

# Impact of Child Labor on Academic Performance: Evidence from the Program “Educame Primero Colombia”<sup>1</sup>

Daniel Holgado<sup>a</sup>, Isidro Maya-Jariego<sup>a</sup>, Ignacio Ramos<sup>a</sup>, Jorge Palacio<sup>b</sup>, Óscar Oviedo-Trespalacios<sup>b</sup>, Vanessa Romero-Mendoza<sup>b</sup> and José Amar<sup>b</sup>

<sup>a</sup> *Universidad de Sevilla, Spain*

<sup>b</sup> *Universidad del Norte, Colombia*

## Abstract

In this study, the effects of different variables of child labor on academic performance are investigated. To this end, 3,302 children participating in the child labor eradication program “Educame Primero Colombia” were interviewed. The interview format used for the children’s enrollment into the program was a template from which socioeconomic conditions, academic performance, and child labor variables were evaluated. The academic performance factor was determined using the Analytic Hierarchy Process (AHP). The data were analyzed through a logistic regression model that took into account children who engaged in a type of labor (n=921). The results showed that labor conditions, the number of weekly hours dedicated to work, and the presence of work scheduled in the morning negatively affected the academic performance of child laborers. These results show that the relationship between child labor and academic performance is based on the conflict between these two activities. These results do not indicate a linear and simple relationship associated with the recognition of the presence or absence of child labor. This study has implications for the formulation of policies, programs, and interventions for preventing, eradicating, and attenuating the negative effects of child labor on the social and educational development of children.

Keywords: Child Labor, Academic Performance, Labor Conditions

## Introduction

Child labor is a far-reaching and complex problem in developing countries. The types of child labor vary according to the country’s culture and the family culture, rural or urban residency, socioeconomic conditions and existing level of development, among other factors (Pinzón, Briceño, Gómez, & Latorre, 2003). According to the International Labor

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Organization (ILO) (2010), child labor affects 215 million minors worldwide. Within recent years, a decreasing tendency in this figure has been observed, especially in areas of Asia, the Pacific, Latin America, and the Caribbean. The greatest decrease occurred in the most dangerous work (related to the worse forms of child labor) and among female children and youth. However, the number of 15- to 17-year-old youth laborers has significantly increased within the last four years (from 52 to 62 million worldwide).

The main sector in which child labor is concentrated is agriculture (Kim & Zepeda, 2004). In fact, a great proportion of child labor is carried out in family businesses associated with this sector within the family home in the form of housework or as non-remunerated work. This type of labor, which can equally negatively affect the social and educational development of the child, has been taken into consideration less frequently than the remunerated labor performed outside of the family context (Buonomo, 2011).

In the short-term, the importance of studying child labor and its consequences is related to the involvement of children and teenagers in manual labor and exploitative activities, sometimes without the child's willingness and often over their physical resistance. In these cases, aspects associated with human and minor rights become factors. In the long term and from a practical point of view, child labor is about a disinvestment of social and human capital, a compromising of the development of the individual, and a hindering of the development of skills, abilities, and knowledge necessary to make a significant contribution to society (Psacharopoulos, 1997).

Although the majority of studies that analyze the genesis, impact, and consequences of child labor derive from an economic point of view (Basu & Van, 1998), several authors do analyze the social and communal causes that underpin the employment of child and youth labor. Hence, the impact of diverse forms of child labor on education has been analyzed, given the educational context as one of the main spheres of socialization and development of childhood and adolescence (Orazem & Gunnarsson, 2004).

Next, a brief review of the main causes and consequences of child labor will be presented, focusing on the effect on the educational sphere in general and on the academic performance of youth and adolescent laborers in particular.

#### *Main causes of child labor*

The effectiveness of the intervention policies and programs designed and implemented to deal with child labor increases if the policies and programs are based on adequate knowledge of the causes that drive children to enter the labor market. These causes of initiation and continuation of child labor are related to economic factors, as well as to social and cultural factors. Regarding the causes of child labor, Webbink, Smits, and de Jong (2011) propose a comprehensive model of different levels. For these authors, the causes of child labor can be (a) the resources related to family income, the job or the education of the parents, (b) the structural characteristics, such as the number of brothers or family members, the availability of educational resources, and the level of urbanization, and (c) the culture as it relates to the existing values and norms associated

with child labor. For example, a work by Amar et al. (2008) on the quality of life and mental health of child laborers in Toluviéjo (Colombia) noted that the entrenchment of child labor in the culture of the country is a way for the child to contribute to the family economy or a way for the child to learn vital habits for the future. In addition, the authors note that the reasons for the labor of minors reported by the adults differ according to the children's age. Thus, for 15- to 17-year-old youth, labor entails an important contribution to their development and to the role that they will carry out in the future. For younger children, an allusion is made to economic issues related to the need for the child to contribute to the family income.

