EXPLORING THE CORRELATION BETWEEN THE ATTITUDE TOWARD EDUCATION AND THE SUBJECTIVE SOCIAL STATUS

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Abstract

In this article we investigate the correlation between the attitude toward education and the subjective social status of the students. We used a previously validated questionnaire to measure the attitude toward education and the MacArthur Scale of subjective social status capturing first, personal familial placement within society and secondly, personal placement in the school environment. This questionnaire was distributed online and was completed by 185 respondents from different schools and universities. The data was analyzed in R, performing factor analysis and a structural equation model. 4 latent factors were identified, that influence the formation of the attitude toward education, namely a general factor, usefulness of education, benefits of education and dislike of education. Only the second part of the scale influence 2 latent factors-general factor and usefulness of education. These results suggest that students positioning themselves higher in school or university have a better attitude toward education and are more prone to appreciate educational process and outcomes.

Keywords: Attitude, Education, Subjective social status, Factor analysis, Structural equation model

JEL Classification: A13, C10, I20

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1. Introduction

Although the importance of the attitudes in the educational process was established long time ago, the targeting of this concept through the public agendas is quite new. For example, focusing on attitudes and values in the educational process represents a key priority in the educational field at the OECD level, as shown in “Future of education and skills 2030” (OECD, 2019). This is not surprising, as attitudes have a strong influence on behaviour, determining personal welfare, such as life-time earnings, as well as societal well-being (Heckman et al., 2006).

In the scientific literature, among the factors that influence the formation of the attitude toward school there are mentioned cultural background (Dohmen et al., 2012; Almas et al., 2014), family relationships (Holmlund et al., 2011), the support from the peers and previous school achievements (Cunha et al., 2006; Cunha and Heckman, 2007; Datta Gupta and Simonsen, 2010). In the same time, a positive attitude and behaviour leads finally to better educational outcomes (Akey, 2006).

Also, as shown by PISA results, socio-economic status influences educational outcomes on the system, school and individual levels (OECD, 2016). The social class of a person has a remarkable impact on the behaviour and even on their personality (Ostrove & Cole, 2003). In this context, a question that arises is what would be the impact of the social status on the attitude towards education.

Usually, in the studies regarding education, researchers focused on objective measurements of socio-economic status, such as income, occupation and education of the parents. One of the strengths of the objective measurement is that it provides unbiased self-report answers. Previous research based on this approach showed significant differences among social classes regarding the time available to study, the successes obtained, the familiarity with the social norms of the universities (Smith, 1997; White, 2000). However, this methodology has its limits. One of them is mentioned by the sociologist Bourdieu (1987), who points out that if socioeconomic status is considered a categorical variable, then it is hard to decide how many categories to include and which should be their cutoff points, in such a way as to make possible the interpretation of the social class relative to population standards. Moreover, for comparative studies, between different countries or contexts, or between different periods of time, objective standards cannot be generalized. Another problem is that in the studies on education, the questions regarding income or occupation refer to students’ parents. Thus, many of the younger respondents might not know the income and education of their parents, resulting in many missing values in the dataset, or the information collected from the older students might not be relevant, because they do not depend on their parents anymore (Repinski & Shonk, 2002).

As an alternative for the objective measures, researchers from many fields such as psychology or sociology started to use subjective, self-reported measures of social class (Adler, 2000; Kraus, 2013). Subjective social status is defined in the literature as “individual’s perception of his own position in the status hierarchy” (Jackman & Jackman, 1973), and it is presented as a psychological phenomenon. The validity of this method comes from the positive relationship that

was found between the objective and subjective measure of social class (Ostrove & Long, 2007). In the same time, there are reasons to believe that subjective measures are also better predictors in education research, because they refer to the students' perception about the social class they belong to, and also they are more sensitive to the changes in social class that students experience over years (Rubin, 2014).

