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## Socioeconomic Gradients in the HOME Inventory

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# Measuring the quality of the home environment of young children in Uruguay

## Socioeconomic gradients in the HOME inventory

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### Abstract

Uruguay is one of very few countries in Latin America that has a nationally representative, longitudinal survey of early childhood development. In 2015–2016, during the second wave of the survey, an observational module on the home environment was administered at scale for the first time. The module included items from two subscales (responsiveness and acceptance) of a widely used instrument that measures the quality of the physical and emotional environment: the HOME inventory. We find that the set of items administered from the HOME has very good concurrent validity with child development and maternal personality traits, as well as with other relevant socioeconomic variables. In line with the literature, our analysis shows that children from the most vulnerable families are exposed to a lower-quality home environment—that is, less responsive and more punitive. Interestingly, Uruguayan children are exposed to better environments as compared to children in predominantly rural samples from the Latin America and Caribbean region; however, they present comparable environments when compared to similar samples from countries such as Brazil and Chile.

**JEL:** I10, I30, J13, I38

**Keywords:** Child development, parenting practices, HOME, quality of the home environment, Uruguay, ASQ, ENDIS

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## 1 Introduction

Collecting information on child development and the quality of the home environment is fundamental to building a comprehensive understanding of early childhood, assessing its current state, and informing evidence-based public policy. Moreover, panel data allow for a better understanding of social changes over time, provide information on how households evolve, and reveal changes in program participation. Nevertheless, collecting this information repeatedly and at frequent intervals can be costly in terms of time, money and human resources. Additionally, the quality of the home environment and stimulation for proper child development is difficult to measure, as it is determined not only by the physical and human resources (identified through structural variables) that facilitate interactions between caregivers and children, but also by process aspects, such as the frequency and intensity with which these interactions occur.

Uruguay, like other countries in Latin America and the Caribbean (LAC), has recently adopted a comprehensive understanding of child development and has recognized the importance of generating information about children and their families. In this context, the Uruguayan Nutrition, Child Development and Health Survey (ENDIS) has been implemented. ENDIS is the first early childhood study in Uruguay (and the third in Latin America, after the Chilean ELPI and the Colombian ELCA) to employ a panel methodology in a national household survey.<sup>1</sup>

The ENDIS was implemented through the *Uruguay Crece Contigo* program (UCC),<sup>2</sup> in partnership with the Family Studies Group from *Universidad de la República* and the National Statistics Institute (INE). The ENDIS seeks to generate knowledge to advance early childhood policies in Uruguay based on evidence about children's nutritional status, development and health, and the changes that occur as they grow. The first wave was conducted in 2013, and the second was conducted between 2015 and 2016.

Additionally, in recognition of the importance of having a complete set of variables for the quality of the home environment, the Government of Uruguay decided to include an observational module to measure the home environment in the second wave of the ENDIS. The Home Observation for Measurement of the Environment (HOME) is a widely used instrument that, through observation and interview, measures the home environment, including the quality of the emotional environment, from the child's perspective. This unique observational measure of the quality of the cognitive stimulation and emotional support provided by a child's family has been used in more than 50 countries and has inspired many other measures, such as the well-known Family Care Indicators (Kariger et al., 2012). The main limitation of the HOME is that the full 45-item inventory is difficult to implement in large surveys, as it requires an average administration time of 45 to 60 minutes and highly trained interviewers. While some of the derived measures are characterized by shorter questionnaires, with fewer observational items and less required

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<sup>1</sup> The Young Lives study in Peru is also a panel study of young children, but it is not nationally representative of the whole population. It only represents children in the first four income distribution quintiles.

<sup>2</sup> *Uruguay Crece Contigo* (UCC) is a national directorate of the Ministry of Social Development (MIDES), whose goal is to build a comprehensive protection system for early childhood, in order to guarantee the comprehensive development of children and their families—beginning with the protection of pregnant women—from a rights, equity, gender equality, social justice and comprehensive human development perspective. In order to achieve this goal, the program develops universal, targeted actions to guarantee the adequate care and protection of pregnant women and the comprehensive development of children under the age of 4. Following the incorporation of the UCC into MIDES in 2015, the creation of an interagency steering committee for ENDIS was proposed, consisting of representatives from MIDES, the Ministry of Public Health (MSP), the Uruguayan Institute for Children and Adolescents (INAU), the Ministry of Education and Culture (MEC), and the INE.

training as compared to the HOME (Fernald et al., 2017), their main disadvantage is that they either focus on access to resources (materials and books) without assessing the emotional environment, or that they are self-reported, meaning they lack objectivity. To overcome this shortcoming, a subset of items from the responsiveness and acceptance subscales of the HOME (Cadwell et al., 2003) was administered.<sup>3</sup>

