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## The relative importance of social and cultural capital for educational performance: Eastern versus Western Europe

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**The Relative Importance of Social and Cultural  
Capital for Educational Performance:  
Eastern versus Western Europe**

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# 1 Introduction

The sociology of education has a long-standing tradition of researching the causes of educational inequality. As the massive body of literature suggests, it is above all ability - the differences in intelligence and personality - that explains variations in performance (Dronkers, 2010). Family background comes in second when examining factors that influence educational performance. A child's family background consists of a variety of aspects, including parents' educational level and the family's cultural endowments (Dronkers, 2010). All of the aspects portray the total environment that the child comes from, which includes financial, occupational, social and cultural endowments. Research has documented that in Western countries, these endowments, along with biological predisposition, considerably determine the level of educational achievement (Blau and Dunkan, 1967; Jencks, 1972, Bourdieu and Passeron, 1977; Hauser and Sewell; 1986, Dronkers, 2010).

This article focuses on the effects of the less tangible assets, namely social and cultural capital, on educational outcomes of children in different societies. To this end, two different societies are analyzed. The reference group is made up of children from Western Europe, which is characterized by capitalist societies with free market economies. The second group consists of children from Eastern Europe that primarily grew up under communism and/or its immediate aftermath.

This paper contributes to existing knowledge by focusing on the *differences* in the way social and cultural capital are related to educational performance, rather than explaining the inequality of educational achievement. Theoretical grounds for arguing that these differences exist on a societal level are based on James Coleman's (1990) notion that the overall social structure has an influence on the way individuals act on it; for example, in the way they invest and allocate their productive resources. The empirical justification is based on findings in earlier literature that there was indeed considerable difference regarding the accumulation of social and cultural capital in Eastern and Western Europe during communism. In addition, the literature demonstrated differences in the use of social and cultural capital for obtaining different goals (De Graaf and Flap, 1988; Volker and Flap, 1997, 1999; Ganzeboom, 1998).

In order to examine how Eastern and Western Europe differ regarding the effects of social and cultural capital on educational performance, two data sets are used that measure cognitive performance of children in 20 European countries. The first study under consideration is the



Trends in International Mathematics and Science Study (TIMSS) conducted in 1995<sup>1</sup>, and the second is the Program for International Students Assessment (PISA) study conducted in 2000. The approach to social capital follows that of Coleman (1988), where social capital at the family and school levels is considered a factor that positively relates to children's educational performance.

In this paper, the structural aspects of social capital are examined, meaning that social capital resides in the social relationships formed by strong or weak ties. Cultural capital, on the other hand, is defined as in the theoretical work of Bourdieu (1984) and the empirical work of DiMaggio (1982 and 1985), where the two forms of cultural capital, objectified and embodied, are positively related to educational outcomes. The estimated model is an adapted version of the educational production function, through which a statistical relationship between cognitive performance, measured by the outcomes of the PISA and TIMSS studies, and family background, is examined.

The article proceeds as follows: In the next section, I discuss the literature that deals with the role of social and cultural capital for educational achievement. I then turn to a description of the differences between Eastern and Western Europe regarding the ways that social and cultural capital are accumulated and allocated. From this I derive the main hypotheses of the article. In subsequent sections I describe my data and the methods used, before moving on to the results and my conclusion.

## **2 The effects of social and cultural capital on educational performance**

Social capital is a concept that has been inductively developed through observation, which in addition to financial and intellectual capital, has shown that the embedding of children in social structure facilitates the culture of learning. Even though the concept originated in the 1920s, Pierre Bourdieu and James Coleman first applied it in the field of education during the 1980s. Whereas Bourdieu (1988) examined the relevance of economic, social and cultural capital for social reproduction, Coleman (1988, 1990) focused on the role of social capital in the development of human capital. Given that I base the theoretical approach of this article on Coleman's work, I shall discuss only his theory and summarize the literature on its empirical application.

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<sup>1</sup> This is the year closest to the end of the communist regime. Given that these children were born during communism and were raised by parents who lived under the same regime for the majority of their lives, I assume that this cohort presents the most representative sample for the situation during communism.

Coleman's (1988, 1990) approach to benefits of social capital has structural-functionalist roots. Three forms characterize his interpretation of social capital: levels of trust, information channels and norms and sanctions that promote selfless behaviour. From this point of view, social capital is inherent to social structure. In this context, Coleman emphasizes the importance of social networks, in particular the role of family structure, as it is the social structure that facilitates development of norms and values.

In his empirical studies, Coleman (1988, 1990) examined the relationship between social capital in and outside family and educational achievement of children in these families. At the family level, his operationalization of the concept of social capital resulted in variables of social capital, including the i) presence of parents and number of siblings in the home, ii) parents' educational expectations; and iii) intergenerational closure. Regarding the social capital at the school level, Coleman has examined relationships among parents, and parents' relationship with school and community. Coleman's work has had enormous influence on subsequent studies; indeed, all mainstream educational research has adopted his conceptualization of social capital in one way or another.

Social capital is assumed to have positive effects on a number of educational outcomes, such as educational achievement (measured by student test scores in various disciplines) and attainment (measured by probabilities of dropping out of school). When it comes to the link between social capital and educational achievement, the most notable studies typically use student test scores on math, reading or science to examine their relationship to social capital. Achievement is found to be influenced by various aspects of social capital within and outside the family. Classic proxies used to measure the family level of social capital are: family form; family size; number of times the family has moved; social connection between parents and children (McNeal, 199; Pong, 1998; Sun, 1998); parent-school involvement (Carbonaro; Pong; Morgan and Sorensen, 1999); and intergenerational closure (Carbonaro; Morgan and Sorensen; Pribesh and Downey; Sun, 1998, 1999). Indicators of social capital outside the family are also found to be of vital importance for educational achievement and include aspects like participation in organizations in school and community (Sun, 1998); number of friends at school (Morgan and Sorensen, 1999); and ties with peers (Pribesh and Downey, 1999).

The link between educational attainment and social capital is predominantly studied using school drop-out rates, which are found to be positively associated to variables that are used to describe social capital in the studies of educational achievement. A positive association with regard to drop-out rates is also found with non-traditional family structure and the number of

siblings (Israel et al. 2001; Smith et al, 1992); whereas things like higher parental expectations, parent-teen connection, fewer moves, church attendance and intergenerational closure are found to be negatively related to drop-out rates (Dika and Singh, 2002). Another line of research (De Graaf et al. 2000; Dyk and Wilson, 1999, Kalmijn and Kraaykamp, 1996; Lopez, 1996) examined the year of schooling as the proxy for educational attainment, and found results similar to those of drop-out rates or proxies for educational achievement.

## **2.1 Cultural capital and its relevance for education**

Around the same time that the concept of social capital appeared on the research scene, the concept of cultural capital emerged on the agendas of those studying educational inequality. Although much of the work of its founder, Pierre Bourdieu, centered on social capital, it is Bourdieu's work on cultural capital that has set the theoretical platform on which many empirical studies have been conducted, especially with regard to the role of cultural capital in education.

Bourdieu (1986) studied cultural capital within this context because of the fact that in Western societies, education is one of the mechanisms behind social reproduction; consequently, studies on social reproduction often assess the role of cultural capital for educational achievement. In light of Bourdieu (1986) and other researchers who have examined this topic, cultural capital is a resource because it provides access to scarce resources and can be transmitted from one generation to another (Lareau and Weininger, 2003). For Bourdieu, cultural capital provides instruments for the appropriation of symbolic wealth socially designated as worthy of being sought and possessed. Cultural capital is inculcated in childhood and is recognized by those who also possess the same cultural capital; therefore, cultural capital exercises returns in terms educational attainment and achievement. It enables people of a higher social status to obtain better education for their children and at the same time allows these children to be treated differently because of their social origin<sup>2</sup>. More specifically, for Bourdieu (1986) cultural capital exists in three states: embodied, objectified and institutionalized. The embodied form of cultural capital is a 'long lasting disposition of mind and body' (Bourdieu, 1986, p.47). In its objectified state it takes the form of cultural goods (such as pictures, books, dictionaries, and so on) and in

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<sup>2</sup> According to Lamont and Lareau (1988), the direct effect of cultural capital in educational outcomes consists of widely shared high-status cultural signals (e.g. behaviours, tastes, and attitudes) used in the process of social reproduction through education (See also, Farkas 1996; Lareau and Horvat 1999; Swidler 1986). This can be seen when teachers positively sanction students who possess dominant linguistic styles, aesthetic preferences and modes of interaction. How such positive sanctioning is exercised depends largely on the characteristics of the particular educational system; for example, the relevance of cultural capital is reduced in a system where educational transitions are based on standardized examinations rather than the subjective judgment of teachers.

its institutionalized state is characterized by educational qualifications. Its institutionalized state approximates what is referred to as human capital in the later literature. In fact, Bourdieu (1986) argues that human capital is a part of cultural capital because of the processes in which human capital is accumulated. He argues that the socially most determining educational investment is the domestic transmission of cultural capital. Bourdieu (1986) goes on to claim that academic ability and talent are products of investment of time in cultural capital, whereas the economic and social yield of educational qualification depends on social capital<sup>3</sup>.