This research paper attempts to contribute to a better understanding of the drivers of the attitude toward education and aims to capture the correlation with the subjective social status through an analysis from the perspective of the structural equation modeling technique. The paper is organized in the following way: in section 2 we describe the instrument and the data collection method, continuing with the explanation of the statistical methods used to analyze and to interpret the data, namely factor analysis and structural equation modeling technique. In section 3 we discuss the findings, propose some implications at the micro and macro level and also, we present the limitations of the study.

2. Data and method

The investigative tool consisted in a 34-items questionnaire, adapted in Romanian from the study of Askew et al. (2008) and the MacArthur Scale of subjective social status (Goodman, et. al., 2001), considered an appropriate instrument in this area. The main purpose was to examine the way in which the education is perceived in different social settings: first, the status of the family in the society and secondly the status of the respondent in school or university.

Previous research in this field demonstrated the positive association between the attitude toward education and social status, when measured objectively, through the income and education of the parents and other relevant indicators. In this study, we are interested to observe whether the association remains the same, when the social status is measured subjectively.

Factor analysis and structural equation modeling techniques are two quantitative methods that were used to analyze the data. Factor analysis is a method for modeling observed variables, and their covariance structure, in terms of a smaller number of unobservable (latent) "factors" (Ockey, 2014). The factors typically are viewed as broad concepts or ideas that may describe an observed phenomenon. Structural equation modeling is used to determine the extent to which an already established theory about relationships among variables is supported by empirical data (Klem, 2000).

2.1. Data collection

The data for this study was collected through an online questionnaire which contained 34 items of the Attitude toward Education Scale and the MacArthur Scale of subjective social status. The questionnaire was completed by 185 respondents from different schools and universities. In this way the general rule regarding the required number of responses for factor analysis is respected: some authors request 5 observations/ scale item (Cerny, 1977). In the schools, pupils

were asked to access and to fill in the questionnaire during the Informatics class, while in the universities the questionnaire was shared on different online groups of students. The sample was composed by 130 females (70,27 %) and 55 males (29,72%) with the age ranging between 15 and 32 years old (31, 89%- 18 years old, 23,24%-17 years old, 8,64%- 19 years old, 7,56%- 23 years old, 5,40%-21 years old, 4,32%- 16 years old).

The instrument that measures the first variable is the Attitude toward Education Scale developed by Glassey in 1945. The original scale had 34 items with a two point response scale of agree-disagree. Some items are positively worded toward education (e.g. I am intensely interested in education), while others are formulated negatively (e.g. I go to school only because I am compelled to do so). This instrument was described by Shaw and Wright in 1967 and was recommended to be used in research studies (Shaw & Wright, 1967). A modified scale, with responses on a 5 point Likert scale from strongly agree to strongly disagree, was applied in United States, in two universities, and the authors found evidence which demonstrates the reliability of the instrument (Askew, Jones-Wiley, Lewis, Restori & Lee, 2008). The modified version of the scale was used in this research. The responses to the positively worded items (1, 5, 13, 14, 15, 16, 19, 23, 24, 25, 26, and 32) were reverse scored to assure that higher ratings correspond to a positive attitude toward education.

The perceived social status among participants was measured with the MacArthur Scale of subjective social status (SSS)- youth version. This instrument contains two scales both with 10 rungs: on the first scale participants indicate personal familial placement within society and it measures subjective socioeconomic status, while the second scale assesses personal placement in the school environment. The modified version of the scale was introduced by Goodman et.al. (2001) and was used to analyze the relationship between SSS and adolescent's physical and psychological health.

2.2. Factor analysis

The first step in an exploratory factor analysis is to check the correlations between the items of the questionnaire. The majority of the values, for normal correlations should be between 0.3 and 0.7. The correlations that are lower than 0.3 (Figure 1) indicate that the items are not quite correlated, while the correlations higher than 0.7 indicate high correlation. From the Figure 1, we can observe that the correlations between the items are positive. In this case, there are some items with predominantly low correlations between 0.1 and 0.3: 13, 24, 25, and 16, but for the moment they were not eliminated from the analysis. The partial correlations are very low- this means that the variables are correlated mainly through the influence of the factors.