A clear relationship exists between poverty levels or low income and the participation of children and teenagers in labor-related activities. Elevated poverty levels can force families to send their children to work, thereby preventing the children from investing in the human capital developed by their attending school (Jensen & Nielsen, 1997). The poor quality of the educational system (Ray, 2000; Murkjerhee and Das, 2008; Kim, 2011) and the low salaries and poor working conditions of the teachers (Kim, 2009) are also noted as other socioeconomic factors that can drive the family to force their children to work. Other aspects that are not strictly economic, such as the educational level of parents, the number of people that live in the home, the birth order of each child or the existence of polygamy (DANE, 2003; Canals-Cerda & Ridaó-Cano, 2004; Arends-Kuenning & Duryea, 2006; Emerson & Portela, 2008; Omokhodion & Ochendu, 2009), also act as either causal or predisposing elements for incorporating children into the workforce. Moreover, Murkjerhee and Das (2008) note that among those parents with greater educational levels, there is a lower frequency of their children engaging in manual labor. This finding is probably due to their awareness of the negative effects of child labor on the child's development. In this sense, Kim and Zepeda (2004), who investigated the factors related to children's involvement on family farms in the United States, found that there are factors that affect youth in different ways at different points of the work cycle, that is, as they first begin working and at a certain point later in their work cycle. In the first case, the decision of the parents for their children to contribute to family work is influenced by the consideration that this will benefit the children in processes, such as social development, responsibility, strengthening of family bonds, and vital learning. However, the economic factors seem to have a greater influence on the level of involvement of the children. In fact, work decreases in intensity and duration when the economic conditions of the family improve (Lee, Jenkins, & Westaby, 1997).

Pedraza and Ribero (2006) found that when the head of the family was the mother, the children and teenagers were exclusively dedicated to studying, unlike those cases in which the head of the family was the father. Pedraza and Ribero (2006) concluded that an exchange between the decision to working or study apparently exists among children. That is, there is a change, in varying degrees, among youth from the educational context to that of labor, as there can be cases where both activities are carried out simultaneously. This combination of working and attending school was significantly present among 12- to 17-year-old youth. However, this was not the case with the group of 7- to 11-year old

who devoted their time to school attendance to a greater extent. This finding could be partly due to the intensive campaigns that have been carried out in Colombia in favor of the provision of basic elementary education (Pedraza & Ribero, 2006).

There are factors that also affect the intensity of child labor. For instance, Rosati and Rossi (2003) found that the number of family members in the home was negatively correlated to the number of hours the child worked. Nonetheless, Murkjerhee and Das (2008) found that in India, family size had an important effect on dropping out of school and on increasing the incidence of child labor. In this sense, it is possible that other factors in addition to the number of family members are associated with the participation of minors in labor. For instance, for Ravallion and Wodon (2000), the family divides the child's between work and education according to the family's regular level of consumption and expenditures, the child's previous attendance to school and the time dedicated to leisure by the family.

All in all, the decision to involve children in the workforce and the type and intensity of the child's devotion to labor is made up of a conglomerate of interacting factors. These causal factors will even determine (acting as mediating variables) the impact that the labor will have on the psychosocial development of the child and his/her experience in the educational system. Next, we will describe several of these negative effects, paying special attention to the interaction between child labor and education.

#### *The impact of child labor*

Child labor generates negative effects that hinder the child's cognitive, emotional and social development (Amar et al., 2008). Many of these child laborers are in a critical period of their psychosocial development during which key aspects of their personality and social behavior, such as self-esteem and self-concept, are being molded and defined. In this sense, the school context, the relationship with peers, and the family environment are all factors that can affect the formation of these key personality concepts (Omokhodion, Omokhodion & Odusote, 2006).

Likewise, child labor generates negative consequences on the quality of life and on the mental health of minors. Amar et al. (2008) found that in addition to the perception of poor physical health, child laborers presented greater emotional wear. Furthermore, the minors who participated in their study perceived that their physical and emotional health interfered to a greater extent in the functioning of the family and that their health was an obstacle to their development. Children and youth can be much more vulnerable than adults to the psychological and physical impact of labor, due to their psychophysiological immaturity and the process of growth and development in which they are immersed (O'Donnell, van Doorslaer & Rosati, 2002). However, according to these same authors, there is a clear lack of evidence in the literature about the direct effects of child labor on the mental and physical health of the children to the point that clearly contradictory results are given in some cases (O'Donnell et al., 2002).

Social and economic consequences of child labor have also been identified. For example, Emerson and Portela (2003) found that adults who had not worked during childhood had higher salaries. They even noted a generational link to child labor. This link can be established in terms of the continuity of conditions of poverty in the community context. However, even controlling for the income variable, it is possible that this generational link is associated with the persistence of certain social norms or educational patterns in the family, all of which determine child labor in families with parents who worked during their childhood.

