PREDICTORS OF SCHOOL SUCCESS IN ROMANIA. FAMILY BACKGROUND, SCHOOL FACTORS, AND COMMUNITY FACTORS

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*T*he paper analyses the relationship between family background, school characteristics, community characteristics, and children's school success in Romania, in 2001. The analysis is placed in the context of the debates regarding the relative importance of family background factors, school factors and neighborhood/ community factors in explaining the variation in children's academic achievement. While research disentangling these relationships is abundant for developed countries and for several developing countries in Latin America, sub-Saharian Africa, and South and East Asia, the Central and Eastern European countries are underrepresented in this type of research. The empirical analysis on educational inequality in Romania undertaken here will also be placed in the context of the educational reforms that accompanied the fall of communism in 1989. The literature review will draw mainly on the contributions to the field based on the American context and some earlier contributions regarding the context of developing countries. It will also present the opinions of several scholars examining the context of educational reforms after the fall of communism in Central and Eastern Europe and in Romania, in particular. The present work will draw on these theoretical bases and the results of an empirical analysis on Romanian fourth graders in an attempt to sketch an image of several factors that contribute to inequalities among children in school success, in Romania.

Keywords: educational attainment, inequality in school success, family background effects, school effects.

DETERMINANTS OF EDUCATIONAL ATTAINMENT

Following the findings of the Coleman report (Coleman, 1966) in the United States and the Plowden report (Peaker, 1971) in Britain (according to which school effects on academic achievement were much smaller than family socioeconomic background effects[1]), research in the 1980's on developing countries has attempted to determine whether the results of these reports hold in different economic and political contexts. The original findings suggested that the pattern of relationships between family background, school effects, and individual attainment might be different in developing countries as compared to developed countries.

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[1] This pattern of effects has been labeled as "the Coleman effect".

Heyneman's studies on developing countries uncovered a relationship between the degree of a country development and the proportion of variance in educational achievement explained by school factors and by family socioeconomic background. According to his empirical analyses, school and teacher characteristics in low income countries explain "two and three times the amount of achievement variance that they can in high income countries" (Heyneman and Loxley, 1982: 19). On the other hand, "the relationship between socioeconomic status and academic achievement appears weaker in less industrialized societies" (Heyneman, 1976: 210). In other words, the Coleman effect is not present in societies characterized by lower economic development levels. On the contrary, in these societies, school effects surpass family socioeconomic background effects in intensity – a situation that has been labeled as the Heyneman-Loxley effect (HL effect). These reversals in the importance of school effects and family background effects between developed and developing countries have been attributed to differences in the distribution of family and school resources between the two types of societies. In developing societies there is a greater homogeneity of variance in family backgrounds and contexts, while school resources are more unequally distributed than in developed societies (Buchmann and Hannum, 2001: 86).

The validity of the HL effect has been questioned on the basis of inappropriate samples, methods of data collection, and methods of data analysis (Baker et al., 2002). The main criticism is related to the use of the ordinary least squares (OLS) regression technique in data analysis, applied to a nested data structure. In their review of the HL effect, Baker, Goesling and Letendre (2002) came to the conclusion that it is unlikely that these drawbacks invalidate the existence of an HL effect for the 1970 data. However, in their empirical analysis of more recent data (1994–1995) they fail to find any evidence of such an effect. The Coleman effect appears to characterize countries with varying economic development levels. The absence of the HL effect is attributed to historical changes, and the authors acknowledge that the effect might still be present in very poor countries and countries that are disrupted by civil war or epidemics (Baker et al., 2002). There is some evidence, however, that the second part of the HL effect (according to which a relatively large part of the cross-national variation in academic achievement is explained by the level of economic development) is enduring: according to empirical results, "national income is associated with the overall production of mathematics and science achievement in schools" (Baker et al., 2002: 304–305).

A parallel direction of research might be employed in explaining the similarity in family background and school effects on educational achievement and the pervasiveness of the Coleman effect across countries with different economic development levels. Although not directly linked to the research on the HL effect, Inkeles' theory states that "the tendency of national educational systems to converge on common structures and practices is pervasive and deep" (Inkeles and Sirowy, 1983: 326). Although some divergent trends still exist, the general tendency towards convergence is attributed to common economic and societal pressures. The concept of institutional isomorphism (DiMaggio and Powell, 1983) may also be employed in explaining convergence trends in educational structures. In this case, the within-nation and between-nation similarities in educational structures might be attributed to the

tendency of organizations to become structurally more similar with other organizations they are in contact with, or on which they depend for their resources.

