



The relationship between education and happiness: Findings from the North Central and Northeast Regions

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Abstract

This paper analyzes how education and other demographic characteristics are associated with the level of happiness in two geographical regions: the North Central Region and the Northeast Region. Using cross-sectional data from two regional datasets, NCR-Stat: Caregiving Survey and NER-Stat: Caregiving Survey, potential disparities between the regions in the impact of education on happiness are examined. The results suggest that education has direct and indirect (through income) effects on happiness. The direct effect shows that respondents with higher education are more likely to report higher levels of happiness in both regions but at different rates. Location and other demographic characteristics influence an individual's happiness and reduce the direct effect and significance of education, although differently, in both regions. Income might contribute more to happiness levels in both regions than education. However, regional disparities were identified as education lost its explanatory power of happiness only in the NCR.

1 Introduction

Education is broadly considered one of the main aspects of human capital development (Ferrante, 2017; Nikolaev, 2018) and one of the strongest indicators of social capital (Helliwell and Putnam, 2007; Emery et al., 2007). Education also belongs among the most important socioeconomic indicators associated with happiness (Maharlouei et al., 2020). Contrary to income, which has a significant direct impact on happiness (Blanchflower and Oswald, 2004), researchers revealed contradictory findings regarding the impact of education on happiness. The relationship between education and happiness is often indirect, and the coefficient of education may change statistical significance in response to the inclusion of other variables in the model (Dolan et al., 2008).

In this study, a geographical dimension is added to analyze potential differences between levels of happiness depending on the place where people live. The geographical context in the analysis of happiness addresses questions about the extent to which spatial factors determine the quality of life in the place of residence (Burger et al., 2020) and the composition of the population that might play a role in explaining differences in subjective well-being between places (Hoogerbrugge and Burger, 2020; Ballas, 2021). Thus, the objective of this article is to analyze how education and location are associated with the level of happiness in two distinct geographical regions, the North Central Region (NCR) and the Northeast Region (NER), and whether any regional differences in the impact of education on happiness exist. The choice of these regions is not random. This study takes advantage of two comparable cross-sectional datasets, including data from the NCR and the NER. By determining to what extent location can impact the association between education and happiness, the study contributes to clarification of what factors may influence subjective well-being and happiness.

2 Theoretical Framework

This paper focuses on the impact of education, socio-economic variables, and spatial aspects on happiness. Most of the earlier studies concentrate on the monetary indirect effect of education on happiness through income level and financial return from education (e.g., Becker, 1993). More recently, a shift has occurred in research focus, with many scholars exploring the effects of education on a variety of non-monetary returns from education, such as marriage, health, work satisfaction, or social interactions. Education often influences well-being indirectly through a variety of socioeconomic, demographic, and spatial factors. Dolan et al. (2008), Layard et al. (2012), and lately Clark (2018) offer a comprehensive overview of factors affecting happiness and subjective well-being, considering some of them as significant. Ballas (2021) summarizes these factors as employment, income, health status, education, marital status, age, gender, and social relationship. Brereton et al. (2008) show that spatial factors play an important role in evaluating subjective well-being because the inclusion of location-specific variables may markedly increase the explanatory power of the happiness function. The following literature review will focus on the direct and indirect relationship between happiness and education, and the outcomes of this association.

Despite many studies proposing that education improves well-being, the overall evidence is full of contradictions. A number of studies report a significant positive effect of education on happiness (Di Tella and MacCulloch, 2006). Another group of researchers suggests that education can increase happiness through indirect channels, such as higher income, labor status, and the ‘self-confidence’ effect of acquiring knowledge (Cuñado and de Gracia, 2012). However, other studies show a negative impact of education on happiness or do not show any significant impact at all (Clark and Oswald, 1996; Heady and Wooden, 2004). Clark and Oswald (1996) suggest two reasons for the negative effects of education on happiness. First, highly educated people might have higher job expectations, which could lead to disappointment if they are not fulfilled. Second, income disparities might increase with education. Veenhoven (1996) suggests that a slight dissatisfaction among highly educated people might be caused by the lack of jobs matching achieved education.

Nikolaev (2018) shows that individuals with higher education are more likely to be satisfied with their financial situation, employment opportunities, neighborhood, local community, and children at home. However, these individuals often experience a lack of time, leading to a decreasing rate in life satisfaction. Oswald et al. (2015) provide evidence that happiness makes people more productive. Having a higher education can increase the likelihood of finding a job and earning a higher income. On the other hand, unemployment is negatively correlated with happiness (Di Tella and MacCulloch, 2006; Farre et al., 2018; Clark, 2018). The price of unemployment for more educated people can be high because they often have good jobs with higher earnings. People with better education are often less successful in dealing with unemployment than people with lower education (Clark and Oswald, 1994).

