: .000; Coeff. Contingency: .282
Source: Author's elaboration from ESS 2012,2016,2018, 2020 dataset

The existence of a saturation threshold is confirmed by the trend described, where health reverses as it declines in later life (DiPrete & Eirich, 2006).
Regards education attained, people with higher levels (university and more) have better health (83.4%) compared to those with elementary school (37.7%) or middle school (67.2%) (see Tab.2).
The contingency coefficient (.250) confirms a modest association between the two variables, as supported by the literature. It shows that higher education levels are linked to better health outcomes due to healthier lifestyles.

	Education Attained				Total
	No school degree/ Primary education	**Secondary education**	**High /Technical/ Vocational school degree**	**University degree and more**	
Bad Health	62.3%	32.8%	20.4%	16.6%	27.9% (3871)
Good Health	37.7%	67.2%	79.6%	83.4%	72.1% (10019)
Total	100.0% (979)	100.0% (5747)	100.0% (4927)	100.0% (2237)	100.0% (13890)

Table 2.Pivot table: Health Education Attained*
N: 13890; Chi-square: 924.418; df: 3; sign: .000; Coeff. Contingency: .250
Source: Author's elaboration from ESS 2012,2016,2018, 2020 dataset

Those who turn out to be employed report better health status than those who turn out to be unemployed (79.4% vs 65.8%, Tab.14, Appendix). Occupational status has a less impact on health distributions compared to income and economic conditions perceptions. Those with high annual incomes (Tab.15 Appendix) mostly report having good and excellent health (79.4% vs. 20.6% who do not report this); in contrast, the percentage of those with low incomes who report good health is only 57.9%. Similar findings can be observed in the distributions concerning individuals' perception of their economic situation (Table 16, Appendix). The proportion of respondents who reported both living comfortably and having good health is 83.2%, in contrast to 16.8%. Those who stated that they could not manage with their earnings to meet the costs of living, 40.8% stated that they do not enjoy good health, showing how economic conditions can affect this dimension. Finally, as expected, diseases affect how men and women perceive their health differently. People with no diseases have 78.3% good health compared to 22.2% of those with one or more diseases. Women, again, report lower health states than men by about 6 percentage points (81.1% vs. 74.2%). As might have been expected, the variable "diseases" is the one most associated with the perception of one's health (Tab.17, Appendix). The large contingency coefficient (.363) confirms a high association between the variables.

According to the ANOVA analysis, gender has no impact on satisfaction with living conditions. The average values for men and women are similar, but there is no significant association between the two variables, as shown by a small contingency coefficient of .155. In contrast, the averages for age groups (see Tab.3) show that as age increases, satisfaction with one's life decreases, in line with the decline in youth the onset of life as young elderly (in fact, the average is negative only for the 55-68 age group). Here, the association is both significant and modest, with a contingency coefficient of .306.

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Age (25-68)	Average	N	Std.Deviation
25-34	0,108614	2402	0,914260
35-44	0,066183	3084	0,976717
45-54	0,014786	3876	0,998396
55-68	-0,118509	4407	1,049477
Total	0	13769	1

*Table 3. Compare means: Satisfaction of living conditions*Age group; Variance between: 104.587; within: 13663.595; dfl:3; F: 35.122; sign: .000; Coeff. Contingency: .306; Eta2: .008. The total average is= 0 and the total Std. Deviation = 1 because the sample is selected from age 25 to 68.*
Source: Author's elaboration from ESS 2012,2016,2018, 2020 dataset

The analysis of variance by educational qualifications (Tab.4) shows that satisfaction with one's life increases in a linear trend: as the level of education increases, satisfaction also increases. This example highlights the benefits of being healthy and contradicts the idea that getting more education leads to feeling dissatisfied with one's aspirations and accomplishments. The association between the two dimensions appears to be significant and modest (contingency coeff. .363).

Education Attained	Average	N	Std. Deviation
No school degree/ Primary education	-0.463619	959	1.293559
Secondary education	-0.090831	5588	1.079285
High /Technical/ Vocational school degree	0.104373	4845	0.872809
University degree and more	0.223245	2208	0.786820
Total	0.003408	13599	0.999396

*Table 4. Compare means: Satisfaction of living conditions*Education Attained; N: 13599; variance between: 414.850; within: 13167.188; df: 3; F: 142,781; sign:.000; Coeff. Contingency: .363; Eta2: 0.31.*
Source: Author's elaboration from ESS 2012,2016,2018, 2020 dataset

In addition, it is observed that investing in education, even after the school system, brings benefits in terms of well-being (Tab.19, Appendix). Adults who pursue education feel more satisfied than those who do not. The working dimension shows that being employed is associated with greater satisfaction than being without a job. Again, the contingency coefficient is small (.267), but the association is significant. Regarding employment status as levels increase, satisfaction also increases significantly (with a higher coefficient than before .314). The same can be said for income levels (.460) and perception regarding one's economic condition (.396) whose results show the strongest association with satisfaction with living conditions (Tab.5 and Tab. 21 Appendix).

