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## **Rendimientos de la Educación / Returns To Education**

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## **Education and happiness in Spain**

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In this paper we study the impact of education on happiness in Spain using individual-level data from the European Social Survey, by means of estimating Ordinal Logit Models. We find both direct and indirect effects of education on happiness. First, we find an indirect effect of education on happiness through income and labour status. That is, we find that people with a higher education level have higher income levels and a higher probability of being employed, and thus, report higher levels of happiness. Second, and after controlling by income, labour status and other socio-economic variables, we find that education has a positive (and direct) impact on happiness. We interpret this result as evidence of a “self-confidence” or “self-estimation” effect from acquiring knowledge. Finally, we find that the direct impact of education on happiness does not depend of the level of education (primary, secondary or tertiary).

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## 1 Introduction

There has been in recent years an emerging body of empirical literature on subjective well-being (individual life satisfaction or also called happiness).<sup>1</sup> The interest on this subject may be explained by different factors. First, monetary socio-economic indicators (such as per capita GDP) have been found to be insufficient measures of the well-being of citizens (see, for example United Nations, 1954 and Erikson, 1993 and more recently, Fleurbaey, 2009; Stiglitz *et al.*, 2009 and Jones and Klenow, 2010 among others). Thus, there is a wide range of studies that uses subjective well-being indicators to measure individual happiness (see, for example, Clark and Oswald, 1994; Di Tella *et al.*, 2001, 2003; Easterlin, 1974, 1995, 2001; Frey and Stutzer, 2002a,b and Ferrer-i-Carbonell, 2005 and Ferrer-i-Carbonell and Gowdy, 2007 among many others). Second, quality of

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<sup>1</sup> See, for example, the recent conference of Bernanke (2010), the Chairman of the Board of Governors of the Federal Reserve System of the U.S., which presents a survey on happiness and economics.

life studies can help to evaluate the welfare effects of different factors such as health, education, unemployment status, environmental variables, contamination, etc.. Furthermore, these studies help inferring implications of different policies, such as educative policies or other public policies (see, for example, Rehdanz and Maddison, 2005; Ferrer-i-Carbonell and Gowdy, 2007).<sup>2</sup>

A number of papers have focused on the relationship between education and happiness.<sup>3</sup> Although some empirical studies find a positive effect of education on happiness (see, for example, Di Tella *et al.*, 2001; Albert and Davia, 2005; Becchetti *et al.*, 2006 and Florida *et al.*, 2010 among many others), the empirical evidence on the link between these two variables is not conclusive. The objective of this paper is to analyze the relationship between education and happiness using data from the European Social Survey (ESS) for individuals living in Spain in 2008. Three are the main contributions of the paper. First, this paper covers the connection puzzle between education and happiness in Spain using recently data from ESS with 2563 observations in 2008. Second, we distinguish between direct and indirect effects of education on happiness (through income, labour status, marital status, etc.) Third, we differentiate among the different individual education levels on happiness, using two approaches: first, and following the classification in the ESS, we consider seven alternative levels of education covering a broad spectrum from people that have not completed primary education to people that have completed the second stage of tertiary; second, resuming that information in a four category variable. Others papers in the economic literature do not take into account difference in educational levels and only considers one proxy of human capital (see, for example Florida *et al.*, 2010) while other papers includes three traditional educational levels such as low, middle and upper (see, for example, Castriota, 2006).

The subjective well-being literature uses the individual's self-reported satisfaction with life to understand the determinants of happiness and to evaluate the impact of different policies on individual satisfaction. In this paper we study the impact of education on happiness in Spain using individual-level data from the ESS. The ESS provides rich data on individuals' subjective well-being, political interests, trust, electoral participation, party allegiance, socio-political orientations, environmental attitudes and demographic and socio-economic characteristics required to control for individual heterogeneity (*i.e.*, age, gender, subjective general health, employment status, marital status, number of children, income, educational level, etc.).

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<sup>2</sup> Recent surveys on the relationship between economics and happiness are Frey and Stutzer (2002a,b), Easterlin (2005), Clark *et al.* (2006), Di Tella and MacCullough (2006), Helliwell (2006), Bruni and Porta (2007), Layard (2006), Blanchflower (2008) and Graham (2008) among others.