Education is repeatedly labeled as one of the strongest predictors of social capital (Helliwell and Putnam, 2007) that refers to educational credentials, knowledge, skills, and self-efficacy (Emery et al., 2007). Social capital is largely discussed in terms of social interactions, behavior, and enhanced quality of life and well-being. Various studies revealed similar results that social capital

positively influences the subjective perception of life quality through trust, social networks, and social involvement (Gundelach and Kreiner, 2004; Yip et al., 2007; Aknin et al., 2013). People with higher education have more extensive social participation and greater involvement with the wider world (Nieminen et al., 2008; Chen, 2012).

3 Materials and Methods

3.1 Data

Data from two surveys, the NCR-Stat Caregiving Survey (Inwood et al., 2024a) and the NER-Stat Caregiving Survey (Inwood et al., 2024b) were used to find out potential happiness disparities between the NCR and NER. Both 15-minute online surveys focus solely on households in all states in the NCR and NER, asking questions about household demographics, education, and caregiving. Following the methodology suggested by Nikolaev (2018), only respondents 22 years old and older were included in the analysis to avoid endogeneity between education and happiness since current happiness cannot affect the educational attainment achieved in the past. The final sample then consists of 4,224 respondents in the NCR and 4,124 respondents in the NER.

3.2 Methodology

Similar to other studies dealing with empirical analysis of economics and happiness (e.g., Ruiu and Ruiu, 2019; Cuñado and de Gracia, 2012), an ordered logistic regression analysis was employed to assess the relationship between happiness, education, and demographic characteristics. Table 1 describes all variables included in the analysis.

The dependent variable in this analysis is happiness. A subjective measure of happiness was used, and respondents were asked, “Taking all things together, how happy would you say you are?” The response ranges from 0 (extremely unhappy) to 10 (extremely happy). The mean happiness, reaching a value of 6.9, is the same in both analyzed regions.

The explanatory variables include education and demographic characteristics that might affect happiness. Categorical variable *education* measures six levels of educational attainment: high school and less, technical school¹, vocational school², community college, 4-year college, and graduate. In both regions, around one-third (32.6% in NCR and 30.1% in NER) of the respondents aged 22 years old and older reported high school or less as the highest educational attainment. The share of respondents with a graduate degree reached 22.7% in both regions. The demographic variables involve *employment* (employed, self-employed, unemployed, retired, and do not work), the combined total household *income* (less than \$25,000; \$25,000-\$49,999; \$50,000-\$74,999; \$75,000-\$99,999; and \$100,000 and more), *age*, *age-squared* to express the U-shaped nonlinear relationship between age and happiness, *marital status* (married, living with

¹ The category ‘technical school’ refers to Career or Technical Schools or Technical Colleges, which are public or private institutions offering two-year or less programs focused on technical and vocational skills. Students can receive certificates, licenses, and associate degrees.

² The category ‘vocational school’ refers to Vocational and Technical Education, which provides students with professional teaching and training without a bachelor’s degree or diploma. This category also includes Junior Colleges, which are private institutions offering students two years of associate degree programs.

a partner, single, divorced, separated, and widowed), gender (*female*), and self-reported *location* (urban, suburban, rural)³.

Table 1. Description of variables

Variable Name	Description
Happiness	Respondents were asked the question, “Taking all things together, how happy would you say you are?” with responses taking values from 0 (extremely unhappy) to 10 (extremely happy)
Education	Categorical variable taking values 1=high school and less, 2=technical school, 3=vocational school, 4=community college, 5=4-year college, and 6=graduate
Employment	Categorical variable taking values 1=employed, 2=self-employed, 3=unemployed, 4=retired, and 5=do not work
Income	Categorical variable taking values 1=less than \$25,000, 2=\$25,000-\$49,999, 3=\$50,000-\$74,999, 4=\$75,000-\$99,999, and 5=\$100,000 and more
Age	Continuous variable showing respondents’ age in years
Marital status	Categorical variable taking values 1=married, 2=living with a partner, 3=single, 4=divorced, 5=separated, and 6=widowed
Gender	Dummy variable where female=1 and male=0
Location	Categorical variable taking values 1=urban, 2=suburban, 3=rural

Source: Inwood et al. (2024a, 2024b).

