

CHAPTER THIRTEEN

ESCUELA NUEVA'S IMPACT ON THE PEACEFUL SOCIAL INTERACTION OF CHILDREN IN COLOMBIA

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This chapter presents the results of research on the impact of *Escuela Nueva* methodologies on the peaceful social interaction of children. Three main research questions are addressed. First, does the *Escuela Nueva* schooling methodology have an impact on the peaceful social interaction of children? Second, do the perceptions and behaviour of families and the community change as a result of the influence of schooling methodologies? Third, what long-term impact does *Escuela Nueva* have on selected aspects of democratic and peaceful social interaction behaviours? The chapter will address these questions in three stages. First, it briefly describes *Escuela Nueva* methodologies and reviews previous evaluations of cognitive and behavioural achievements. Second, it describes methods, data bases and statistical procedures used to address the research questions. Third, it presents the results of the analyses in relation to the three main questions.

As part of the analysis of the first question, the impact of external levels of violence on the peaceful social interaction of children was evaluated. The relevance of this research for a country like Colombia, where it was applied, stems from the fact that it has one of the highest rates of homicide in the world. The analysis of the second question goes beyond the debate about the relative importance of family and school in the formation of the social behaviour of children, into showing that these are not independent causal entities. For that, it develops in some detail various relationships between schooling models and family behaviour. The third question is a first approximation to a comparative evaluation of the long-term effects of primary school methodologies on young adults.

*ESCUELA NUEVA**The methodology*

Escuela Nueva is an educational innovation applied since 1976 in Colombia and other countries of the world. It is intended to promote 'active, participatory and cooperative learning'² among primary school students. The model combines a classroom pedagogy (centred on self-paced and self-directed learning guides, and multigrade schooling) with student government, and with spaces for par-ent and community involvement. It has been mainly applied in the rural areas, but in recent years it has reached urban schools, where it is known as *escuela activa*.

Participation of children and teachers in all components of the schooling system is a central characteristic of *Escuela Nueva*. Each procedure and each agent is part of a participatory process.³ Individual learning guides, student government, parent and community workshops, and teacher training are intended to build social knowledge and practice democracy. The education process is defined as a project that is shared by students, teachers, administrative agents and the community.⁴

In Colombia, approximately 20,000 of the 29,896⁵ rural public schools claim to follow the methodology of *Escuela Nueva*. In Guatemala and Nicaragua, school reform programmes based on *Escuela Nueva* have reached 2,000 schools.⁶ Other countries have implemented projects that take some of the features of this model. More than 100 Chilean teachers have been trained in Colombia; 3,800 *escolas ativas*, based on the same principles, are operating in Brazil; in Paraguay they have been called *mitairu*, a Guaraní word; and in the Dominican Republic they are known as *escuelas multigrado innovadas*. The methodology has also been influential in all Central American and Andean countries, and in some countries in Africa and the Philippines. In Egypt, individual guides and manuals were published in Arabic. Mexico, Panama, Honduras, Salvador and Guyana are carrying out pilot programmes.⁷

Escuela Nueva was created in 1976, when Colombian rural schools did not offer complete primary education. One of its stated purposes was to 'provide complete primary education and improve the efficiency of rural schools, especially multigrade schools'.⁸ The project was created based on UNESCO's *unitary school* and was complemented with pedagogic strategies used in multigrade schools that appeared to be effective in rural schools.⁹

As a system, *Escuela Nueva* integrates curricular, administrative, community-involvement and teacher-training strategies. It develops a curriculum centred in daily life, so that contents are relevant both to children

and the rest of the community. Evaluation and levelling are flexible, in the sense that children may meet their learning goals according to their own learning rhythm and time available.

This methodology implements several characteristics borrowed from multigrade schooling:¹⁰

- Children of different ages and grades may share classroom and tutor.
- Tutors stay with each child during sufficiently large time spans to support individualised learning by students.
- Teachers are trained in group management and the simultaneous use of curricula for children of different ages.
- Classroom spaces are organised to facilitate multigrade schooling.
- A sequence of workshops ensures the training and follow-up of teachers.¹¹
- A workshop led by a national team trains regional teams. The objective is to have regional training teams promoting and organising the system.
- Initiation workshops, where teachers learn to implement the system in the school and the community, take place. When the teacher has been able to mobilise the community in favour of the new model, she attends other levels of workshops.
- Teachers are trained in the use and adaptation of individual study guides. The teacher learns to apply the guides in the specific context of her school.
- Teachers are trained to organise and use the school and classroom libraries.
- Teachers attend local follow-up workshops. As the model evolved, they became 'micro-centres' where teachers learn through the evaluation process, analyse individual problems and construct solutions in a participatory learning process.
- Model schools have been organised. These are schools where the model has been fully and successfully implemented. Teachers from the whole region attend special workshops at these schools.

Evaluations of Escuela Nueva

Several evaluations of *Escuela Nueva* have been made concerning the impact of this methodology on both cognitive competences and civic and democratic behaviour.

Cognitive achievements

The evaluations of Rojas and Castillo (1988), Psacharopoulos (1993) and McEwan (1998) have found the same results: '*Escuela Nueva* schools have better levels of Spanish and mathematics in tests to third and fifth graders. On the other hand, it was found that *Escuela Nueva* children have higher degrees of self-esteem'.

Rojas and Castillo (1988) and Psacharopoulos (1993) used the results obtained in the Ministry of Education test of 1987 in Spanish, mathematics, creativity, self-esteem and social and civic behaviour in 168 *Escuela Nueva* rural schools and 60 conventional rural schools, in the regions of Boyaca, Caldas, Cauca, Córdoba, Cundinamarca, Huila, Nariño, Norte de Santander, Santander, Sucre, Valle del Cauca and Tolima. In these regions, *Escuela Nueva* was already well established and developed as a system. Besides, schools in the sample of each region were selected so as to ensure that the system had been implanted at least three years earlier.

Rojas and Castillo (1988) analysed the differences in the achievements reached by students of conventional and *Escuela Nueva* programmes. Their research uses a set of qualitative variables to show that *Escuela Nueva* schools are more involved in the life of the community, and their teachers are better trained and reach higher levels of fulfilment. Although 42% of the *Escuela Nueva* schools in the sample had not established a student government, these schools achieved the highest levels of participation in activities related with the community. These authors conclude that '*Escuela Nueva* shows significantly higher test scores than traditional schools in civic behaviour, social self-concept, third grade mathematics and third and fifth grade language' (Rojas and Castillo 1988: 189).

Psacharopoulos (1993) estimated a production function for the students of third and fifth grade in each type of schooling system: *Escuela Nueva* and conventional. Applying ordinary least squares, he found that third-graders attending *Escuela Nueva* exhibit higher and statistically different achievements in mathematics, Spanish, creativity and self-esteem tests. Further, the achievements of the fifth-graders of *Escuela Nueva* were higher and statistically different in Spanish tests, but were not significant in other tests. Through the estimation of a logit model, he demonstrated that fifth-graders of *Escuela Nueva* have a lower probability of drop-out than students of conventional schools, and found that the labour experience of children – very common in Colombia's rural areas – has the higher explanatory power for the probability of drop-out.

McEwan (1998) criticised the estimation of Psacharopoulos (1993). He argued that although Psacharopoulos' model is parsimonious, its results are biased by the omission of important input variables. Psacharopoulos' study

does not take into account variables reflecting the inputs of *Escuela Nueva* associated to the school and the classroom. This omission introduces a bias. The performance of the average school of each type is compared, but this ignores different degrees of implementation of *Escuela Nueva* methodologies, and the observation that some conventional schools apply certain features of *Escuela Nueva*.