During the second wave of the ENDIS survey, along with the variables collected during the first wave (see page 3 in Cabella et al., 2015), additional instruments were administered that allowed for a more comprehensive understanding of the conditions and environment in which Uruguayan children were growing up: the aforementioned subset of items from the responsiveness and acceptance subscales of the HOME, and the Big Five Inventory (John et al., 2008), which examines personality traits (in this case, of the mothers or primary caregivers). Furthermore, the Ages & Stages Questionnaires, Third Edition (ASQ-3) (Squires et al., 2009) was expanded to the entire country as an indicator of the development of the children in the sample.<sup>4</sup>

The purpose of this paper is to analyze the relationship between the HOME, child development, anthropometrics, maternal personality traits, and the socioeconomic variables that characterize the homes of the children that participated in the second wave of the ENDIS survey. In particular, an analysis of how well the HOME correlates with internationally validated measures such as the ASQ-3, FCI and Big 5 is conducted. This aspect is important, since the HOME has never been administered at scale in Uruguay. As they are highly relevant to policy-making, the socioeconomic gradients in the HOME are presented, along with a multi-country comparison.

This paper is divided in four parts: i) this introduction; ii) a description of the source of our information (the ENDIS survey), data collection, instruments and descriptive statistics; iii) results; and iv) conclusions.

## **2 Description of the ENDIS, the instruments used and descriptive statistics**

### **2.1 ENDIS**

Uruguay's ENDIS is a longitudinal survey that arose from a need to generate nationwide data to allow for a more in-depth study of the current state of early childhood in various aspects, including socioeconomic conditions, child development (both physical and cognitive), and parenting practices,<sup>5</sup> thereby creating inputs to inform the design and implementation of public policies aimed at young children. The ENDIS also constitutes the country's first effort at something nearing a demographic and health survey, which was previously non-existent.

The first wave of the survey was conducted from October 2013 to February 2014 and included 3,077 children ages birth to 3 years 11 months from 2,665 urban households (localities with more than 5,000 inhabitants), which were also interviewed as part of the INE's Continuous Household

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<sup>3</sup> This version of the HOME is the same one used in other studies conducted in LAC (Berlinski and Schady, 2015).

<sup>4</sup> During the first wave of the ENDIS, the ASQ-3 was only administered to children in Montevideo.

<sup>5</sup> The ENDIS contains 18 modules (not counting the HOME and the ASQ-3) and aims to study the following phenomena: household socioeconomic and demographic characteristics; access to social benefits; food security; nutritional status through anthropometric measurement; child nutrition; child development; child-rearing practices in the home; women's health and sexual and reproductive health; access to and utilization of health services; and access to educational services (Berón and Toledo, 2015).

Survey (ECH)<sup>6</sup> (Cabella et al., 2015). The second wave was carried out between December 2015 and May 2016, during which information was obtained on 2,611 children from 2,310 households with at least one child between the ages of 2 and 6 years old. Of those children, 2,383 had participated in the first wave (i.e., a 22.6% drop in participation relative to the first wave of the survey) while 228 were visited for the first time. A subsequent study should investigate attrition bias between the first and second waves. In the statistical analysis that we present below, we include the sample weights, which guarantee the national representativeness of the survey. In this paper, we solely use data from the second wave of the ENDIS.

## **Training**

The second wave of the ENDIS required highly trained data collection personnel, particularly for the anthropometric measurements, child development tests, and observational tools. In response to this need, 96 students in their final year of the psychology program were selected to participate in the training process. They were divided into three groups and trained for four days: the first day was devoted exclusively to HOME training, days two and three to a description of the survey and completion of the socioeconomic form, and the final day to anthropometric measurements and child development measures. Of the 96 students, 74 participated in data collection.

## **2.2 Instruments**

### **2.2.1 Self-reported parenting practices**

The two waves of the ENDIS incorporated a self-reported parenting practices module. This module includes the following: four play-related questions that partially match items from the Family Care Indicators (FCIs) developed by UNICEF (Kariger et al., 2012); 23 questions from the Parenting Practices Instrument of the Interdisciplinary Group of Psychosocial Studies (IPCGIPE), designed specifically for the Uruguayan context, which provides an indicator on parenting beliefs and practices (UDELAR, 2012); and four questions about the person responsible for decisions on the child's health, education, habits and boundaries. In this study, we focused on four items from the FCIs, since it is an internationally validated and widely used instrument (UNICEF, 2017).

### **2.2.2 HOME**

In addition to the socioeconomic variables and aforementioned (self-reported) parenting practices collected during the first wave, for the second wave of the ENDIS, interviewers administered a subset of items from the responsiveness and acceptance subscales of the Infant/Toddler Home Observation for Measurement of the Environment (IT-HOME) (Cadwell et al., 2003), an instrument that combines observations with information reported by the parents and that focuses

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<sup>6</sup> The ENDIS used a two-stage sampling design. The first stage corresponds to the ECH's sampling (nationally representative sample), whose design is random and stratified in two or three stages. The second stage was the selection of all households belonging to the ECH with at least one member under the age of 4; it was not randomized because the number of households that met these criteria (4,943) was the minimum to obtain estimates with reasonable precision and statistical confidence. Of the 4,943 households that constituted the theoretical sampling frame, a response rate of only 66.1% was achieved during the first wave, yielding a real sample of 2,655 households (ENDIS data sheet, INE, 2013). Given the low response rate in the first wave, and the loss of sample in the second wave, the final weights were calibrated with the post-stratification technique.

on the child as a receiver of objects, events and interactions that occur with their closest family members.