Feeling about household's income nowadays	Average	N	Std.Deviation
Living hardly	-0.411824	3747	1.184743
Living discretly	0.073575	6533	0.892555
Living comfortably	0.358361	3168	0.759797
Total	0.005429	13448	0.997023

*Table 5. Compare means: Satisfaction of living conditions*Feeling about household's income nowdays. Variance beetween: 1077.299; within: 12290.114; df: 2; F: 589.281; sign:.000; Coeff.Contingency: .396; Eta2: .081.*
Source: Author's elaboration from ESS 2012,2016,2018, 2020 dataset

Those who report having diseases/illnesses (one or more) are less satisfied compared to those who do not (see Tab.22, Appendix). People who reported good health are more satisfied than those who reported bad health (.293).

The aim is to estimate the potential impact of educational levels on the health and psychosocial well-being dimensions. First, the effect of individual and contextual variables (gender, age group; high education; lifelong learning; social capital) on the respondent's employment status is shown. Next, the same relationship is observed for earnings expressed in

categories. The third model investigates the determinants of self-reported health status. The final model examines how variables relate to satisfaction with living conditions to identify the most influential factors.

4.2 Multivariate analysis

The Health Attainment model is used to study how control variables affect employment levels and their impact on status and earnings. Two different models are proposed using ordinal logistic regression. In the first, occupational status (low, middle, high) is used as the dependent variable, and in the second, earnings expressed as income (J to H). The categorical variables of occupational status and earnings can be treated as ordinal because of their clear order distribution. (Di Franco 2017). Considering the effect of one or more covariates, ordinal regression assumes a dependency or causal relationship between two or more independent and dependent variables. The ordinal model can be presented as the set of two simultaneously estimated binomial models in which the two regression coefficients reach the same value (McCullagh & Nelder, 1989; Pisati, 2003). For the first model, the reference category for employment status (dependent) is "high". The independent variables used for both models are three categorical ones: Gender; Age Group (25-34 vs 35-44; 35-54; 55-68), Education (high vs low); Lifelong Learning (yes vs no) and one cardinal one, Social Capital. The reference equation with the model's reference variables is given:

1.1 $$\eta_i^k = r^k - (x_{i1}\beta_1 + x_{i2}\beta_2 + x_{i3}\beta_3 \sum_{i=3}^{9} x_{ij\beta_i})$$

1.2 $$\eta_i^k = r^k - (GENDER_{I1}\beta_1 + AGE\ GROUPS_{i2}\beta_2 + HIGH\ EDUCATION_{i3}\beta_3 + LIFELONG\ LEARNING_{i4}\beta_4 + SOCIAL\ CAPITAL_{i5}\beta_5)$$

The results are now observed graphically (estimates are given in Tab. in Appendix) in terms of logs-odds and probability differences.

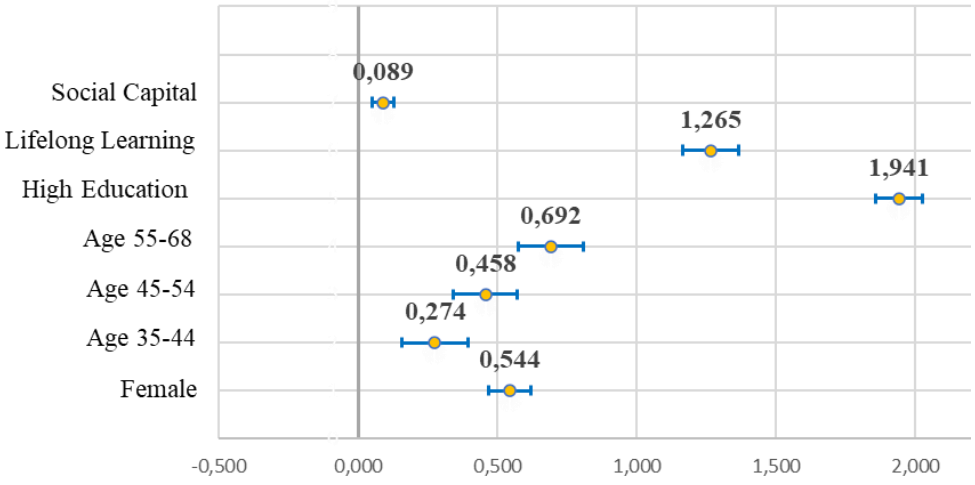

Figure 3. Ordinal regression model. Dependent variable: Occupational status (high vs middle and low). Indipendent variables: Gender (female); Age groups; High education; Lifelong learning and

Social Capital. In the graph, the values correspond to the estimates (B) produced by the model. Source: Author's elaboration from ESS 2012,2016,2018, 2020 dataset

Being a woman results in greater likelihood of falling into the high category of employment status than men. This result contradicts the notion that women have a harder time than men in entering the workforce. Women in Italy have higher educational qualifications than men, which increases their chances of entering high employment status categories, despite their lower employment rates. Turning to the age groups, these are found to be ordered according to an increasing progression. The older the age group, the greater the likelihood of being employed in the higher categories. It can be hypothesised that this result is due to career advancements that see only late in life, reaching hierarchically higher job positions. Having an educational qualification, greatly impacts employment status. Those with a diploma or a university degree are six times more likely to be in the highest employment category compared to peers with only an elementary of secondary education. Attending a training course/conference in the past year can greatly increase job opportunities, highlighting the importance of adult education. Finally, the effect of social capital, although significant, would seem to affect less in the model than in the other variables.