<sup>3</sup> For example, Easterlin (2001) considered happiness in a broader way: "... *I use the terms happiness, subjective well-being, satisfaction, utility, welfare interchangeably...*". Throughout the paper we use the terms happiness and life satisfaction interchangeably. Many recent studies assume happiness and life satisfaction as synonymous (see, for example Caporale *et al.*, 2009 and Cunado and Perez de Gracia, 2010). In this paper, we used both happiness and life satisfaction scores as measures of subjective well-being (*i.e.*, dependent variable in our empirical analysis). The results are very similar with both proxy variables (happiness and life-satisfaction). The life satisfaction empirical evidence are available upon request.

The remainder of this paper is organized as follows. Section 2 briefly reviews the main literature contributions of the impact of educational variables on happiness. Section 3 covers the definition of the variables, the data set, the estimation procedure and the empirical analysis for Spain. The detailed results are also presented in Section 3 of the paper. Finally, Section 4 offers some concluding remarks.

## **2 Literature Review on Education and Happiness**

In this paper we focus in the impact of educational variables on the subjective well-being. Education has a significant impact on economic growth in aggregate level (see, Nelson and Phelps, 1966; Benhabib and Spiegel, 1994; Lucas, 1988 and Mankiw *et al.*, 1992 among others) and on human life at an individual level. There are two main channels through education affect subjective well-being. The first direct channel considers the positive effect on self-confidence and self-estimation and pleasure from acquiring knowledge. The second indirect channel takes into account that education promotes higher employment probability, better job quality, higher expected salary and better health.

There are many recent papers that have analyzed the relationship between educational variables and subjective well-being (see, for example, Witter *et al.*, 1984; Ross and Van Willigen, 1997; Hartog and Oosterbeek, 1998; Peiro, 2006; Michalos, 2007; Stevenson and Wolfers, 2009 and Florida *et al.*, 2010 among many others). For example, some empirical studies obtain a significant positive effect of education on happiness (see, for example, Di Tella *et al.*, 2001, Hayo and Seifert, 2003; Layard, 2005; Albert and Davia, 2005; Becchetti *et al.*, 2006; Castriota, 2006 and Florida *et al.*, 2010 among many others). In addition, education should increase subjective well-being through different channels such as promoting higher job quality with more interesting jobs (see, for example, Blanchflower and Oswald, 1994 and Albert and Davia, 2005); positive effect on health (see, Berger and Leigh, 1989; Hartog and Oosterbeek, 1998 and Alesina *et al.*, 2004 and Blanchflower and Oswald, 2008 among others) and better marriage prospects (see, Haveman and Wolfe, 1984 and Hartog and Oosterbeek, 1998 among others).

However many other empirical studies present some inconclusive results on the connection between educational levels and subjective well-being (see, for example, Veenhoven, 1996; Clark and Oswald, 1994, 1996; Inglehart and Klingemann, 2000; Dockery, 2003; Heady and Wooden, 2004 and Hickson and Dockery, 2008 among many others). For example, the paper by Inglehart and Klingemann (2000) do not find a significant effect of educational proxy variables on life satisfaction while the paper of Clark and Oswald (1996) finds an opposite result reducing level of satisfaction. According to Clark and Oswald (1996) two primary factors could explain the negative impact of education on happiness. The first factor considers that highly educated people have higher job expectations which are more difficult to fulfil and the second factor, the dispersion of

incomes increase with education. In other paper, Clark and Oswald (1994) detected that unemployment people with higher levels of education were less happy than those with lower levels of education.

As we have explained in the Introduction Section, in this paper we analyze the connection between different educational level as proxy variable of human capital and subjective well-being in Spain in 2008.

### **3 Empirical Analysis: Dataset, Estimation and Results**

For the empirical analysis of the paper, we use data from the European Social Survey (ESS) that is available on line at the following direction: [www.europeansocialsurvey.org](http://www.europeansocialsurvey.org). The dataset includes 2563 individuals for the Spain in year 2008.<sup>4</sup> The dataset covers information on self-reported satisfaction levels and personal characteristics such as gender, age, income, subjective general health, marital status, main activity, number of children and educational level. The education proxy variable presents the following seven alternative values: not completed primary education; primary education; lower secondary; upper secondary; post secondary; first stage of tertiary and second stage of tertiary. The full description of the variables is included in Table 1.