The HOME is designed to measure the quality of the family environment in the home from both a quantitative and qualitative perspective. The version for children ages birth to 3 (IT-HOME) consists of 45 items divided into six subscales that assess parental responsiveness and acceptance, household organization, learning materials, parental involvement, and variety in stimulation. Each item receives a binary score (plus or minus), depending on whether a specific event occurs with a determined frequency. The number of “pluses” are tallied for the subscale and total scores. For the ENDIS, 11 items from the caregiver responsiveness and acceptance subscales were administered. The first six items are part of the caregiver responsiveness subscale, with higher values indicating a colder or less sensitive relationship with the parents, while the last five items correspond to the acceptance subscale, which measures how parents handle the child’s behavior, with higher values indicating a more punitive or severe parenting style. These items of the HOME are the same one used in other studies conducted in LAC (Paxon and Schady, 2007, 2010; Macours, Schady and Vakis, 2012).<sup>7</sup>

To ensure high-quality administration of the measure, an internationally experienced trainer provided support in the training and selection of a group of 20 interviewers who achieved an inter-rater reliability<sup>8</sup> of 80% (during training and throughout the data collection), thereby guaranteeing homogeneity and impartiality in the results. Subsequently, 54 interviewers received theoretical training from a professor at the *Universidad de la República* and jointly administered the HOME at least once with 1 of the 20 initially trained interviewers. The entire survey took an average of two hours to administer, but interviewers only made observations for the HOME during the first hour.

### 2.2.3 Big Five

Social interactions, as well as academic and labor market outcomes, depend on multiple factors, including personality traits. Unlike intelligence or cognitive traits, there is no consensus on the best way to measure them. However, there seems to be consensus around five key dimensions: energy or extraversion, agreeableness, conscientiousness, emotional instability (reported as neuroticism), and openness. To approximate these dimensions, during the second wave of ENDIS, the children’s mothers or caregivers answered questions from the self-reported personality test known as the Big Five Inventory (BFI). This inventory consists of 44 short statements for which the interviewee must indicate how strongly he/she agrees on a scale of 1 to 5 (John et al., 2008). Answers are totaled by dimension, yielding five scores in all, one for each dimension.

Although there are no established norms against which to compare the results, some authors have proposed personality traits that may be associated with each of the dimensions’ score; for example, high scores in conscientiousness are associated with self-efficacy, organization, self-discipline, orderliness, etc., while high scores in neuroticism are associated with anxiety, hostility, depression, and impulsivity (Almlund et al., 2011). High levels of hostility and depression might

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<sup>7</sup> Other surveys, such as the U.S. National Longitudinal Survey of Youth (NLSY), have also incorporated a short version of HOME.

<sup>8</sup> Inter-rater reliability corresponds to the level of agreement between two or three observers when assigning a score to a subject; it is usually established against a gold-standard (certified) observer. For those instances in which the raters’ scores differed, the observers engaged in discussion and feedback.



affect parenting patterns in a negative way, while high levels of organization and self-discipline may positively influence parenting practices (Richter et al., 2016; Black et al., 2016).

#### **2.2.4 ASQ-3**

As a measure of child development in both waves of the survey, the Ages & Stages Questionnaires, Third Edition, ASQ-3, was administered to children up to 5½ years of age. This instrument allows for a first-level comprehensive analysis of child development, so that children at risk of developmental delays or disorders can be identified, which is very important for the design and implementation of public policies, insofar as it makes it possible to provide early interventions and focus resources.

The ASQ-3 is designed to be completed by parents or primary caregivers and is composed of 21 questionnaires that are administered based on the child's age (birth to 66 months). Each questionnaire assesses five domains: problem solving, fine motor, communication, personal-social and gross motor. The score for each domain is constructed by totaling the scores obtained for each of its six items, all of which have three answer options, "yes," "sometimes" and "not yet" with values of 10, 5 and 0, respectively. Thus, the minimum score that can be obtained is zero, and the maximum score is 60.<sup>9</sup> For the correlation analysis, we internally standardized developmental scores by age, following the non-parametric method proposed by Rubio-Codina et al. (2015).

#### **2.2.5 Anthropometric indicators**

To estimate the anthropometric indicators, we standardized the scores relative to a WHO reference population of healthy children (z-scores).<sup>10</sup> Following WHO recommendations, biologically implausible values (values greater than 5 or 6 SD and values less than -6 or -5 SD, depending on the indicator) were discarded. In addition to z-scores, we computed a range of binary indicators of nutritional status:

- Low weight: children with a score below -2 SD in weight for age.
- Chronic malnutrition: children with a score below -2 SD in height for age.
- Overweight and obesity: for children under age 5, scores are calculated based on whether weight for height is between 2 and 3 SD above the mean. Scores for children over age 5 are calculated based on the body mass index (BMI), with children considered overweight or obese if they are 1 to 2 SD above the mean.