According to these recent cross-national empirical studies, we should expect to find the Coleman effect as an almost universal characteristic in a variety of social and economic contexts. Recent debates acknowledge the fact that family background effects are much stronger than school, neighborhood, and community effects, but focus on the question whether these above-individual-level effects, notwithstanding their small size, have a statistically significant direct impact on child school success and later success on the labor market.

To this end, researchers have attempted to refine their understanding of what a school community is. Neoinstitutionalist theorists argue that schools are not simple ecological communities, but they have to be examined in the institutional and organizational context in which they function. "Today more than ever, a school's relevant community is not just a neighborhood demographic environment, but equally an institutional environment" (Arum, 2000: 400). The neoinstitutionalist perspective gives rise to a criticism of earlier research of neighborhood effects on academic achievement, based on the fact that it has failed to incorporate measures of school characteristics. The implicit assumptions in these earlier studies were that "schools vary solely as a function of demographic and organizational characteristics of neighborhood settings or that variation in schooling is inconsequential and insignificant" (Arum, 2000: 401). To the extent that these assumptions might be incorrect, these analyses suffer from the omitted variable bias.

The evidence on the existence of significant direct neighborhood and school effects on school achievement is mixed. Arum, a firm believer in the existence of the neighborhood and school resource effects, states that "while some politically conservative researchers … still attempt to assert that public school inefficiencies are so great that increases in the educational inputs are not significantly related to educational attainment …, a variety of sophisticated methodological studies have demonstrated a clear set of positive associations" (Arum, 2000: 405). Arum's research finds significant effects of school disciplinary policies on student achievement (Arum, 2000) and of school resources on high school dropout rates (Arum, 1998).

Card and Krueger (1992: 3) find that "the rates of return to education are higher for individuals who attend schools with lower teacher/pupil ratios and higher relative teacher salaries" and that material returns to education are also correlated with higher education among teachers. Their analysis does not provide a direct test of the relationship between school quality and educational achievement, but they use their results to infer that if school quality is related to labor market success, then it is likely to be related to test scores, too.

On the other hand, Hanushek believes that the methodological studies that find significant school effects suffer from an array of problems (imperfect measurement, nonrandomness of samples, self-selection, misleading indices of school quality, ignoring the differences in individual ability and historical variations in inputs) that lead to the overestimation of school effects (Hanushek and Taylor, 1990).

Some of the problems inherent in the research on school and neighborhood research have been solved with the development of the theoretical framework for

the estimation of multilevel models. The method is more appropriate for the nested nature of the data involved in these studies. Although the use of hierarchical linear models produces more accurate results, misspecification error and the omitted variable bias still threaten the accuracy of models examining school and neighborhood effects (Garner and Raudenbush, 1991).

To sum up, the debate regarding the relative importance of family background characteristics, school effects, and neighborhood effects in determining educational achievement seems to converge toward the opinion that family background effects surpass the other two effects in a variety of social contexts, and that when found, school and neighborhood effects are extremely weak in recent periods, both in developed, and in developing countries.

THE EDUCATIONAL SYSTEM REFORM IN ROMANIA

The educational systems in the Central and Eastern European countries have gone through some radical reforms after the fall of communism, but strong legacies of state commitment to the development of human capital still persist in the region (Laporte and Ringold, 1997). Education is emerging as one of the most important determinants of labor market success and earning potential (Laporte and Ringold, 1997). As a result, growing educational inequalities (if this is indeed the trend) will probably translate in growing income inequalities. Theoretically, the decentralization of the educational systems in the region is expected to lead to growing educational inequalities, and growing regional disparities (within country) in educational attainment (Laporte and Ringold, 1997).

In Romania, the dismantling of political control over the educational process, the diversification of funding resources for the schools, the new bargaining process used by schools during their search for additional funding, the existence of alternative choice in the selection of courses and manuals are likely to produce more variation in educational achievement. The funding process has become increasingly complex:

"The Ministry of National Education decides to build or rebuild schools. Construction costs are covered directly by the local budget. The allocation process is very complex and totally informal. It involves negotiation and influence-wielding among the Ministry of National Education, principals, the school inspectorate, local political elites, influential persons in the central government and local government, and so forth" (Ivan et al., 2001: 96).

Research on the practices of school inspectorates has revealed a recurring strategy of some inspectorates to direct support to schools in wealthier areas and ignore the needs of schools in impoverished areas. "The conservative school inspectorate tends to multiply local disparities by assigning more money to affluent schools because the inspectorate has a special relationship with their managers" (Ivan et al., 2001: 103). In this context, a winning strategy of school principals and managers is to invest in their social capital.