Thus, child labor does not only have immediate and short-term effects on the child, but rather, these effects are also present in the long term throughout the whole lifecycle. Taking on labor-related activities at an early age reduces work opportunities during adulthood, hinders the achievement of an adequate educational level, and even impedes the formation of a stable family unit (Beegle, Dehejia, Gatti, & Krutikova, 2007; Seebens & Wobst, 2003).

#### *Child labor and education*

It is precisely in the integration and performance of children and youth in the educational system where the more significant impacts of child labor can be observed. In fact, beyond the econometric analyses previously mentioned, most of the studies related to the effects of child labor appear within the context of education (Grootaert & Kanbur, 1995). In the majority of cases, child labor makes adequate child and youth inclusion in the educational system difficult (Dyer, 2007), given that the time for work takes away from the time allocated to studies and that the attention to academic activities is reduced, due to the fatigue produced by the labor (Sabia, 2009).

However, this is a complex relationship that goes beyond the consideration of the presence or absence of child labor and school attendance (Rosati & Rossi, 2003). In fact, in the literature, the amount of time that the child devotes to labor or the moment of the day or week in which s/he is dedicated to labor and the impact of labor on variables related to education have barely been taken into account (Sabia, 2009). The majority of the studies from the last five years have focused on the determinants of child labor and school participation, rather than on the impact that labor can have on different aspects of schooling. For Rosati and Rossi (2003), attending school and working are decisions that are usually considered simultaneously as a family. Conversely, these authors also posit that the number of hours the child devotes to work is one of the fundamental variables for evaluating the child's wellbeing.

For example, researches in developing countries have found that the majority of child and youth laborers regularly attend school (Heady, 2000). However, in certain cases, a negative relationship between the number of hours worked and the hours of school attendance has been found (Boozer & Suri 2001). For example, Buonomo (2011) found that children who work below the median predicted by the proposed statistical model (up to two hours daily) demonstrated better schooling results (measured years in school, age-grade ratio, completion of elementary education, completion of at least one year of

secondary education) than those children who only attended school. This finding indicates that while there is clear evidence of the negative impact of labor on the minor's education, a minimal devotion to labor does not seem to have a significant effect on the education of children and youth (Ray & Lancaster, 2003).

In fact, the impact of child labor and other related variables has been evaluated on several occasions with regards to school attendance or lack thereof, years of schooling, and other associated variables (Boozer & Suri, 2001; Jensen & Nielsen, 1997; Patrinos & Psacharopoulos, 1995). However, attendance is an indicator that does not sufficiently explain the impact of child labor, as it does not take into account the quality of the child's experience in school (Buonomo, 2011). For example, Jensen and Nielsen (1997) found that among child laborers in Zambia, only 2 percent of the minor participants mentioned labor as the reason for abandoning studies. It is therefore necessary to consider other variables associated with schooling to adequately evaluate the impact that child labor can have on those variables, such as the aforementioned years of schooling or age-academic grade ratio.

Even though a relationship between child labor and school attendance may exist (especially when other factors such as gender, income level or number of members in the family are considered), these factors only provide an indirect measure of the educational consequences of the child's involvement in labor activities. In reality, other characteristics are related to academic performance (such as performance in different subjects or failure of academic courses) and the intensity of the work (hours worked, moment of the week or daily hours worked). In fact, in certain cases, it is shown that working minors also usually attend school (Admassie, 2003), suggesting that variables associated with academic performance are those that show us the impact of child labor on the minor's education (Buonomo, 2011). Furthermore, it is possible to take into account specific subjects or specific fields of the educational development that are differentially affected by child labor and its associated variables, for instance, mathematics and language (Akabayashi & Psacharopoulos, 1999; Cervini, 2005, 2006; Gunnarsson, Orazem, & Sánchez, 2006; Heady, 2000; Orazem & Gunnarsson, 2004). However, the majority of these cases are based on the results of standardized tests that evaluate these fields, rather than on obtaining direct or indirect data on the performance of the child laborer in the educational center.

All in all, child labor seems to have a clear negative effect on academic performance. However, such an effect is far from homogeneous, and it cannot simply be associated with the presence or absence of child labor in the individual children. Such variables as the number of hours worked or the type of work are associated with the intensity of such effects and with schooling factors beyond just attendance. Therefore, it is pertinent to study the effects that different variables of child labor have on various aspects of the minor's education in an attempt to clarify the real reach that such work has on the development of the minor and on his/her academic success and educational experience.

Therefore, we seek to study how the aforementioned variables affect the academic performance of a sample of child laborers from within the context of an educational intervention program. We attempt to evaluate the impact that the presence, intensity, type, and distribution of the labor performed by a sample of children and youth has on particular performance factors in the educational context.

As previously mentioned, other aspects, such as the number of hours worked, the conditions of the work, and the distribution of the work throughout the day and the week, can differentially affect the psychosocial and educational development of the child. In this sense, we believe that it is necessary to differentiate such aspects as the distribution of child labor (morning, afternoon or night; weekend or during the week) and the harshness of the labor, as evaluated according to the slavery conditions established by the International Labor Organization (ILO, 1999), to determine the impact that child labor has on academic performance.