As in many studies in the empirical literature on economics and happiness, this paper uses individual's responses to the question: "How happy are you". The respondent answers on a scale from 1 to 10, where 1 stands for not happy at all and 10 for completely happy. This happiness measure is explained by means of using the following model:

$$u_i = \alpha + \beta' \mathbf{x}_i + \gamma' \text{EDU}_i + \varepsilon_i \quad (1)$$
$$i = 1 \dots I,$$

where  $u$  is the answer to the happiness question,  $i$  represents the individual,  $\mathbf{x}$  is a set of socio-economic explanatory variables,  $\text{EDU}$  is a set of educational variables and  $\varepsilon$  stands for the error term. Since the dependent variable (happiness and/or life-satisfaction) is an index which takes values 1 to 10, the econometric analysis is performed using an Ordered Logit Model with robust standard errors (similar to other studies such as Peiro, 2006 and Cunado and Perez de Gracia, 2010).<sup>5</sup>

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<sup>4</sup> The ESS is a biennial multi-country survey covering over 30 nations. The first round was fielded in 2002/2003. Some papers that also used the ESS are Benesch *et al.* (2006), Biancotti and D'Alessio (2007), Frey *et al.*, (2007), Caporale *et al.* (2009), Sironi and Mencarini (2009) and recently, Cunado and Perez de Gracia (2010) among others.

<sup>5</sup> See, for example, Maddala (1983) for a detail description of the Ordered Logit Model.

**Table 1. Description of the variables used**

Variable name	Source	Description
Happiness	ESS	How happy are you, from 1 (not happy at all) to 10 (absolutely happy)
Satisfied with your life	ESS	How satisfied with life as a whole, from 1 (not satisfied at all) to 10 (absolutely satisfied)
Gender	ESS	Dummy variable which takes value 1 if the respondent is male, 0 otherwise
Age	ESS	Age of the respondent in years
Children	ESS	Dummy variable which takes value 1 if the respondent has children, 0 otherwise
Income	ESS	Subjective feeling about household's income nowadays: 1 (living comfortably on present income), 2 (coping on present income), 3 (difficult on present income), 4 (very difficult on present income)
Subjective general health	ESS	Discrete variable which takes the following values: 1 (Very good), 2 (good), 3 (fair), 4 (bad), 5 (very bad)
Marital status	ESS	Discrete variable which takes the following values: 1 (married); 2 (in a civil paternship); 3 (separated); 4 (divorced); 5 (widowed); 6 (never married, never in a civil partnership)
Main activity	ESS	Discrete variable which takes the following values: 1 (paid work); 2 (education); 3 (unemployed looking for a job); 4 (unemployed, not looking for a job); 5 (permanently sick or disabled); 6 (retired); 7 (housework and children)
Education	ESS	Discrete variable which takes the following values: 1 (not completed primary education); 2 (primary or first stage of basic); 3 (lower secondary or second stage of basic); 4 (upper secondary); 5 (post secondary, non tertiary); 6 (first stage of tertiary); 7 (second stage of tertiary)
Regions	ESS	Spanish region where the individual lives

Note: ESS stands for European Social Survey ([www.europeansocialsurvey.org](http://www.europeansocialsurvey.org)).

The estimation procedure is carried out in two different steps. In a first step, we present some descriptive data on happiness and educational levels. As shown in Table 2, the subjective well-being response is higher the higher is the education level. For example, the average happiness for people with not completed primary education is 6.91 while the average happiness for people with the second stage of tertiary completed is 8.6. Furthermore, and based on an ANOVA F-test, we can reject the null hypothesis of no relationship between happiness and educational level which initially suggest that education will have an impact on happiness, although we cannot distinguish yet between direct or indirect (through other variables) effects.