Bourdieu's theory has been empirically examined in many of the studies pioneered by DiMaggio (1982). His application of the concept in the field of education has lead him to many definitions of cultural capital such as: 'Instruments for appropriation of symbolic wealth, designated as worthy of being sought and possessed' (DiMaggio, 1982); 'Linguistic and cultural competence' (Robinson and Garnier, 1985); 'Appropriate manner and good tastes, values of formal culture and beaux arts' (De Graaf, 1986); 'Cultural assets, in general, a control over cultural resources and disposal over cultural resources' (Ganzeboom, De Graaf and Robert, 1990). In essence, all of these definitions have been inspired in one way or another by Bourdieu's (1986) work and represent either embodied or objectified cultural capital, defined in a more concrete manner. These definitions have been proxied by all sorts of variables that are believed to measure cultural capital, such as cultural attitudes (interests in music, literature and self image), activities (creation of art, attendance of cultural events), cultural knowledge (about literature, music, art) (DiMaggio, 1982, DiMaggio and Mohr, 1985, Ganzeboom, De Graaf and Robert, 1990) or parents' interest in culture (De Graaf, 1995, Kalmijn and Kraaykamp, 1996).

The previous empirical literature on the relationship between cultural capital and educational success has established a positive relationship between the two. DiMaggio (1982) showed that cultural participation among high school students in the US is positively associated with school grades in English, History and Mathematics; whereas the study of DiMaggio and Mohr (1985) demonstrated a positive relationship between cultural participation and educational attainment, college attendance and college graduation. As for the relationship between parents' cultural participation and children's educational attainment, De Graaf and Kraaykamp (1996) have found

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<sup>3</sup> I would argue that two developments in empirical research on human capital give us reason to believe that human capital is a separate entity and not a form of cultural capital. First, the new definitions of human capital, focusing on abilities, skills and competencies, have shown the relevance of skills and ability as an integral part of human capital, which is not developed by any process of socialization or transmission of cultural capital, but rather embodied in persons. Second, the economic yield of education and therefore the value of human capital is not only realized by using social capital. Even if social capital can assist in this process, it is much more the ability signaled by educational achievement that determines future returns on human capital. For this reason, I argue that Bourdieu's cultural capital takes only two forms: embodied, as a consequence of cultural milieu, and objectified, as possessions indicating the endowments of cultural capital.

that in the Netherlands, parental cultural behaviour had greater impact on children's years of education than parents' financial resources. Similar results were found in Germany by De Graaf and Crook (1997), where parents' participation in cultural activities was positively related to their children's educational attainment.

## **2.2 Different effects in the East and the West**

The main proposition in this article is that the effects of social and cultural capital on the educational outcomes can be different across societies due to the fact that the overall functioning of the society cannot be disentangled from the attitudes and behaviour of its citizens (Coleman, 1988, 1990). In particular, when it comes to economic behaviour we can argue that society can influence the investment in different resources and consequently their returns. This implies that we expect to see different relationships between social and cultural capital and educational performance across diverging societies.

In order to test this proposition, I examine the differences regarding the effects of social and cultural capital between students in Eastern and Western Europe. As the testing of educational performance of these pupils started in 1995, in the case of TIMMS and 2000 in the case of PISA, and the students under consideration were either 13 or 15-year-olds, I assume here that they grew up in vastly different societies than those of their Western counterparts and therefore their early upbringing was very much influenced by the legacies of communism. Consequently, we can pose a very important question: What differentiates these societies when it comes to returns of social and cultural capital in the context of education? In order to answer this question, the next section discusses previous studies on the role of social and cultural capital in the context of education in communist societies. From this, key hypotheses are derived regarding their different associations to levels of educational achievement in Eastern relative to Western societies.

## **2.3 The role of strong ties and 'the collective'**

Previous literature has emphasized the importance of social capital as a productive resource in Eastern Europe during communism. Due to restrictions on the accumulation of material wealth, people had to invest more in development of formal and informal social networks that could be mobilized in different situations (De Graaf and Flap, 1988; Volker and Flap, 1997, 1999; Ganzeboom, 1998; Wong, 1998). In this context, Delhey and Newton (2004, p.7) note that 'personal social networks were particularly important in communist systems of Eastern and

Central Europe. People in these countries developed circles of private and unofficial contacts among people who could help each solve the daily problems'<sup>4</sup>.

As a consequence, most of the literature on the relationship between social capital and educational attainment during communism studies the use of social ties for the creation of educational opportunities. A less elaborated subject in the previous studies is the role of social capital in the form of social ties within the family, and social capital at school for educational achievement during communism. However, the literature has shown us that it is these forms of social capital that are traditionally studied in Western societies as important determinants of educational achievement. As Coleman argued, it is the social structure at the family and school level that facilitates the culture of learning by transmitting and maintaining the norms and values held about learning. Additionally, this social structure serves both as the information channel through which parents transmit human capital to their children as well as a way to monitor their children's performance.

Therefore, within this context it is especially important to examine the potential differences regarding social capital on the family and school levels between communist and capitalist societies. As we have seen, one of the consequences of oppressive communist regimes was a general reliance on strong social ties within the family. Given that the public sphere was dominated by the regime, a general feeling of distrust in society prevailed; and as a consequence, family and close friends were of great importance for improving life chances in every possible way, since these close relations were the only ones that could be trusted.

Investment in strong family ties was not just an unintended consequence of the regime's policies; interestingly, it was also stimulated by the regime in the later stages of communism, with the idea that family was one of the primary institutions of political socialization. The role of the family in transmitting political values made communists initially believe that placing the upbringing of children squarely in the hands of the state was the best way to accomplish political indoctrination of the new regime. In the long term, however, the experimental policies set forth to achieve this goal proved inefficient and costly (Clawson, 1973). Communists also concluded that putting so much effort into the indoctrination of such young children did not produce adequate results. Finally, as communism progressed there was less fear of the influence of the older generation. As a consequence, the negative attitude toward the role of family in the political socialization processes turned into a positive and the prevailing thought became that

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<sup>4</sup> People in Western societies also use strong ties, but in Eastern Europe the general reliance on those was stronger during communism given that there were restrictions on accumulation, but also use, of material wealth (Wong, 1996)

family should play a dominant role in transmitting communist ideology to children. In this context it was the family's task to create a proper foundation upon which later socialization experiences could be built. It was thought that this could only be achieved through the stimulation of obedience to adults and authority in general. In order for this to occur, the development of strong ties between parents and children was absolutely necessary<sup>5</sup>.

By taking all of these aspects of family social structure into account and following Coleman's theory, we can argue that in Eastern Europe, ties between parents and children were extremely important as resource on which to draw given the lack of other means to improve life chances<sup>6</sup>.

*If this is also true in the context of education, then one would expect to see a higher association between family relationships and educational achievement characterized by strong ties in the communist societies relative to Western ones (Hypothesis 1).*

In addition to the importance of social capital in the family, Coleman also emphasized the relevance of the family's social environment; and in particular its embeddings in the community. One of communism's primary aims was in fact to create a society where collective interests took complete precedence over individual interests. As a result, the importance of community was emphasized. Indeed, 'the norms of collectivism' dictated the lives of Eastern European citizens, who were forced to work in brigades and collectives and had to join organizations where they spent their free time. Neighbourhoods were even designed in a way to ensure the intermingling of social origins (Volker and Flap, 2001). Although all of these policies officially had only one goal, the creation of social integration, unofficially they were used to control social aspects of people's lives. In fact, we have seen that one of the consequences of these policies was a solid reliance on strong ties.

Nevertheless, there was a certain need to be part of the collective, as there were not many alternatives. School, being one of the main institutions of political socialization, naturally promoted collective values. In addition, school was seen as an institution complementary to that of the family in 'raising' socialist citizens. Although the regime abolished the Marxist idea that early child-rearing should be placed entirely in the hands of the state, it never relinquished the idea completely.

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<sup>5</sup> It should be noted in this context that one of the premises of the Marxist ideology is that women should have political and social equality and that child care and education should become a public task (Clawson, 1993). This is in contrast to traditional Western view, where the father is the breadwinner of the family and the mother stays to take care of the child rearing. As a consequence, women were encouraged to participate in the labour market to the same extent as men. Therefore full-time employment of mothers was a much more common phenomenon in the communist countries than in the Western ones.

<sup>6</sup> Such as wealth in the Western countries.

As the state could never completely control what was going on in the private family sphere, the regime recognized that most political indoctrination would have to take place at the school level. Thus it was extremely important for parents to be participating members of the school community. Consequently, parents and children who decided *not* to participate and not develop good social relationships at school experienced significantly more negative consequences than their Western counterparts, given that the alternative to participation was social exclusion. Whereas being a member of the school community in Western societies meant sharing norms and values that encouraged learning, in Eastern Europe it also meant sharing (or purporting to share) the same general ideology<sup>7</sup>. *Following this line of argumentation, I hypothesize that social capital at the school level has a stronger association with educational achievement in communist countries relative to Western societies (Hypothesis 2).*

## **2.4 Cultural capital as a determinant of social stratification**

The importance of cultural capital for educational performance can best be studied in its role of counterbalancing the effects of egalitarian policies. As previously mentioned, one of the main aims of communist de-stratification policies was to eliminate the traditional link between social background, which was made up of social and cultural capital, and educational achievement. Communist policy-makers primarily recognized that the family was one of the basic instruments of social stratification; as a result, educational policies were targeted at increasing educational opportunities for children from lower socio-economic backgrounds while decreasing the opportunities for those from already elevated social positions. The discrimination levelled at bourgeoisie children took the form of limiting their admission to secondary and tertiary education, while those from farming families were favoured for admission (Ganzeboom and Nieuwbeerta, 1994). From this, we can glean that the primary differences between Eastern and Western societies during communism were reflected in educational policies aimed at reducing the privileges of the higher social strata and increasing the access to education for children from working class families.