Accordingly, McEwan (1998) used data from a 1992 survey of 52 randomly chosen schools (24 *Escuela Nueva* and 26 conventional), in the regions of Cauca, Nariño and Valle. He did not establish an additional criterion to select the schools (like the number of years of operation with the new methodology), so his results might be biased by the number of years that *Escuela Nueva* schools have been working with this methodology: students reported in *Escuela Nueva* might have studied until the fourth grade with the traditional system. Consequently, the results may have underestimated the effects of *Escuela Nueva* methodologies on students' achievements.

Nonetheless, McEwan measured the occurrence of certain inputs that are specific to the *Escuela Nueva* methodology. The proportion of classroom libraries of *Escuela Nueva* doubles that of conventional schools (66% and 33%). Group learning in Spanish and mathematics is significantly more frequent in *Escuela Nueva*. Individual learning predominates in conventional schools.

As in previous studies, McEwan measured the achievements of third and fifth graders in Spanish and mathematics tests.¹² In both tests, third- and fifth-graders of the *Escuela Nueva* system reached a statistically higher score than students of the conventional system. The difference in the results obtained for fifth-graders is not as high as for third-graders. The impact of the *Escuela Nueva* system on mathematics results is not as large as that observed for Spanish. The author suggests that this might be related to a lower quality of the fifth-grade mathematics study guide.

In addition, McEwan observed that although less than 50% of *Escuela Nueva* schools were fully equipped with basic inputs required by the system to function, their impact on the community is consistently larger than that of other educational systems.¹³ He concluded that future research should be done to clarify which of the elements of the *Escuela Nueva* system may be eliminated to reduce administrative costs, without affecting the positive effects of the system on student achievements. Also he suggested further research on what happens in the classroom.

The studies by Psacharopoulos, Rojas and Castillo and McEwan are perhaps the most comprehensive comparative evaluations of *Escuela Nueva* and conventional methodologies made before 2001, but there are other important evaluations of *Escuela Nueva*.

Misión Social and DNP (1997) used the results of the SABER tests to study the achievements of *Escuela Nueva*. Controlling for the socio-economic level of the households and for the type of area (urban or rural), they found that students of the *Escuela Nueva* system show a better performance. *Escuela Nueva* students with a socio-economic level lower than average achieve higher test scores than high-income students of rural households attending conventional schools. Their main conclusion is that *Escuela Nueva* methodologies are able 'to compensate for limitations in initial endowments related to the low socio-economic level' of students. This was the first study that applied multilevel analysis to measure academic differences among students. Ordinary least squares had been applied by all previous statistical evaluations, thereby ignoring the hierarchical structure of educational data.

In 1998, the Latin American Laboratory for the Evaluation of the Quality of Education (LLECE) published a study comparing the level attained in mathematics and language by rural and urban elementary schools in all Latin American countries.¹⁴ It found that Colombia, where the majority of rural schools practise *Escuela Nueva* methodologies, had the second highest level in fourth-grade mathematics, after Cuba. Also, contrary to what was expected, rural schools outperformed urban centres and large cities in fourth-grade mathematics. In third grade, Colombian rural schools also were ahead of their urban counterparts in language, and ahead of both urban centres and megalopolis in mathematics. This country was actually the only case in Latin America where rural schools had some advantages over urban centres and large cities.

Beyond Colombia, a study from Nicaragua is reported in the *Estudio Anual 2003*, and studies of Nicaragua, Guatemala and the Philippines are reported in *The Effects of Active Learning Programs in Multi-grade on Girl's Persistence in a Completion of Primary School in Developing Countries* (Juárez and Associates 2003). Methodologically these studies do not go beyond the comparison of average values, but conclude that students in *Escuela Nueva* schools exhibit higher academic test scores, deeper involvement of the community, higher absorption rates and lower drop-out and repeating rates than conventional schools.

Some of the studies reported in this section address the issue of explaining the cognitive achievements of *Escuela Nueva*. Perhaps the most comprehensive explanation is found in Rojas and Castillo (1988), who attribute the success in cognitive achievements of *Escuela Nueva* to the following reasons:

- The *Escuela Nueva* system provides complete primary education; at the time of their research, conventional education did not in 60% of these schools.
- The programme provides children with free study guides.
- *Escuelas nuevas* have a better endowment of textbooks and libraries than conventional schools.
- The objectives of the curricula and their content are relevant for children and their families.
- Children practise group learning.
- Teachers are facilitators: they guide, supervise and evaluate children.
- Promotion to the following level is flexible and students progress at their own rate.
- The flexibility of the system may be related to lower drop-out rates, and these to higher cognitive achievements.
- Students participate in school organisation through student governments.
- The classroom is a lively place with activity centres, thematic corners and learning materials.
- The school has become an information centre for the community, containing information about families and their activities.

Civic and democratic behaviour

While many of the evaluations have focused on academic achievement, some appraisals in Guatemala and Colombia have focused on the democratic behaviour of children. Based on direct observation of behaviour, Chesterfield (1994) compared the impacts of *Escuela Nueva* and conventional systems on the democratic behaviour of students in the first and second grades, in twenty rural schools of Guatemala, ten applying *Escuela Nueva* and ten applying conventional methodologies. The study assumes that schools can generate democratic behaviours and attitudes if they enable students to: (a) demonstrate or express rational, empirical, and egalitarian beliefs about how things should work in different social situations; (b) practise interaction with peers and adults; (c) become involved in the political and social life of the school.

Each of these indicators was evaluated through the observation of specific behaviours: (a) was measured through taking turns and assisting others in different activities; (b) was measured by expressions of opinions and attitudes, and by the ability to choose among a set of viable options; (c) was measured by student participation in school organisations, such as student government, and leading fellow students when carrying out different activities.

Chesterfield (1994) found that 80% of the occurrences of turn-taking involved *Escuela Nueva* students. This result remained unchanged when the sample was separated by gender. Perhaps the most interesting observation concerned the practice of taking turns; taking turns in conventional school is always related to waiting in line to have the teacher review one's work, while in *Escuela Nueva* taking turns was a spontaneous reaction.¹⁵ However there was no difference between the two types of school on the proxy for rational, empirical and egalitarian beliefs, i.e. assisting others in their academic work, a result that the author relates to the young age of the children.¹⁶ Nonetheless, the few cases observed occurred in the case of *Escuela Nueva* students. As for inter-personal effectiveness, it was measured through the child's response to positive and negative feedback when completing a task, and the involvement of the student in the political and social life of the school. Results obtained for the involvement of the student in the political and social life of the school were not statistically different between the two types of school. This is explained by Chesterfield as the result of young age, when they are perhaps more attracted by other activities. Nonetheless, *Escuela Nueva* students are more interested in leading others when accomplishing group tasks.¹⁷

The analysis of Chesterfield assumes that the school environment and methodology are the only factors affecting civic and democratic behaviour. The study does not consider family and community environment. On the other hand it is the first evaluation of *Escuela Nueva* based on direct observation of behaviour, and this allows the construction of a detailed story of what happens in the school and the classroom.