Besides these factors related to the educational reform, low teacher salaries diminish teachers' incentives for working in difficult conditions, especially with

difficult students in substandard schools (Ivan et al., 2001: 103). As a result, this particular group of children is more likely to become one of the groups affected negatively by the increasing educational inequality.

The difficulties encountered by the implementation of the educational reforms are probably among the causes for which "more families, especially the well-to-do, lose faith in the value of degrees and qualifications" (Bîrzea and Fartuşnic, 2003: 88). As a consequence, wealthy families choose to supplement the education of their children through private tutoring, a widespread practice among those who afford it. The system of private tutoring is an additional threat to the equity of the educational system (Ivan et al., 2001). The researchers' conclusion is bleak: "No mechanism exists to ensure equity, and there are few incentives to promote it" (Ivan et al., 2001: 103).

METHOD

Data and analytical strategy

This study investigates the relationship between family background, school characteristics, community characteristics, and children's school success in Romania in 2001. Several models are estimated in order to explore the relative importance of family background and above-individual level factors in determining school success for a sample of fourth graders. The data comes from a study conducted in 2001 by the Romanian Ministry of Education and Research, the National Curriculum Council and the Center Education 2000+. The research, entitled "Change and continuity in the compulsory education curriculum" collected quantitative data from school principals (N = 350), school teachers (N = 5,778), and students in the fourth (N = 8,674) and eighth grades (N = 6,556). The sample contains 352 schools and is representative at national level. The data includes indices of human capital, employment, demographic modernity, and economic capital of households at locality level, all of which can be used to create a summary indicator of community development level (Sandu, 2000).

Although the data seems to allow for four levels of analysis: students nested within classes, nested within schools, nested within localities, the choice of levels for the analysis was restricted by the structure of the data: while the research staff provided a variable linking principals to schools, there is no variable linking teachers to classes. Also, the schools were selected so that in each locality the sample includes only one, and in rare cases two or three schools (the exception being Bucharest, with seven schools in the sample). Due to this selection procedure the locality and school level have to be collapsed. The final model used here includes two levels of analysis: students nested within schools[2]. Community level variables are included at the second level of the analysis (the school level), since in general each school is part of a different community.

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[2] In some schools in which principals were interviewed, there were no interviews with pupils. These schools were excluded from subsequent analyses. The resulting sample sizes are: 8,674 students at level 1 and 346 schools at level 2, with an average of approximately 25 students per school in the sample.

Because of the multi-level data structure, conventional statistical techniques like OLS regression are not appropriate, due to the violation of the assumption that observations are independent from one another. The hierarchical linear model (HLM) technique used here provides a solution to this problem, by accounting for the similarity between children within the same school. The technique models the relationships separately for each level, but also allows for cross-level interactions (Bryk and Raudenbush, 1992; Luke, 2004)[3].

At the individual level, the analysis will only look at fourth graders. Eighth graders are excluded from the analysis because in 2001, at the time the data was collected, they had to pass a 'capacity' examination at the end of the eighth grade, for which they were supposed to prepare during the whole year. The practice of private tutoring might have been much more frequent during this year than during the fourth grade, students might have been more motivated to learn than in other years, and teachers might have been more severe (or more permissive, depending on the subject being taught). Therefore, the eighth grade experience in 2001 was probably characterized by notable differences from the experiences during the previous school years. Without control variables accounting for these differences, a statistical model would return results that are hard to interpret since they combine measured and unmeasured influences.

Incomplete data, both at the individual level and at school level was handled using a multiple imputation strategy (Allison, 2002). The data was imputed using the sequential regression multivariate imputation method[4], resulting in 5 multiply imputed data sets. The procedure computes imputed values for each individual, that are fully conditional on observed values of other variables for that individual[5], and introduces variation among imputed values from the posterior predictive distribution specified by the regression model (Raghunathan et al., 2001). In order to combine the results from the multiply imputed data sets, means, standard deviations, and HLM regression coefficients were averaged across imputations, and standard errors for the latter were estimated within the HLM software using formulae that take into account the uncertainty introduced by imputation.

Variables and hypotheses

Educational attainment (the dependent variable) is measured by the pupils' yearly mean grade[6]. The main interest independent variable among the individual

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[3] HLM model results were estimated using the HLM 6.06 software (Raudenbush et al., 2005).

[4] Missing values were imputed using the IVEware software (Raghunathan et al., 2002).