However, a relevant question remains about the effectiveness of these policies in reaching their goal of reallocating educational opportunities across social classes<sup>8</sup>. Prior research (Ganzeboom

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<sup>7</sup> One could also argue in the tradition of Coleman that schools are embedded in communities in Western countries as well; however, these communities are generally not marked by one religion or ideology. Therefore there are alternatives. In communist countries the situation was more polarized: people were either 'in' or 'out'.

<sup>8</sup> They were also aimed at assuring equality between men and women, as well across regions (urban versus rural) (Mateju, 1993). However, this I will leave out of the scope of my analysis.



and Nieuwbeerta, 1994, Kraaykamp and Nieuwbeerta, 2000, Peschar, 1990, 1993) has shown that in spite of administrative and bureaucratic measures, children's socio-economic background continued to play a dominant role in their educational outcomes; hence social reproduction through education continued under communism.

In order to explain this phenomenon, we look to *the theory of counter selection* put forward by Mateju (1986, 1993). The theory of counter selection essentially explains the association between social origin and educational outcomes in former communist countries by two different counter balancing processes. The first process in question is the one outlined above: the enacting of a series of practices aimed at limiting access to education for children from bourgeois families, and expanding access for those from working class families. In this context, Mateju notes: 'These measures blocked the educational careers of children from higher social strata and were designed primarily to replace free competition in which aspirations, ability, and educational performance at previous levels were probably the most important factor of success' (Mateju, 1993, p. 257).

As a consequence of these measures, the theory of counter selection predicts an initial decline in the effects of social background on educational outcomes. According to this line of reasoning, we can assume that families with higher social status were also the ones that had more cultural capital, therefore the following hypothesis can be inferred about the relationship between cultural capital and educational performance during communism: *The association between cultural capital and educational performance will be weaker in communist societies than in the non-socialist Western countries (Hypothesis 3).*

However, according to the second pillar of the theory of counter selection, the other process is the emergence of a new class of cadre administrators. Contrary to many beliefs' and somewhat paradoxically given the egalitarian ideology, the new elite possessed a significant amount of cultural capital. As the existing research suggests, in addition to cultural codes and competencies, educational credentials were highly valued among the new elites; indeed, the possession of such credentials was found to be one of the requirements for promotion within the political party. Additionally, studies have shown that university graduates were largely overrepresented in the party, particularly among high-ranking officials (Szelenyi, 1987).

Mateju (1993) posits that the emergence of a new elite counterbalances the initial decrease of importance of social origin, as it actually increases its importance. Mateju argued primarily that as the new elite, communist cadres were able to use their bureaucratic authority and social

connections to assure the prestigious educational attainment of their children at institutions of higher education, regardless of their children's qualifications. As a result, educational attainment became strongly dependent on the political and social capital<sup>9</sup>, held by the family of origin, which strongly undermined any meritocratic competition. Furthermore, as the communist party consisted of a new, highly educated elite, its members were also more likely to pass these skills and dispositions on to their children, not only enhancing their access to education, but their educational performance as well. This particular form of cultural capital possessed by children was highly valued by their teachers in the strong intelligentsia tradition in Eastern European societies (Wong, 1999). In sum the cultural capital of the family continued to play the same role for educational attainment and achievement as in the Western societies. *Based on this, the last hypotheses of this paper is that cultural capital had as equal effect on educational achievement in Eastern Europe as in the Western European countries during communism (Hypothesis 4).* This hypothesis in fact contradicts the third hypothesis, as it proposes that communist regime was unsuccessful in creating opportunities for the deprived groups.

### **3 Data and regression techniques**

In order to test the above stated hypotheses, I will use data from the Program for International Student Assessment (PISA) and the Trends in International Mathematics and Science Study (TIMSS). PISA sampled students aged between 15 years and 3 months as the lower bound and 16 years and 2 months as the upper bound at the beginning of the assessment period. The TIMSS target population was 13-year-old students, attending the seventh or eighth grade, depending on each country.

By examining the results of the PISA survey, represented by students' test scores, we can assess how well they are prepared for so-called 'real life'; the objective is to test the application of knowledge rather than its accumulation. The age of 15 is considered a good testing point as it signals the end of compulsory schooling in the countries under consideration and assumes that young people have had enough learning experiences both in and outside of school. TIMSS uses the curriculum - defined broadly - as its major organizing concept and is based on a model of curriculum with three components: 1) the intended curriculum; 2) the implemented curriculum; and 3) the achieved curriculum. Although TIMSS and PISA look at educational achievement

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<sup>9</sup> The implicit assumption here is that individuals who were endowed with cultural capital were also the ones who belonged to elite and therefore has social connections. So we can posit that the possession of social capital is conditional on possession of cultural capital in this context.

from different perspectives, for the purposes of this article it is assumed that this has no influence on the relationships I assess in the empirical portion.

Both PISA and TIMSS provide not only tested scores on mathematics, but a significant amount of background information about the students that took the test as well. This information makes PISA and TIMSS unique in that they not only assess the role of schooling in educational outcomes of students, but also learning opportunities in families, communities or even societies they make up (Gronmo and Olsen, 2004).

The PISA survey has currently been conducted in three different waves: first in 2000, then again in 2003 and 2006. The TIMSS study has also been conducted in three waves: 1995, 1999 and again in 2003. Here I will utilize data from the TIMSS 1995<sup>10</sup> and PISA 2000<sup>11</sup> surveys, in order to test the above-proposed hypotheses. I chose these particular years, as they are closest to the fall of communism; therefore, the effects can be considered the most similar to those found during communism.

Tables of the Appendix to this chapter give an overview of the variables employed in this paper from both the TIMSS and PISA studies, and present their international descriptive statistics and correlation matrices. In order to have a complete data set of all students with performance data and some background data, random missing values are imputed for individuals using the averages of these variables.

### **3.1 The construction of dependent variables**

In order to test the main hypotheses advanced in this paper, I use the student performance scores in mathematics as a measurement of educational performance<sup>12</sup>. In the case of PISA, mathematical literacy is defined as 'an individual's capacity to identify and understand the role that mathematics plays in the world, to make well-founded judgments and to use and engage with mathematics in ways that meet the needs of that individual's life as a constructive, concerned and reflective citizen' (OECD, 2003). In the case of TIMSS, the definition is 'a measurement of student achievement in mathematics and science whose content reflects an

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<sup>10</sup> Where the countries under consideration are Austria, Belgium, Bulgaria, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, The Netherlands, Norway, Poland, Portugal, Romania, Sweden, Spain and United Kingdom.

<sup>11</sup> Where the countries under consideration are Austria, Czech Republic, Denmark, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, The Netherlands, Norway, Poland, Portugal, Romania, Sweden, Spain and United Kingdom.

<sup>12</sup> Reading literacy is only available for the PISA studies and therefore it is left out of the scope of this paper.

international consensus of important mathematical and scientific concepts that students should have learned' (IEA, 2000).

Combining the performance in different aspects of mathematics, the plausible values<sup>13</sup> represent the proficiency mapped onto an international scale with a mean of 500 and a standard deviation of 100, yielding the international achievement scores. This implies that the plausible values are to be interpreted as relative to the mean of all the countries under consideration, in the case of TIMSS, and as relative to the OCED average; in PISA's case, rather than to the absolute values of individuals.

### **3.2 Operationalization of social and cultural capital**

The explanatory variables are derived from the PISA and TIMSS background questionnaires on the characteristics of students, teachers and schools. The information obtained from these questionnaires is used for the construction of variables for social and cultural capital. Following the work of Coleman, the social capital variables can be categorized in two groups. The first one consists of the social capital variables at the family level, while the second one presents the social capital variables at the school level. The following variables portray various aspects of social capital within the family: family form, social communication within the family, working time of parents. Social capital outside of family is proxied by those variables that portray social life (time spent with friends, and club participation) of pupils on one hand; and on the other by variables for social capital at the school level that describe relations i) among pupils; ii) between pupils; and iii) between parents and teachers (cooperative learning, parents' communication with school, student relations). This section describes each of the variables in more detail.

*Family form* is derived from the question of who actually lives with the student at home. Based on the outcomes of previous studies (Astone, McLanahan 1991; McLanahan, Sandefur 1994; Teachman, Paasch and Carver, 1997; Sandefur, Wells 1999), it is assumed that children from single-parent families will receive less attention from their parents as they tend to have less time to spend with them. According to Coleman, this results in a deficiency in creation and maintenance of social capital in the family because these children will have weaker ties with their parents. There are two dummy variables constructed from this question. The control

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<sup>13</sup> Where 'plausible values are imputed as values that resemble individual test scores and have approximately the same distribution as the latent trait being measured. Plausible values were developed as a computational approximation to obtain consistent estimates of population characteristics in assessment situations where individuals are administered too few items to allow precise estimates of their ability. Plausible values represent random draws from an empirically derived distribution of proficiency values that are conditional on the observed values of the assessment items and the background variables' (PISA 2003).

group is a single-parent family. The other two groups are mixed families (student reported to live with mother and the male guardian, father and female guardian or two guardians) and nuclear families (student reported to live with mother and father). The dummy variables are derived from the index of family structure.