Pitt (1999) extends Chesterfield's study substantively, in scope and methodology. Following Chesterfield's assumption that the school is the main setting where citizens form their attitudes towards democracy and political participation, Pitt (1999) asks three fundamental questions that guide her study of Colombian *escuelas nuevas*: how do *Escuela Nueva* methodologies function in the schools, how does the formation of civic knowledge differ in the two types of school, and what is the effect of civic education on *Escuela Nueva* alumni?

Pitt (1999) understands civic education as self-government, and this is determined by the knowledge of the ideals of democracy. Civic education is composed of three elements: civic knowledge, civic skills and civic dispositions. Civic knowledge is the background that a person must know before she may talk about a political event. Civic abilities refer to the intellectual abilities used to exert rights and duties. Finally, civic dispositions are understood as motivations and behaviours that must be developed in each individual for democracy to be maintained and diffused. Its main results are: (a) classroom climate is significantly better in *Escuela Nueva* schools than in

the control group of *colegios agropecuarios*; (b) the level of democratic indicators is higher in *Escuela Nueva*; and (c) civic participation does not show significant differences in the two types of schools.

Methodologically, this research is very successful in combining diverse instruments to reach consistent conclusions about democratic behaviour of primary and post-primary school children. The evaluation of behaviours is based on interviews, discussion panels, surveys and direct observation of all agents concurring at the school. But the relationship between school, family and community in forming these behaviours is not explored.

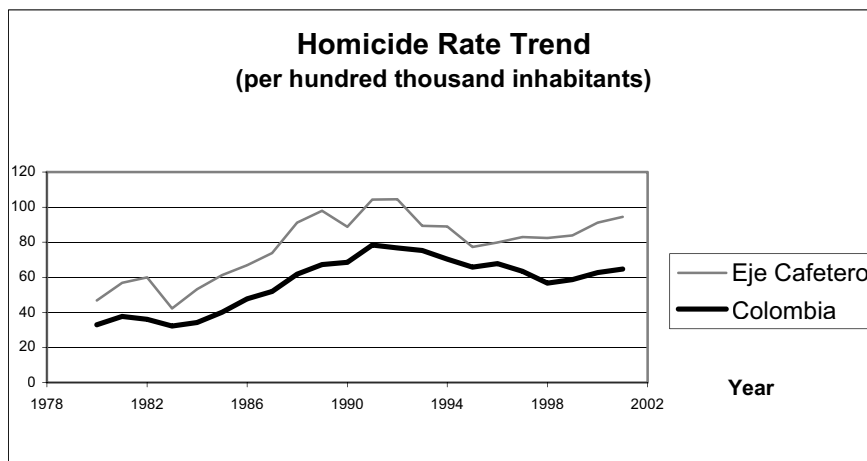
RESEARCH QUESTIONS AND METHODS

Research questions and their relevance

The focus of the new research reported in this chapter is a comparison of *Escuela Nueva* and conventional schooling in terms of their impact on the peaceful social interaction of children, in six municipalities of the Eje Cafetero region of Colombia. *Escuela Nueva* has been implemented for many years in this region, ensuring that implementation indexes are high enough to make comparisons possible.

The importance of this issue stems from the fact that Colombia has one of the highest homicide rates in the world. Additionally, the levels of violence of the Eje Cafetero region have been much higher than the average of the whole country, as shown in Figure 13.1.

Figure 13.1 Homicide rates, Eje Cafetero region and Colombia, 1980–2001



Source: Forero-Pineda and Escobar-Rodríguez (2004) based on statistics provided by DANE and DIJIN

This is of interest because the levels of violence in the communities could be related to the peaceful social interaction of children in schools. Though the results of this study are limited by the fact that only six municipalities are observed, the model controls for the impact of the level of violence in the municipality, measured by the rate of homicides, on the peaceful social interaction of children.

The first question dealt with in the research, the impact of schooling methodologies on the peaceful social interaction of children, needs to be complemented with other questions and analyses, since the behaviour of children in schools is a component of an intricate network of relationships between these children, their schools, their families, and the community. For this reason, an understanding of the determinants of this behaviour requires exploring other closely connected relations. Focusing on the impact of schooling methods and other school-related variables, on the families and the communities, and exploring the traces left by the schooling experience on alumni, a set of subsidiary relevant results is obtained. The hypothesis is that there are significant differences in the perceptions of parents and the behaviour of alumni of the two types of schools.

The research reported in this chapter differs from previous work on *Escuela Nueva* in three respects. First, it goes beyond the debate about the relative importance of school and family in the formation of democratic and peaceful social interaction behaviour, into analysing relations *between* schools and families, and measuring the impact of schooling systems *on* families and communities. Second, it explores the relationships among community, school, family and student variables, and their impact on communicative action, democratic behaviour and the peaceful social interaction of children. Third, it measures the traces of schooling methods on the behaviour of alumni.

These measurements and observations are done using different statistical methods, some of which are also new in the evaluations of *Escuela Nueva*. In the case of the behaviour of children, the methodology used is based on hierarchical multilevel models. This statistical technique allows minimising biases when estimating the impact of variables that belong to different nested contexts. Individual, school and community variables intervene as determinants of the behaviour of children, but large groups of children share the same values of school variables, and this lower variance introduces a bias against the variables of the higher level (school variables).

Until now, the academic literature has not used multilevel analysis to understand the impact of the educational system upon the democratic

behaviour and the peaceful social interactions of children. The conclusions of previous behavioural studies on *Escuela Nueva* rely on direct observation and average value comparisons. In addition, this study controls for the different levels of implementation of the *Escuela Nueva* system. Some previous studies recognise the limitation of their comparisons, for not taking into account that inputs of *Escuela Nueva* are not equally provided in all schools and classrooms, and that *Escuela Nueva* methodologies have substantially permeated conventional schools. In this research, the use of the variable 'level of implementation of *Escuela Nueva* methodologies' permits a consideration of the effects of these two phenomena.

Statistical methods

All measurements and evaluations in this study are made comparing *Escuela Nueva* and conventional schools. The analysis of the impact of community, school and individual variables on peaceful social interaction uses hierarchical multilevel models. For the analysis of the relationship between schools and the family, and of the long-term traces left by the school on the behaviour of alumni, the research uses logit, probit and ordered-probit probabilistic models.

The main dependent variable in the first part of the analysis is the peaceful social interaction of children (*convivencia*). The rest of the analysis, which explores the above-mentioned complementary relationships, evaluates the impact of the main explanatory variable, the level of implementation of *Escuela Nueva* methodologies, on different variables describing the behaviour of the family, the community and alumni.

The following two sub-sections respectively describe the methodologies and present the results of the statistical exploration.

Peaceful social interaction and its determinants

Convivencia, or peaceful social interaction, is a concept of common use in Colombia to identify the conditions associated with non-violent human relations. Theoretically, it is composed of (i) active respect for others, (ii) universal solidarity, (iii) fair play and (iv) equity.¹⁸

Active respect was measured through questions and situations asking students about the difficulties they experience when studying or playing with children of the opposite gender, or of a different race or geographical origin. Universal solidarity was measured through questions and situations asking students about their behaviour when they relate to a stranger who is

facing social problems. Fair play was measured by questions related to situations where they could take advantage of breaking rules. Equity was measured through situations where distributional issues were at stake.

Peaceful social interaction of children is assumed to be affected by different contexts. Four levels of determinants are defined accordingly: the student, the classroom, the school and the municipality. Appendix A contains the questions that were used to build this variable.