Bartlett's Test of Sphericity was applied to check if the correlation matrix is significantly different from the corresponding identity matrix. The null hypothesis of the test is that the two matrix are identical, and there is no need for further analysis. We obtained a p-value less than 0.05

thus the null hypothesis of the test is rejected, which means that the correlations between variables are significant.

Figure 1: The correlations between the items

In the next step the Kaiser-Meyer-Olkin Test was applied. It is a measure of how suited is the data for factor analysis. The test measures sampling adequacy for each variable in the model and for the complete model (Cerny & Kaiser, 1977). In our example, the KMO criterion equals 0.86 (Table 1) which is considered a meritorious score (Ockey, 2014). The values for each variable are between 0.65 and 0.94, an indication that the sampling is adequate for factor analysis.

Table 1: Kaiser-Meyer-Olkin Test

Item	Score	Item	Score	Item	Score
I1	0.91	I13	0.76	I25	0.76
I2	0.92	I14	0.80	I26	0.93
I3	0.91	I15	0.90	I27	0.91
I4	0.82	I16	0.67	I28	0.78
I5	0.90	I17	0.88	I29	0.83
I6	0.83	I18	0.91	I30	0.92
I7	0.74	I19	0.80	I31	0.85
I8	0.88	I20	0.95	I32	0.82
I9	0.91	I21	0.90	I33	0.80
I10	0.84	I22	0.89	I34	0.92
I11	0.84	I23	0.85		
I12	0.91	I24	0.66	KMO-Criterion	0.86

The reliability analysis which measures the extent to which the data are consistent in repeated measurements lead to a Cronbach reliability $\alpha = 0.92$ - a very good coefficient (95% confidence boundaries: 0.9-0.94). All the values for the reliability if an item is dropped are equal or lower than the raw- α . The item-to-total correlations reduced the number of meaningful items from 34 to 30. Items 13, 16, 24 and 25 (the same items as in the first step) were dropped for having small, non-significant correlations, which indicate that the items don't correlate well with the scale overall. The correlations were 0.27, 0.23, 0.17 and 0.22 respectively. The removed items are: (13) We cannot become good citizens unless we are educated; (16) I always read newspaper articles on education; (24) Education enables us to make the best possible use of our lives; (25) Only educated people can enjoy life to the full. It seems that these items are different from the rest of the scale because of the low items-to-total correlations. One explanation might be that they are formulated in abstract terms: the respondents can interpret differently the notion of a "good citizen", they have distinct representations about "the best possible use of life" or about the meaning of what does it mean to "enjoy life to the full". The high level of subjectivity might influence the accuracy of the answers.

Before extracting the factors it is necessary to determine the appropriate number of factors using the function "parallel". The scree plot obtained with the remained 30 items gave a solution of 6 factors. However, factor analysis does not have an unique solution and it is permitted to remove items in order to improve the result. After multiple trials the items 7, 11, 15, 28 and 34 were dropped for low factor loadings and to avoid factor overlapping. The removed items are: (7) I should not do much work if I did not have to pass examinations; (11) It is doubtful whether education has improved the world or not; (15) I think my education will be of use to me after I leave school; (28) Education is all right in moderation; and, (34) If anything, I must admit a slight dislike for education. The parallel analysis for the remained 25 items gave a 4 factor solution. In the scree plot (Figure 2), the blue line shows eigen values of actual data and the two red lines show simulated and resampled data. The point of inflection is the point where the gap between simulated data and resampled data tends to be minimum.

Figure 2: Parallel Analysis Scree Plot

The output of the factor extraction is presented below, with “fa” function, “oblimin” rotation and “pa” factoring method - principal factor solution. Oblimin minimizes covariance of squared loadings between factors. The sums of squared (SS) loadings represent the eigen values, or the variance in all variables which is accounted for by that factor. According to the Kaiser’s rule all four factors are important, because the eigen values are greater than 1 (Table 2). Each factor was named depending on the items that it comprises in the following way: general factor, usefulness of education, benefits of education, and dislike of education (Table 3).