The second ordinal regression model's results, with income grouped into five categories, are now showed graphically. Here, being employed or not (Employed vs. Unemployed) was added to the independent variables.

1.3 $$\eta_i^k = r^k - (GENDER_{I1}\beta_1 + AGE\ GROUPS_{i2}\beta_2 + HIGH\ EDUCATION_{i3}\beta_3 + LIFELONG\ LEARNING_{i4}\beta_4 + EMPLOYED_{i5}\beta_5 + SOCIAL\ CAPITAL_{i6}\beta_6)$$

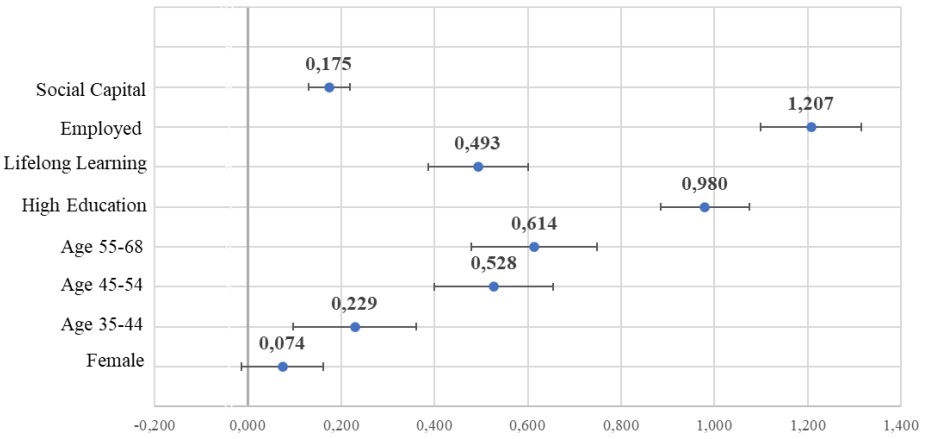

Figure 4. Ordinal regression model. Dependent variable: Income categories (high vs low;middle low; middle; middle high). Indipendent variables: Gender (female); Age groups; High education; Lifelong learning; Employed vs Unemployed and Social Capital. In the graph, the values correspond to the estimates (B) produced by the model. Source: Author's elaboration from ESS 2012,2016,2018, 2020 dataset

Regarding income ranges, the gender variable does not appear to have any effect; in fact, it is not significant. Based on the age groups, the

results show that as people get older; they are more likely to enter higher income categories, consistent with the earlier findings. Here, social capital would seem to have a greater effect on income than on high levels of employment status. The effect that high levels of education can have on this dimension also falls; this happens because the impact exerted by education levels is absorbed by being employed. This variable turns out to have the greatest effect on earnings. The impact of lifelong learning also goes down for the same reasons just listed.

Turning to the third model, the impact of the variables considered on self-perceived health status is observed. The study focuses on how educational qualifications and economic conditions jointly influence respondents' health status. Since the dependent variable is dichotomous, a binary logistic regression model can be used. Recoding the dependent variable with dichotomous values (between 0 and 1) allows to express the results of logistic regression in terms of logs-odds (Di Franco, 2017, p. 241). Here, 1 equal "good health" and 0 equals "bad health." The reference equation whose values have been replaced with the reference equations for the model (1.5) is the following (1.4)

1.4 $$\ln\left(\frac{pi}{1-pi}\right) = \beta_0 + \beta_{1X_1} + \ldots + \beta_{kx_k}$$

1.5 $$y = \beta_0 + \beta_1 GENDER_1 + \beta_2 AGE\ GROUP_2 + \beta_3 HIGH\ EDUCATION_3 + \beta_4 EMPLOYED\ VS\ UNEMPLOYED_4 + \beta_5\ ECONOMIC\ CONDITIONS_5 + \beta_5 LIFELONG\ LEARNING_5 + \beta_6 SOCIAL\ CAPITAL_6 + \beta_7 SATISFACTION\ OF\ LIVING\ CONDITIONS_7 + \beta_8 DISEASES_8$$

Results are reported in Tab. of estimates in the Appendix, while the graphic version is shown in figure below (Fig.5).