At the individual (student level) it is assumed that peaceful social interaction is affected by individual cognitive and behavioural variables: the development of communicative skills (communicative action) and democratic behaviours. Higher levels of communicative skills and democratic behaviours are expected to be related to higher levels of the students' peaceful social interaction. The results are also controlled by several variables associated with this level: age, grade, gender, moral development and household socio-economic level. The socio-economic level of the family is very hard to obtain for all children. Besides, the variance of income among the 343 parents who participated in the survey is very low. For this reason, though it is certainly a variable that may change some results in a wider context, it was not included.

For parsimony in multilevel modelling, school and classroom variables, were included in the same hierarchical level. In this level, the main independent variable is the degree or level of implementation of *Escuela Nueva* methodologies. The study controls for the impact of school and classroom climate, school management, level of education of teachers, and quality of the school infrastructure (defined in a scale from 1 to 3). We have called those variables "school variables", but we are actually referring to classroom variables, as they may take quite different values in the same school. Even the index of implementation of *Escuela Nueva* may vary between two classrooms in the same school. Other variables take the same value for all classrooms in one school.

The municipality level was explored to take into account the possible effects of the external levels of violence on the behaviour of children, the influence of a rural–urban environment and a dummy variable for the sub-region where the municipality was located. The third level includes variables related to the municipality: the urban or rural environment of the school, the size of the municipality, the current rate of homicide of the municipality and the sub-region (*departamento*). The third level was not statistically significant. At the risk of introducing a bias, an additional exploration was made putting these variables at the second level, but again none of them was significant at this level, reinforcing the conclusion that only school and individual variables are significant determinants of the peaceful social interaction of children, as is shown in the following sections.

Appendix B describes in more detail the variables of the different hierarchical levels just listed. Nonetheless, additional comments are necessary concerning the 'level of implementation of *Escuela Nueva* methodologies', and the three indicators that were used to measure it.

Table 13.1 Classroom rankings and *Escuela Nueva* implementation indexes

Classroom ranking	Classroom index		Teacher index		Global index	
	New	Conventional	New	Conventional	New	Conventional
1-10	10	0	10	0	8	2
11-20	10	0	9	1	8	2
21-30	9	1	8	2	7	3
31-40	1	9	3	7	7	3
41-49	0	9	0	9	0	9
Total	30	19	30	19	30	19

The index of implementation of Escuela Nueva methodologies

Although the system of *Escuela Nueva* is not established in all primary rural schools of Colombia, its influence has been pervasive and most rural conventional schools have adapted some aspects of its methodologies. Though many schools practise the whole combination of methodologies of *Escuela Nueva*, some schools that claim to follow these methodologies actually do so in a limited manner, or each classroom implements these methodologies to varying degrees within the same school. At the same time, some conventional schools use the methods of *Escuela Nueva* variously.

Accordingly, an index is built for the purpose of measuring the degree to which these methodologies have been implemented in each school and classroom. This allows going beyond the formal classification of schools as *Escuela Nueva* or conventional, and overcoming the limitations of a binary classification.

The level of implementation of *Escuela Nueva* has two components: the organisation of the classroom and the training of teachers are the most important. Accordingly, two different implementation indexes are built, measuring the degrees of classroom implementation and teacher implementation. A composite index, called global implementation combines the two measures.

The classroom implementation index is an aggregate measure of the existence and practice of certain physical and organisational features of *Escuela Nueva*: desk or table organisation (individual, couple, group), the way

subjects are presented and developed, the use and number of personal study guides available, the frequency of group activities, the existence and use of classroom libraries and learning corners, and curricular flexibility. The teacher implementation index measures the level of pedagogical training received by the teacher to apply this methodology. Its two main components are the number and level of training workshops they have attended, and level of micro-centre activities. The global implementation index aggregates the variables of the other two indexes. The indexes range from 0, describing the purely conventional school, to 100, for a school reporting the full implementation of *Escuela Nueva* methodologies.

The use of continuous-value indexes like these to describe the degree to which an educational innovation has been implemented is of great importance for the research about innovations that are not fully applied or those that have a pervasive influence on other systems.

Table 13.1 shows that despite spillovers of *Escuela Nueva* methodologies across all types of schools, those formally classified as *Escuela Nueva* have a higher index of implementation. In general these indexes show a good discriminatory power between self-declared *Escuela Nueva* and conventional schools, and this validates the choice of a continuous index rather than a dichotomous or dummy variable.

The mobility of teachers, from one type of school to the other, explains the lower discriminatory power of the teacher implementation index when applied to predict the methodology declared by the administration of each school. In general, it was observed in the field that these teachers bring the *Escuela Nueva* training with them, when they are appointed to conventional schools, though they face material limitations. On the other hand, classroom implementation is an almost perfect predictor of the declared type of school. Only one *Escuela Nueva* classroom appears to be below one conventional school classroom. As the global index aggregates these two indexes, its power to differentiate between the two types of schools is intermediate.

Appendix C describes the methods used to build composite indicators for the different variables (both dependent and explanatory) using principal component procedures.

The database

The database was constructed with information obtained from a survey applied in 2001 to third- and fifth-grade students of 25 schools in six municipalities of the Eje Cafetero region in Colombia.¹⁹ The total number of observations is 989. The survey was applied in 15 *Escuela Nueva* schools, and in ten conventional schools. Additionally, the study gathered information from 49 teachers, 24 school principals, 343 parents, and 179

alumni. These surveys were used to estimate the effects of the educational system on the families, the community and the alumni.

SCHOOL IMPACT ON PEACEFUL SOCIAL INTERACTION

Mean values of peaceful social interaction

Table 13.2 shows the mean value of peaceful social interaction, the dependent variable. These differences do not attain statistical significance and the more powerful tools of hierarchical models are required to compare the two types of schools, so as to analyse and compare the effects of the implementation of *Escuela Nueva* and other variables on the index of peaceful social interaction.

Table 13.2 Mean values of peaceful social interaction, by school type

<i>School type</i>	<i>Grade</i>	<i>Peaceful social interaction</i>
Conventional	3	70.02 <i>16.07</i>
	5	79.28 <i>14.12</i>
	Total	75.33 <i>15.66</i>
<i>Escuela Nueva</i>	3	74.22 <i>17.20</i>
	5	78.99 <i>13.86</i>
	Total	76.66 <i>15.75</i>

Mean values in bold *Standard deviations in italic*

Determinants of children's behaviour

Results of hierarchical models

Table 13.3 shows the results of running the empty model and four alternative full models. Each column presents the results of one regression model. These models differ in the indicators that were chosen to measure key independent variables. Specifically, only one index of democratic behaviour and only one index of implementation of *Escuela Nueva*

methodologies were included. Also, in one of the regressions, grade was not included to observe the sensitivity of the results to this change.

The following variables that were explored in the model were not included in Table 13.3, because they were not significant in any of these regressions: school climate, political management of the school, level of formal education of the teacher, infrastructure of the school (quality and state of the building), habitat (urban, semi-urban, rural), homicide rate of the municipality, and sub-region (*departamento*) where the municipality is located (see Appendix B).

The statistical exploration with hierarchical models summarised in Table 13.3 shows positive significant relationships among communicative action, democratic behaviour of three types (those related with the institutions of direct, participatory and representative democracies) and peaceful social interaction. This validates a general hypothesis of the study in the sense that communicative action is directly related to democratic behaviours, and these are related to peaceful social interaction.