**TABLE 2. Happiness and education, Spain 2008**

How happy are you					
Education	n	Mean	Std. Deviation	Minimum	Maximum
Not completed primary education	355	6.91	1.89	0	10
Primary education	529	7.36	1.67	0	10
Lower secondary	745	7.84	1.65	2	10
Upper secondary	526	7.80	1.41	2	10
Post secondary	6	7.50	1.76	5	10
First stage of tertiary	387	8	1.29	2	10
Second stage of tertiary	15	8.6	1.18	7	10
Total	2563	7.63	1.63	0	10

ANOVA F test for equal means = 22.26 (0.00)\*\*\*

Note: \*\*\* means that we can reject the null hypothesis of equal means at the 1% significance level.

As we have previously shown in Section 2, education may affect happiness via income. In Table 3 we present the relationship between individual responses to happiness and income. As before, we can reject the null hypothesis of no relationship between the two variables, since those individuals with a higher educational level feel more comfortable with their incomes than less educated individuals. The results suggest the existence of an indirect effect of education on happiness, since there is a high correlation between years of education and income.

**TABLE 3. Income and education, Spain 2008**

Education	How do you feel about household's income			
	Comfortable	Quite comfortable	Difficult	Very difficult
Not completed primary education	45	186	95	28
Primary education	71	304	125	26
Lower secondary	170	415	122	28
Upper secondary	160	279	69	16
Post secondary	2	3	1	0
First stage of tertiary	212	146	25	3
Second stage of tertiary	14	1	0	0

Chi-square test of independence = 49.1 (0.00)\*\*\*

Note: \*\*\* means that we can reject the null hypothesis of equal means at the 1% significance level.

In a second step, we estimate a happiness equation (1) including those socio-economic variables which we believe may affect subjective well-being, together with education. We present

three alternative models in Table 4: Model 1 includes as explanatory variable age, gender, health status, marital status, children and educational levels, while Model 2 also includes the main activity variable and, finally, Model 3 adds the income variable as explanatory variable.

The main results presented in Model 1 -see column (2) of Table 4- suggest the following. We find a significant effect of “age” on happiness. In fact, we find a non-linear effect of age on happiness. For example, Castriota (2006) and recently, Caporale *et al.* (2009) also obtain that happiness is U-shaped with age.

We do not find a significant effect of the “gender” variable on happiness. In former analysis, we find a low but significant (at a 10% significance level) effect of this variable. That is, women seem to be happier in average than men (controlling for the rest of explanatory factors). A similar result is also obtained by Castriota (2006) and Caporale *et al.* (2009).

One of the most significant variables on happiness is “subjective general health”. People who feel they have a very good, good or fair health are happier than those with worse health (controlling for the rest of explanatory factors). Similar results are found by Berger and Leigh (1989), Veenhoven (1989,1991), Hartog and Oosterbeek (1998), Alesina *et al.* (2004) and Caporale *et al.* (2009).

“Marital status” plays also a significant role on happiness: people who are married or in a civil partnership are happier than singles, while separated and widowed individuals are less happy than single ones (controlling for the rest of explanatory factors). The results are similar to Clark and Oswald (1994), Clark (1997), McBride (2001), Alesina *et al.* (2004), Blanchflower and Oswald (2004b), Brereton *et al.* (2008) and Caporale *et al.* (2009) among others.

Having children has also a significant effect on happiness. A similar result is also obtained by Angeles (2009) and recently by Cunado and Perez de Gracia (2010). On the other hand, some studies by Di Tella *et al.* (2003), Alesina *et al.* (2004), Clark (2006) and also Caporale *et al.* (2009) documented a negative effect of the presence of children on life satisfaction.

The variable “education” has a positive and significant effect on subjective well being, after controlling for the rest of variables. It has to be mentioned that in this model we do not include income and other professional variables, such as individual’s main activity.

We also take into account a broader concept of education, and for each individual, his/her partner’s level of education, his/her mother’s level and his/her father’s level of education. However, none of these three variables were significant at the 10% level.

In a next model, Model 2, we include as an additional explanatory variable, the individual’s main activity, in order to take into account the possible correlation of the level of education with the professional activity. Based on the results presented in Model 2 -see column (3) in Table 4-, we obtain additional conclusions. The unemployment status has a negative and significant effect on

happiness similar to other papers such as Clark and Oswald (1994), Winkelmann and Winkelmann (1998), Clark *et al.* (2001) and Blanchflower and Oswald (2004a). While there are no significant differences among the variable which controls for professional activities, being unemployed and looking for a job is the unique significant variable in this group of factors.