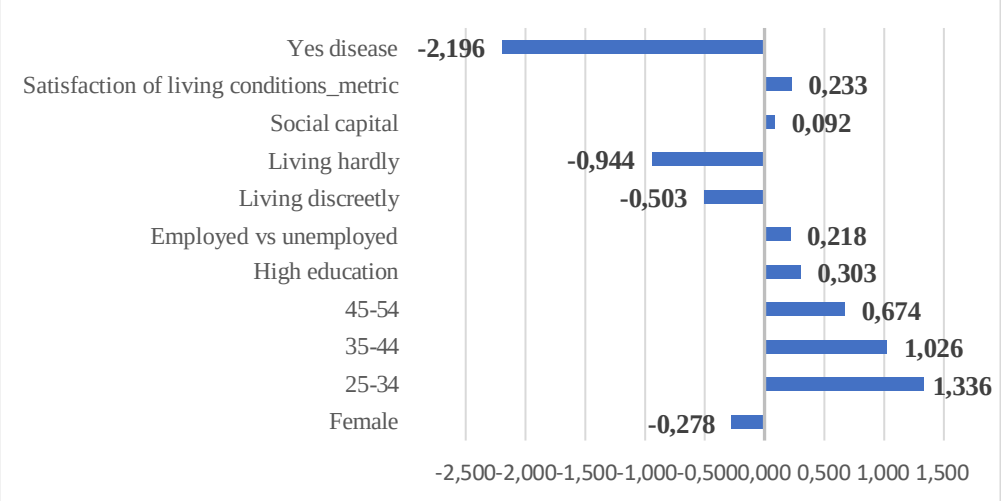

Figure 5. Logistic Binomial regression model. Dependent variable: Health perceived (good health vs bad). Independent variables: Gender (female); Age groups; High education; Employed; Lifelong learning; Economic living conditions; Social Capital (metric); Satisfaction of living conditions (metric); Diseases. In the graph, the values correspond to the estimates (B) produced by the model. Source: Author's elaboration from ESS 2012,2016,2018, 2020 dataset

The estimates reveal how women perceive a worse health status than men, confirming what was said in the preliminary analyses of Italian trends. Despite having healthier lifestyles (less exposure to smoking, less alcohol consumption, longer life expectancy etc.), women view their health as worse than men, especially as they age. In addition, women are more affected by chronic diseases and take more medication, which leads to lower mental health states compared to men (ISTAT, 2022a). As for the effect exerted by age groups, as expected, it exerts the greatest effect and decreases as age itself increases. The 25-34 age group represents the age group with the highest levels of perceived good health. Those falling into this category are three times more likely to perceive good health compared to the others. Thus, age is important for subjective health, but education also plays a role in differentiating individuals as it relates to age. The literature supports the idea that higher educational qualifications are linked to improved health perceptions and being employed. It is, in fact, well known that education also impacts health through employment and economic conditions. A clear association can be observed in the graph between lower economic coping ability and the respondents' perception of health status. Satisfaction with living conditions also positively affects the perception of health status. People who were happy with their living conditions reported better health, regardless of objective factors. Social capital has a positive effect on this relationship, but not as much as the other factors. According to the literature, it is hypothesized that the positive impact is achieved through the education attained, which is positively associated with the level of employment attained (on which the impact of family background is known). Finally, negatively impacting there are diseases, which represent, precisely, the objective dimension of health status that is considered when respondents plan their perceptions.

Turning to the analysis of well-being, or satisfaction with life, the results of the last regression model are shown. A linear regression model was chosen because of the dependent variable being a metric variable generated by Principal Component Analysis (PCA). Here, a block entry of the independent variables was chosen. The final model includes the following control variables: Gender (female); Age group (55-68 vs 24-34; 34-44; 45- 54); High education; Employed vs Unemployed; economic living conditions (living comfortly vs discreteely and hardly) and Diseases. Therefore, the variables in the model's reference equation (1.6) are reported:

1.6 $$Y_i = \beta_0 + \beta_1 X_i + \varepsilon_i$$

1.7 $$Y = \beta_1 GENDER_1 + \beta_2 AGE\ GROUP_2 + \beta_3 HIGH\ EDUCATION_3 + \beta_4 EMPLOYED_4 + \beta_5 ECONOMIC\ CONDITIONS_5 + \beta_6 DISEASES_6$$

The estimates in Tab. in the Appendix are shown and the results are observed graphically below (Fig.)

+

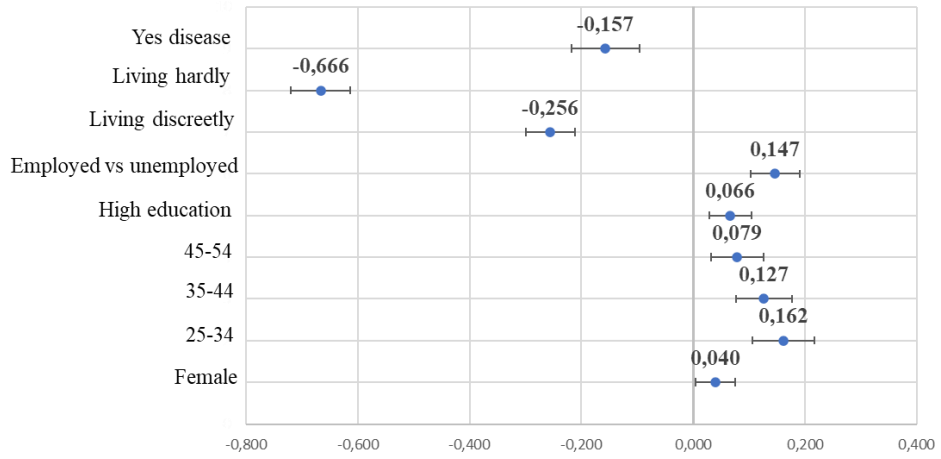

Figure 6. Graphic results of Linear Regression Model. Dependent variable: Satisfaction of living conditions; Independent variables: Gender (female); Age group (55-68 vs others); High education; Employed vs not; Economic conditions (living comfortably vs others) and diseases. In the graph, the values correspond to the estimates (B) produced by the model. Source: Author's elaboration from ESS 2012,2016,2018, 2020 dataset