Table 13.3 Determinants of peaceful social interaction (*convivencia*)

<i>Variables</i>	<i>Empty model</i>				
		<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>
Constant	75.94 1.05	64.5 2.61	64.58 2.62	65.13 2.62	64.28 2.62
Age		0.55 0.25	0.53 0.25	0.53 0.25	0.54 0.25
Grade		4.78 0.82	4.89 0.82	4.63 0.83	4.6 0.82
Sex		4.78 0.7	4.74 0.7	4.66 0.7	5.14 0.71
Moral development		0.09 0.02	0.09 0.02	0.09 0.02	0.08 0.02
Democratic behaviour (direct democracy)		0.08 0.02	0.08 0.02	*	*

Table 13.3 continued

<i>Variables</i>	<i>Empty model</i>	<i>Model 1</i>	<i>Model 2</i>	<i>Model 2</i>	<i>Model 4</i>
Democratic behaviour (participatory democracy)		*	*	0.07 <i>0.02</i>	*
Democratic behaviour (representative democracy)		*	*	*	0.11 <i>0.03</i>
Communicative action		0.06 <i>0.02</i>	0.06 <i>0.02</i>	0.07 <i>0.02</i>	0.08 <i>0.02</i>
Global index of implementation of <i>Escuela Nueva</i>		0.08 <i>0.03</i>	*	*	*
Classroom index of implementation of <i>Escuela Nueva</i>		*	*	*	*
Teacher index of implementation of <i>Escuela Nueva</i>		*	0.05 <i>0.01</i>	0.06 <i>0.01</i>	0.06 <i>0.01</i>
Classroom climate		0.09 <i>0.03</i>		0.1 <i>0.03</i>	0.1 <i>0.03</i>
School variance	23.32 <i>7.71</i>	21.6 <i>7.07</i>	21.54 <i>7.06</i>	21.59 <i>7.07</i>	21.53 <i>7.05</i>
Student variance	195.74 <i>6.78</i>	170.88 <i>5.92</i>	171.54 <i>5.94</i>	171.5 <i>5.94</i>	170.28 <i>5.9</i>
School-level explanation	10.64%	11.22%	11.16%	11.18%	11.22%
R ² _{students}		0.12	0.12	0.12	0.12
R ² _{school}		0.09	0.09	0.09	0.10

Coefficients in bold

Standard deviation in italic

* Variables not included in the regression shown in that column

All statistically significant variables in the peaceful social interaction models (both school- and children-level variables) have a positive impact on the peaceful social interaction of children. It is interesting to note that both the level of teacher and classroom implementation of *Escuela Nueva* methodologies have positive effects on the peaceful social interaction of children. Nonetheless, classroom implementation is not significant. The training of teachers and their participation in 'micro-centre' activities, the two main variables in defining the level of implementation of *Escuela Nueva*, show a greater impact on peaceful social interaction than the way the classroom is arranged, the use of libraries, and other physical and organisational components of the *Escuela Nueva* system.

Age, grade and moral development of children are children-level variables that improve the conditions for peaceful social interaction. Gender comparisons show that boys have slightly higher levels of peaceful social interaction behaviour. Besides the level of implementation of *Escuela Nueva* methodologies, the only variable of the school level that has a significant impact on peaceful social interaction is the classroom climate.

Violence in the environment and the behaviour of children

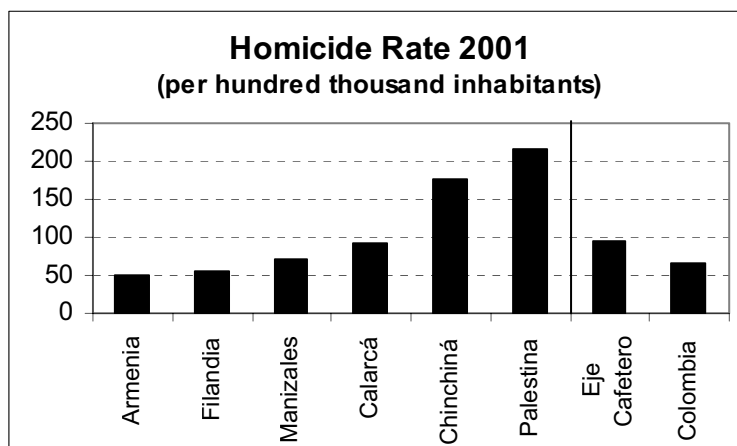
The most important variable of those considered at the municipality (third) level of the model was the rate of homicides. This variable should allow testing of the hypothesis that the behaviour of children is related to the levels of violence in the social environment where the school is located. If this hypothesis could be verified, there should be significant differences between the behaviours of children of municipalities with low and high rates of homicides.

Running the model with three levels showed that the third-level group of variables was not significant. To check the validity of this result, these variables were then introduced as second-level variables, and the model was run with only two levels. As expected,²⁰ none, including the homicide rate, appeared to be significant. These results suggest that the differences of behaviour between municipalities with high and low rates of homicides are not significant.

The municipalities chosen for the study exhibit a wide range of values in their homicide rates, going from values close to the average of the whole country to almost four times that average value. The variance of the six municipalities is actually larger than the variance of the 24 regions of Colombia, and it is also above the variance of the 40 municipalities in the

two sub-regions (Caldas and Quindío) where the six municipalities chosen are located.²¹ The bias introduced by the larger variance of the group of six should favour the appearance of a statistically significant influence of the rate of homicide on peaceful social interaction. Still, this variable does not show to be significant in the model, either when it is part of a three-level model, or when it is included with the variables of the second level. Though the municipality sample is small (six out of 40 in the two subregions), these results are indicative that this is not a significant variable in the determination of peaceful social interaction of children in the schools. The result is certainly valid for the schools and grades observed in the study, where the peaceful social coexistence of children from different municipalities cannot be expected to be significantly different, despite the very large differences in the surrounding levels of violence.

Figure 13.2 Homicide rates, 2001 by six municipalities, Eje Cafetero and Colombia



Source: Forero-Pineda and Escobar-Rodríguez (2004) based on statistics provided by DANE and DIJIN

THE IMPACT OF SCHOOLING METHODOLOGIES ON THE FAMILY, THE COMMUNITY AND ALUMNI

In the following sections, the complementary results concerning parents, alumni and community are presented. The main research questions

addressed in this section are: (i) do the perceptions and behaviour of families and the community change as a result of the influence of schooling methodologies? (ii) What long-term impact does *Escuela Nueva* have on selected aspects of democratic and peaceful social interaction behaviours? The first question is addressed in the next two sections, and the second question is dealt with in the last subsection before the conclusion.

Differences in perceptions and behavioural changes acknowledged by parents and alumni were the basis for the analysis of the impact of the school type on the family and the community and alumni. The first hypothesis was that *Escuela Nueva* and conventional schools would show significant differences both in perceptions and behaviour of parents. The second was that it is possible to detect significant traces on alumni of the schooling received in the two types of schools.

The analysis of impact of school methodologies on parents and alumni was made through probabilistic logit and probit models. These models show the progression of the probability of a certain answer when the value of the independent variable changes. The independent variable chosen for most models was the index of implementation of *Escuela Nueva* methodologies in each school. The value of this index for each school was calculated as the average of the implementation indexes of the different grades surveyed. Other independent variables whose effect on these answers were explored, and which sometimes exhibited a significant impact, include the age of the child, the socio-economic level of the family, the experience of the teacher and the frequency of each parent's participation in school activities.