In the following section, we describe the “Educame Primero Colombia” intervention program, which provided the intervention context from which the data analyzed were obtained.

### **The “Educame Primero Colombia” program**

The “Educame Primero Colombia” program emerged from a collaborative agreement between the United States Department of Labor and the Social Protection Ministry of the Republic of Colombia to intervene in zones with a high presence of child labor within the territory of Colombia.

Through the consortium between Partners of the Americas, Devtech, Cinde, and Mercy Corps, this program, previously applied in the Dominican Republic, was implemented in Colombia. The objective of the program was to achieve the “reduction and progressive eradication of the worse forms of child labor in Colombia” (Partners of the Americas, Devtech, Mercy Corps & CINDE, 2011) through educational intervention. Through such an intervention, the creation of childcare spaces, termed “Spaces for Growth” (SfG) and “Spaces for Entrepreneurship” (EpE), stand out. These spaces are training initiatives that complement formal education and are based on strategies to promote active participation and collaboration of children and youth. The spaces are meant to support permanence in school and the improvement of academic performance among child laborers and those at risk of working.

In the case of the SfG, minors were offered three types of complementary activities in an alternative schedule to the school day. The *academic component* centered on introductory and academic orientation activities; the *socializing component* included lucid and recreational sessions (music, art, theater, and children’s literature); and the *personal growth component* was oriented toward the improvement of self-image along with the teaching of emotional, ethical, and cultural values. In other words, the content of the program centers on the students’ cultural, social and community environment with an emphasis on coexisting with and participating in the community, as well as developing a

respect for the natural environment. Finally, the program emphasizes issues related to health and personal wellbeing (for more information, see Devetch, 2007).

Intervention through the SfG was based on the Quantum Learning methodology, which has shown itself to be effective in different educational contexts (Benn, 2003). This program’s objective is the articulation of strategies to create safe, fun, compromising, and meaningful learning spaces for the children and youth, stimulating perception and learning at all moments through attractive activities. The children and youth participating in the SfG were between 6 and 17 years of age and were divided into three groups (Fish, Oaks, and Hawks) according to their academic level.

The SfG were located in the educational center or in community centers, in each case offering access to and collaboration with the educational and local communities (teachers, professionals, community leaders, families). These spaces played a key role for (a) the sustainability and effectiveness of the program, (b) the improvement of the feeling of belonging and appropriation of objectives, (c) the articulation and complementarity with other social and educational programs, and (d) the social participation in decision making with regards to the program.

The application and execution of the SfG were conducted by the facilitators. This role was performed by people trained for teaching and training children and youth and those who knew the community environment where the program’s spaces would be implemented. Furthermore, these individuals usually had high social sensitivity, as well as community mobilization skills and abilities, leadership capacity, and a vocation of service to the community.

In the case of the Colombian Caribbean Coast, the program was applied in the three most important municipalities of this area - Cartagena, Barranquilla, and Santa Marta. In these geographic areas to which the families of our study sample belong, a total of 172 spaces were implemented with a mean of 25 to 30 children for each of the spaces (Table 1).

Table 1. Distribution of the SfG in Cartagena, Barranquilla, and Santa Marta (Colombian Caribbean Coast)

<b>Geographic Area</b>	<b>Responsible Entities</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>TOTAL</b>
Cartagena	Renacer Foundation	36	45	26	107
	“Volver a la Gente” Foundation Mamonal Foundation				
Barranquilla	Universidad del Norte Foundation	10	16	15	41
Santa Marta	Foundation for Children, Family and Community Development	7	9	8	24
TOTAL		53	70	49	172

## **Methods**

### *Participants*



There were 3,302 families with a son or daughter participating in the “Educame Primero Colombia” program for the eradication of child labor. These families were interviewed during the 3 years of the program’s implementation, that is, in 2008, 2009, and 2010. The families lived in the municipalities of Barranquilla (37.3 percent) and Soledad (5.3 percent) in the state of Atlántico; Cartagena (32.9 percent) in the state of Bolívar; and in Santa Marta (23.5 percent) and SitioNuevo (1.0 percent) in the state of Magdalena.

One member of each family was interviewed, usually the mother of the minor (74.0 percent). In other cases, one of the grandparents (7.2 percent), the father (5.8 percent), one of the brothers (2.7 percent), or another person (11.0 percent) was interviewed. Most of the families, according to the classification of the Colombian National Statistics Administrative Department (DANE-Departamento Administrativo Nacional de Estadística), belonged to socioeconomic stratum 1 (85.8 percent). A mean of 5.67 members (SD=2.14) made up these families, and the average monthly incomes reached approximately 338,000 pesos (approximately 190 dollars) (SD=179,329).