The next proxy of social capital to consider is *social communication within the family*, derived from the index of social communication with parents. It measures the frequency with which students discuss with their parents how well they perform at school, have a meal together, or just talk with their parents. It is assumed that children who communicate more with family members have stronger social ties with them.

*Employment status of parents* describes whether the parents work full-time, part-time or do not work at all. Previous literature emphasizes in particular the positive effects of the mother's involvement in her child's education. In this context it is not only important that resources of parents are present in the family (financial and human capital), but also that those are made available to the child by parents' involvement in their education. It is found that the majority of the time it is the mother who makes these resources available to the child, therefore it is assumed here that the role of working full-time has a negative effect on child's educational performance, as the mother will spend less time with her children and therefore be less involved in resource allocation.

As for the social capital variables outside the family, *club participation* used in PISA corresponds to the number of clubs an individual student belongs to. In the case of TIMSS, this variable measures the frequency of contact between students and their friends. Children that are members of clubs and have more contact with their friends are assumed to have higher amounts of social capital outside the family, given the stronger social ties with their friends or club members. *Sense of belonging to the school* is a variable that indicates the level that students feel connected to their school's social environment. Children that feel good at school are assumed to have a good relationship with other students at school and with teachers. Contrary to the previous variable that essentially proxies the amount of fun children have at school, this variable tell us something about the social atmosphere at school, which can foster cooperation among pupils and teachers and therefore have a positive effect on learning. The same is true for *communication between parents and school* which represents how often parents get informed about the performance of their children.

The second group of independent variables contains those that are believed to be good approximations of cultural capital: family cultural resources, family cultural activities and cultural communication within the family. *Family cultural resource* is an index variable that measures how many items such as classical works of literature, works of art and the like are present in the home. In the case of TIMSS, this variable is represented by the number of books a family possesses. It is assumed that families possessing these items have higher endowments of cultural capital. *Students' cultural activities* are an index variable that measures how often students visit museums or art galleries, or attend the opera and classical concerts. The argument here is that the more positive attitudes children have toward cultural activities, the higher their endowments of cultural capital. The next variable measuring social capital is *cultural communication within the family*. This variable is derived from the index of cultural communication which measures how often students engage in communication with their parents or guardians regarding cultural themes including politics, social issues, books, television programs, or how often they listen to classical music together. It is assumed here that if children discuss cultural topics frequently with their parents this indicates high endowments of cultural capital in their families.

### **3.3 Other background variables**

The human capital of parents is approximated by two variables: parental educational level and parental occupational status. *Parental educational level* indicates the highest level of parental education according to national qualifications, which are adjusted following the International Classification of Education with the aim of producing internationally comparable indicators of educational attainment. In the case of this study, the variables for father and mother are kept separate. *Parental occupational status* is a variable derived from the International Index of Socio-Economic Status (Ganzeboom, de Graaf and Treiman, 1992). It is based on the father's or mother's education, whichever is higher. The low values represent low socio-economic status.

The variable that measures financial capital is described as *family financial resources* and reports the possessions belonging to the family including items like number of dishwashers, educational software, cellular phones, and so on. Possession of these items can be seen as a good approximation for the family's wealth.

Other background variables used in the study are *gender*, a dummy variable, where the control groups are girls; *immigrant status*, a dummy variable where the control group consists of native students and the dummies are part of two groups, first- and second-generation immigrants.

Finally, the *type of community*, which consists of two dummies: the control group consists of students who live in a village and the dummy variables signify those living either in a town or a big city (with a population of over one million people).

### 3.4 Imputation

Under the variables to be controlled for in this empirical analysis, there was between 3 percent and 35 percent missing. Excluding these students from the sample would imply a significant reduction in the sample size. Moreover, assuming that the values are randomly missing would in fact be a rather strong assumption for many of the variables. Therefore, the values are imputed following the averages of the extant values of the variables under consideration. In addition, the dummies for missing values (non-missing being a control group) are included in the regression analysis.

## 4 Regression model: Micro-educational production function with a focus on social and cultural capital

Four hypotheses were presented in the introduction of this paper. In order to test these hypotheses, an adjusted version of the educational production function will be estimated for the selected number of European countries that participated in the TIMSS and PISA studies. The concept of educational production function is used to study the output of the educational process, i.e. the educational achievement of students (Hanushek, 1986). The educational production function links the educational achievement to inputs available in and outside of the school such as students' family background characteristics and school resources. Using the student test scores as the output of the educational production function, and estimating the parameters of the educational production function, it is possible to yield evidence on the direction, magnitude and significance of the input-output relationships (Woessmann, 2002). The adjusted version of the educational production function to be estimated in this paper is described as follows:

$$(1.1) \quad T_{ics} = \alpha + \beta_1 S'_{ics} + \beta_2 C'_{ics} + \beta_3 B'_{ics} + \beta_4 dummy * S'_{ics} + \beta_5 dummy * C'_{ics} + \beta_6 dummy * B'_{ics} + \beta_7 dummy + \varepsilon_{ics}$$

Where  $T$  is a mathematics test score of each student  $i$ , in country  $c$ , at schools  $s$ .  $S$  is the vector that measures a set of variables describing social capital at the family level,  $C$  is a vector that represents the measures of cultural capital,  $B$  is the vector representing the other background

variables. Coefficients  $\beta_1, \beta_2$  are vectors of parameters to be estimated. The parameters determine the magnitude and direction of the relationship between social, cultural capital and educational achievements of each student. These coefficients indicate the relationship for all individuals across all of Europe between their endowments of social and cultural capital and educational performance (in Table 1 this is represented in the first column of the results termed ‘Western societies’). The set of vector  $\beta_3$  of parameters to be estimated indicates the relationship between other aspects of students’ social background such as parents’ human capital or financial capital of the family and educational outcomes of children belonging to this family.<sup>14</sup>

The coefficients we are most interested in are those of the interaction terms, namely  $\beta_4$  and  $\beta_5$ . Given that the control group of the dummies are Western societies<sup>15</sup>, these vectors of parameters indicate the differences between the Eastern and Western European models. In other words, the statistical significance of  $\beta_4$  and  $\beta_5$  vector indicates the different roles played by independent variables representing social and cultural capital in East versus the West. As such, they tell us if there is a significant difference between the Eastern and Western European models; they are found in the second column of Table 1.

The net effect of respectively social and cultural capital<sup>16</sup> for the Eastern European model (represented in the last column) is the sum of  $\beta_4$  and  $\beta_5$  vectors and  $\beta_1$  and  $\beta_2$  which vectors determines the strength and direction of the relationship between social capital and cultural capital *and* educational outcomes of students in Eastern Europe.

The sample design of PISA and TIMSS contains varying sampling probabilities for different students from different schools as well as clustered data. In order to correct for this, weighted least square estimation is used here as a regression technique for all the regressions performed with this data set. This technique allows for the assignment of different weights to students. The weights are provided by the PISA and TIMSS data sets. In addition, the cluster design of the study is not ignored, but corrected for by taking into account the fact that the primary sampling units (PSU) are not students but their schools in case of PISA and classes, in case of TIMSS.

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<sup>14</sup> If the de-stratification policies had been successful, the sum of the coefficients would be considerably smaller than in the West, implying no relationship between social background and educational achievement.

<sup>15</sup> Therefore, the dummy variable is defined as ‘1’ if the country belongs to the Former Eastern bloc and ‘0’ if it is a Western country.

<sup>16</sup> But also other background variables, where we are looking at the sum of  $\beta_3$  and  $\beta_6$ .



## 5 Results of the empirical analysis

### 5.1 The effects of social capital at the family level

According to the first hypothesis of this article one would expect to find a higher association between social capital at the family level and educational achievement in the communist countries. In order to test this hypothesis, Model 1 in Table 1 reports the results of the TIMSS 1995 study. The variables that approximate social capital at the family level used in this estimation are *educational support of the family* and *family form*.

Table 1: The association between educational achievement and social and cultural capital in Western and Eastern societies in year 1995

| <b>Model 1: Weighted least square model</b> |                   |                     |                   |
|---------------------------------------------|-------------------|---------------------|-------------------|
|                                             | Western societies | Interaction effects | Eastern societies |
| <i>Family level effects</i>                 |                   |                     |                   |
| Gender (male)                               | 4.661***          | n.s.                | 4.661***          |
| Mother's education                          | 0.535             | 2.324***            | 2.324***          |
| Father's education                          | 3.358***          | n.s.                | 3.358***          |
| Native (ref. immigrant)                     | 17.21***          | -8.668*             | 8.524***          |
| Home educational resources                  | 55.03***          | n.s.                | 55.03***          |
| <i>Social capital in the family</i>         |                   |                     |                   |
| Nuclear family (ref. single family)         | 8.459***          | n.s.                | 8.459**           |
| Educational support                         | -2.211**          | 4.238**             | 2.207**           |
| <i>Social capital outside family</i>        |                   |                     |                   |
| Disciplinary climate                        | 0.531             | n.s.                | n.s.              |
| Influence parents                           | -5.815            | n.s.                | n.s.              |
| Club participation                          | -6.58***          | 4.874***            | -1.71**           |
| Time with friends                           | -8.94***          | 5.173***            | -3.76**           |
| <i>Cultural capital effects</i>             |                   |                     |                   |
| Cultural possessions                        | 14.00***          | n.s.                | 14.00***          |
| Cultural activities                         | 1.408***          | n.s.                | 1.408***          |
| Intercept                                   | 395.6***          |                     |                   |
| R <sup>2</sup> of the model                 | 0.176             |                     |                   |

Note: N = 110006 respondents. Levels of significance: \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ . Source: TIMSS 1995.