Table 2: Factor extraction

	PA1	PA2	PA3	PA4
SS loadings	3.331	2.445	2.005	1.283
Proportion var.	0.133	0.098	0.080	0.051
Cumulative var.	0.133	0.231	0.311	0.363

Table 3: The factors and items

Factors	Items
General Factor	1.I am intensely interested in education. (0.384) 2.I go to school only because I am compelled to do so. (0.506) 3.I am interested in education but think that one ought not to get too concerned about it. (0.367) 4.I like reading thrillers and playing games better than studying. (0.358) 9. I think time spent studying is wasted. (0.672) 10. It is better for boys and girls to get jobs when they are fourteen than to continue at school. (0.543) 12. I have no desire to have anything to do with education. (0.579) 20. I dislike education because it means that time has to be spent on homework. (0.334) 21.I like the subjects taught in school, but I do not like attending school. (0.565) 27.I do not like school teachers so I somewhat dislike education. (0.516) 29. It is enough that we should be taught to read, write, and do sums. (0.639) 30. I do not care about education so long as I can live comfortably. (0.484)
Usefulness of education	17. Education does more harm than good. (0.820) 18. I see no value in education. (0.746) 22. Education is doing far more harm than good. (0.731) 33. Too much money is spent on education. (0.371)
Benefits of education	5. Education is of first-rate importance in life of man. (0.575) 14. More money should be spent on education. (0.476) 19. Education enables us to live a less monotonous life. (0.416) 23. Lack of education is the source of all evil. (0.563) 26. Education does far more good than harm. (0.481) 32. Education is an excellent character builder. (0.559)
Dislike of education	4. I like reading thrillers and playing games better than studying. (0.350) 6. Sometimes I feel that education is necessary and sometimes I doubt it. (0.583) 8. Education tends to make people snobs. (0.700)

As in the article on the attitude toward education by Askew (2008), we obtained the first factor, larger than the others, because the method used is principal factor solution, which means that the first latent factor captures the highest proportion of the total variance. This factor contains only one item that reflects a positive attitude, the others being negatively worded toward education. It has absolute loadings higher than 0.3 on all the 12 items. The other three factors are relatively small, comparative to the general factor and they seem to capture specific variance held common by a few factors, namely Usefulness of education, Benefits of education and Dislike of education. Thus, the attitude toward education is influenced by a general factor, reflecting a common attitude of the students toward education that is driven by the fact that education is mandatory and everyone is enrolled in school without being asked about their actual preferences, the utility that a person attributes to the education process and outcomes, the perceived benefits which are obtained as a result of education and the dislike of specific attributes related to education.

The next step is to define a baseline model, in order to attribute the items to the latent factors identified.

General factor: $f1 = \sim I1+I2+I3+I4+I9+I10+I12+I20+I21+I27+I29+I30$

Usefulness of education: $f2 = \sim I17+I18+I22+I33$

Benefits of education: $f3 = \sim I5+I14+I19+I23+I26+I32$

Dislike of education: $f4 = \sim I4+I6+I8$

Structural equation modelling starts with the confirmatory factor analysis, using the `cfa()` function to fit the models. The algorithm converged normally after 31 iterations, with 185 observations, using the maximum likelihood estimation. The fitting values of the model, as well as the expected ones are presented in the Table 4.

Table 4: CFA fitting values

Indicator	Expected value	Value in the CFA
CFI	>0.9	0.881
TLI	>0.9	0.866
RMSEA	<0.06	0.069
SRMR	<0.08	0.063

First of all, we are interested in the Comparative Fit Index and Tucker-Lewis Index which measure whether the model fits the data better than a more restricted baseline model. The cutoff for both indices is 0.9, but in this case they are slightly below the threshold: CFI=0.88 and TLI=0.86. The Root Mean Square Error of Approximation measures how closely the model reproduces data patterns. The suggested cutoff is 0.06. In this case RMSEA is above the cutoff (0.069), the p-value = 0.001 (tests the hypothesis that RMSEA is less than or equal to 0.05- the null is rejected). The Standardized Root Mean Square Residual which indicate the discrepancy between the sample covariance matrix and the model covariance matrix is 0.063- below the suggested cutoff (0.08). In the output of the parameter estimates it is indicated the loading for each item on its factor (Table 5). The interpretation of the factor loadings is similar to the regression coefficients. For example the factor loading for the first item (I1) on the first factor is 0.553. This means that for each unit increase in the factor 1, the model predicts a 0.553 unit increase in I1. Since we work with standardized latent factors, one unit increase in the factor 1 means 1 standard deviation. Another example: for each unit increase in the second factor, called Usefulness of education, the model predicts a 0.742 unit increase in I18- “I see no value in education”. The model also calculate the co-variances or variances if it is between