Out of the total sample, 44 percent were girls, and the mean age of the participants in the study was 9.66 years (SD=2.17).

#### *Procedure and instruments*

To conduct the survey, a semi-structured interview was held with the family prior to the inclusion of the minor in the assigned SfG. This format was used as a diagnostic instrument of the minor’s involvement in labor activities, either through their effective participation or the existence of risk factors. All of the families of the minors to be included in the program had to participate in the interview as a prerequisite. Finally, the study’s format was applied as it was designed by the team of the International Center for Education and Human Development (CINDE).

The interview was executed at the family home of the minor who would potentially participate in the program. A time and hour was agreed upon, and the presence of the minor and the interviewee was requested. The objective of the interview was to evaluate the socio-demographic and economic variables of the family, the characteristics and educational conditions of the minor, and the conditions of the child’s labor. In the case of the sociodemographic variables, the stratum to which the family belonged, the size and composition of the family unit, and the educational level of the minor’s parents were evaluated.

Likewise, the minor’s parents were used as a source of information concerning his/her educational performance. The parents were asked about the educational level of the minor, and variables related to absenteeism and/ quitting school were evaluated along with the achievements and failures during the last year in different subjects (mathematics, language, social sciences, and natural sciences).

Finally, the conditions of the child’s labor were evaluated. With regards to sensible information and to guarantee its reliability, this part of the interview was applied after

several visits with the family. This approach allowed the creation of an atmosphere of trust that would facilitate the family's responses to the questions related to the labor of their son or daughter. In this case, information regarding the participation of the minor in family businesses or in housework or in activities outside of the home that involved remuneration was obtained. Likewise, information about the characteristics of the minor's work (number of hours, distribution throughout the day of the week, contribution to the family economy, and current and future prospects regarding this work) and the presence or absence of child slavery or exploitation conditions was requested.

### *Analysis*

For the analysis of the results obtained, a series of logistic regression models was adjusted for the academic performance. These models involved a series of variables related to child labor and were built from the information obtained through the interviews. The analyses were carried out with the statistical package SPSS 19. The variables initially included in the previous models were (a) the conditions of the labor, (b) the type of labor, (c) the daily and weekly hours dedicated to work, (d) the age at which the child started working, (e) the distribution of the work between weekdays and/or weekends, and (f) the time of day the child works (morning, afternoon, or night).

In addition, the variable responses related to the academic performance were categorized according to the *Analytic Hierarchy Process (AHP)*. This process minimizes subjectivity in the moment when choosing the weight of each one of the response alternatives related to the academic performance of the child in the dependent variable. The AHP is an efficient process for dealing with group decision making, assisting with the identification and adjustment of the selection criteria, analyzing the collected data, and hastening the decision-making process (for more information, see Saaty, 1977, 1980).

Categories were compared within three groups of variables: school attendance and basic teaching content, current involvement of the child in school, and basic subjects taught in the centers. In each one of these groups (which would afterwards make up the academic performance factor considered in the analyses), a group of experts<sup>2</sup> compared each one of the categories with the rest of those in the same group, assessing the importance of each variable in determining academic performance. Each one of the options was ascribed a weight for the preferred category using a scale from 1 to 9, depending on the degree of preference.

In this way, we determined the adjusted weight that each one of the categories would have over the concrete academic performance factor. This methodology allowed us to obtain a factor related to the academic performance in which the contribution of each one of the

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<sup>2</sup> Five experts in the areas of education and psychosocial research and practice were consulted. Three psychologists specializing in education, a professor of education and a teacher were interviewed. Selection of the experts depended on their experience and prominence in the area of education and the study of factors associated with learning and scholarly performance.

categories measured in the population has a relative weight that was obtained according to the criteria of a group of experts in the concrete evaluation area.

## Results

### *Descriptive data about education*

The majority of the participating children knew how to read and write at the moment of the interview (90 percent) and regularly attended school (91.5 percent). A total of 9.5 percent of the children were enrolled in preschool education, 56.9 percent were in primary education, 24.9 percent were in middle or secondary school, and 3.5% were enrolled in technical or technological studies.

The greatest number of lost achievements or credits by the children in their studies was in mathematics and language, with 37.4 percent and 33.6 percent, respectively, having lost at least one achievement/credit in these subjects. Meanwhile, in the social sciences (18.6 percent) and the natural sciences, 18.1 percent lost at least one achievement/credit, approximately half of what was lost in mathematics and language.

Furthermore, 28 percent of the youth interviewed had failed a grade, and 26 percent had failed at least one of the complete basic subjects. Other academic performance variables taken into account included having quit school before completing the year (7.3 percent), not having matriculated while having passed the previous year (6 percent), having stopped studying during the year (5 percent), and having been expelled from school for one month or longer (3 percent).