The estimates in these early stages of transition show significant differences between Eastern Europe regarding the association between provided educational support in the family and the educational achievement of children belonging to these families. Whereas in the Western societies we observe a negative effect, in Eastern Europe this effect is positive. This can be seen as a rather surprising result; however, it is possible that this variable has a different meaning in

communist countries. Earlier research has shown that it is not entirely clear what educational support really measures.

As Coleman suggested, it can be a sign of taking care of educational performance of a child. On the other hand, parents tend to put more effort on improving educational performance of their children if they have learning problems. If this is the case, it means that this variable measures the reverse effects here, where it is the educational achievement that causes educational support and not vice versa<sup>17</sup>. If this is true then the negative relation is not a surprising result. Given that in socialist societies a relationship between parents and children was important for transmission of norms and values it could be argued that parents in general were more concerned with the education of their children.

As for the role of family form, in both East and West the results show that children from nuclear families perform better than those coming from single-parent families. There is no significant difference in the nature of this relationship between Western and post-communist societies. Therefore, this outcome is not in line with the expectation presented by the first hypothesis. However, the outcome does show support for Coleman's proposition that family form, as an indicator of social capital at the family level, matters for educational achievement both in Eastern and Western societies.

Moving on to later stages of the transition, the results of Model 2 in Table 2 show different outcomes regarding the first hypothesis in the year 2000. In the PISA 2000 study, different variables are used that portray social capital on the family level to those used in TIMSS. Here the role of amount of *social communication* between children and parents, *family educational support*, *family form* and *employment status of parents* are examined as the proxies for social capital on the family level.

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<sup>17</sup> For discussion of this argument see McNeal, 1999.

Table 2: The association between educational achievement and social and cultural capital in Western and Eastern societies in year 2000

| <b>Model 2: Weighted least square model</b> |                   |                     |                   |
|---------------------------------------------|-------------------|---------------------|-------------------|
|                                             | Western societies | Interaction effects | Eastern societies |
| <i>Family level effects</i>                 |                   |                     |                   |
| Gender (male)                               | 13.42***          | n.s.                | 13.42***          |
| Highest occupation status parents           | 0.988***          | n.s.                | 0.988***          |
| Fathers education                           | 4.943***          | n.s.                | 4.943***          |
| Mother education                            | 6.526***          | -3.742*             | 2.78**            |
| Financial resources                         | 1.576             | -4.763**            | -4.736**          |
| Home educational resources                  | 14.59***          | n.s.                | 14.59**           |
| Native (ref. immigrant)                     | 17.09***          | n.s.                | 17.09**           |
| <i>Social capital in the family</i>         |                   |                     |                   |
| Social communication                        | -2.629***         | 6.560***            | 3.931**           |
| Family educational support                  | -14.18***         | n.s.                | -14.18***         |
| Nuclear family                              | 15.13***          | -14.52***           | 0.61**            |
| Mother working fulltime                     | 5.307**           | n.s.                | 5.307**           |
| Mother working part-time                    | 8.043***          | -17.07***           | -9.027**          |
| Father working fulltime                     | 0.993             | n.s.                | n.s.              |
| Father working part-time                    | -21.22***         | n.s.                | -21.22**          |
| <i>Social capital outside family</i>        |                   |                     |                   |
| Teacher support                             | -4.041***         | 4.372*              | 0.33***           |
| Bad disciplinary climate                    | -4.929***         | n.s.                | -4.929**          |
| Student relations                           | 5.405***          | -6.169***           | -0.76**           |
| Sense of belonging                          | 1.404*            | 3.331*              | 4.735**           |
| Cooperative learning                        | 0.611             | 3.544*              | 3.544***          |
| Parents communication school                | -7.182**          | 18.36*              | 11.72**           |
| <i>Cultural capital effects</i>             |                   |                     |                   |
| Cultural communication                      | 5.667***          | n.s.                | 5.667**           |
| Cultural activities                         | 5.239***          | 6.560***            | 11.779**          |
| Cultural possessions                        | 0.242             | 5.943**             | 5.943**           |
| Intercept                                   | 422.9***          |                     |                   |
| R <sup>2</sup> of the model                 | 0.248             |                     |                   |

Note: N = 126716 respondents. Levels of significance: \*p < .05, \*\*p < .01, \*\*\*p < .001. Source: PISA 2000.

According to the PISA 2000 results represented by Model 2 of Table 2, there is a significant difference found in the association of social communication between children and parents and the educational achievement of those children when Eastern Europe and Western Europe are compared. The negative coefficient for the overall model indicates that in Western societies this association is negative, whereas the larger positive coefficient of the interaction term indicates that in the post-communist countries this association is significant and positive. The negative result found in the West is a rather surprising result since according to Coleman's theory this variable would be the best one to describe the parent-child social relationship. The effects

observed in post-communist societies are in keeping with the theory implication, as they show that children who communicate more often with their parents also tend to attain higher achievement. It should also be noted that this coefficient is rather small in both an absolute and relative sense, i.e. when compared with other coefficients that portray social capital at the family level, such as family form or educational support of the family.

As for the educational support of the family, we observe that for the year 2000 a negative association with performance is found in both the East and the West. In addition, there is no significant difference between the Eastern and Western models. Given that this outcome is in line with what we have found in Model 1, it can be interpreted as another argument in favour of the explanation put forth in the previous section: children with difficulties get more educational support from their parents. This means that selection effects are captured by these results rather than the effect of parents' educational support.

Additionally, we observe that children from single-parent families perform worse than those from mixed or nuclear families. This is also in line with the expectation that children from single-parent families will be negatively affected by a smaller amount of social capital in the family caused by the absence of one parent. However, the results in the East and the West differ significantly when it comes to this aspect of social capital. We observe that the coefficient is significantly lower in the East. The differences between the association in Eastern and Western societies could possibly be explained by the following argumentation: Most of the research on the negative effects of divorce in Western countries on educational performance of the children affected shows that it is not the divorce as such that has a negative impact, but the consequences of divorce in terms of general well-being. This change is mostly related to the drop in income, which is not absorbed equally by both parents, and the woman is put in a disadvantaged position. It has also been shown that in societies that favour economic autonomy of the mother<sup>18</sup> these effects are less pronounced (Andress, Borgloh, Giesselmann and Hummelsheim, 2006).

It could be argued that the less pronounced effect in the East is caused by one important structural difference between Eastern and Western Europe: labour markets. Communist ideology emphasized the importance of female employment in its attempt toward the maximum utilization of labour force potential. As a consequence, communist labour markets were characterized by higher female labour participation than capitalist ones<sup>19</sup> (Matysiak and

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<sup>18</sup> Scandinavian countries are a good example.

<sup>19</sup> For example, women's labour force participation rates in Eastern Europe in the 1960s were two to three times higher than in Western Europe (ILO, 2007). Under state socialism in Eastern Europe, for instance, a 'dual earner-female double burden model' was adopted. Women were expected to be workers as well as the primary care

Steinmetz, 2008), which made women less economically dependent on men. Additionally, the state provided significant support in terms of general social policies, such as well-regulated childcare assistance (Matysiak and Steinmetz, 2008). This being the case, we can argue that well-being losses induced by divorce were smaller for the Eastern European children than for Western ones, as women and children were negatively affected to a lesser extent than in the West.

However, the problem of this explanation for the observed difference of the association between family form and educational achievement is that it does not account for the difference in terms of social capital losses induced by divorce. Therefore, we need to take another important aspect of Eastern European families into account; primarily that it was not uncommon that a typical Eastern European household consisted of three generations (Clawson, 1973).

Due to the lack of housing, it was very difficult for young couples to move away from their parents. This implies that grandparents provided another 'shelter' for the family, which could be seen as additional social capital that did not fall apart in the case of divorce. Consequently, there was less distortion between the total amount of social capital in the family than in the Western case. In Eastern Europe, the relationship with grandparents was important in the raising of the children, thus this aspect of social capital in the family should not be overlooked. As a result, children whose parents had separated were still left with a rather high amount of social capital relative to their Western counterparts.

Taking all of this into account, it is not surprising that the negative effect of divorce was less pronounced in the East. However, we did see that different processes were at work here, and the differences of social capital loss induced by divorce are only one part of explanation.

Another interesting result is found in connection to the employment status of both parents. In the case of mothers, we observe a positive effect in both regions for any type of maternal employment. However, working part-time has a stronger effect in the West; whereas in the East, the opposite relationship is found. In the case of Western countries, this supports the result found in previous research that maternal part-time occupation enables mothers to spend time with children and also earn income to afford better childcare while working. This makes part-time employment an optimal choice for mothers in the West (Muller 1995).

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providers for their families (Siemieska, 1997; Geisler and Kreyenfeld, 2005). They were supported in performing their double roles by generous social policies, job guarantees, and low competition in the labour market. In this context, East Germany was the forerunner with a female labour force participation rate of 89 percent in 1988.