[5] Binary variables were imputed using logistic regression model, while ordinal and interval variables were imputed using a linear regression model. School level variables were imputed at the individual level and the data was then aggregated back at school level. The imputation model included all variables used in the substantive HLM model.

[6] The Romanian educational system uses the yearly mean grade as an indicator of student performance. The yearly mean grade is the main indicator throughout the first 12 years of education for official and informal (between peers) hierarchies. During the fourth grade, pupils have the same teacher for all subjects, which include mathematics, Romanian language, but also drawing and physical education. The yearly mean grade here is filled in by the students, who were instructed to seek the assistance of their teacher when filling this particular item in the questionnaire.

level predictors is the parents' education. The individual level questionnaire offers little choice of other control variables. In addition to parents' education, the level 1 equation includes controls for gender, motivation for learning, degree of understanding of the material presented in class, and opinion on the usefulness of the information learned in school for coping with every-day problems (see Table 1 for an in-depth description of the variables).

Table 1

Description of level 1 variables

Variables	Indicators
Educational achievement	Yearly mean grade (1 = insufficient … 4= very good)
Gender	Male (0 = female, 1 = male)
Motivation for learning (delayed gratification) 0=immediate gratification 1=delayed gratification A cluster analysis on the 6 indicators grouped the first 3 motives and the 5th motive on a dimension that could be labeled "immediate gratification", and the 4th and 6th motive on a different dimension, that could be labeled "delayed gratification". The motivation for learning index has a value of 0 if the child chose 1,2, 3 or 5 as the most important motive and a value of 1 if the child chose 4 or 6 as the most important motive.	"Which are the motives for which you learn? – Rank these motives:" 1. To get high grades 2. To be liked by my peers 3. To be praised by parents and teachers 4. To know as many things as possible from different domains 5. To get one of the prizes at the end of the year 6. To be able to succeed in my job later in life
Comprehension of class material	How much do you understand what is taught in class? (1 = very little … 4 = very much)
Practical applications (solving everyday problems)	Do you think that the information presented during classes might help you solve everyday problems/situations? (1 = to a very small degree … 4 = to a very large degree)
Parent education (the education of the highest educated parent)	1. Mother's education 2. Father's education (1 = primary education… 4 = tertiary education)

Data Source: Change and Continuity in the Compulsory Education Curriculum (2001), Ministry of Education and Research, National Curriculum Council, Center Education 2000+.

At the second level, the models explore the impact of a number of school-level variables on educational achievement. There are several predictors examined at this level: whether children in the school come mostly from advantaged families (high education, high income), the general level of parental involvement/ interest in schooling, the general level of child involvement/ interest in schooling, school endowment with material resources, appropriate facilities, and learning space, the degree of delinquency in the school environment, the degree of community development for the community in which the school is placed (see Table 2 for an in-depth description of the variables).

Description of level 2 variables

Variables	Indicators	
% highly educated families Percentage of pupils in the school with at least a parent with faculty completed	Computed based on level 1 variable recording the education of the highest educated parent for all children interviewed in the school (both IVth graders and VIIIth graders)	
Poor family environments Principal's assessment of the degree to which the pupils in the school come from poor family environments	To what degree do you think that this is a problem in your school: …? The pupils come from families with limited material resources, they are poorly clothed and poorly fed. (1 = to a very little degree … 4 = to a very large degree)	
Low parental involvement Principal's assessment of the degree to which the parents are uninterested/ uninvolved in schooling	To what degree do you think that this is a problem in your school: …? The children's parents are completely uninvolved in schooling/ uninterested in what goes on in school. (1 = to a very little degree … 4 = to a very large degree)	
Low pupil involvement Principal's assessment of the degree to which the pupils are uninterested/ uninvolved in schooling	To what degree do you think that this is a problem in your school: …? The children do not really want to learn. (1 = to a very little degree … 4 = to a very large degree)	
School endowment Composite index of school (material) endowment – factor score of A,B,C and D	A. modern technology (factor score of A1 to A7)	The school has: A1. internet access A2. projector A3. TVset A4. radio A5. VCR A6. tape player A7. telephone
	B. building (factor score of B1 to B4)	The school has: B1. modern plumbing B2. central heating B3. running water B4. electricity
	C. library	The school has: C1. a library
	D. laboratories/ facilities (factor score of D1 to D7)	The school has: D1. sports room D2. theater room D3. sports field D4. biology lab D5. chemistry lab D6. physics lab D7. computer lab
Delinquent school environment (principal's assessment of violence in the school) – factor score of a,b,c,d,e	How often does this happen in your school (1 = never … 4 = very often) a. Pupils destroy furniture or other inventory objects b. Pupils are impertinent towards the teachers c. Pupils steal from one another d. Pupils physically assault teachers e. Pupils consume alcoholic beverages and/or drugs	