In the case of not studying, the reasons given were that the child had to carry out tasks or occupations in the family home (65.7 percent), that the child had mothered or fathered a baby at an early age (13.5 percent), that the child needed to take over family responsibilities (9.1 percent), and that the costs of education were too high (3.6 percent), among other reasons (Table 2).

Table 2. Reasons given for not studying currently

<b>Reasons for abandoning school</b>	<b>F</b>	<b>%</b>
Must carry out home tasks	639	65.7
Maternity or paternity at an early age	131	13.5
Family responsibilities	88	9.1
High educational costs	35	3.6
Forced abandonment from family home	18	1.9
Other reasons	61	6.2
<b>TOTAL</b>	<b>972</b>	<b>100</b>

### *Descriptive data about child labor*

In more than three-quarters of the cases (78.6 percent), the child participated in housework during the previous week for an average of 4.41 hours (SD=4.58). In addition, 40.6 percent of the children participating in the study carried out work for which they received payment during the previous week, and 46.8 percent stated that they had worked in the past, even if they were not currently working.

The reasons given for working were mainly centered on economic concerns. Thus, the reasons given for the majority of the cases in which the child had worked at some point were the need to help with home expenses (34.3 percent) and the obligation to participate in the economic activities of the family (27.3 percent). To a lesser extent, the minor's interest in having his/her own job that contributes to the training of the minor (10.2 percent) or isolates him/her from vices (5 percent) are also mentioned as contributing factors.

On another note, the children and youth who report having worked have done so primarily in their homes or on their own on the streets (40.5 percent). The rest worked on businesses or farms belonging to their parents, relatives, or other people who are not relatives. Moreover, these children and youth that performed remunerated work dedicated an average of 3.22 hours per day (SD=1.98) and 1.89 days per week (SD=2.59) to such labor activities.

Table 3. Days and moments dedicated to remunerated labor.

Day and moments dedicated to remunerated work	F	%*
Monday	894	27.1
Tuesday	835	25.3
Wednesday	880	26.7
Thursday	850	25.8
Friday	990	30.0
Saturday	1008	30.6
Sunday	770	23.3
Morning	763	23.1
Afternoon	702	21.3
Night	141	4.3

\*Percentage calculated over the sample's total

The days of the week in which the greatest percentage of children and youth carried out some remunerated work are Friday (30.0 percent) and Saturday (30.6 percent). These laborers typically work with a greater frequency in the morning and afternoon (Table 3).

In the majority of the cases, the job is permanent (72.6 percent), while in the rest of the cases, it is temporal with a specified duration. The average income from labor activities performed by the children within the sample is 29,435 pesos (SD=47,029). Only for a small number of families is the contribution of the minor the main support for the home

economy (2.7 percent). On the contrary, in the majority of the cases, the minor's contribution is not considered important (32.5 percent), or it is considered a more or less important complement (64.9 percent).

*Model of the impact of child labor on academic performance*

First, the weights of the variables were distributed on the academic performance factor according to the AHP procedure mentioned before. The final distribution of these weights is shown in Table 4.

Table 4. Weights of the academic performance variables on the final performance factor (in percentages)

<b>Academic Performance Variables</b>	<b>Weight on final factor (%)</b>
Can read and write	38
Regularly attends school	0
Irregularly attends school	1
Does not attend currently, but attended before	1
Has never attended class	4
Has failed a grade	12
Failed language the previous year	3
Failed mathematics the previous year	3
Failed social sciences the previous year	1
Failed natural sciences the previous year	1
Did not lose any achievement in basic subjects	0
Lost 1 or 2 achievements/credits in basic subjects	1
Lost 3 or 4 achievements/credits in basic subjects	3
Lost 5 or more achievements/credits in basic subjects	7
Has dropped out of school before finishing the year	4
Has not matriculated a year while having passed the previous year	9
Has stopped studying for a year	7
Has been expelled for periods equal to or greater than one month	4
<b>TOTAL</b>	<b>100</b>

Different logistic regression models were applied using the academic performance factor as the dependent variable and those mentioned in the methodology section as independent variables. It must be considered that this model was only adjusted in those cases where the participating children were engaged in labor. The academic performance dependent variable was categorized as a dichotomous variable with low (0) and high (1) levels to achieve a better fit to the binary logistic regression models.

The number of final cases included in the analysis was 921 participants. The cases had complete measurements in the studied variables. To calculate the logistic regression

model, the method of maximum likelihood, which allows the program to introduce variables into the model, was applied with those that have the largest and statistically significant regression coefficients. The method reevaluates the coefficients and their significance in each step, eliminating from the model those that are not considered statistically significant. The last study step generated the model shown in Table 5. The non-significant variables included in the previous steps have not been included.

Table 5. Logistic regression model for academic performance

		<b>B</b>	<b>E.T</b>	<b>g.l.</b>	<b>Sig.</b>	<b>Exp (B)</b>
Step 3 <sup>a</sup>	Working conditions	.227	.76	1	,003	1,255
	Total hours per week	-.018	.006	1	,001	,982
	Morning labor	-.470	.118	1	,000	,625

<sup>a</sup>Variable (s) introduced in step 3: working conditions.