The evaluation of the association between education and happiness begins with a descriptive analysis. Table 2 presents the results of the first analysis, showing that there is no trend in the mean happiness by the level of education. Nevertheless, the highest average happiness in both regions is for people with graduate degrees.

Table 2. Happiness and education in the North Central and Northeast Regions

Taking all things together, how happy would you say you are?						
Education	NCR			NER		
	N	Mean	SD	N	Mean	SD
High school and less	1,261	6.61	2.34	1,343	6.78	2.41
Technical school	436	7.00	1.95	351	6.66	2.39
Vocational school	352	6.98	2.15	333	7.06	2.22
Community college	451	6.80	2.13	448	6.90	2.20
4-year college	763	7.07	1.93	724	7.08	2.05
Graduate	972	7.35	1.79	936	7.18	2.04
Total	4,235	6.95	1.79	4,135	6.95	2.24
ANOVA F-test for equal means	F(10, 4,224) = 11.4 (0.000)***			F(10, 4,124) = 7.49 (0.000)***		

Source: Inwood et al. (2024a, 2024b). Author’s calculations.

Note: *** means that the null hypothesis that all means are the same as $p < 0.001$ can be rejected.

³ The category ‘urban’ refers to urbanized areas - city or town, metropolitan area. The category ‘suburban’ refers to the outskirts of a city or town, an outlying area economically tied to an urban area within commuting distance. The category ‘rural’ refers to open and/or sparsely populated countryside, not within commuting distance to urban or suburban areas.

The ANOVA F-test reveals significant relationships between happiness and categories of education, although it is not yet known whether the impact of education on happiness is direct or indirect (through other variables).

Next, happiness is estimated by employing ordered logistic regression with 11 categories of happiness using demographic control variables that might affect the happiness scores. Model 1 includes only levels of education as regressors (Table 3). Adding other variables into the model may alter education coefficients. Table 4 provides the results of two additional models with different specifications. Model 2 includes education, employment, age, age-squared, marital status, gender, and location. Model 3 adds income to the previous set of variables.

4 Results and Discussion

The results of Model 1, in which only education levels are included as regressors, imply that in the NCR, all evaluated levels of education, except for the community college, have a statistically significant effect on happiness. The positive happiness effect from higher education is increasing (except for the community college) but at a nonlinear rate (Table 3). Looking at the marginal effects, we can say that the probability that respondents would report the highest level of happiness increases with every additional level of education (except for community college). For example, a high school diploma increases the probability of reporting the highest level of happiness by 7.3 % points, while a graduate degree increases the probability of reporting the highest level of happiness by 12.3 % points.

Table 3. Ordered logistic regression for happiness and education

Variable	Model 1					
	NCR			NER		
	Coef.	Std. Error	Margins	Coef.	Std. Error	Margins
Education (i.e. High school and less)			0.073			0.121
Technical school	0.290	(0.097)***	0.095	-0.084	(0.106)	0.112
Vocational education	0.330	(0.108)***	0.099	0.198	(0.109)*	0.144
Community college	0.152	(0.097)	0.084	0.074	(0.095)	0.129
4-year college	0.367	(0.081)***	0.102	0.182	(0.081)**	0.142
Graduate	0.568	(0.076)***	0.123	0.278	(0.075)***	0.154
Number of observations		4,235			4,135	
Prob > chi2		0.000			0.001	
Pseudo R2		0.004			0.001	

Source: Inwood et al. (2024a, 2024b). Author's calculations.

Note: Standard errors in parentheses. Statistical significance reported *** p<0.01, ** p<0.05, * p<0.1. Margins show the change in the predicted probability of reporting the highest level of happiness

In the NER, the results suggest that only vocational education, 4-year college, and a graduate degree might be associated with a significant effect on happiness. The marginal effects reveal that predicted probabilities of reporting the highest level of happiness are higher for all evaluated educational categories compared to the NCR. For example, in both regions, having a graduate degree significantly increases the probability of reporting an extreme level of happiness the most of all educational levels. However, regional disparities were identified as the probability of

reporting an extreme level of happiness may rise by 12.3% points in the NCR and by 15.4% points in the NER.