Variables	Indicators
Ethnic/ social conflict environment (principal's assessment of the degree of ethnic or social conflict in the school)	To what degree do you think that this is a problem in your school: …? Pupils coming from different social or ethnic categories do not get along. (1 = to a very little degree … 4 = to a very large degree)
Community development level	Constructed by research staff – an indicator formed through successive factorial aggregation from indices of human capital, employment, demographic modernity and economic capital of households at county level. (high values for high development levels)

Data Source: Change and Continuity in the Compulsory Education Curriculum (2001), Ministry of Education and Research, National Curriculum Council, Center Education 2000+.

Table 3 presents descriptive statistics for the individual and school level variables employed in the estimation of the models. The amount of missing data in these variables is small to moderate, except for the composite index measuring school endowment. The high percentage of missing data characterizing this index is due to its construction as a factor score of several variables using listwise deletion of missing data. The original variables that were used for the construction of this index are characterized by 2% to 21% amount of missing data.

Table 3

Descriptive statistics

	Min	Max	Before imputation			After imputation	
			% Missing	Mean	SD	Mean	SD
Level 1 variables (N = 8,674)							
Educational achievement	1.00	4.00	3.40	3.22	0.79	3.21	0.78
Gender (male)	0.00	1.00	0.38	–	–	–	–
Delayed gratification	0.00	1.00	7.59	–	–	–	–
Comprehension	1.00	4.00	1.20	3.34	0.79	3.33	0.79
Practical applications	1.00	4.00	0.80	3.53	0.74	3.52	0.74
Parent education	1.00	4.00	1.54	2.83	0.74	2.84	0.73
Level 2 variables (N = 346)							
% of higly educated families	0.00	80.00	1.71	8.99	13.92	9.03	13.89
Poor family environments	1.00	4.00	2.86	2.68	0.94	2.67	0.93
Low parental involvement	1.00	4.00	3.71	2.41	0.91	2.41	0.89
Low pupil involvement	1.00	4.00	6.29	2.04	0.82	2.06	0.81
School endowment	−1.49	2.05	42.00	0.00	1.00	0.00	1.00
Delinquent school environment	−1.33	10.46	3.71	0.00	1.00	0.00	1.00
Ethnic/ social conflict environment	1.00	4.00	11.43	1.18	0.52	1.20	0.49
Community development level	−1.12	2.33	0.29	0.00	1.00	0.00	0.99

Note: The percentage of males in the sample both before and after imputation is 50%. The percentage of students in the sample choosing delayed gratification motives for learning before imputation is 71%, while after imputation the same percentage is 67%.

In the HLM models, all predictors are centered around their grand mean, except for the gender variable and the learning motivation variable, in order to have a meaningful interpretation of the intercept. The absence of controls for previous achievement levels, individual ability, and teacher quality (data are not available) constitute limitations of this model. In the absence of these controls, the models will probably overestimate both the size of the impact of family background on educational achievement and the size of the impact of school level and community level effects on educational achievement. It is up to future research to determine the intensity of these omitted effects and their influence on the other relationships studied in the model proposed here.

The factors described as being associated with the educational reform in Romania after 1989 are likely to contribute to an increase in both in the effect of family background and in the effects of school and community characteristics on individual educational attainment, compared to pre-1989 levels. The empirical analysis will not be able to assess time trends in the relative sizes of family background, school, and community characteristics because of the cross-sectional nature of the data. Instead, I will focus on the question whether the Romanian educational context in 2001 is characterized by the presence of a Coleman effect or a Heyneman-Loxley effect. A previous empirical analysis on data from 1994–95 demonstrated the pervasiveness of Coleman-type effects in a number of different countries, including Romania (Baker et al., 2002).

I expect that the analysis on the 2001 data will confirm this finding: the proportion of variance explained by family background factors will be much larger than the proportion of variance explained by school and community level factors. In addition to this, the 2001 data can be used to compute an estimate of the variance between schools and within schools in educational achievement, and to explore whether certain school-level variables or community-level variables are statistically significant predictors of educational achievement.