one variable and itself. In this model the variance for each observed variable is significant, which means that the latent factors do not make perfect predictions.

Table 5: CFA parameters estimates for the baseline model

Latent factor	Indicator	B	SE	Z	P-value	Beta
F1	I1	0.553	0.064	8.663	0.000	0.601
F1	I2	0.805	0.083	9.708	0.000	0.658
F1	I3	0.506	0.084	5.990	0.000	0.438
F1	I4	0.325	0.128	2.541	0.011	0.266
F1	I9	0.785	0.072	10.983	0.000	0.722
F1	I10	0.504	0.066	7.594	0.000	0.539
F1	I12	0.747	0.074	10.082	0.000	0.677
F1	I20	0.799	0.083	9.672	0.000	0.656
F1	I21	0.846	0.093	9.082	0.000	0.625
F1	I27	0.634	0.075	8.414	0.000	0.587
F1	I29	0.856	0.087	9.082	0.000	0.625
F1	I30	0.826	0.072	11.545	0.000	0.748
F2	I17	0.760	0.065	11.762	0.000	0.759
F2	I18	0.742	0.053	14.020	0.000	0.856
F2	I22	0.797	0.053	14.946	0.000	0.892
F2	I33	0.578	0.079	7.290	0.000	0.521
F3	I5	0.846	0.070	12.069	0.000	0.806
F3	I14	0.540	0.090	5.992	0.000	0.455
F3	I19	0.606	0.093	6.548	0.000	0.492
F3	I23	0.618	0.098	6.294	0.000	0.476
F3	I26	0.693	0.080	8.639	0.000	0.622
F3	I32	0.661	0.068	9.729	0.000	0.684
F4	I4	0.372	0.139	2.680	0.007	0.304
F4	I6	0.892	0.109	8.191	0.000	0.642
F4	I8	1.024	0.103	9.926	0.000	0.803

2.3. Structural equation model

The aim of the final part of the analysis is to determine the relationship between the attitude toward education and the subjective social status. In this respect, the latent factors identified were correlated with the MacArthur Scale of subjective social status. For this purpose, we used “sem()” function from “lavaan” package to fit structural equation model.

A model containing n variables and m factors can be written in vector form as follows:

$$Y_{nx1} = \Lambda_{nxm} * F_{mx1} + \epsilon_{nx1} \quad (1)$$

Y= observed variables;

Λ = factor loadings;

F= factor scores;

ε = disturbances arising from other influences than shared factors;

m= number of factors;

n= number of observable variables.

Our model identifies correlations with the MacArthur scale of SSS in which the first ladder measures the subjective social status of the respondent's family in the society, while the second ladder assesses the perceived status in the school or university environment. The algorithm converged normally after 71 iterations, with 185 observations, keeping the maximum likelihood estimator. The Comparative Fit Index and Tucker-Lewis Index are slightly below the threshold, 0.869 and 0.849 respectively. The RMSEA=0.069, (p-value=0.001) is above the cutoff and SRMR=0.063, below the cutoff. The conditions are partially satisfied, so the model is well fitted, but there is the possibility for improvement.

Table 6: The fitting values for the final model

Indicator	Expected values	Values in the final model
CFI	>0.9	0.869
TLI	>0.9	0.851
RMSEA	<0.08	0.068
SRMR	<0.08	0.063

In the Table 7 are presented the results of the regressions. The correlations are very low, and only 2 coefficients are statistically significant. According to the results of the regression, for each unit increase in the scale 2 (measuring the subjective social status of the respondent in the school/university), the model predicts 0.072 unit increase in the General Factor (p-value=0.004), and 0.074 unit increase in the factor 2- Usefulness of education (p-value=0.028). The correlations between the latent factors and scale 1 are not statistically significant. The results suggest that the subjective social status of the respondent's family does not influence the attitude toward education.