The estimates show gender does not have a significant impact, even though it is positive and higher than the male counterpart. The breakdown of age groups shows that as age increases, overall satisfaction decreases, in line with Italian trends (ISTAT, 2022b). Here, high levels of education have a smaller impact than health states, since the effect exerted by education is absorbed by being employed. However, preliminary analysis shows that overall satisfaction tends to increase with education. Those who have high education and are employed in Italy express more positive satisfaction opinions. The same can be said of the position taken in the labour market, which, in this case, corresponds to the perception regarding one's economic conditions. This factor has the greatest negative effect on respondents' psycho-social well-being when it is not enough to handle daily life. The presence of illness also leads to a decrease in satisfaction, but to a lesser extent than in the previous model. When stating their opinion on living conditions, people may not prioritize health and instead consider various aspects of life like relationships, work, and free time.)

5. Conclusions

The aim of the study was to investigate the noneconomic effects of formal education on the level of mental and physical health and well-being. In particular, the research focused on analysing the associations between formal education and subjective measures of general health, happiness, and satisfaction with living conditions. The analysis of employment outcomes (in/out and earnings) was carried out to verify or challenge the mediating hypothesis. In terms of the health status, the model's estimates reveal that age is a key element in the subjective dimension of health, with the

youngest age group displaying the highest levels of perceived health. Education, however, acts as a real age-related driver of differentiation People with higher education tend to view their health more positively than those with only elementary or middle school education. Education has been shown to slow health decline by enhancing risk awareness, comprehension of health information, and decision-making about well-being. The importance of education is also found in the impacts on psycho-social well- being. Estimates show that general satisfaction and happiness increase as educational attainment increases. Here, education attained is found to have less impact because they are partly absorbed by being employed. This is because of education is linked to better job opportunities and higher income. Access to lifelong learning paths also contributes to this mechanism. The results show that education plays a significant role in influencing economic opportunities, which in turn affect both health and well-being. While for health, education appears to exert a greater influence, on the well-being condition it is economic conditions that matter. When these do not cope with aspects of daily life, the level of satisfaction drops dramatically and linearly. Theoretical assumptions make it clear that one's social position affects their health and well-being. The disparities and differences in health outcomes are influenced not only by the level of formal education achieved but also by the resources it generates. Employment, participation in lifelong learning, and access to resources all play a role in shaping the socioeconomic status, which in turn affect the health and well-being of the population. The model proposed by Lucchini and Sarti (2009) about Health Attainment, which explains how health inequalities spread through family, education, and employment, is also supported. This analysis doesn't show the influence of social background, but it is known that it affects education and employment outcomes. Education and employment outcomes mediate the relationship between socioeconomic background and health and well- being.

In conclusion, it is suggested to expand the analysis of the non-economic effects of education by including civic and political participation. Research suggests that social background, education, and employment are linked to increase these dimensions (Campbell, 2006; Brand, 2010 Assirelli, 2014). It is believed that higher education levels lead to more civic engagement and political interest, due to socioeconomic factors. Since information related to civic and political participation is present in the SSE, the same database as in this analysis will be used.

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Wellness is a state of emotional, mental, physical, social and spiritual well-being that enables people to reach and maintain their personal potential in their communities. (April 2001). *Working Together for Wellness. A Wellness Strategy for New Brunswick, Second Report of the Select Committee on Health Care, Third Session Fifty-fourth Legislative Assembly of the Province of New Brunswick.*

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APPENDIX

Isco 08 original categories	Frequencies	Valid %	Five Cat.%	Three cat.%
Legislators, senior officials, and managers	456	3.9	19.2	35
Professionals	1798	15.3		
Technicians and associate professionals	1866	15.8	26.9	
Clerical support workers	1306	11.1		32.3
Service workers and shop and market sales workers	2165	18.4	21.2	
Skilled agricultural and fishery workers	280	2.4		
Craft and related trades workers	1736	14.7	21	32.8
Plant and machine operators and assemblers	746	6.3		
Elementary occupations	1386	11.8	11.8	
Armed Forces	46	0.4		
Totale	11783	100		
Sistema	2315			
Totale	14098			
Armed forces fit into the third category for both recodifications				

Table 6. Recoding individual occupational status.
Source: Author's elaboration from ESS 2012,2016,2018,2020 dataset