### **2.3 Descriptive statistics**

Table 1 presents descriptive statistics for the children interviewed in the second wave. The average age of the children is 46.02 months, concentrated mainly in the range of 29 to 62 months (10th and 90th percentiles), 75% attend a school or daycare center, and 6% are stunted. The average household size is 4.55 members, with 13% of families living in overcrowded conditions.

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<sup>9</sup> Additionally, the ASQ-3 proposes cut-off points that allow us to compare the child's level of development with results from a sample of U.S. children used to validate the instrument. According to this comparison, the child's development is classified as above, just above, or below expectations, depending on whether the score is more than 2 standard deviations (SD) above the cut-off point, between 1 and 2 SD above, or 2 SD below the cut-off point (Squires et al., 2009).

<sup>10</sup> To compute z-scores, we used the ANTHRO program in its two versions (for children up to age 5 and children ages 5 to 19).

The average number of years of maternal education is 10.92, while the average per capita income is 15,391.36 Uruguayan pesos (UYU) (standard deviation of UYU 15,085.71). Data from the 2016 ECH Survey, which is representative of the national population, reveal an average household size of 2.79, overcrowding of 5.82%, average number of years of education of women of childbearing age (15 to 49 years old) of 10.52, and average per capita income of UYU 20,857.21. These results are expected given that the ENDIS sampling frame is different from that of the ECH Survey, mainly since the former draws from a much younger sample, with a focus on families with young children.<sup>11</sup>

The average score on the HOME is 2.10 (of the 11 practices or activities evaluated, caregiver households report an average score of 2.10 undesirable behaviors), while the average score on the Big Five Inventory is high on dimensions of agreeableness and conscientiousness, medium on extraversion and openness to experience, and low on neuroticism (emotional instability).

With regard to self-reported parenting practices (FCIs), the most frequently reported are playing and singing (89% and 88%, respectively), while the least frequent response is reading books (65%), followed by telling stories (79%). The average score on the ASQ-3 subscales ranges from 46.65 to 54.70, with fine motor skills and gross motor skills receiving the worst and best scores, respectively.

Figure 1 shows that the 50th percentile of our sample earns UYU 10,984.33, which means that about 50% of households have a per capita income lower than the monthly minimum wage set at UYU 11,150 for 2016. To put these figures in perspective, Duryea and Robles (2016) analyzed the 2014 Continuous Household Surveys of 18 Latin American countries and found that Uruguay had the second highest per capita income (USD 8,461 per year), the lowest poverty rate, and the highest percentage of middle-class families. This survey seems to overrepresent poor families precisely because it focuses on families of young children.

Mothers have an average of 10.8 years of education. This figure coincides with the fact that 44% of mothers have incomplete secondary education; 15%, complete primary education; and 2%, incomplete primary education; in contrast, 16% have a college education or higher (Figure 1). According to the 2016 ECH Survey, the average years of education for women between the ages of 25 and 49 (the age range containing 75% of the women who identified as head of household in the second wave of ENDIS) is 10.65, equivalent to the fourth year of secondary education (Sociómetro-BID, 2017). It is important to note that the mothers' average education level is above the national average probably precisely because they are younger; however, the average still falls short of the 12 years of compulsory education mandated by the Uruguayan educational system.

### **3 Results**

#### **3.1 Concurrent validity of the HOME**

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<sup>11</sup> The average age of household members for the ENDIS is 20.58, while for the ECH it is 42.68. When we restrict the ECH to households with at least one member between the ages of 2 and 6, the descriptive statistics are as follows: average household size of 4.31, overcrowding equal to 18.13%, average number of years of education of women of childbearing age (29 to 49 years old) of 10.61, and average per capita income of UYU 12,375.01.

Concurrent validity is a measure of how well a particular indicator correlates with a previously validated measure. In this case, given that the HOME has never been administered at scale in Uruguay, it makes sense to analyze its correlations with valid measurements from the ENDIS.

Table 2 shows the concurrent validity of the HOME (in this subsection the reverse coded version is used to facilitate its comprehension; that is, a higher score in this case is associated with a positive home environment for child development). To that end, we estimate Pearson's correlations between the HOME and socioeconomic variables, self-reported parenting practices, each of the ASQ-3 subscales, and Big Five dimensions.