Table 7: Coefficients of Regressions

Regressions	Estimate	Std. Err	z-value	P-value	Std.lv	Std.all
f1~scale1	-0.008	0.026	-0.316	0.752	-0.015	-0.025
f2~scale1	0.019	0.036	0.531	0.596	0.025	0.042
f3~scale1	0.065	0.042	1.548	0.122	0.080	0.132
f4~scale1	-0.001	0.017	-0.085	0.933	-0.004	-0.007
f1~scale2	0.072	0.025	2.847	0.004	0.130	0.231
f2~scale2	0.074	0.034	2.204	0.028	0.098	0.174
f3~scale2	0.057	0.039	1.460	0.144	0.070	0.125
f4~scale2	-0.003	0.015	-0.187	0.851	-0.009	-0.016

3. Conclusions, discussions and future work

The first important implication of this research is that the questionnaire measuring the attitude toward education was validated and it can be used further in research on education in Romania. From this questionnaire, we identified four latent factors that influence the attitude of the respondents: (1) General Factor, (2) Usefulness of education, (3) Benefits of education, and (4) Dislike of education. The first factor is the one that comprises the most of the variance, because the factoring method is principal factor solution. It reflects a general attitude of the students toward education.

Following the results of structural equation model, the first observation is that the correlations between the factors and the subjective social status of the participants are very weak. Moreover, only two correlations are statistically significant:

- (1) When the perceived social status of the pupil or student in the community in which they study increases with one unit (scale 2), the general factor increases with 0.072 (p-value=0.004).
- (2) And second, when subjective social status measured with the scale 2 increases with one unit, the factor 2- Usefulness of education increases also with 0.074 (p-value=0.028).

These results suggest that students positioning themselves higher in school or university have a better attitude toward education.

This study reveals the fact that subjective social status of the student's family does not influence his attitude toward education. It seems that pupils and students are much more influenced by their status in the school or university, a finding that has a psychological foundation, in the sense that positive feelings, confidence, appreciation contribute to more engagement in education and better attitudes toward schooling.

On the macro level, this result is important from the perspective of the resources that are allocated toward education. The policy makers should take into consideration the multiple influences that affect academic achievements and to adjust the policies of financial transfer accordingly. Their starting point in solving a specific educational problem should be to get at its roots and to decide if financial resources are effective.

As recommended in previous studies, some methods to prevent and to tackle the problems that arise in the educational field are:

- Policies of financial transfer, only in cases in which decisions regarding the education are affected by the lack of resources;
- To offer extra educational attention to the disadvantaged children;
- To develop culturally sensitive programs for the parents, in this way to sensitize them and to strengthen the relations with their children;
- To promote and to encourage cognitive stimulation of the children in the home environment.

In the same time, more attention should be directed to the influences coming from the peers, but this can be controlled only partially, by the parents and professors.

One of the first important limitations of this study is that due to sample limitations, the results cannot be generalized. It addresses a wide category of people: from pupils in 9th grade to master students, their age ranging between 15 and 32 years old. Their attitude toward education is driven by different factors: older students might be not so sensitive to the influences from the colleagues as younger pupils. Also, the role of the family is different in each case: students are not so dependent of their parents, but their attitude toward education might be cultivated in the home. From this perspective, a more accurate analysis is required in which the participants will be segmented according to their age and the education level.

The second limitation is that the participants are from different schools and universities, some of them being of a different ethnicity. Previous research suggest comparative studies between different units of education or between different ethnicities. Considering this limitations, it will be recommended to replicate this methodology, but controlling for the aspects mentioned above.

As a direction for future research, it will be interesting to do a comparative study to check if in the countries with a lower standard of living the subjective social status has a stronger correlation with the attitude toward education.

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