Household's total net income, all sources	Frequencies	Valid %	Five categories %
J - 1st decile	797	9.3	23
R - 2nd decile	1183	13.7	
C - 3rd decile	1236	14.4	28
M - 4th decile	1171	13.6	
F - 5th decile	906	10.5	21.7
S - 6th decile	962	11.2	
K - 7th decile	986	11.5	19.1
P - 8th decile	652	7.6	
D - 9th decile	415	4.8	8.2
H - 10th decile	293	3.4	
Total	8601	100	
Refusal	4005		
Don't know	1465		
No answer	27		
Total	5497		
Total	14098		

Table 7.Recoding individual occupational status.
Source: Author's elaboration from ESS 2012,2016,2018,2020 dataset

		How happy are you	How satisfied with life as a whole
How happy are you	Pearson	1	.671**
	Sign. (a due code)		0
	N	13990	13769
How satisfied with life as a whole	Pearson	.671**	1
	Sign. (a due code)	0	
	N	13769	13860
** Correlation is significant at the 0.01 level (two-tailed)			

*Table 8. Correlations: How happy are you? *How satisfied with life. Coeff.Contingency: .765; Gamma: .704; Pearson R: .671.*
Source: Author's elaboration from ESS 2012,2016,2018,2020 dataset

Total variance explained						
Compnt	**Initial eigenvalues**	**Sums of extraction squares loaded**				
	Total	% variance	% cumulative	Total	% variance	% cumulative
1	1.671	83.557	83.557	1.671	83.557	83.557
2	0.329	16.443	100			
Extraction method: Principal component analysis.						

Table 9. Table 9. Total variance explained; ACP results (Satisfaction of living conditions)
Source: Author's elaboration from ESS 2012,2016,2018,2020 dataset

	Component
	1
How happy are you	0.914
How satisfied with life as a whole	0.914
Extraction method: 1-component principal component analysis extracted.	

Table 10. Component Matrix; ACP results (Satisfaction of living conditions).
Source: Author's elaboration from ESS 2012,2016,2018,2020 dataset

Correlations		Household's total net income, all sources	Feeling about household's income
Household's total net income, all sources	Pearson correlation Sign. (a due code) N	1 8601	.559** 0 8562
Feeling about household's income	Pearson correlation Sign. (a due code) N	.559** 0 8562	1 13709
** Correlation is significant at the 0.01 level (two-tailed)			

*Table 11. Correlations Household's total net income, all sources * Feeling about household's income nowadays. Coeff.Contingency: .526; Gamma= .617; R di Pearson: .559.*
Source: Author's elaboration from ESS 2012,2016,2018,2020 dataset

Correlations		Take part in social activities compared to others of same age	How many people with whom you can discuss intimate and personal matters	How often socially meet with friends, relatives or colleagues
Take part in social activities compared to others of same age	Pearson	1	.192**	.283**
	Sign. (a due code)		0	0
	N	13870	13640	13835
How many people with whom you can discuss intimate and personal matters	Pearson	.192**	1	.235**
	Sign. (a due code)	0		0
	N	13640	13824	13796
How often socially meet with friends, relatives or colleagues	Pearson	.283**	.235**	1
	Sign. (a due code)	0	0	
	N	13835	13796	14048
** Correlation is significant at the 0.01 level (two-tailed).				

*Table 12.Correlations Take part in social activities*How many people with you can discuss intimate*how often socially meet with friends 'relatives or colleagues.*
Source: Author's elaboration from ESS 2012,2016,2018,2020 dataset

		Gender		Total
		Male	**Female**	
Good health vs Bad	**Bad Health**	25.3%	30.5%	28.0% (3915)
	Good Health	74.7%	69.5%	72.0% (10091)
Total		100.0% (6917)	100.0% (7089)	100.0% (14006)

*Table 13 Pivot table: Health*Gender. N: 14006; Chi-square: 47.738; df: 1; sign: .000; Coeff. contingency : .,058.*
Source: Author's elaboration from ESS 2012,2016,2018,2020 dataset

		In/out labour market		Total
		Unemployed	**Employed**	
Good health vs Bad	**Bad Health**	34.2%	20.6%	24.3% (2909)
	Good Health	65.8%	79.4%	75.7% (9073)
Total		100.0% (3219)	100.0% (8763)	100.0% (11982)

*Table 14. Pivot table: Health*In/out labour market. N: 11982; Chi-square: 235.847; df: 1; sign: .000; Coeff. contingency: .139.*
Source: Author's elaboration from ESS 2012,2016,2018,2020 dataset

		Household's total net income					Total
		Low	**Middle Low**	**Middle**	**Middle High**	**High**	
Good health vs Bad	**Bad Health**	42.1%	29.0%	27.4%	18.2%	20.6%	28.9% (2487)
	Good Health	57.9%	71.0%	72.6%	81.8%	79.4%	71.1% (6110)
Total		100.0% (1979)	100.0% (2408)	100.0% (1866)	100.0% (1636)	100.0% (708)	100.0% (8597)

*Table 15.Pivot table: Health*Household's total net income. N:8597; Chi-square: 283.899; df: 4; sign: .000; Coeff. contingency: .179.*
Source: Author's elaboration from ESS 2012,2016,2018,2020 dataset