We also find that educational level is still a significant variable explaining subjective well-being, even after including this last variable. In order to promote education, public policies should tend to stimulate primary and secondary level of education, since it seems that post secondary and tertiary level of education has not a significant impact on happiness.

Finally, in Model 3 we also include as an additional explanatory variable the income. Based on the results presented in column (4) in Table 4, once income is included as an additional explanatory variable, we obtain that the education level does not play a significant role in explaining happiness. Therefore, we conclude that education plays an indirect effect on happiness, affecting individual income.

Finally, once we have estimated alternative models of equation (1) in Table 4, we redefine our education variable, since, as shown in Table 2, there are not enough data to represent all the seven educational levels. Following Castriota (2006), who analyzed the impact of education on happiness using only three levels of education (low, middle and upper), we re-estimate equation (1) taking into account only four levels of education (not completed primary education, primary, secondary and tertiary). Table 5 summarizes the results of re-estimating various happiness regressions using the new proxy for education. In general, the new results in Model 4 confirm the impact of the socio – economic indicators (i.e., age, age \* age, gender, health, income, marital status, children and main activity) on happiness. Model 5 includes the new proxy for education. The significance of the socio – economic indicators is similar to previous results and the educational variable only is significant for “not completed primary”. The results suggest the existence of two channels: the first indirect channel via income (with positive and significant effect) and the second direct channel for people with “not completed primary education (with positive and significant effect).

**TABLE 4. Ordinal Logit estimation. Happiness and socio-economic variables in Spain, 2008**

Variable	Model 1	Model 2	Model 3
Age	-0.087*** (46.70)	-0.076*** (27.95)	-0.076*** (27.25)
Age2	0.001*** (46.58)	0.001*** (23.73)	0.001*** (20.26)
Gender			
Male	-0.098 (1.773)	-0.116 (2.08)	-0.137* (2.86)
Female			
Health			
Very good	2.96*** (58.58)	2.87*** (53.60)	2.59*** (43.69)
Good	2.063*** (29.83)	1.98*** (26.68)	1.76*** (21.11)
Fair	1.579*** (17.55)	1.51*** (15.67)	1.34*** (12.25)
Bad		0.892** (5.43)	0.789** (4.22)
Very bad	0.956** (6.29)		
Income			
Comfortable			1.50*** (52.69)
Quite comfortable			1.06*** (29.40)
Difficult			0.36* (3.12)
Very difficult			
Marital status			
Married	0.721*** (32.0)	0.724*** (31.56)	0.681*** (27.61)
Civil partnership	0.404* (3.20)		0.554** (5.79)
Separated	-0.706** (4.89)	0.492** (4.60)	-0.61* (3.56)
Divorced	-0.216 (0.15)	-0.66* (4.24)	-0.13 (0.06)
Widowed	-0.591*** (7.50)	-0.16 (0.09)	-0.18** (1.08)
Never married, never civil partnership		-0.55** (1.32)	
Main activity			
Paid work		-0.06 (0.18)	-0.06 (0.18)
Education		0.162 (0.54)	0.07 (0.09)
Unemployed, looking		-1.05*** (23.91)	-0.74*** (11.31)
Unemployed, not looking		0.029 (0.01)	0.258 (0.77)
Sick, disabled		-0.093 (0.10)	0.009 (0.01)
Retired		0.21 (2.03)	0.248* (2.79)
Housework, children			
Children			
Yes	0.159* (3.01)	0.169* (3.35)	0.222** (5.73)
No			
Education			
Not completed primary	-1.34*** (7.54)	-1.28*** (6.81)	-0.69 (1.93)
Primary	-1.03** (4.69)	-0.99** (4.28)	-0.48 (0.99)
Lower secondary	-0.80* (2.84)	-0.76 (2.54)	-0.40 (0.71)
Upper secondary	-0.82* (2.96)	-0.80* (2.80)	-0.51 (1.13)
Post secondary	-0.83 (0.90)	-0.85 (0.96)	-0.66 (0.57)
First stage tertiary	-0.57 (1.44)	-0.55 (1.32)	-0.42 (0.76)
Second stage tertiary			
Regions	Yes	Yes	Yes
Pseudo-R <sup>2</sup>	0.218	0.228	0.259

Notes: Regional dummy variables are included in order to control for geographical factors affecting individual happiness. \*, \*\* and \*\*\* indicate significant at 10, 5 and 1% level. In parenthesis, we present the Wald test for testing the null hypothesis of non significance.