Per capita household income and mother's years of education have a significant positive association with the HOME score for all ages, while chronic malnutrition is negatively associated with the HOME, except for children under 36 months. Parenting practices such as reading books and singing songs—during the week before the survey—are positively and significantly associated with the HOME score; however, telling stories and playing are not correlated for children under 36 months. Correlations between the HOME and standardized ASQ-3 subscale scores range from 0.02 to 0.24 and are statistically significant for all age ranges, except gross motor for children under 36 months. Beyond this exception, the association is statistically significant, which is an expected result since a positive home environment promotes child development. Finally, in terms of the average score of the dimensions evaluated by the Big Five, high scores (associated with positive attributes that define the primary caregiver's personality) have a significant positive correlation with results on the HOME. These results are in line with the child development literature (Bradley, 2015; Fernald, et al., 2017).

### **3.2 Socioeconomic gradients of the HOME**

When investigating the differences on the responsiveness and acceptance subscales of the HOME, we found that the most socioeconomically vulnerable children are exposed to environments that do not favor their development; that is, less receptive and more punitive environments. The difference in scores between the poorest and the wealthiest quintiles, as well as between the children of less and more educated mothers, is approximately one point on the overall score (at a significance level of 1%; that is, with a 99% probability that this difference is not equal to zero), which suggests that there are significant disparities within Uruguay (see Table 3). This finding somehow contrasts with comparisons between children living in Montevideo<sup>12</sup> and those living in the rest of the country, as the total score for children living outside Montevideo (i.e. poorer) indicates that they are exposed to a better environment.

As described in section 2.2.2, the responsiveness scale takes values from 0 to 6, while the acceptance scale takes values from 0 to 5 (which, together, represent an overall score of 11 on the scale). Scores are constructed such that a higher score means a less favorable environment (if the caregiver yells at the child, a score of one is assigned, whereas if she speaks normally to the child, a score of zero is given). Thus, a responsiveness score of 1.80 for the poorest quintile means that, on average, almost two negative practices were observed in those households. In contrast, the wealthiest households had a score of 1.14, roughly half the number of unhealthy practices observed in the poorest households.

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<sup>12</sup> A greater number of children from households in the richest income quintile live in Montevideo.

When comparing these gradients with those obtained in mainly rural areas of other countries of the region, Uruguayan children get a higher HOME score over the entire distribution of per capita household income (see Table 4). This difference is mainly explained by the responsiveness subscale, which displays greater differences. When analyzing gradients by the education level of mothers, the results remain the same only when compared to the Caribbean and Peru. These results are different when compared to populations in urban areas such as Fortaleza, Brazil, or Chile. Regardless of income level or maternal education level, Uruguayan children obtain similar or slightly lower scores on both subscales. Specifically, in spite of differences in the versions of the HOME used (namely, the wording of certain items, the number of items and the version administered<sup>13</sup>), when the results of the ENDIS are compared with those of the Early Childhood Longitudinal Survey (ELPI, 2012) in Chile—the most similar LAC country in terms of per capita income and poverty levels—it is observed that on a scale of 0 to 11, Uruguayan parents or caregivers have 0.7 more negative practices than their Chilean counterparts. At the subscale level, the responsiveness score is higher for Uruguay, while the acceptance score is higher for Chile, implying that Uruguayan parents or caregivers offer an emotionally colder but less punitive environment as compared to Chilean parents and caregivers (see Table 5). However, we cannot conclude that scores are significantly different between the two countries.

### 3.3 Gender and age differences in HOME

Table 6 presents the socioeconomic gradients by children's gender and age. Regardless of income level, maternal education level or type of area (urban or rural), households with girls have better home environments than those with boys. In terms of age, although there is no clear trend, children older than 60 months who belong to the poorest quintile or who have mothers with an education level equal to incomplete primary school, grow up in environments with worse parenting practices.

## 4 Conclusions

In 2013, Uruguay committed to investing in a longitudinal survey of early childhood, which contributed to the subsequent definition of several policies aimed at this age group, among them the UCC and the *Sistema Nacional Integrado de Cuidados* (SNIC). Furthermore, in 2015–2016, with support from the IDB, two subscales of an internationally validated observational tool—as is the HOME—were included in the survey to measure the quality of the family environment. This paper presents one of the benefits of using this type of measure, by examining correlations of the HOME with income level and maternal education, which were previously unexplored in Uruguay.

The quality of the home environment depends on multiple factors, including dynamic aspects such as the frequency and intensity with which enriching interactions occur between caregivers and children. Using items from the HOME's responsiveness and acceptance subscales as a measure of the quality of the stimulation and home environment offered to children, we found that the most socioeconomically vulnerable children (low income households and those with less educated mothers) are exposed to unfavorable environments—that is, less responsive and more punitive—which suggests that socioeconomic disparities exist that, if not tackled, may persist and perpetuate the vicious cycle of inequality. These results suggest the need for interventions aimed

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<sup>13</sup> In Chile, just some items from HOME were selected (*Centro de Microdatos* of the University of Chile).

at bettering the HOME scores of the most vulnerable families to improve equity not only in the present, but also in years to come, given the correlations between the home environment and future outcomes (Berlinski and Schady, 2015). Nevertheless, when comparing these results with those obtained in predominantly rural samples in other countries of the region, Uruguayan children are exposed to better environments over the entire income distribution. The results do not follow the same trend when performing the analysis by maternal education or when comparing Uruguay to more urban samples; although these results remain inconclusive due to slightly different versions of the instrument being applied in different countries.