Table 4. Ordered logistic regression for happiness, education, and other variables

Variable	Model 2				Model 3			
	NCR		NER		NCR		NER	
<i>education</i> (i.High school and less)								
Technical school	0.147	(0.098)	-0.233	(0.107) **	0.076	(0.100)	-0.269	(0.109) **
Vocational educ	0.159	(0.108)	0.096	(0.111)	0.069	(0.111)	0.069	(0.113)
Community college	0.126	(0.098)	-0.008	(0.096)	0.049	(0.100)	-0.066	(0.098)
4-year college	0.173	(0.083) **	-0.020	(0.083)	0.031	(0.086)	-0.120	(0.086)
Graduate	0.320	(0.078) ***	0.015	(0.077)	0.130	(0.084)	-0.158	(0.084) *
<i>employment</i> (i.Employed)								
Self-employed	-0.137	(0.114)	-0.121	(0.103)	-0.031	(0.117)	-0.116	(0.105)
Unemployed	-0.875	(0.127) ***	-0.843	(0.117) ***	-0.621	(0.133) ***	-0.729	(0.123) ***
Retired	0.105	(0.093)	0.086	(0.093)	0.235	(0.096) **	0.161	(0.096) *
Do not work	-0.430	(0.095) ***	-0.420	(0.089) ***	-0.217	(0.100) **	-0.295	(0.094) ***
<i>Income</i> (i. Less than \$25,000)								
\$25,000-\$49,999					0.217	(0.091) **	0.268	(0.089) ***
\$50,000-\$74,999					0.421	(0.100) ***	0.180	(0.098) *
\$75,000-\$99,999					0.630	(0.112) ***	0.350	(0.110) ***
\$100,000 and more					0.817	(0.114) ***	0.681	(0.108) ***
<i>age</i>	-0.041	(0.011) ***	0.001	(0.003)	-0.042	(0.012) ***	0.002	(0.003)
<i>age2</i>	0.000	(0.000) ***	-0.000	(0.000)	0.001	(0.000) ***	-0.000	(0.000)
<i>marital_status</i> (i.Married)								
With partner	-0.478	(0.094) ***	-0.604	(0.086) ***	-0.358	(0.097) ***	-0.549	(0.087) ***
Single	-0.740	(0.079) ***	-0.800	(0.075) ***	-0.537	(0.086) ***	-0.667	(0.079) ***
Divorced	-0.741	(0.088) ***	-0.500	(0.095) ***	-0.529	(0.094) ***	-0.386	(0.098) ***
Separated	-1.116	(0.194) ***	-0.734	(0.172) ***	-0.994	(0.198) ***	-0.623	(0.177) ***
Widowed	-0.519	(0.127) ***	-0.533	(0.128) ***	-0.321	(0.132) **	-0.403	(0.132) ***
<i>female</i>	0.028	(0.058)	-0.133	(0.057) **	0.020	(0.059)	-0.131	(0.058) **
<i>location</i> (i.Urban)								
Suburban	-0.156	(0.066) **	-0.271	(0.065) ***	-0.231	(0.067) ***	-0.319	(0.066) ***
Rural	-0.149	(0.072) **	-0.239	(0.074) ***	-0.169	(0.073) **	-0.262	(0.075) ***
Number of observations	4,219		4,116		4,085		4,009	
Prob > chi2	0.000		0.000		0.000		0.000	
Pseudo R2	0.25		0.015		0.029		0.019	

Source: Inwood et al. (2024a, 2024b). Author's calculations.

Note: Standard errors in parentheses. Statistical significance reported *** p<0.01, ** p<0.05, * p<0.1.

If other control variables are added, Model 2 suggests that educational level is still a significant variable explaining happiness; however, regional differences can be observed. In the NCR, 4-year college and graduate degrees might significantly positively affect happiness. In the NER, only a degree from a technical school might be significantly related to happiness but in a negative direction.

Regarding employment status, being unemployed and not working is associated with a significant negative effect on happiness in both regions. These results correspond with other studies, such as Cuñado and de Gracia (2012) and Jongbloed (2018). In this study, unemployment has a more significant relationship with happiness than not working status, especially in the NER.

Age significantly affects happiness only in the NCR. The model results show that happiness is a quadratic function of age, which means that the effect is non-linear. Several studies revealed a U-shape age effect, suggesting that people are happier when they are young or old and reach the bottom of the shape around their middle age (Blanchflower and Oswald, 2004; Nikolaev and Rusakov, 2016).

The level of self-reported happiness is significantly associated with marital status as respondents living with a partner, single, divorced, separated, and widowed are significantly less happy than married respondents. This outcome is also broadly documented in the literature emphasizing the importance of family relationships in creating subjective well-being (Layard, 2011 [2005]). Spouses living separately represent the category that adds the most points to unhappiness in both regions.