**TABLE 5. Ordinal Logit estimation. Happiness and socio-economic variables in Spain, 2008**

Variable		Model 4		Model 5	
Age		-0.074***	(-26.46)	-0.076**	(-27.47)
Age2		0.001***	(18.33)	0.001***	(20.50)
Gender					
	Male	-0.13	(2.66)	-0.13	(2.57)
	Female				
Health					
	Very good	2.66***	(46.36)	2.60***	(43.72)
	Good	1.83***	(23.02)	1.76***	(21.18)
	Fair	1.39***	(13.44)	1.33***	(12.25)
	Bad	0.84**	(4.76)	0.79**	(4.22)
	Very bad				
Income					
	Comfortable	1.55***	(57.66)	1.51**	(52.43)
	Quite comfortable	1.09***	(31.17)	1.08**	(29.27)
	Difficult	0.37*	(3.28)	0.36*	(3.13)
	Very difficult				
Marital status					
	Married	0.69***	(28.43)	0.69***	(28.20)
	Civil partnership				
	Separated	0.58**	(6.24)	0.57**	(6.03)
	Divorced	-0.56*	(-3.10)	-0.59*	(-3.36)
	Widowed	-0.17	(-0.11)	-0.14	(-0.06)
	Never married, never civil partnership	-0.45**	(-4.29)	-0.47**	(4.62)
Main activity					
	Paid work	-0.04	(-0.08)	-0.06	(-0.22)
	Education	0.08	(0.13)	0.06	(0.10)
	Unemployed, looking	-0.71**	(-10.65)	-0.74***	(-11.34)
	Unemployed, not looking	0.28	(0.94)	0.25	(0.74)
	Sick, disabled	0.03	(0.01)	0.01	(0.01)
	Retired	0.25*	(2.94)	0.24	(2.60)
	Housework, children				
Children					
	Yes	0.23**	(5.96)	0.22*	(5.71)
	No				
Education					
	Not completed primary			-0.25*	(2.74)
	Primary			-0.04	(0.31)
	Secondary			-0.01	(0.15)
	Tertiary				
Regions		Yes		Yes	
Pseudo-R <sup>2</sup>		0.251		0.259	

Notes: Regional dummy variables are included in order to control for geographical factor affecting on individual happiness. \*, \*\* and \*\*\* indicate significant at 10, 5 and 1% level. In parenthesis, we present the Wald test for testing the null hypothesis of non significance.

#### **4 Concluding Remarks**

There is a growing literature in economics analyzing the socio-economics determinants of subjective well-being or happiness (see, for example, Blanchflower, 2008 for a recent review). The objective of this paper is to analyze the relationship between educational levels and happiness using data from the European Social Survey for individuals living in Spain. For a sample of 2563 individuals and estimating happiness equations using Ordinal Logit Models, we obtain the following main results. First, the educational level of each individual has a positive and significant effect on happiness. However, the educational level of his/her partner, or mother or father does not play a relevant role in his/her subjective well-being. Second, we find both direct and indirect effects (through income and labour status) of education on happiness. That is, we find that people with a higher education level have higher incomes and a higher probability of being employed, and thus, report higher levels of happiness. Furthermore, and after controlling for income, labour status and other socio - economic variables, we still find that education has a positive (and direct) impact on happiness. We may interpret this result as evidence of a “self-confidence” or “self-estimation” effect from acquiring knowledge. Finally, when analyzing the impact of each of the education levels (not completed primary education, primary, secondary and tertiary level) on happiness, we only find differences among those without studies with the rest of the people, but not among those with primary, secondary and tertiary education levels.

The results presented in this paper provide evidence of the relevance of the education on happiness. We believe that the results obtained in this paper may help designing public policies in order to affect individual happiness. For example, it seems than policies directed to stimulate the education may have positive effects on individual happiness. However, any policy should take into account that the impact is not the same for every education level.

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