Again, the fact that Eastern Europe differs so much in this respect can be explained by the different structure of the labour market. In less developed economies, part-time work is not a widespread phenomenon. This means that mothers that cannot find work will most probably have to settle for part-time jobs, which in the East is characterized by low incomes. Consequently, the win-win situation in the West can be interpreted as lose-lose in the East, where mothers neither earn enough resources to afford good childcare nor do they spend enough time with their children.

When it comes to the role of the father's employment status, we observe the opposite results. Part-time work is very negatively related to educational outcomes in both societies. One of the possible explanations for this outcome is that given the traditional role of the father as the breadwinner of the family in the West and the goal of communist societies to achieve full employment rates, this might mean that fathers without full-time employment have not voluntarily chosen this status. Therefore it is most likely that we find the negative income effect that dominates the social capital effect, meaning that less financial resources available to the family will have a negative effect on the education performance of children belonging to these families.

We can conclude that the obtained results of Models 1 and 2 show little support for the first hypothesis that there is a higher association between social capital at the family level and educational achievement in the communist societies relative to Western ones. We did observe significant differences between Eastern and Western societies regarding this association, but its direction and magnitude were predominately not in keeping with the proposed hypothesis. If speculative explanations put forth for this outcome are true, we can conclude that the variables used to portray social capital at the family level have different meaning in these two societies. A good example of this is employment status of the mother, which has often been examined as a determinant of social capital at the family level for Western countries. This leads me to observe that in the East being employed part-time meant the *inability* to obtain full-time employment, in the West this was mostly a choice. Therefore, its effects on educational achievement across these societies might be different due to the overall state of the labour market and not the loss or gain of social capital endured by it.

## **5.2 The effects of social capital at the school level**

The second hypothesis of this article states that social capital at the school level has a stronger association with educational achievement in communist countries relative to Western societies.

In order to test this hypothesis, I have used the following variables in Model 1: *time spent with friends*, *club participation*, *influence of parents* and *disciplinary climate at school*. For both variables that portray social relationships with peers (time spent with friends and club participation) we observe both in the East and West a negative effect on educational performance. However, such effects are much less prominent in the East; so much so that they are almost non-existent. This result indicates that the time students spend with their friends can possibly be interpreted as a form of distraction from learning and therefore negatively influences their educational performance. In addition, we observe that neither in East nor in the West does the disciplinary climate at school significantly correlate with educational outcomes of the children of that school.

More interesting results were obtained by estimating the same relationship for the PISA 2000 study, not only because of the outcomes but also the fact that more aspects of social capital at the school level are used that could possibly better capture its effects than those available in the 1995 study. Social capital at the school level for the PISA 2000 study is proxied by the variables that better assesses the social atmosphere at school, as they portray the social ties among pupils (*student relations*, *sense of belonging*, *cooperative learning*), between pupils and teachers (*teachers support*) and between parents and the school (*parents' communication*).

Regarding the role of student relations, there is a positive and significant association found in Western societies; whereas this relationship is slightly negative in the case of Eastern societies. As for the sense of belonging, we find that the positive effect on educational achievement is stronger in Eastern Europe. Cooperative learning among students plays a more important role in the East as well. From this we can conclude that the outcomes for two of the three variables that portray social relationships among students at school are in line with the expectations proposed by the second hypothesis. It should also be noted that these effects are only moderate when compared to those that dominate in the overall model, such as family form.

As for the relationship of support between teachers and pupils, the results of Model 2 show a significant negative association in Western societies and a non-existent relationship in the East. The outcome for the Western countries can be explained similar to the negative association between educational support of parents and the educational performance of their children. This means that in the case of teachers, in the West they potentially give most of their attention to children that have problems with learning, which explains the counter-intuitive effects.

Finally, we observe a large positive and significant effect of parent's communication with school in Eastern societies, whereas it is negative in the West. However, the East-West difference

regarding this variable is striking. This makes the effect of parents' communication with school the largest effect of all in the Eastern societies. These outcomes give overwhelming support for the second hypothesis by showing how much social networking between school and parents matters in Eastern societies relative to other factors. As suggested in the theoretical framework, communists consistently emphasized the importance of community over individuals, and we see is that in the case of education this effect is still present<sup>20</sup>.

The negative effect of this variable found in the Western societies can be possibly explained by the same argument as one put forward for the educational support provided by the teachers and social communication within family, meaning that in the West the communication between parents and children mostly takes place when the child has learning problems. This gives us reason to believe that this variable, but as well variables portraying the educational support of teachers and of family, have different meaning in these two societies.

### 5.3 The effects of cultural capital

Two contradicting hypotheses on the association between cultural capital and educational performance were put forward in the theoretical framework of this article; I hypothesized that the association between cultural capital and educational performance will be weaker in communist societies than in the non-socialist Western countries (Hypothesis 3) and that it is also possible that cultural capital had an equal effect on educational achievement in Eastern Europe as in the Western European countries during communism (Hypothesis 4). The first hypothesis is backed by the argument that socialist policies were aimed at destroying traditional links between social background and educational achievement. The second hypotheses is based

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<sup>20</sup> The latter is well illustrated by Lonkila's (1998) comparative study of the teaching profession in post-Soviet Russia and Finland, which includes a detailed analysis following the examination of teachers' diaries and interviews with both Russian and Finnish teachers. The article illustrates that the process of becoming a teacher, as well as the profession itself, is very different in the two countries, especially in terms of the social meaning of work. Lonkila notes that Russian teachers indicated that one of their particular responsibilities involved the moral development of children; therefore emphasizing the importance of a highly personal relationship. Not only did the Russian teachers record significantly higher levels of social ties with pupils and parents than their Finnish counterparts, they also testified to having exceptionally strong and effective bonds with their pupils. Lonkila explains this phenomena as being rooted in the ideology of *vapsitanie*, the moral upbringing concerned with all aspects of children's lives, which was not only seen as the task of pupils' families but of the school as well.

According to Lonkila, the personal relationship between pupils and teachers was not dictated by the regime, but instead was the result of close ties between teachers and parents for the purpose of overcoming restrictions imposed by the regime. Her findings suggest, for example, that work is more important to Russian teachers than for their Finnish colleagues; not in the professional sense, but rather as a social environment that provides an arena for socializing and access to informal resources mediated through work. The profession of teaching comes with a well-developed social network of teachers and parents, the side effect of which also facilitates closer ties between teachers and pupils, thereby accomplishing the moral upbringing. Moreover, if this is the case then this variable has different meaning in the Eastern and Western societies.



on the argument that people from higher social strata also found ways to assure better education for their children under communism, therefore the link between social background and educational achievement did not cease to exist under the communist regime.

It should also be observed that along with home educational resources, the coefficient of cultural possessions is the second biggest in the overall model. If we assume that home educational resources portray the human capital of the family, then we can safely assume that there is overwhelming support for the argument that families that invest in educational and cultural resources continued to provide better opportunities for their children. In fact, this effect is found to dominate all other effects, which is in itself a very important result. This result is also in line with the findings of previous literature, which suggest that communism was in no way effective in destroying the traditional link between social background and educational performance.

The results presented in Table 2 in Model 2 for PISA 2000 show even stronger support for these findings. We see that in Eastern Europe, not only are the cultural communication and cultural activities of the family both positively related to the educational outcomes of the children in these families, but this relationship is even stronger in the East relative to the West. Two of the three variables portraying the cultural capital of the family (cultural activities and cultural possessions) are more strongly positively associated with educational outcomes. The third variable (cultural communication) has the same significant and positive association both in the East and the West. This result contradicts the third hypothesis and suggests that the communist regime not only failed to succeed in eliminating the link between family background and educational performance of children belonging to these families, but it managed to emphasize this link even more when compared to the West.

It should be noted that a possible explanation for differences in the PISA and TIMSS outcomes relates to the age groups they examine. TIMSS studies the educational achievement for pupils at the age of 13, meaning that according to the model of the educational system in Eastern European societies, these children are still in primary school (Wong, 1998), whereas the PISA age group comprises students in secondary school. The implication for the results is that in the case of PISA, cultural capital effects are stronger because they have two functions: traditional symbolic effects, but at this stage they also provide access to better education, as at the age of 15 selection of secondary schooling had already taken place.

When confronted with the outcomes of the empirical analysis, we can safely reject the hypothesis that communism succeeded in abolishing the link between social status and

educational inequality. The results of TIMSS 1995 show overwhelming support for the fourth hypothesis that this association remained equal under communism; PISA 2000's results suggest that communism even emphasized the importance of culture.

These outcomes are in keeping with previous research conducted on this relationship in communist societies outlined earlier. Therefore, we can conclude that cultural capital was a multi-functional asset during communism. It was not only used as an alternative way of social stratification but also as one of the means of social reproduction through its use in the context of education. Its function was therefore similar to that in the West, but not identical, as communism did not allow for the accumulation of wealth as an alternative resource.

#### **5.4 Effects of other background variables**

The models also include variables that portray other aspects of family background, because we know from previous research that all of these are also significantly related to educational performance (Dronkers, 2010). These are parental human capital, their occupational status, home educational resources and immigrant status of the families.

Two variables are used in this paper as an approximation for parental human capital: the highest level of education achieved by the mother and father, and the highest occupational status of the parents. The results of TIMSS 1995 show that there exists a positive relationship between educational achievement of the parents and the educational achievement of their children. This relationship is stronger in the East. The PISA 2000 study confirms this finding. Both fathers' and mothers' educational achievements are positively correlated with those of their children, although there is no difference regarding the magnitude of this relationship between the East and the West. For the year 2000, the estimated model for the PISA study indicates a positive relationship between parental human capital and the educational outcomes of their children. However, the strength of the relationship differs between the East and the West, being stronger in the East.