The impact of the school on parent behaviour and perceptions

A total of 343 parents answered complete questionnaires. In order to balance the sample so as to have approximately the same number of observations among *Escuela Nueva* and conventional school parents, the base was expanded to 746 observations. The general result of these explorations is that parents of children attending *Escuela Nueva* show a higher propensity to change their behaviour, and a higher probability that they would consider that the school has an influence on the community. This could be explained by the closer involvement of these parents in the activities of the school, and also, as one of the questions they answered confirmed, that this influence was mainly exerted through the children at home. Table 13.4 below shows the results having a statistical significance higher than 95%.

When asked whether there is an influence of the school on the way they reprimand or punish their children, 73% of all parents give an affirmative answer. The probability that a parent gives a positive answer to this question

significantly increases with the global implementation of *Escuela Nueva* methodologies. Other variables having a favourable influence on positive answers to this question are the age of the child and the family's socio-economic level.

When asked whether the assignment of domestic activities has changed as a result of what children have learned in school, 70% of parents answer affirmatively. The number of years of the child in that school is the first variable associated with a positive answer to this question, and the level of global and teacher implementation are also associated with a positive answer.

Parents were asked if they stimulate their children to become school ombudswomen or ombudsmen: 79% of them gave a positive answer. The probability of a positive answer increases with the global implementation index of *Escuela Nueva* methodologies, socio-economic level and the experience of the teacher in *Escuela Nueva*.

Though, on average, parent participation in school activities is higher in *Escuela Nueva*, it is interesting to consider the frequency of this participation in the case of each parent as an independent variable. It was found that when parent participation in school activities is higher, it is more likely that they perceive that their children accept different opinions among their peers, and that what children have learned at school has had an influence on changes in permission rules at home and the way family decisions are made.

Table 13.4 Estimation of the influence of the global level of implementation of *Escuela Nueva* on perceptions and behavioural changes of parents

<i>Question</i>	<i>Probability of a positive answer</i>	<i>Coefficient</i>	<i>Standard deviation</i>	<i>Other significant determinants</i>
Was there an influence of the school on changes in the way you reprimand or punish your children?	73.12	0.1661	0.075	Age of child, socioeconomic level
Has the assignment of domestic activities changed as a result of what children learn at school?	71.52	0.5854	0.0113	Years at same school, teacher implementation
Do you stimulate your children to become school ombudsmen or women?	79.54	0.192	0.057	Socioeconomic level, teacher experience in

Also, with a higher participation in school activities it is more likely that the family collectively solves home problems rather than putting this responsibility on the shoulders of one of its members. Other results show that when a child is forbidden to do something the probability that she asks for an explanation increases with the socio-economic level of the family. As the level of global implementation increases, children tend to help their parents more in their labour. Appendix D shows other questions for which no significant relationships with independent variables were obtained.

The impact of the school on the community (as indicated by parent perceptions)

In this sub-section, the impact of the level of implementation of *Escuela Nueva*, and other secondary variables, on community-related decisions of parents is explored.

The level of teacher implementation of *Escuela Nueva* is significantly related to a positive answer when parents are asked whether what children learn at school has influenced family decisions relating to the community. A variable showing the same positive influence on these decisions is the frequency of parent participation in school activities.

Sixty per cent of parents gave a positive answer when asked whether the work done by the school has had an influence on the community electing their leaders with a criterion of quality in their expected performance. The probability of a positive answer increases with the level of classroom implementation of *Escuela Nueva*. The coefficient of this (positive) relationship is 0.5038 and the standard deviation is 0.113.

The classroom level of implementation of *Escuela Nueva* is also strongly related to the probability that parents participate in monitoring community projects and resources and acknowledge that this is related to school activities. When the index of implementation is low, the probability of a positive answer is 33%, and almost doubles as the level of implementation approaches 100%. The coefficient of this relationship is 0.7776 and the standard deviation is 0.134.

The analysis shows that the level of teacher implementation is highly related to parents claiming that trust and respect among families has increased as a result of school activities. While the probability of a positive answer for the whole sample is 0.7951, the coefficient of the relationship between teacher implementation and this probability is 0.1237 and the standard deviation is 0.038.

Seventy-two per cent of parents claim that school activities have helped them to organise and solve community problems. The probability of a negative answer diminishes with the socio-economic level of parents.

Sixty-three per cent of parents answered that school activities have encouraged them to learn about the problems of other families and help solve them. A higher socio-economic level is related to lower probabilities of a positive answer.

Thirty-nine per cent of parents believe that school activities have encouraged them to participate in the sessions where the Municipal Education Plan is drafted. The regression shows that the number of years that the child has attended an *Escuela Nueva* school has a positive relationship with an affirmative answer to this question.

No significant results were obtained for whether parents believed that the activities of the school developed with the parents have helped the community to participate in the process of making the Municipal Education Plan or in monitoring it.

Long-term impact of the school on alumni perceptions and behaviour

The long-term effects of schooling methods are analysed through questionnaires applied to 179 alumni from both types of school. The average age of alumni in the sample is 15.9 and standard deviation is 4.9. Most are in secondary school, but some have finished or dropped out of school. Alumni from conventional schools have an average age of 16.3 years, with standard deviation of 5.4; the average age of alumni from *Escuela Nueva* is 15.5 and the standard deviation is 4.4. Schools were responsible for identifying alumni and inviting them to the meetings. All those who came to the meetings filled in the questionnaire.

Table 13.5 Structure of the alumni sample

<i>Schooling system</i>	<i>Interviews</i>	<i>%</i>
Conventional	80	44.7
<i>Escuela Nueva</i>	99	55.3
Total	179	100.0

The questionnaire for alumni shared some questions with that of students, though with some adaptation. Some questions, such as one related to their participation in voluntary organisations, were added. The size of the sample and the smaller number of questions did not allow researchers to

apply multi-level hierarchical analysis, but probit, ordered probit and multinomial logit probabilistic models were used for the analysis of the different items in the questionnaire.

Participation of alumni in voluntary social organisations

The research explored the propensity of alumni to join voluntary organisations. The affiliation of citizens to voluntary organisations has been identified with social capital, an asset explaining differences in the success of adults having accumulated the same levels of physical and human capital,²² and also facilitating the accumulation of human capital. The central issue here was whether there is a relationship between the type of school and the propensity to join various types of voluntary organisation. The questionnaire asks about membership in different types of organisation in the past two years. The number of organisations where the alumni has been a member in the past two years is set as the dependent variable, and the type of school is the independent variable.

The regression obtained through a simple probit model, though significant only to 80%, shows that alumni participating in a larger number of voluntary organisations have a higher probability of being alumni from *Escuela Nueva*.

When using an ordered probit model, which allows multiple values, the dependent variable is defined as the number of organisations the alumni has been affiliated to in the past two years. This number is larger for *Escuela Nueva* than for conventional schools, at 90% significance.

Other significant results about alumni

The probability that *Escuela Nueva* alumni vote to decide what to do for Labour Day is higher than that for conventional school alumni. In contrast, it is more probable that conventional school alumni vote to change the president of the community grass-root organisation board.²³ This shows a relative preference on the part of *Escuela Nueva* alumni for participatory democracy, while conventional school alumni seem to be more oriented towards representative democracy.