When investigating the correlation between the HOME and those variables that impact children's development (as reflected in the score obtained on the ASQ-3 subscales, for example), as well as socioeconomic variables, the HOME is found to have good concurrent validity, with correlations showing the strength and direction indicated by the literature. An analysis of the psychometric properties of the ASQ-3, ASQ-SE and CBCL child development measures for the Uruguayan context is currently underway (Vasquez, Gonzales and Alvarez, 2018, in progress). This effort is very important, in particular for variables that account for personality traits and non-cognitive abilities, such as in the case of the Big Five, as they can be noisy (Laajaj and Marcous, 2017).

Finally, it is important to note that a single measurement of the home environment is inadequate in terms of fully assessing the current state of early childhood; repeated measurements over time would offer an overview of how Uruguayan parenting practices are evolving and would reveal changes resulting from social program's participation (such as the UCC). Recognizing that programs aimed at increasing family income might not suffice when it comes to the timely improvement of children's outcomes, this document reinforces that, in spite of the financial and human resource challenges inherent to the monitoring and evaluation of the home environment (i.e. intense levels of training for personnel in charge of the observation) programs that seek to strengthen the child-rearing skills of the most vulnerable parents are the best bet for improving children's developmental trajectories, achieving societal progress and breaking the intergenerational transmission of poverty.

**Table 1. Descriptive statistics**

<b>Variable (*)</b>	<b>Mean</b>	<b>SD</b>	<b>p10</b>	<b>p90</b>
Age (months)	46.02	11.99	29.00	62.00
Sex (1=male, 0=female)	0.52	0.50	0.00	1.00
Stunting	0.06	0.23	0.00	0.00
Currently attends school or daycare	0.75	0.43	0.00	1.00
Mother's years of education	10.92	3.86	6.00	17.00
Mother's height (cm)	161.68	6.78	153.00	170.00
Per capita household income (in UYU)	15,391.36	15,085.71	3,024.75	31,583.33
Overcrowding (**)	0.13	0.33	0.00	1.00
Household size	4.55	1.69	3.00	7.00
Dependency ratio (***)	110.98	75.53	50.00	200.00
Total HOME score	2.10	1.86	0.00	5.00
<i><u>Big Five</u></i>				
Extraversion (energetic)	3.49	0.81	2.38	4.50
Agreeableness (friendly)	4.00	0.57	3.22	4.67
Conscientiousness (perseverant)	4.03	0.61	3.22	4.78
Neuroticism (emotional stability)	2.70	0.84	1.63	3.88
Openness	3.43	0.79	2.40	4.50
<i><u>FCIs</u></i>				
Read books	0.65	0.48	0.00	1.00
Tell stories	0.79	0.41	0.00	1.00
Sing songs	0.88	0.32	0.00	1.00
Play	0.89	0.31	0.00	1.00
<i><u>ASQ (****)</u></i>				
ASQ-Communication	52.39	13.07	40.00	60.00
ASQ-Gross motor	54.70	11.44	45.00	60.00
ASQ-Fine motor	46.65	15.66	25.00	60.00
ASQ-Problem solving	48.83	14.33	30.00	60.00
ASQ-Socio-emotional	51.99	11.98	40.00	60.00

Note: \*Variables with mean values between 0 and 1 can be multiplied by 100 and interpreted as percentages. \*\*A household is considered overcrowded if the ratio between the number of family members and the available rooms—excluding the bathroom and kitchen—has a value greater than 2.5. \*\*\*Total population ages 0 to 14 plus the population aged 65 and over, divided by the total population ages 15 to 64 and multiplied by 100. \*\*\*\*Non-standardized scores on ASQ-3.

**Table 2. Correlations between the HOME and socioeconomic characteristics, FCI, ASQ-3, and Big Five**

	<b>≤36 months</b>	<b>37–48 months</b>	<b>49–60 months</b>	<b>&gt;60 months</b>
Stunting	0.00	-0.03***	-0.05***	-0.02***
Mother's years of education	0.18***	0.13***	0.22***	0.18***
Per capita household income	0.23***	0.1***	0.16***	0.17***
<i><u>FCIs</u></i>				
Read books	0.04***	0.13***	0.20***	0.02***
Tell stories	0.00	0.09***	0.13***	0.12***
Sing songs	0.15***	0.11***	0.08***	0.06***
Play	0.00	0.07***	0.15***	0.02***
<i><u>ASQ</u></i>				
ASQ-Communication	0.10***	0.14***	0.14***	0.14***
ASQ-Gross Motor	0.01	0.06***	0.04***	0.02***
ASQ-Fine Motor	0.18***	0.18***	0.20***	0.17***
ASQ-Problem solving	0.26***	0.24***	0.23***	0.13***
ASQ-Socio-emotional	0.13***	0.13***	0.13***	0.09***
<i><u>Big 5</u></i>				
Extraversion	0.04***	0.04***	0.04***	0.08***
Agreeableness	0.10***	0.07***	0.16***	0.03***
Conscientiousness	0.17***	0.13***	0.16***	0.03***
Neuroticism	-0.10***	-0.11***	-0.15***	-0.06***
Openness	0.11***	0.18***	0.15***	0.19***