To verify the fit of the model, the likelihood ratio, which follows a  $\chi^2$  distribution with p degrees of freedom, was analyzed. Given that this statistic was significant ( $p < 0.5$ ), the model presents a good fit. In addition, the Hosmer-Lemeshow test (Hosmer and Lemeshow, 1989) was used as a way to evaluate the global fit of the model. This statistic is especially useful with models with continuous co-variables and relatively small samples. In this case, the absence of significance with a p-value equal to 0.132 also indicates a good fit of the model.

The coefficients of the exposure variables and the constant were evaluated using the Wald test. The constant was not significant and was withdrawn from the model. The significance values are also shown in Table 5. The percentage of the cases classified by the model was 60 percent.

Although the Nagelkerke R-squared value was low (0.74), it must be taken into account that other statistics show the validity of the model. In this sense, as Hosmer and Lemeshow (1989) mention, the empirical evidence suggests that these values are intuitive and are usually confused with R-squared of common regressions. In this case, it is suggested to first verify the classification errors that resulted in 17 percent of false lows and 71.1 percent of false highs. In general, this finding indicates that to have a higher discriminatory power over high educational conditions, other variables must be evaluated.

The academic performance variable is a function of the existence of labor conditions classified by the ILO (1999) as severe or slave-like conditions, the number of hours devoted per week, and the fact that the day's work is mainly during the morning. That is, the academic performance is affected by the presence of child labor conditions beyond its presence or absence, which is fundamentally related to exploitation conditions or non-sporadic labor.

Working under conditions of slavery or working a high number of hours per week during a schedule contrary to the usual academic schedule, that is, in the morning, leads to poorer academic performance in different aspects of the child's schooling. In this sense, it is

important to highlight the importance of work carried out during schedules that compete with the school day, which entails poorer academic performance. As we can see, working in the afternoon or evening does not appear to be significant for this model, even though they could have an impact in terms of greater exhaustion or less time available for extracurricular activities associated with the educational experience or for recreational activities and free time.

On another note, the number of hours worked weekly by the child appears to be the third relevant variable with regards to its impact on academic performance. Working for a number of hours above the acceptable threshold affects the minor's performance in school, with the hours per week rather than the hours per day being the relevant variable in this case.

Finally, it is important to note that the distribution according to the days of the week does not appear as a condition that has a negative impact on the set of educational conditions. The age of initiation of labor activities was also not shown to be a relevant variable in any of the models.

## **Discussion**

The results of the current study show the differences among the characteristics of child labor with regards to their impact on the academic performance of the child laborers participating in the "Educame Primero Colombia" program. Although the involvement of children in labor activities is generally a far-reaching problem and has negative consequences on the emotional, social, and educational development of the child, it is not a linear relationship that can be explained simply in terms of the presence or absence of child labor. As has been mentioned in this study, several authors note that certain characteristics of child labor influence the educational experience of the child laborer in a differential way. Even in the literature, several of these characteristics have been precluded on certain occasions (Sabia, 2009). Accordingly, certain aspects, such as the type of work, the intensity, or the moment dedicated to labor activities, are variables that affect the different spheres of the child's development over the short, medium, and long term (Seebens & Wobst, 2003)

In our case, the construction of a robust academic performance variable allows us to see the impact of child labor on the minor's global school experience beyond the consideration of specific aspects of the educational experience, such as assistance, desertion or absenteeism, performance, or the acquisition of basic educational abilities, such as reading and writing. In our study, we consider the educational experience to be a global factor that includes different dimensions and that covers the aforementioned variables. Moreover, this facilitates measuring the impact of the characteristics of child labor over the general educational performance of the minor.

Specifically, the proposed model suggests that three fundamental dimensions of child labor negatively affect the minor's educational experience. On one hand, the conditions in which the labor is carried out, taking into account the worse forms of child labor

defined by the ILO (1999), were redefined in one variable that included deteriorated working conditions. The quality of the labor performed and the subjection to situations such as prostitution, drug trafficking, or work that involves a physical or psychological risk to the minor, result in a clear negative impact on their general development and, specifically, on their academic performance in the educational context. On the other hand, the inclusion of the variable indicating the type of work carried out was not significant for the model. This finding suggests that it is not the type of activity performed but the conditions under which the activity is performed that are important, even if taking into account that certain types of labor can entail worse working conditions.