		Feeling about household's income nowadays			Total
		Living hardly	**Living discretly**	**Living comfortably**	
Good health vs Bad	**Bad Health**	40.8%	25.8%	16.8%	27.9% (3822)
	Good Health	59.2%	74.2%	83.2%	72.1% (9862)
Total		100.0% (3827)	100.0% (6650)	100.0% (3207)	100.0% (13684)

*Table 16. Pivot table: Health*Feeling about household's income nowadays. N: 13686; Chi-square: 527.245; df: 2; sign: .000; Coeff. contingency: ,193.*
Source: Author's elaboration from ESS 2012,2016,2018,2020 dataset

		Diseases		Total
		Yes	**No**	
Good health vs Bad	**Bad Health**	77.8%	21.7%	27.8% (3890)
	Good Health	22.2%	78.3%	72.2% (10090)
Total		100.0% (1521)	100.0% (12459)	100.0% (13980)

*Table 17. Pivot tabl: Health*Disease. N: 13980; Chi-square: 2120.499; df: 1; sign:.000; Coeff. contingency: .363.*
Source: Author's elaboration from ESS 2012,2016,2018,2020 dataset

Gender	**Average**	**N**	**Std.Deviation**
Male	0.010078	6761	1.020219
Female	-0.010532	6954	0.98144
Total	-0.000372	13715	1.000761

*Table 18. Compare means:Satisfaction of living conditions*Gender. Variance beetween: 1.456; within: 13733.104; df:1; F: .454; sign:.228; Coeff.Contingency: .155; Eta2: .000.*
Source: Author's elaboration from ESS 2012,2016,2018,2020 dataset

Lifelong learning, last 12 months	Average	N	Std.Deviation
Yes	0.221885	2603	0.847718
No	-0.047691	11037	1.025062
Total	0.003753	13640	0.999269

*Table 19. Compare means: Satisfaction of living conditions*Lifelong learning. Variance beetween: 153.061; within: 13466.043; df: 1; F: 155.017; sign: .000; Coeff.Contingency: .190; Eta2: .011.*
Source: Author's elaboration from ESS 2012,2016,2018,2020 dataset

Employed vs unemployed	Average	N	Std.Deviation	Occ. Status	Average	N	Std.Deviation
Unemployed	-0.231987	3157	1.195387	Out.oc	-0.138246	1438	1.132234
Employed	0.115343	8580	0.880974	Low	-0.108498	3796	1.146204
Total	0.021915	11737	0.987592	Middle	0.018788	3704	0.921805
				High	0.164452	4051	0.827809
				Total	0.009631	12989	0.997833

*Table 20. Compare means: Satisfactionf of living conditions*Employed vs Unemployed; Variance beetween: 278.423; within: 11168.291; df:1; F: 292.555; sign: .000; Coeff.Contingency: .267; Eta2: .024. Compare means: Satisfaction of living conditions*Occupational status. Variance between: 181.823; within: 12749.535; df: 3; F: 61.724; sign: .000; Coeff.Contingecy: .314; Eta2: .014.*
Source: Author's elaboration from ESS 2012,2016,2018,2020 dataset

Household's total net income	Average	N	Std.Deviation
Low	-0.379446	1928	1.299933
Middle Low	-0.013137	2366	0.937512
Middle	0.162501	1848	0.865680
Middle High	0.295535	1617	0.759491
High	0.388305	706	0.769934
Total	0.034219	8464	1.009976

*Table 21. Compare means: Satisfaction of living conditions*Household's total net income. Variance beetween: 564.487; within: 8068.230; df: 4; F: 147.957 ; sign:.000; Coeff.Contingency: .460; Eta2: .065.*
Source: Author's elaboration from ESS 2012,2016,2018,2020 dataset

Diseases	Average	N	Std. Deviation	Good health vs Bad	Average	N	Std. Deviation
Yes	-0.320556	1513	1.229805	Bad Health	-0.325955	3853	1.138361
No	0.042092	12190	0.959849	Good Health	0.128039	9896	0.907250
Total	0.002058	13703	0.999687	Total	0.000810	13749	0.998541

*Table 22. Compare means: Satisfaction of living conditions*Disease. Variance beetween: 176.981; within: 13516.608; df: 1; F: 179.398; sign:.000; Coeff.Contingency: .245; Eta2: .013.*
Source: Author's elaboration from ESS 2012,2016,2018,2020 dataset

						95% confidence interval		
	Estimate	**Std. Deviation**	**Wald**	**df**	**Sign.**	**Lower limit**	**Upper limit**	**Exp (B)**
Low	0.998	0.057	309.628	1	0.000	0.887	1.109	/
Middle	2.839	0.063	2025.062	1	0.000	2.715	2.962	
Gndr_female	0.544	0.038	205.568	1	0.000	0.470	0.619	1.723302
Age_35-44	0.274	0.061	20.360	1	0.000	0.155	0.394	1.315804
Age 45-54	0.458	0.059	61.156	1	0.000	0.343	0.573	1.580654
Age 55-68	0.692	0.059	137.841	1	0.000	0.576	0.807	1.997511
High_education	1.941	0.043	2047.717	1	0.000	1.857	2.025	6.965424
Lifelong_learning	1.265	0.052	599.468	1	0.000	1.164	1.366	3.543741
Social_capital	0.089	0.020	20.230	1	0.000	0.050	0.128	1.093170