**Table 3. Socioeconomic gradients on the HOME score**

<b>HOME</b>			
<b>Variable</b>	<b>Total</b>	<b>Responsiveness</b>	<b>Acceptance</b>
<b>By income quintile</b>			
Quintile 1 (poorest)	2.62	1.80	0.82
Quintile 2	2.40	1.66	0.74
Quintile 3	2.07	1.48	0.59
Quintile 4	1.81	1.27	0.54
Quintile 5 (richest)	1.63	1.14	0.49
Q1=Q5 test (p-value)	0.00	0.00	0.00
<b>By mother's education level</b>			
Primary education or less	2.90	1.92	0.98
Incomplete secondary education	2.08	1.47	0.61
Secondary education or more	1.98	1.40	0.58
E1=E5 test (p-value)	0.00	0.00	0.00
<b>By area</b>			
Montevideo	2.29	1.49	0.80
Rest of the country	1.93	1.45	0.48
M=R test (p-value)	0.00	0.00	0.00

Note: A higher HOME score indicates a less favorable home environment.



**Table 4. Socioeconomic gradients on HOME scores from LAC countries**

Variable	EC			PR			CB			NI	BR			CH			UR		
	Total	R	A	Total	R	A	Total	R	A	Total	Total	R	A	Total	R	A	Total	R	A
<b>By income quintile</b>																			
Quintile 1 (poorest)	2.77	2.27	0.5	3.08	2.49	0.59	3.04	2.41	0.63	4.42	1.98	1.52	0.46	--	--	--	2.62	1.80	0.82
Quintile 2	2.45	2.09	0.36	2.71	2.2	0.51	2.65	2.26	0.39	3.90	1.87	1.74	1.87	--	--	--	2.40	1.66	0.74
Quintile 3	2.19	1.88	0.31	2.58	2.07	0.5	2.5	1.99	0.53	3.71	1.91	1.45	0.47	--	--	--	2.07	1.48	0.59
Quintile 4	2.02	1.77	0.24	2.26	1.81	0.44	2.4	2.03	0.38	3.67	1.61	1.24	0.38	--	--	--	1.81	1.27	0.54
Quintile 5 (richest)	1.94	1.74	0.19	2.03	1.6	0.43	2.5	1.78	0.72	3.45	1.65	1.21	0.45	--	--	--	1.63	1.14	0.49
Q1=Q5 test (p-value)	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.09	0.01	0.64	<0.01	<0.01	<0.01	<0.01	--	--	--	<0.01	<0.01	<0.01
<b>By mother's education level</b>																			
Primary education or less	2.83	2.46	0.37	3.07	2.39	0.69	--	--	--	4.07	2.31	1.67	0.65	1.92	0.94	0.98	2.90	1.92	0.98
Incomplete secondary education	2.39	2.03	0.36	2.48	2.04	0.44	2.9	2.35	0.64	3.53	2.01	1.53	0.48	1.47	0.75	0.71	2.08	1.47	0.61
Secondary education or more	1.83	1.59	0.25	1.79	1.5	0.29	2.3	1.97	0.40	2.38	1.56	1.24	0.32	1.27	0.57	0.70	1.98	1.40	0.58
E1=E5 test (p-value)	<0.01	<0.01	0.01	<0.01	<0.01	<0.01				<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Note: EC=Ecuador, rural and urban areas, 2005. PR=Peru, rural areas, 2014. CB=Caribbean, Antigua, Jamaica, and Santa Lucia, urban areas, 2011. NI=Nicaragua, rural areas, 2006. BR=Brazil, Fortaleza, 2016. CH=Chile, ELPI, 2012. UR=Uruguay, ENDIS, 2015-2016. R=Responsiveness, A=Acceptance. For Ecuador, Peru, the Caribbean, and Nicaragua, data taken from Berlinski and Schady, 2015. Data for Brazil taken from López-Boo, 2017. All scores came from the 11-item HOME inventory.