Gender only plays a significant role in the NER, where being a woman significantly decreases the level of happiness while controlling for the rest of the explanatory variables. This result contradicts other studies reporting that women tend to indicate higher happiness (Hartog and Oosterbeek, 1998; Dolan et al., 2008). This is an interesting result that would deserve further research.

Location is a significant factor in respondent's happiness. In both regions, living in a suburban and rural community might be associated with lower happiness compared to living in urban areas. In particular, living in the NER suburban and rural areas adds more to the happiness downturn. With the reference group being urban areas, the probability of reporting the highest level of happiness is identically 1.2% lower among respondents who live in suburban and rural areas in the NCR, 3% lower among those living in the NER's suburban, and 2.7% lower in rural areas in the NER. A potential explanation for lower happiness in rural areas might be their common characteristics, such as continuing rural out-migration associated with an aging population, declining income, remoteness, lack of workers, and limited access to urban areas (Cromartie et al., 2015). However, as the location-related results oppose the widely accepted urban-rural happiness gradient (Berry and Okulicz-Kozaryn, 2011), controlling for other characteristics that might affect respondents' happiness would be needed to explain this study outcome.

In Model 3, an additional variable, total household income, is included to see whether the financial aspect plays a significant role. To find out which variables affect the association between happiness and education, changes in the coefficients can be monitored (Chen, 2012). Including income leads to an additional decrease in the education coefficients. The results of Model 3 suggest that income might contribute more to an individual's happiness level than education. This result is not surprising because many other studies consistently show a positive association between higher income and greater happiness or subjective well-being (e.g., Blanchflower and Oswald, 2004; Ball and Chernova, 2008; Azizi et al., 2017; Xu et al., 2019). Though, Clark (2018) suggests that higher income increases subjective well-being but at a decreasing rate.

A closer look at the findings of Model 3 reveals differences between the two monitored regions. Education is not a significant variable explaining happiness in the NCR and has only an indirect effect on happiness. Nevertheless, education is still a significant variable in the NER. Specifically,

respondents in the NER who have a diploma from a technical school, or a graduate degree might be significantly less happy than those with the lowest level of education. This is an interesting finding pointing at both ends of the educational spectrum. In line with the findings of Clark and Oswald (1996), happiness declines when the level of education increases while controlling for income. Clark and Oswald (1996) suggest that higher education generates higher aspirations that can be difficult to fulfill, which can result in negative satisfaction. A possible explanation for the decreasing happiness of respondents with a technical education might be the lack of relevant job opportunities both for wage-employed and self-employed respondents and, subsequently, limited sources of income.

Another finding after including income is that being retired might be associated with a significant increase in happiness in both studied regions. This result aligns with other studies focusing on retirement, well-being, and income levels. For example, Arendt (2005) suggests that elderly people with lower income levels indicated poorer psychological well-being and functional capacity and lower physical activity.

5 Conclusion

This article focuses on the impact of education on happiness in two regions: the NCR and the NER. Using data from the NCR-Stat: Caregiving Survey and NER-Stat: Caregiving Survey, the following main results were obtained. Education showed direct and indirect (through income) effects on happiness. The direct effect shows that respondents with higher education are more likely to report higher levels of happiness in both regions, but regional differences can be observed. In the NCR, every additional level of education, except community college, might be associated with an increased level of happiness, although at a decreasing rate. In the NER, only vocational education and 4-year college or graduate degrees might significantly affect happiness, but at a higher rate than in the NCR. After controlling for location and other demographic characteristics, only 4-year college and graduate degrees still have a positive and direct impact on happiness in the NCR. The situation differs in the NER, where only technical school has a significant but negative effect on happiness. These results suggest that location and other demographic characteristics influence an individual's happiness and reduce the direct effect and significance of education. Finally, adding income into the analysis reveals a significant impact of this financial aspect on happiness, suggesting that income might contribute more to happiness levels in both regions than education. Regional differences were detected as education lost its explanatory power of happiness in the NCR, but a technical school or a graduate degree are still significant variables in the NER, though in a negative direction.

The results point to differences among regions emphasizing the importance of location in the determination of happiness. Both local and regional spatial dimensions influence the association of happiness with education. Furthermore, individual and household characteristics in a spatial context might be responsible for different effects of education on the level of happiness.

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NCR-Stat is a North Central regional panel dataset being developed by NCRCD as a venue and incentive for interdisciplinary collaboration across states and across research and extension. [NCR-Stat Baseline Dataset](#)