The same is true for the occupational status of the parents, which is only examined in the PISA data set. A positive relationship is found between occupational status of the parents and the educational achievement of their children. There is no difference in the relationship between the Eastern and Western European model; however, it should be noted that this relationship is rather minimal given the magnitude of its coefficient.

Nevertheless, we should note the relevance of home educational resources, which seem to be one of the most valuable resources in the educational production function in both the PISA and TIMSS studies. In the case of 1995, we find that it has the most significant effect by far on educational performance. There is, however, no difference between the East and the West. A positive effect is found in the years 2000 in both East and West.

Finally, another interesting result of this study is the role played by immigrant status. All studies under consideration find a highly negative effect of being an immigrant on educational performance. In fact, in the case of TIMSS 1995 and PISA 2000 this is found to be the second biggest explanatory factor. However, the negative effect of being an immigrant is smaller in Eastern Europe relative to the West in the case of 1995 study.

Explained within the framework of social capital theories, this outcome can be interpreted as a consequence of the loss of social capital because of moving. However, it is more likely that parents of children coming from these families have different attitudes toward education than their native counterparts; the TIMSS 1995 results showed considerable differences between Eastern and Western European models. Earlier research (Levels, Dronkers and Kraaykamp, 2009) has linked different attitudes toward learning across immigrant populations to their countries of origin. If we assume that there is less cultural diversity between immigrants and natives in the Eastern European societies<sup>21</sup> than in the Western ones, then the difference of these effects is not surprising. However, these are only speculative explanations and given the relevance of this variable, further research on the topic is needed.

## **6 Conclusion**

The study of differences in the relationship between social and cultural capital and educational performance between Eastern and Western societies presented in this article demonstrated application of Coleman's and Bourdieu's theory in an international context. This study showed how the multi-dimensionality of these concepts can be applied in different societal contexts. In the context of societal differences between Eastern, post-communist societies and Western, traditional capitalist societies, association between various aspects of social and cultural capital and educational performance of children are examined. To this end, the empirical analysis consisted in the estimation of a modified version of educational production function. Through

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<sup>21</sup> Given the fact that most of immigrants in Eastern societies come from the neighboring countries

this estimation, the association between the educational achievement of children and their (or their families') social and cultural capital is measured and compared across these two societies.

Several expectations were formulated in the main hypothesis of this article. Regarding social capital at the family and school level, it was hypothesized that they would have a stronger association to educational achievement in the East relative to the West (Hypotheses 1 and 2). As for cultural capital, two contradicting hypotheses were put forward based on the counterbalancing processes that were influencing the traditional link between cultural capital and educational performance; the third hypothesis of this article captured the expectation that there is a weaker link between cultural capital and educational performance in the East compared to the West, whereas the fourth hypothesis proposed that there exists no link between the two.

The empirical results demonstrated very weak support for the first hypothesis. I did find different relationships between aspects of social capital at the family level in these two societies; however, the differences were not in line with the expectations put forth by my hypothesis: single parenthood had negative or no relation to educational achievement, full-time employment status of the mother had the same positive impact as in the West, while part-time employment showed biggest differences. Finally, the most significant difference was found between educational support of the family, where this variable was determined to be negatively associated with educational achievement in Western societies and positively associated with the same in Eastern ones.

My explanation for this divergence regarding aspects of social capital at the family level lies in the possibly different meaning of variables traditionally used to approximate social capital at the family level in these two societies. For example, earlier research has shown that in families where mothers work part-time and both parents contribute to child rearing duties, children will positively influence educational achievement. The explanation for these results is that mothers who work part-time have more time to dedicate to their children than those working full-time. In addition, they also earn resources that will provide them with adequate childcare while at work. A similar argument was used to explain the effects of divorce where the lack of one parent in the family was assumed to have negative consequences on the levels of social capital, and therefore on educational achievement. The underlying idea is that it is primarily the physical presence of parents (and its consequences) that has a positive effect on levels of social capital in the family, thereby positively affecting educational achievement.

What we have seen is that in Eastern societies, children's upbringing was primarily in the hands of grandparents or the state as a result of employment and family policies. Consequently, I argued that the absence of one parent in single parent families did not have a negative effect on social capital nor on educational achievement. This also explains why my results showed a very weak relationship between single parenthood and divorce in Eastern societies.

As far as part-time employment is concerned, the undesirability of such employment in Eastern societies indicates that mothers with part-time employment do not spend enough time with her children, nor do they have desired employment, given that the latter is necessity rather than choice. Accordingly, we observe the opposite (negative) effect in Eastern societies compared to Western ones.

As a result, if we take divorce or the employment status of the mother as an indicator of the amount of social capital in a family without taking into account the structural differences between these two societies, it is not entirely clear what the results of empirical analysis reveal. It is primarily because of these policies that divorce and employment will have different effects on the levels of social capital in the family, and therefore will be the underlying source of educational achievement.

Based on the above, my conclusion is that the indicators of social capital applied in previous studies and used in this one, might not be the most adequate for measuring the level of social capital in the family for the context of this study. The main reason for this is the structural differences of family life and labour markets in Eastern and Western Europe, including composition of the household and the opportunity for full-time employment.

In contrast to the first hypothesis, the empirical results showed significant support for the second hypothesis of this article. A stronger link was established between resources inherent to social relationships and networks at the school level and educational performance than the one observed in the West. These results not only support Coleman's proposition that being an active member of the community of schools and parents positively influences schooling outcomes, more specifically they emphasize the importance of this type of social capital for educational achievement in societies where other productive resources are scarce, such as a family's material wealth. However, also here I have raised my concerns about the validity of the variables used to portray these aspects of social capital, in particular the one of the social relationship between schools and parents.

Regarding the relevance of cultural capital, results showed virtually no support for the third hypothesis; rather, they revealed that communist societies were not able to eliminate the traditional role of the family as the agent of social stratification. Instead, they showed that coming from families endowed with cultural capital remained an important determinant of educational achievement, which corresponds to the fourth hypothesis.

In addition to these effects, the most consistent result of the study regards the effects of home educational resources and immigrant status of the family on child's educational performance. In the case of home educational resources, we find no difference between the East and the West, whereas the negative effect of being an immigrant is much weaker in the East.

The most valuable contribution of this paper is that it demonstrates the relative importance of social and cultural capital, which varies according to different institutional and cultural contexts. In the case of differences between Eastern and Western societies, it is critical to understand how the communist regime influenced through its policies the accumulation and allocation of social and cultural capital in the context of education. As we have seen, educational, but also labour market policies were guided by different incentives than those in Western societies. Therefore, as shown in this article, they also had different consequences on the relative significance of various dimensions of social and cultural capital for educational achievement. Further, the use of social and cultural capital not only enhanced the conversion of social inequality in terms of education, but it also compensated for the deficiencies imposed by communism.

Finally, one should note that there are several important questions left out of the scope of this study that deserve attention in further research. I analysed the relationship between social and cultural capital and educational achievement in a comparative perspective, but I did not take into account the fact that Eastern and Western European societies are not homogenous groups of countries. Future research on this topic should account for differences in social systems in order to achieve more differentiated outcomes across countries. This would be of particular importance where social capital at the family level is concerned, as we have seen that differences in family and labour market policies question the validity of the variables used to approximate social capital at the family level.

Even if we take into account the heterogeneity of the institutional systems of these countries, the question remains how adequate are the variables that measure the social capital at the family level. According to theoretical implications of structural approach to social capital, it is the

physical presence of parents, in particular the one of the mother that is important for transmission of human capital through a social connection between a parent and a child. Whereas her presence seems to be a necessary condition it is not the aim in it self, and the results of the first paper have shown that we can not look only at this aspect of social capital. If not accompanied by the 'right' norms and values, the social connection does not mean much. It is these norms and values that guide the use of social connection, and make it productive. Therefore, as suggested by Coleman, the research on the effects of social capital at the family level on educational outcomes, should always take both of these aspects of social capital into account.