Table 23. Determinants of Occupational status- Ordinal Logistic Regression. Model 1. [Number of valid cases: 11183; Log likelihood: 10901.490; Chi Square: 4177.179; Df: 7; Sign. .000; Pearson: 9242.324; Deviation: 8836.407; Cox and Snell: .312; Nagelkerke: .351; McFadden: .170].
Source: Author's elaboration from ESS 2012,2016,2018,2020 dataset

	Estimate	Std. Deviation	Wald	df	Sign.	95% confidence interval Lower limit	Upper limit	Exp (B)
Low	0.483	0.074	42.501	1	0.000	0.338	0.628	
Middle Low	2.012	0.078	669.348	1	0.000	1.859	2.164	
Middle	3.054	0.082	1385.859	1	0.000	2.893	3.214	
Middle High	4.644	0.092	2574.072	1	0.000	4.464	4.823	
Gndr_female	0.074	0.045	2.764	1	0.096	-0.013	0.162	1.077088
Age_35-44	0.229	0.067	11.565	1	0.001	0.097	0.361	1.257651
Age 45-54	0.528	0.065	65.843	1	0.000	0.400	0.655	1.694819
Age 55-68	0.614	0.069	79.493	1	0.000	0.479	0.749	1.848136
High_education	0.980	0.049	407.445	1	0.000	0.885	1.075	2.663585
Lifelong_learning	0.493	0.055	81.650	1	0.000	0.386	0.600	1.637199
Employed vs not	1.207	0.055	482.291	1	0.000	1.099	1.315	3.343638
Social_capital	0.175	0.023	58.450	1	0.000	0.130	0.219	1.190790

Table 24. Determinants of Income- Ordinal Logistic Regression. Model 2. [Number of valid cases: 7127; Log likelihood: 14930.081; Chi Square: 1709.826; Df: 8; Sign. .000; Pearson: 16531.090; Deviation: 13148.281; Cox and Snell: .213; Nagelkerke: .223; McFadden: .077.]
Source: Author's elaboration from ESS 2012,2016,2018,2020 dataset

	B	S.E.	Wald	Df	Sign.	Exp (B)
Female	-0.278	0.053	27.954	1	0.000	0.757
25-34	1.336	0.086	239.560	1	0.000	3.803
35-44	1.026	0.070	213.882	1	0.000	2.790
45-54	0.674	0.062	118.175	1	0.000	1.962
High education	0.303	0.054	31.074	1	0.000	1.354
Employed vs not	0.218	0.060	13.432	1	0.000	1.244
Living discreetly	-0.503	0.073	48.018	1	0.000	0.605
Living hardly	-0.944	0.082	133.838	1	0.000	0.389
Social capital	0.092	0.027	11.734	1	0.001	1.096
Satisfaction of living conditions	0.233	0.026	82.166	1	0.000	1.263
Yes disease	-2.196	0.080	754.771	1	0.000	0.111
Costante	1.146	0.095	144.802	1	0.000	3.146

Table 25. Determinants of health perceived of Italian. Binomial logistic regression model; Model 3; [Number of valid cases 6091; Overall percentage predicted correctly: 80.5; Log likelihood 9917.879; Cox and Snell .182; Nagelkerke .271; Chi square: 2192.640; df: 12; sign: .000].
Source: Author's elaboration from ESS 2012.2016.2018.2020 dataset

						95% confidence interval for B		
Model	**B**	**Std.Error**	**Beta**	**t**	**sign**	**Lower limit**	**Upper limit**	**Exp (B)**
(Costante)	0.102	0.034		2.988	0.003	0.035	0.168	
Female	0.040	0.018	0.020	2.171	0.030	0.004	0.076	1.04083
25-34	0.162	0.028	0.063	5.739	0.000	0.107	0.217	1.17564
35-44	0.127	0.025	0.056	4.971	0.000	0.077	0.177	1.13513
45-54	0.079	0.024	0.037	3.278	0.001	0.032	0.126	1.08176
High education	0.066	0.019	0.033	3.425	0.001	0.028	0.104	1.06865
Employed	0.147	0.022	0.066	6.554	0.000	0.103	0.191	1.15795
Living discreetly	-0.256	0.023	-0.129	-11.309	0.000	-0.300	-0.211	0.77448
Living hardly	-0.666	0.027	-0.302	-24.615	0.000	-0.719	-0.613	0.51359
Disease	-0.157	0.031	-0.045	-5.007	0.000	-0.218	-0.095	0.85495

Table 26. Determinants of satisfaction of living conditions. Linear Regression Model; Model 4; [Number of valid cases: 11318; R= .305; R2= .093; R2 adatpted= .092; Standard error= .94216446; df=9; F=128.557; Sign= .000.] Source: Author's elaboration from ESS 2012.2016.2018.2020 dataset