Although the variance between schools in educational attainment will likely be very small, it will probably be significantly different from zero (due to the influence of factors such as school funding and preferential treatment by the inspectorates of 'wealthy' schools or schools in wealthy communities). If the variance between schools in educational achievement is indeed small, the level two predictors (percent of children with highly educated parents, degree of parental and child involvement in schooling, level of school material endowment, degree of delinquency characterizing the school environment, and community development level) should be able to explain a large percentage of the variance between schools in attainment.

It is possible that some (or all) of the level 2 predictors will have statistically nonsignificant impacts on educational attainment. The theory is less clear on which school, neighborhood, or community effects are more powerful. In this context, I will consider the analysis as having an exploratory purpose and let the data sort out which effects are statistically significant and which are not. However, in the case of level 1 predictors, it is likely that boys will have lower achievement levels than girls. Higher achievement levels are also expected to be present for those who are driven to learn by motives involving delayed gratification, those who understand more during class, and those who see the practical/ applied value of the knowledge

they gain in class. Controlling for differences among students in motivation for learning, understanding of class material, and views on the practical applications of knowledge gained during class, and for students' gender, it is likely that parental education will have a positive effect on children's school performance.

MODEL AND RESULTS

In order to be able to test all the hypotheses and to examine the separate impact of each of the level 2 factors, successive models with different combinations of variables are estimated. An unconditional model (a random intercept model with no predictors) is estimated as a baseline model. The variance components in the unconditional model are presented in Table 4. The school level variance is statistically significant. This confirms the hypothesis that there is a significant (although small) variation in achievement levels between schools. Only 10% of the variance in students' grades is accounted for by differences between schools (see ICC in Table 4).

Table 4

Variance components in the unconditional model

Level 1 Variance in educational achievement within schools (σ^2)	$0.556^{\text{---}}$
Level 2 Variance in educational achievement between schools (τ^2)	0.062^{***}
ICC (% of variance in educational achievement accounted for by level 2 units)	$\dfrac{\tau}{\sigma^2 + \tau} = 0.10$

Data Source: Change and Continuity in the Compulsory Education Curriculum (2001), Ministry of Education and Research, National Curriculum Council, Center Education 2000+.
*Note: ⁻⁻ no significance test computed, + p < 0.1, *p < 0.05, **p < 0.01, ***p < 0.001; ICC = intraclass correlation coefficient.*

The first substantive model introduces parental education as a level 1 predictor and the rest of the level 1 control variables. As expected, parental education is a significant predictor of educational achievement, even in the presence of controls for students' gender, students' approaches to learning, and opinions on schooling. Jointly, all level 1 predictors improve the prediction of educational achievement by approximately 20%, compared to the predictive ability of the unconditional model (see the pseudo R squared value in Table 5).

In Model 1, all level 1 predictors have statistically significant effects on students' grades, and the effects are all in the expected direction. On average, boys tend to have lower grades compared to girls, and students who place more importance on delayed gratification reasons for learning, who feel they understand the class material and who see a practical application for it tend to have more success in school.

Models 2 through 9 test the impact of the various level 2 predictors on grades[7]. The predictors are introduced one by one, without any other level 2 predictors, in

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[7] Models 2 through 9 are random intercept models. These models assume that level 2 predictors only have main effects on educational achievement and that there are no cross-level interactions between level 1 and level 2 predictors. Model 10 has a similar structure.

order to examine their total effects on educational achievement, and in order to avoid problems of multicollinearity. Among the effects of these level two predictors, unexpectedly, the percentage of students with highly educated parents, the degree of parental involvement, school endowment, the delinquency of the school environment, ethnic and social conflict, and community development fail to achieve statistically significant levels. While the percentage of children in the school with highly educated parents has no statistically significant effect on grades, the principal's assessment on the pervasiveness of poor family environments has a significant effect, in the expected direction: the greater the degree to which children come from perceived poor family environments in a school, the lower their grades. Low student involvement also displays a statistically significant negative effect on educational achievement (see Table 5). Each of the level 2 variables by itself improves the prediction of school-level mean grades by approximately 22% to 26%.

In Model 10, where all the level 1 and level 2 influences are controlled for, the only level 2 effect retaining its statistical significance is the effect of low student involvement. Assuming that the principal's assessment of the level of student involvement in schooling is a reasonably accurate estimate of the actual interest children have in the learning process, the results here suggest that the degree of student interest in schooling is one of the important factors producing variation in grades between schools. This further suggests that schools that do not manage to make their students interested in learning, either because of the low quality of teaching or because of the poor endowment with teaching support materials, will have, on average, poorer results than other schools. On the other hand, it is possible that teaching quality and school endowment have nothing to do with the level of student involvement in schooling, and that instead, these schools with lower levels of student involvement are located in communities or neighborhoods with certain characteristics (such as poverty, low parental education, low aspirations, reduced employment opportunities) that decrease the level of student involvement in schooling.