Comparing it with other results reinforces this conclusion. While conventional school alumni have a higher probability of acknowledging that the mayor of the town has asked them to vote for a certain initiative, *Escuela Nueva* alumni are more likely to present an initiative of their own to the mayor of the town. Furthermore, *Escuela Nueva* alumni collaborate more with local authorities, as shown by a regression with 90% significance.

Escuela Nueva alumni also show more respect for ideas proposed by women. With 90% significance, they are more open to deal with persons from other races, though the question was asked in negative terms, and this

limits its validity. Another regression shows that *Escuela Nueva* alumni are more disposed to expect discussions to end with an agreement.

The second part of Appendix D shows the questions that did not show significant results.

CONCLUSIONS

The comparison between *Escuela Nueva* and conventional schools was made for children, their parents and alumni. It was shown that the use of *Escuela Nueva* methodologies has a significant positive impact on the peaceful social interaction of children. Other variables positively related to peaceful social interaction in the five full models that were run are the following:

- *Child level*: age, grade, sex, moral development, the three types of democratic behaviour defined, and communicative action.
- *School level*: global index of implementation, teacher index of implementation, and classroom climate.

Variables such as school climate, political management of the school, level of formal education of the teacher, infrastructure of the school (quality and state of the building), habitat (urban, semi-urban, rural), homicide rate of the municipality, and sub-region (*departamento*) where the municipality is located did not show a significant influence on peaceful social interaction.

An unexpected result was that the level of violence of the municipality was not a significant determinant of peaceful social interaction of children. This means that, when considering the set of municipalities where the study was carried out, the behaviour to be expected from children in municipalities with relatively low homicide rates does not differ from that of children living in municipalities with homicide rates almost four times higher. This is extremely important for a country like Colombia, which has one of the highest rates of homicide in the world. Despite the fact that the variance of homicide rates in the municipalities chosen for the study is larger than the regional and national variances, a word of caution should be said concerning the present state of this result, since the size of the municipalities' sample is not sufficient to make a country-wide generalisation.

Notwithstanding, the system of education where children form their peaceful social interaction behaviour extends beyond the school. To obtain a more complete picture of this behaviour formation, the study also explored some relationships between the school methodology, the home and the community. We found significant positive effects of *Escuela Nueva* on

some family behaviour related to home educational practices and to the influence of the school on parent participation in community life.

The final question of the research was whether these behavioural differences remained after children had left primary school. We explored the traces left by schooling methodologies through questionnaires to alumni from conventional and *Escuela Nueva* schools. Some significant differences were found. The inclination of *Escuela Nueva* alumni towards participatory democracy contrasts with the inclination of conventional school alumni towards representative democracy. The propensity of *Escuela Nueva* alumni to join voluntary organisations, thereby forming social capital, was shown to be higher, though the level of significance of the relationship was only 90%. In this and other aspects, an extension of the research to other regions would considerably increase its validity.

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APPENDIX A

*An instrument to measure the peaceful social interaction of children
(‘convivencia’)*

Peaceful social interaction (*convivencia*) is related (Hoyos, 1998) to four behaviours: active respect for others, universal solidarity, fair play and equity. In order to measure each of these components, the following questions were asked:

Active respect

- 1 I help my classmates with their homework, independently of who they are.
- 2 I only play with a student of my own gender.
- 3 I do my homework with students of my own gender because they are more intelligent than the students of the opposite gender.
- 4 I don't care if the person with whom I work is male or female.
- 5 When I choose a classmate to work with, I don't care if he is older or younger than me.
- 6 If I have to elect a classmate to work with, the choice is not affected by his/her ethnicity.
- 7 If there is a new child in the school and I am asked to choose the members of a team, I start by choosing children that I already know.

Universal solidarity

- 1 I don't throw garbage into the river because other people might use this water.
- 2 What would you do if a person in your class could not afford to buy pencils?
 - a I lend my pencils.
 - b I do not lend my pencils.
 - c I talk to the teacher, so she takes care of the problem.
- 3 What would you do if, when you are walking out of the school, it is raining strongly:
 - a I ask a classmate if he/she wants to share my umbrella.
 - b I run away with my umbrella so I do not have to share it.
 - c I lend a small part of my umbrella, making sure I do not get wet.

- 4 What would you do if you are the only one to notice that your teacher takes two more oranges than she is supposed to, from a parent's gift.
 - a I agree with my teacher. She is older than me and she knows what is correct.
 - b I do not agree with her attitude because some children are not going to receive their orange.
 - c I propose that all children share their oranges so that everyone can eat fruit, and the teacher can keep the extra oranges.

Fair play

- 1 Do you agree with the following statement: Poor people can steal from rich people, because they do not share what they have.
- 2 If I am the only one to notice that one of my team-mates made a fault, I demand the referee to sanction the fault against my team.
- 3 If my best friend asks me to let her copy my answers during a test, I let her copy.
- 4 What would you do if you are the only person to notice that there are some leftovers from the cake we bought to celebrate the teacher's birthday:
 - a I eat the cake.
 - b I share it with my friends.
 - c I give it to the teacher.

Equity

- 1 If you have two pieces of bread, and you eat one of them, what would you do with the second one?
 - a I give the other to a friend.
 - b I give the other to a poor child who does not have anything to eat for lunch.
 - c I save the other bread for later.
- 2 Several days ago, some new families arrived in my town. They were running away from violence in their home town. Now, they are asking us to lend them our school for five days, but we must replace these days with five days of our vacation. My teacher is doing a poll to see if we accept this proposal:
 - a I agree because these families do not have anywhere to go.
 - b I withdraw from the decision and let other children decide.
 - c I am against it because I do not want to lose part of my vacation.

- 3 In the school 'Little Mountain', students have organised an excursion to Parque del Café. Francisco is in charge of collecting the money to pay for the bus and lunch. When he asks Marcela for her money, she says she cannot come because her mother does not have the money. What do you do?
- a I let Marcela's mother solve the problem.
 - b Marcela should not go on the trip because she does not have the money to pay for it.
 - c We organise a raffle to collect the money, so Marcela can go with us.

APPENDIX B

Variables determining the peaceful social interaction of children

Independent variables

The independent variables of the model are directly associated to the first and second levels of the hierarchical analysis.

First level

Age, grade, gender, moral development, democratic behaviour, communicative action and households' socioeconomic²⁴ level are variables directly linked to the student. The socioeconomic level of the family is a family variable, but as only a few children in a school share the same family, it may be considered as an individual variable.

Communicative action is a concept developed by the German philosopher Jurgen Habermas, related to the ethics of rational communication. To make it operational, the variable was defined as measuring the abilities to comprehend others, to argument, to build consensus, and to accept dissent.²⁵ The results of these four measurements were used to construct a composite index of communicative skills using principal components or factor analysis.

Another index was constructed for moral development. It is based on the methodology used by Pitt (1999), which was previously explained, and derives from the theory of moral development of Lawrence Kohlberg.²⁶

The study assumes that different democratic behaviours are related to different types of democratic institutions. Accordingly, indexes were constructed for three democratic behaviours, each related to one form of democratic institution:²⁷ direct democracy, representative democracy, and participatory democracy.

Direct democracy is associated to groups making collective decisions. Representative democracy is associated to the process of selecting representatives who are in charge of making decisions. Participatory democracy refers to mechanisms whereby citizens and authorities act in conjunction to seek the welfare of society.²⁸

Empirically, the survey measured the children's democratic behaviours with questions related to their possible reactions in specific situations related to their school, family and community. Statistical factor analysis showed that it is not appropriate to estimate a global democratic behaviour index. This implies that an improvement in direct democratic behaviour is not necessarily related to improvements of representative democratic or participatory democratic behaviours.