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## Appendix A: Summery statistics

Table 3: Summary statistics of variables derived from TIMMS 1995

| Variables                  | Mean   | Std. Dev. | Min | Max |
|----------------------------|--------|-----------|-----|-----|
| East                       | 0.286  | 0.452     | 0   | 1   |
| South                      | 0.236  | 0.425     | 0   | 1   |
| North                      | 0.201  | 0.401     | 0   | 1   |
| Male                       | 0.490  | 0.500     | 0   | 1   |
| Club participation         | 1.242  | 0.631     | 1   | 5   |
| Time with friends          | 3.072  | 1.118     | 1   | 5   |
| Mother's education         | 3.383  | 1.393     | 1   | 6   |
| Father's education         | 3.543  | 1.391     | 1   | 6   |
| Cultural possessions       | 3.572  | 1.154     | 1   | 5   |
| Cultural activities        | 13.280 | 1.646     | 4   | 16  |
| Native family              | 0.956  | 0.206     | 0   | 1   |
| Nuclear family             | 0.813  | 0.390     | 0   | 1   |
| Home educational resources | 0.831  | 0.175     | 0   | 1   |
| Educational support mother | 0.597  | 0.491     | 0   | 1   |
| Disciplinary climate       | 4.965  | 1.415     | 2   | 8   |
| Influence parents          | 0.125  | 0.331     | 0   | 1   |

*Source: Timss 1995.*



Table 4: Summary statistics of variables derived from PISA 2000

| Variables                   | Mean   | Std. Dev. | Min   | Max  |
|-----------------------------|--------|-----------|-------|------|
| Mother working full time    | 0.478  | 0.500     | 0     | 1    |
| Mother working part time    | 0.226  | 0.418     | 0     | 1    |
| Father working full time    | 0.815  | 0.388     | 0     | 1    |
| Father working part time    | 0.069  | 0.253     | 0     | 1    |
| Native family               | 0.879  | 0.326     | 0     | 1    |
| Mixed family                | 0.065  | 0.247     | 0     | 1    |
| Nuclear family              | 0.742  | 0.438     | 0     | 1    |
| Number of siblings          | 1.754  | 1.323     | 0     | 12   |
| Highest occupational status | 48.188 | 16.121    | 16    | 90   |
| Father's education          | 4.353  | 1.343     | 1     | 6    |
| Mother's education          | 4.305  | 1.370     | 1     | 6    |
| Financial resources         | -0.292 | 1.125     | -5.05 | 3.38 |
| Home educational resources  | -0.119 | 1.093     | -5.93 | 0.76 |
| Cultural communication      | 0.043  | 0.979     | -2.2  | 2.72 |
| Social communication        | 0.092  | 0.979     | -3.65 | 1.2  |
| Family educational support  | 0.001  | 1.016     | -1.49 | 3.35 |
| Teacher support             | -0.004 | 0.967     | -3.03 | 1.95 |
| Disciplinary climate        | -0.034 | 0.996     | -2.92 | 2.96 |
| Student relations           | 0.014  | 0.984     | -2.9  | 2.84 |
| Achievement pressure        | -0.011 | 1.015     | -4.35 | 2.75 |
| Sense of belonging          | -0.018 | 0.957     | -3.4  | 2.33 |
| Cultural activities         | 0.121  | 0.993     | -1.28 | 2.93 |
| Cultural possessions        | 0.076  | 0.975     | -1.65 | 1.16 |
| Cooperative learning        | 0.045  | 0.863     | -3.02 | 2.46 |
| Parents relation            | 0.540  | 0.498     | 0     | 1    |
| Public school               | 0.878  | 0.327     | 0     | 1    |
| Parents communication       | 4.113  | 0.960     | 0     | 5    |
| Native family               | 0.879  | 0.326     | 0     | 1    |

*Source: PISA 2000.*

## **Appendix B: Detailed description of scaled variables of TIMSS 1995**

### **Plausible values of mathematics**

The construction of the TIMSS achievement scores is based primarily on item response theory (IRT) scaling methods. The IRT scaling method was used to produce a score by averaging the responses of each student to the items in the student's test booklet in a manner that takes into account the difficulty and discriminating power of each item. (IEA, p.1-15). Achievement scales were produced for five mathematics content areas (fractions and number sense; measurement; data representation, analysis, and probability; geometry; and algebra), as well as for mathematics overall.

When all countries participating in 1995 at the eighth grade are treated equally, the TIMSS scale average over those countries is 500 and the standard deviation is 100. The average and standard deviation of the scale scores are arbitrary and do not affect scale interpretation.

To allow more accurate estimation of summary statistics for student subpopulations, the TIMSS scaling made use of plausible-value technology, whereby five separate estimates of each student's score were generated on each scale, based on the responses to the items in the student's booklet and the student's background characteristics. The five score estimates are known as "plausible values," and the variability between them encapsulates the uncertainty inherent in the estimation of these scores. (IEA, p.1-15)

### **Home educational resources**

This is a three-level index of home educational resources that is constructed from students' responses to three questions: number of books in the home, educational aids in the home (computer, study desk/table for own use, dictionary), and parents' education. Students were assigned to three different levels according to their answers, 'high', 'medium' and 'low'. Students were assigned to the high level if they reported having more than 100 books, having all three educational aids, and that at least one parent finished university. Students at the low level reported having 25 or fewer books in the home, not all three educational aids, and some secondary or less to be the highest level

of education for either parent. Students with all other response combination were assigned to the middle category (IEA, 1999).

## **Appendix C: Detailed description of scaled variables of PISA 2000**

### **Plausible values of mathematics**

The plausible values in mathematics stand for random values for each randomly selected student from an estimated ability distribution of students with similar item response patterns and back- grounds. The idea behind is that these values adequately represent estimates of parameters of student populations, instead of individual student performance. The Pisa 2000 database provides five plausible values for mathematics. The average of these plausible values is used as dependent variable in paper 1 of this thesis. These plausible values are transformed to a scale with mean of 500 and a standard deviation of 100 (OECD 2000).

### **The indices of the Pisa 2000 study derived from the student questionnaires**

The following overview of the indices gives detailed information on the indices derived from the student and school context questionnaires of the Pisa 2000 study.

The indices summarize responses of students or school representatives to a number of questions. Structural equation modeling is used to confirm the theoretically expected behavior of the indices and to validate their comparability across countries. The indices are scaled using a weighted maximum likelihood estimate, using a one-parameter item response model with three stages. (Estimation of the parameters followed by computation and standardization of the estimates) (OECD, Pisa 2000, p. 29)

### **Highest occupational status of parents**

This variable represents the highest occupation status of either mother or a father, which ever is highest. It is based on the Pisa International Socio-Economic Index of Occupational Status, derived from students' responses on parental occupation.

The index captures the attributes of occupations that convert parents' education into income. The index was derived by the optimal scaling of occupation groups to maximize

the indirect effect of education on income through occupation and to minimize the direct effect of education on income, net the occupation (OECD, PISA 2000, p. 30)

### **Parental education**

The classification of the highest education level of father and the mother of each student on the basis of national qualifications, which were then coded in accordance with the International Standard Classification of Education (ISCED 1997). The following categories are then obtained for each of the parents:

1. Did not go to school
2. Completed ISCED level 1 (primary education)
3. Completed ISCED level 2 (lower secondary education)
4. Completed ISCED level 3B or 3C (upper secondary education, direct access to labor market)
5. Completed ISCED level 3A (upper secondary education, access to tertiary education)
6. Completed ISCED level 5A, 5B or 6 (tertiary education)

### **Index of home educational resources (weighted likelihood estimate index)**

This index is derived from students' reports on the availability of the availability of the following: 1) dictionary, 2) a quiet place to study, 3) a desk for study, 4) textbooks and 5) the number of calculators at home.

### **Index of social communication with parents**

This index was derived from students' reports' on how often their parents engaged with them in the following activities: 1) discussing how well they are doing at school, 2) eat a meal with them around the table and 3) spend time simply talking to them.

### **Index family educational support**

This index is derived from student's' reports on how often the following people work with them on their schoolwork: 1) their mother, 2) their father, 3) their brothers and 3) sisters.

**Index of teacher's support**

This index was derived from the students' reports on how often the following happens at school: 1) a teacher shows an interest in every student's learning; 2) the teacher gives students opportunities to express opinions, 3) the teachers helps students with their work, 4) the teachers continues teaching until the students understand, 5) the teacher does a lot to help students, 6) the teachers helps students with their learning. All of the Pisa indices to be found in the rest of this paragraph are weighted likelihood estimates.

**Index of disciplinary climate (Weighted likelihood estimate index)**

This index derives from students' reports on the how often the following happens in their class: 1) their teacher has to wait long time for students to calm down, 2) students cannot work well, 3) students don't listen to what the teacher says, 4) students don't start working for a longtime after the lesson begins, 5) there is a noise and disorder, 6) at the start of the class there is more than five minutes spent on doing nothing.

**Index of teacher – student relations**

This index derives from the students reports on the extent to which they agree with the following statements regarding their relation with their teachers: 1) students get along well with most of their teachers, 2) most teachers are interested in students' well-being, 3) most of the teachers really listen to what they have to say, 4) if they need extra help, they will receive it from their teachers, and 5) most of their teachers treat them fairly.

**Index of students' sense of belonging in the school**

This index derives from students' report on the extent to which they agree with the following statements regarding their social environment at school: 1) I feel like an outsider, 2) I make friends easily, 3) I feel like I belong, 4) I feel awkward and out of place, 5) other students seem to like me, 6) I feel lonely.

**Index of cultural communication with parents**

This index derives from students' reports on how often they engage with parents in the following type of activities: 1) discussing political and social issues, 2) discussing books, films or television programs, 3) listening to classical music.

**Index of cultural activities**

This index derives from activities that relate to classical culture and is based on the students' report on how often they participated in the following activities during the proceeding year: 1) visited a museum or a gallery, 2) attended and opera, ballet or classical symphony concert, 3) watched live theater.

**Index of Cultural possessions**

This index derives from the students' reports on the amount of possession at home of the object relating to classical culture such as 1) classical literature books, 2) books of poetry and 3) works of art.

**Index of family wealth**

This index derives from students' reports on the availability of the following things at home: 1) dish- washer/room of their own/educational software/link to internet and 2) number of cellular phones, television sets, computers, motor cars and bathrooms at home.

**Index of co-operative learning**

This index derives from the students' reports on their agreement with the following statements: 1) I like to work with other students, 2) I learn the most when I work with other students, 3) I like to help other people do well in a group and 4) It is helpful to put together everyone's ideas when working on a project.



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