The results of the final model also suggest that the students who view their education as an avenue for future benefits (to gather as much knowledge as possible and to succeed in their jobs), who are able to keep the pace with the presentation of class material, and who see a practical application for it are more likely to be successful in school. Parental education is also an important factor, contributing to children's success in school.

Contrary to expectations, none of the school level or community level variables, and neither their combination, manages to explain away all the variance in grades between schools. The percentage of level 2 variance explained in the last full model remains at 25%. In general, the school and community effects appear to be weak, even when they achieve statistical significance. In contrast, family background has a sustained positive and statistically significant impact on educational achievement. The last model provides an estimate of the average grade of boys who are motivated to learn by reasons that delay gratification, with mean levels on all the other variables in the model: 3.12 out of a maximum of 4.

Table 5

Individual, school, and community level effects on the educational achievement of IVth graders (unstandardized coefficients)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
Level 1 effects										
Intercept	3.118***	3.116***	3.118***	3.117***	3.119***	3.116***	3.119***	3.117***	3.116***	3.116***
Gender (male)	–0.195***	–0.195***	–0.196***	–0.195***	–0.196***	–0.196***	–0.195***	–0.195***	–0.195***	–0.196***
Delayed gratification	0.266***	0.265***	0.265***	0.265***	0.265***	0.265***	0.266***	0.265***	0.265***	0.264***
Comprehension	0.208***	0.208***	0.208***	0.208***	0.208***	0.208***	0.208***	0.208***	0.208***	0.022***
Practical applications	0.096***	0.096***	0.095***	0.095***	0.095***	0.095***	0.096***	0.095***	0.096***	0.095***
Parent education	0.281***	0.278***	0.279***	0.280***	0.281***	0.280***	0.281***	0.280***	0.280***	0.278***
Level 2 effects										
% highly educated parents		0.001								0.001
Poor family environment			–0.038*							–0.028
Low parental involvement				–0.029						0.013
Low pupil involvement					–0.049**					–0.045*
School endowment						0.012				–0.002
Delinquent environment							–0.013			0.003
Ethnic/social conflict								–0.054		–0.033
Community development									0.011	0.003
Variance components										
Level 2 var (τ)	0.050***	0.050***	0.049***	0.050***	0.049***	0.050***	0.050***	0.050***	0.050***	0.049***
Level 1 var (σ^2)	0.447---	0.447---	0.447---	0.447---	0.447---	0.447---	0.447---	0.447---	0.447---	0.447---
Pseudo R^2										
Level2		0.244	0.256	0.245	0.244	0.244	0.224	0.236	0.236	0.248
Level1	0.196	0.197	0.198	0.196	0.198	0.196	0.196	0.197	0.196	0.198

Data Source: Change and Continuity in the Compulsory Education Curriculum (2001), Ministry of Education and Research, National Curriculum Council, Center Education 2000+.

Notes: --- no significance test computed, + p<0.1, *p<0.05, **p<0.01,***p<0.001.

**Comparison of family background effects and school and community level effects
(standardized coefficients)**

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
Parental education	0.263***	0.261***	0.262***	0.263***	0.263***	0.262***	0.263***	0.263***	0.262***
% highly educated parents		0.022							
Poor family environment			−0.046*						
Low parental involvement				−0.033					
Low pupil involvement					−0.051**				
School endowment						0.015			
Delinquent environment							−0.016		
Ethnic/social conflict								−0.034	
Community development									0.014

Data Source: Change and Continuity in the Compulsory Education Curriculum (2001), Ministry of
Education and Research, National Curriculum Council, Center Education 2000+.
*Notes: + p<0.1, *p<0.05, **p<0.01,***p<0.001.*

In order to compare the effects of parental education to the effects of school
level and community level factors, Table 6 presents standardized coefficients in
models 1 through 9. While an increase of one standard deviation in parental
education leads to an average increase of 0.26 standard deviations in grades, the
effects are much smaller for the school level and community variables. The
standardized coefficients in Table 6 validate the hypothesis according to which in
this context we are dealing with a Coleman effect, rather than an HL effect.