In addition, as mentioned by Rosati and Rossi (2003), the intensity of child labor, measured by the time dedicated to the work, is an important variable when considering its impact on academic performance. In our case, the weekly hours devoted to labor activities negatively affect the educational experience. Other related variables, such as the daily hours or the day/s devoted per week, were not significant. This finding is observed because the number of weekly hours is a variable that in some way encompasses the other two variables mentioned. The number of weekly hours allows the adequate discrimination of the type of working day of the minor, taking into consideration that contrary to adult labor, this work is usually irregular in terms of its hourly or daily distribution, and sometimes tasks to assist family businesses are carried out as needs arise (Buonomo, 2011). Conversely, this same author notes that the number of hours worked above a specific threshold is detrimental to academic performance, particularly because work begins to compete with the educational context. Under this threshold, Buonomo (2011) found a better academic performance with respect to non-working children.

Finally, the third significant variable for the model was the presence of work in the morning. It is in this case that the competition between the working day and the school day is more clearly evident. Several authors have noted that the moment of the day in which the work is performed can have a differential impact on the working minor (Sabia, 2009). Logically, performing labor activities in the morning, a time during which school activities are usually scheduled in the majority of the contexts, produces an immediate effect on the minor's absence from school and therefore affects the indicators included in the academic performance factor. It is worth highlighting that the presence of labor in the afternoon or at night were not significant variables for the final model. While it is true that, as mentioned before, working during these other moments of the day should have a more or less residual effect on academic performance, we can assume that the majority of the educational experience is produced within the school such that the inability to attend produces more negative effects than not being able to conduct school tasks outside of the classroom. In this sense, the majority of the intensive labor is carried out in the morning schedule, and in those cases (of less frequency) in which the labor is performed in the afternoon or at night, in addition to not affecting school attendance, this labor usually involves housework or specific assistances in other jobs.

Overall, the interaction between child labor and the academic performance of child and youth laborers is far from being simple or linear. It is a complex relationship in which, as



we have observed, such factors as the working conditions, the intensity and devotion to labor, and the distribution and time of the activities performed play key roles. Academic performance is affected to the extent that these characteristics of child labor compete with the educational experience of the minor. Accordingly, poor working conditions, hours worked in excess of the acceptable threshold, and above all, a work schedule that overlaps with the school schedule, will clearly affect the child's academic performance and his/her experience in the educational process. This model is supported by the results found by O'Donnell et al. (2002), regarding a non-linear back-and-forth relationship between child labor and the educational, social, and family spheres. However, it is worth noting that Buonomo's (2011) aforementioned results showed better academic performance for those children and youth who devoted a maximum of two hours per day to labor activities.

The "Educame Primero Colombia" program's general objective is to eradicate child labor through public and development policies. This objective, which corresponds to general cooperative actions in developing countries, has medium- and long-term outlooks that are demonstrating effective results on the reduction of the prevalence of child labor according to the general statistics mentioned. The program also proposes educational and socialization activities during times outside of the educational schedule as a strategy to buffer the negative effects that child labor has over educational performance. This buffering effect has had a positive impact on certain educational processes, including the improvement of student grades in mathematics, language, and behavior (Palacio, Sierra, and Aguilar, 2010).

The results of the current study and the experiences associated with the "Educame Primero Colombia" program show that an effective combination of public policies and specific educational and community-based interventions is the best strategy for addressing child labor. By confirming that concrete aspects of child work affect academic performance, we can propose *microinterventions* that address these aspects and that have as objectives, for instance, the disengagement of the minor from poor working conditions, the reduction in the intensity and in the number of hours devoted to work, and the adequate distribution of cooperative labor activities. It should be attempted, in a practical manner, to avoid conflicts between the child's work and the child's education with respect to academic performance and attendance, as well as the subjective educational experience and involvement in recreational experiences within the educational framework. Therefore, it is necessary to propose strategies that complement and reinforce the educational focus (as proposed in the "Educame Primero Colombia" Program) to mitigate certain of the effects of labor on the child's academic performance. Finally, general public policies that influence macrosocial aspects, such as socioeconomic conditions, should define the key factors behind involving minors in labor activities (Basu and Van, 1998; Ranjan, 1999). Furthermore, the cultural factors present in society can, along with the characteristics of the family structure, influence those factors that determine the preservation of child labor (O'Donnell et al., 2002).

Overall, only a comprehensive perspective allows proposals for effective action for tackling this problem with permanent, middle- or long-term results. This ideal perspective

proposes multidimensional interventions and combines preventive activities for mitigating the negative effects of child labor on the development of the child and for fostering social and community development.

In future studies, it would be desirable to include other variables that reflect the academic performance of the child in a more holistic manner, such as the subjective experience with regards to the educational activity or the perception of the school environment. Furthermore, additional sources of information besides the family could be used to obtain the academic performance indicators, such as the staff at the educational center or documentary sources, concerning the child's performance in different subjects. This approach would enhance the robustness of the variable. It would also be interesting to broaden the description of the characteristics of the work carried out by the minor in such a way that it would be possible to increase the range of independent variables that describe, in more detail and with more precision, the impact of labor on the child's academic performance. Finally, future studies could include family, educational, and community variables and thereby create a multilevel analysis of the effects of child labor on academic performance.

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