**Table 5. Comparison of HOME results at item level (ELPI [Chile] and ENDIS [Uruguay])**

Item	ELPI		ENDIS
Responsiveness	N	Mean	Mean
The mother spontaneously speaks/vocalizes to the child at least twice.	2,868	0.03	0.10
The mother responds verbally to the child's vocalizations or verbalizations.	2,868	0.06	0.08
The mother tells the child the name of an object or person during the visit.*	2,868	0.11	0.27
The mother spontaneously praises the child twice.	2,868	0.17	0.54
The mother's voice conveys positive feelings about the child.	2,868	0.13	0.16
The mother caresses or kisses the child at least once.	2,868	0.16	0.32
<b>Total subscale</b>	<b>0.66</b>	<b>1.47</b>	
Acceptance			
The mother yells at the child.	2,868	0.16	0.09
The mother expresses obvious annoyance or hostility toward the child.	2,868	0.14	0.09
The mother slaps or spanks the child during the visit.	2,868	0.14	0.02
The mother scolds or criticizes the child during the visit.	2,868	0.16	0.15
The mother interferes with the child's actions or restricts the child's movement more than three times during the visit.*	2,868	0.15	0.29
<b>Subscale total</b>	<b>0.74</b>	<b>0.63</b>	
<b>Scale total</b>	<b>1.40</b>	<b>2.10</b>	

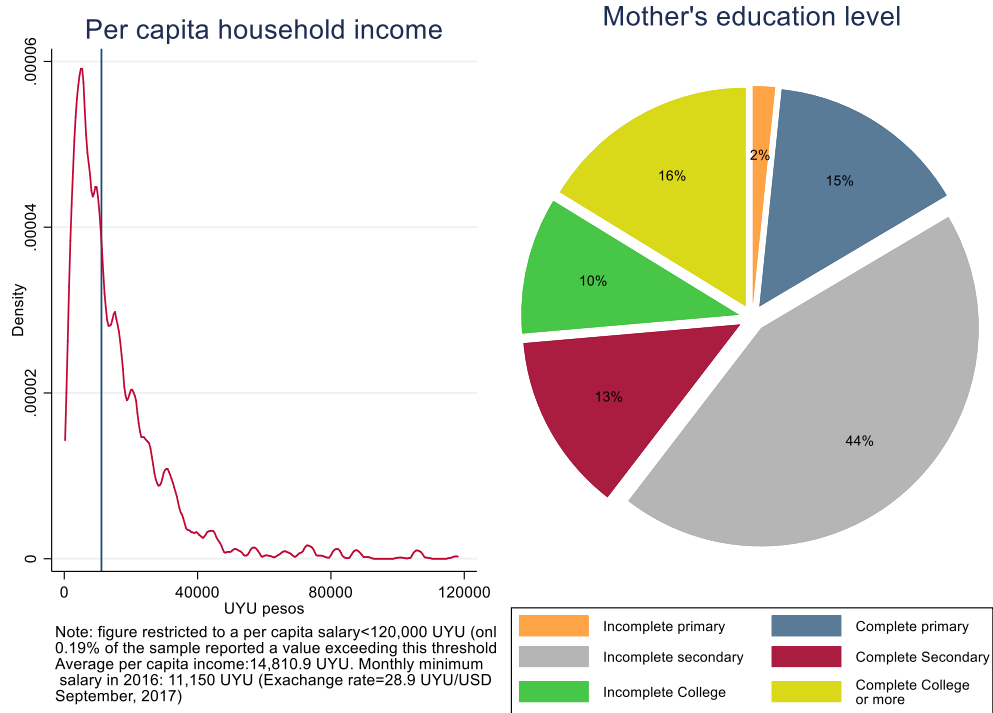
Note: ELPI data correspond to the 2012 wave. \*We assigned a value equal to the average of the other five items that compose the scale because ELPI did not include this item.

**Table 6. Gender and age differences in HOME score**

<b>Variable</b>	<b>Boys</b>	<b>Girls</b>	<b>≤36 months</b>	<b>37–48 months</b>	<b>49–60 months</b>	<b>&gt;60 months</b>
<b>By income quintile</b>						
Quintile 1 - Q1 (poorest)	2.69	2.52	2.62	2.60	2.58	2.70
Quintile 2	2.58	2.22	2.63	2.29	2.47	2.03
Quintile 3	2.31	1.78	1.83	2.05	2.14	2.40
Quintile 4	1.90	1.71	2.03	1.72	1.69	1.76
Quintile 5 - Q5 (richest)	1.70	1.56	1.15	1.87	1.61	1.83
Q1=Q5 test (p-value)	0.00	0.00	0.00	0.00	0.00	0.00
<b>By mother's education level</b>						
Primary education or less - E1	3.14	2.57	2.80	2.85	3.02	2.94
Incomplete secondary education	2.24	1.92	2.25	1.97	2.04	2.08
Secondary education or more - E3	2.03	1.93	1.90	2.12	2.03	1.87
E1=E3 test (p-value)	0.00	0.00	0.00	0.00	0.00	0.00
<b>By area</b>						
Montevideo - M	2.50	2.06	2.38	2.40	2.26	1.94
Rest of the country - R	2.01	1.86	1.75	1.86	1.96	2.29
M=R test (p-value)	0.00	0.00	0.00	0.00	0.00	0.00

Note: A higher HOME score indicates a less favorable family environment.

**Figure 1. Per capita household income and mother's education level**



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