DISCUSSION AND DIRECTIONS FOR FUTURE RESEARCH

In sum, the results of the empirical analysis are in general similar with more
recent research in very different economic and political contexts, for example the
United States, where researchers have found several weak but significant effects of
school and neighborhood level variables, but much stronger effects of family
background on educational achievement. The analysis of the sample of Romanian
fourth graders in 2001 suggests that the pattern of family background, school, and
neighborhood effects conforms to the Coleman pattern rather than the HL pattern.
Parental education and other individual level variables have much stronger
influences on educational achievement than the school level or community level

factors examined here. Among the school level factors, most do not have statistically significant influences on student grades, and the few that do, have very small effects. Furthermore, most of the variation in grades lies between students, within schools, rather than between schools. The only community level variable examined here – the level of community development, has no statistically significant effects on student grades.

The small amount of variance in grades between schools seems to be mostly driven by the financial situation of the students' families and the degree of student involvement in schooling (assuming that the principals' assessments regarding these two variables are reliable). In the final model controlling for all level 1 and level 2 influences, the only level 2 variable that retains statistical significance is the level of student involvement in schooling. It is possible that teaching quality is poorer in schools with students that are not interested in learning, thereby resulting in lower school level mean grades. In this case, a possible explanation of this effect is that advanced by Ivan et al. (2001) according to which low teacher salaries diminish the teachers' incentives for working with difficult students – in this case, students that are not interested in learning. However, it is also possible that there are structural characteristics of communities and neighborhoods that result in a concentration of students that are not interested in schooling in certain schools, and the lower school level mean grades are a direct consequence of the low level of student involvement, and an indirect consequence of the community characteristics that determined the low level of student involvement in schooling.

Either way, the results here indirectly suggest that students that are not interested in schooling will have less success in school compared to their peers. In any case, the models examined here provide evidence that students who are driven to learn by motives involving delayed gratification, those who feel they understand the material taught in class, and those who feel that the knowledge they gain in school has practical applications have, on average, better grades than their peers. Teaching strategies focused on involving the students in the process of learning and on motivating the students by outlining future benefits of schooling and possible practical applications of the knowledge gained in class might have positive effects on student performance in school.

While the present models have been able to circumvent the problems derived from the clustered nature of the data by using an HLM framework, the omitted variable bias still poses a problem. Due to data constraints, the models employed a limited number of controls, both at the individual level and at the school and community level. Despite this, it is likely that a more detailed set of controls would not modify the general conclusion regarding the hierarchy of family background, school, and neighborhood effects, with the first being much stronger than the latter two. A more detailed set of control variables would, however, contribute to a more precise estimation of effects, and a more refined explanation of the mechanisms underlying the variation in student grades.

At the individual level, a measurement of student's academic ability would be one of the variables that should be taken into consideration. The inability to control for this variable in the present models is likely to produce inflated estimates of family background effects. A more detailed measurement of parental socio-economic background, including household income and parental occupation, and of parental cultural capital would constitute refinements to the models presented here. Since the community level development index, as a summary index, had no statistically significant effects on educational achievement, it would also be interesting to explore whether any of its component indicators have statistically significant effects on student grades.

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*A*rticolul analizează relaţia dintre caracteristici ale familiei, şcolii şi comunităţii şi succesul şcolar în România, în 2001. Analiza este plasată în contextul discuţiilor privind importanţa relativă a factorilor legaţi de familie, şcoală şi comunitate în explicarea variaţiei succesului şcolar. Această temă de cercetare a fost pe larg studiată în ţările dezvoltate şi în câteva dintre ţările în curs de dezvoltare din America Latină, Africa Subsahariană şi Asia de Sud şi de Est, însă mai puţin în ţările din Europa Centrală şi de Est. Analiza empirică a inegalităţilor privind succesul şcolar în România din acest articol va fi de asemenea plasată în contextul reformelor educaţionale din România de după 1989. Discuţia literaturii din domeniu se va axa în principal pe contribuţiile referitoare la contextul american şi la contextul ţărilor în curs de dezvoltare, dar vor fi prezentate şi opinii ale câtorva cercetători care au examinat reformele în domeniul educaţiei după căderea comunismului în Europa Centrală şi de Est şi în particular în România. Articolul de faţă va utiliza aceste baze teoretice şi rezultatele unei analize empirice a elevilor de clasa a IV-a din România pentru a propune o schiţare a câtorva factori care contribuie la inegalităţile dintre copii în ceea ce priveşte succesul educaţional în România.

Cuvinte-cheie: succes şcolar, inegalităţi de succes şcolar, efecte ale caracteristicilor familiei, efecte ale caracteristicilor şcolii.