Second level

The second-level group variables related to the classroom and school. The level of implementation of the new school system, school and classroom climate, the quality of school management, the educational level of teachers, the quality of school infrastructure belong to this level.

School climate measures certain organisational aspects and the school's orientation towards achievement. Organisational aspects include the existence and common knowledge of rules, forms of the reward and penalty system, absenteeism, morality, and general behaviour of students. The orientation towards achievement includes aspects such as the motivation and commitment of teachers, communication among them, relations among students, and trust between the principal and teachers. Questions like the presence of alcoholism, drug dependence and other problems in the school and among parents, vandalism, occurrence of violence at school and in the families, lack of interest in learning on the part of students or parents, general attitude of teachers are included in the questionnaire that serves to measure school climate.

Classroom climate is an index that captures aspects related to organisation, good relations between the teacher and the students and satisfaction in the classroom. Organisational aspects include expectations of teachers, opinions about justice in the classroom, consistency in class management, order in the classroom, and clear rules. Good relations are related to empathy and warmth in the attitudes of teacher and students. It

captures the priorities, the conflicts and the reasons for the teacher to have certain attitudes with the students.

As opposed to the variable defined as peaceful social interaction, school and classroom climates are not individually measurable behaviours but refer to general social conditions.

The index of school governance contains information about the functioning of the academic and discipline councils. Additionally, it captures whether the school follows the Institutional Education Plan²⁹ that schools are required to construct with the community.

Third level

The third-level variables, which include the municipality population, a dummy variable for the *department*, and the homicide rate of the municipality, were obtained from national and regional sources.³⁰

APPENDIX C

The construction of indexes

The principal components procedure allows obtaining aggregation coefficients that are independent from the bias or values of the researchers. The method consists of finding an aggregate indicator of the valued response to different positively related questions. Questions that are negatively related to the indicator are successively discarded. This methodology enables the researcher to identify the variables that are positively related and statistically significant.

The procedure maximises the variance of the variables associated with the index, applying a monotonic transformation to the initial values of the variables, which guarantees that the weights assigned to answers are unchanged. Because of the ordinal nature of the answers, the procedure transforms this qualitative information into quantitative data that keeps the implicit subjective ordering of the answers. In this case, the study selected the (as good as) preference transformation rule.³¹ In addition, this tool allows the wiping of the non-significant information, and assigns a weighted value to each of the final variables selected to construct the index. All the indexes are standardised and re-scaled into the 0–100 interval.

APPENDIX D

Questions to parents and alumni where no independent variables appeared to be significant

Parents

No significant results were obtained for the following questions:

- 24 Who establishes family rules?
- a Each member of the family establishes his/her own rules.
 - b The family as a whole.
 - c All adults together.
 - d The father.
 - e The mother.
- 25 How do you help solve the problems of your children?
- a The father helps the child to solve the problem.
 - b The mother helps the child to solve the problem.
 - c The child solves his/her problem on its own.
 - d Friends help to solve the problem.
 - e The teacher helps to solve the problem.
- 26 If the family has to decide what the child needs,
- a The child receives what she wants.
 - b The child receives what she really needs.
 - c Somebody explains to the child what the family needs.
- 42 Which of the following home rules have been changed, influenced by what your child has learned at school:
- a How decisions are made.

Alumni

In six questions to alumni, no significant results were obtained.

- 5 I have demanded that the decisions made by the grassroots' organisation board (*Junta de Acción Comunal*) be respected.
- 6 I participate in the activities organised by the *Junta de Acción Comunal*.

- 7 When we select a leader to develop a project in the community, I follow his leadership.
- 8 I have asked to the president of the *Junta de Acción Comunal* to explain what he has done for the community.
- 9 I want to be elected as a member of the *Junta de Acción Comunal*.
- 10 In the organisations with which I have been affiliated, I have demanded that women's opinions be respected.

NOTES

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- ² EDIHR (World Bank), Taro (UNICEF) and Fundación *Escuela Nueva* Volvamos a la Gente (1999) *Hacia una nueva escuela para el siglo XXI*, pp. 20–22.
- ³ Colbert, V. (1999) *Mejorando el acceso y la calidad de la educación para el sector real pobre. El caso de la Escuela nueva en Colombia*. Section 4.3. Available at <http://www.campus-oei.org/revista/rie20a04.htm>.
- ⁴ EDIHR (World Bank), Taro (UNICEF) and Fundación *Escuela Nueva* Volvamos a la Gente (1999), p 5.
- ⁵ Figures of Ministerio de Educación, Colombia.
- ⁶ Juárez and Associates (2003).
- ⁷ Agencia para el Desarrollo Internacional USAID y Juárez and Associates (2003), and EDIHR World Bank, Taro UNICEF and Fundación *Escuela Nueva* Volvamos a la Gente (1999).

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- ⁸ Colbert, V. (1999) Section 4.
- ⁹ EDIHR World Bank, Taro UNICEF and Fundación *Escuela Nueva* Volvamos a la Gente (1999) p. 19.
- ¹⁰ McEwan, P. (1998) The Effectiveness of Multigrade Schools in Colombia. *International Journal of Educational Development*. 18(6) pp. 435–452.
- ¹¹ SER Institute Evaluation (1987) p. 9.
- ¹² Institute SER designed the tests in 1992.
- ¹³ The number of activities that were organised jointly by the school and the community measured the impact on the community.
- ¹⁴ UNESCO Santiago de Chile 1998.
- ¹⁵ Chesterfield (1994), *Indicators of Democratic Behaviour in Nueva Escuela Unitaria (NEU) Schools*, p. 5.
- ¹⁶ Idem, p. 8.
- ¹⁷ Idem, p. 12.
- ¹⁸ The last two components are defined as components of justice (Hoyos, 1998).
- ¹⁹ The survey was conducted in the municipalities of Manizales, Chinchiná and Palestina in the *departamento* of Caldas, and Armenia, Filandia and Calarcá, in the *departamento* of Quindío.
- ²⁰ The expectation is based on the fact that introducing a third level gives more chances to the variables included in it to be significant.
- ²¹ The values for the standard deviation of these observations of the rate of homicides are: for the six municipalities in the sample, 0.70; for the forty municipalities of Caldas and Quindío, 0.53; for twenty-four subregions and four metropolitan areas of Colombia, 0.44.
- ²² See James S. Coleman (1990) *Foundations of Social Theory*. Harvard (Belknap), chapter 12, 'Social Capital', p. 300.
- ²³ 'Juntas de acción comunal'.
- ²⁴ This variable was used to control for possible differences in the economic levels. It was useful in some logit and probit analyses, but due to its low variance (most households had incomes between one and two minimum wages) it was not significant in the multilevel model.
- ²⁵ See Habermas (1981) and Hoyos (1998).
- ²⁶ See Kohlberg.
- ²⁷ See Forero (2001) for a taxonomy of forms of democracy based on the theoretical work of Bobbio and Sartori and the recent practice of some Latin American countries.
- ²⁸ Forero (2001).
- ²⁹ Every school in the country is required to draft and follow an Institutional Education Plan.
- ³⁰ Population figures were obtained from www.dane.gov.co and homicide rates from National Police DIJIN statistics.
- ³¹ Mas-Colell (1995) chapter 1 explains the implications of maintaining a specific preference ordering.