

Enriching the home environment of low-income families in Colombia: a strategy to promote child development at scale

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This article outlines how a home visiting intervention in Colombia, delivered at scale through partnering with existing social welfare systems, successfully increased the variety of play materials and play activities in poor households with children aged between 1 and 2 years at the start of the intervention. It explains how these factors, among others which are generally associated with household wealth, are correlated with differences in early learning that are likely to persist into adulthood.

Early experiences of socio-economic adversity, poor nutrition and deprived home environments contribute to disparities in children’s development and their potential lifelong achievement. In Colombia, as in many other low- and middle-income countries, children growing up in socio-economically disadvantaged households show lags in development, as compared to children growing up in more advantaged socio-economic conditions.

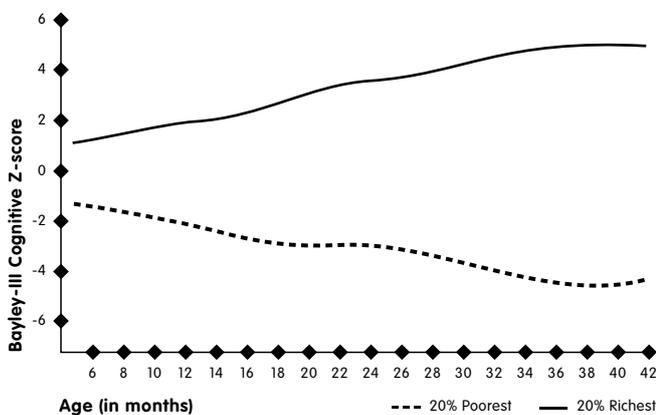
Some aspects of development, like the maturation of the visual system, unfold in predictable patterns regardless of children’s socio-economic or cultural background. On the other hand, experience-dependent skills, such as the ability to read, rest on the availability of key learning experiences and adult support (Shonkoff and Richter, 2013). Diverse opportunities for verbal engagement with a consistent caregiver influence children’s language development and the acquisition of early literacy skills, and these skills predict academic achievement later in life. As new skills build on existing skills, the early foundations for children’s development set the stage for later human capital accumulation (Heckman, 2007). Thus, gaps in early development and learning may arise because children do not have access to fundamental learning experiences during sensitive periods.

Home environment and parental beliefs

The quality of children’s home environment, in terms of quality of stimulation and learning opportunities, is closely associated with their well-being (Bradley and Corwyn, 2005; Evans, 2006). Having access to material learning resources and nurturing learning experiences consistently during the first few years of life affords children with the foundations for healthy development and lifelong learning. Unfortunately, in many developing countries, numerous children grow up in socio-economically disadvantaged households where such inputs are minimal or absent.

The most commonly used and validated instrument to assess these dimensions across countries is the Home Observations for Measurement of the Home Environment (HOME) (Caldwell and Bradley, 2001). Mostly based on observations, the HOME requires time and skilled, well-trained interviewers, as well as substantial cultural adaptation for administration. To facilitate administration at scale and across countries, UNICEF has developed an alternative instrument, the Family Care Indicators (FCI) (Frongillo *et al.*, 2003). The FCI has been adapted from several sources, including the HOME, and collects, among other variables, the number of toys the child usually plays with, classified by their use (for example: toys to play or make music;

Figure 1 SES gap in cognitive development by age



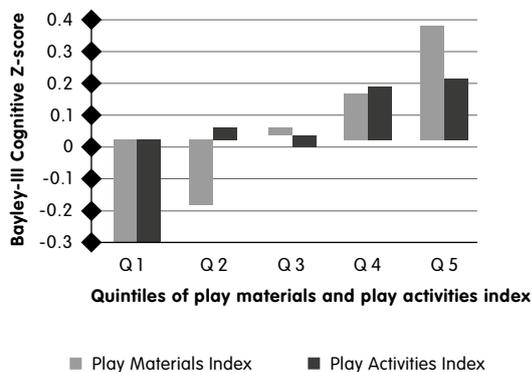
Source: Rubio-Codina *et al.*, 2013

As is evident in Figure 1, gaps in children’s development can be observed at a very early age.¹ These gaps become significant (statistically speaking) shortly after the first year of life and are increasingly wider as children grow older. This cumulative effect of socio-economic adversity on children’s development is related to the sensitive periods – age-related windows of opportunity – for brain development and the acquisition of higher-level cognitive functions (Knudsen *et al.*, 2006).

picture books; things for drawing and scribbling; toys to play pretend games, etc. – often referred to as ‘varieties of play materials’) and their source (such as home-made, bought, and household objects – ‘sources of play materials’), as well as specific types of play activities done in the home with adult guidance during the three days before the interview (for example: tell stories; read books or look at picture books; sing songs with the child; play with the child with his or her toys; spend time with the child scribbling/drawing/colouring; naming things or counting, etc. – ‘varieties of play activities’).²

In Colombia, as in many other contexts, children’s cognitive development is also strongly associated with the availability of learning resources – diverse play materials and play activities shared with caregivers. Figure 2 illustrates such an association³ using data from a study in Bogotá, the nation’s capital city, on a representative sample of low- and middle-income children aged 6–42 months (Rubio-Codina *et al.*, 2013). Stimulation and home environments are in turn significantly associated with access to economic resources and wealth (raw correlation = 0.35 and significant). Indeed, the quality of the home environment and access to stimulation, play activities and play materials seem a plausible mediating factor of the socio-economic gap, or at least contribute to a fraction of it.

Figure 2 Differences in children’s cognitive development by quality of the home environment quintiles



Source: Rubio-Codina *et al.*, 2013

Parental beliefs about child development also influence caregiving practices, and these beliefs are shaped by culture, education level, and socio-economic background. There are, broadly speaking, two ‘types’ of belief among parents (Bornstein and Putnick, 2012). One is that children develop at their own pace through leisure, non-structured activities and little parental involvement. The other is that children’s cognitive and social skills should be actively fostered by the parent. In terms of associated parenting practices, in the first, parents direct their caregiving efforts to keeping the child safe, fed, clothed, sheltered, and to regulating the child’s behaviour when needed (‘accomplishment of natural growth’). In the second, parents provide structured learning activities and learning opportunities, and engage in goal-directed parent–child conversations (‘concerted cultivation’) (Lareau, 2003; Bornstein and Putnick, 2012). Parenting beliefs may fall along a continuum between these two opposites. There is wide variation across and within countries on parental beliefs and parenting practices but, generally, the former child-rearing approach is more frequently observed in relatively poor families, while the latter is more characteristic of middle-class families (Lareau, 2003).

Home visiting programmes

A variety of intervention programmes for disadvantaged children aimed at improving parenting practices, from birth to age 3, have been implemented in developing countries such as Brazil (Wendland-Carro *et al.*, 1999), Jamaica (Powell *et al.*, 2004) and South Africa (Cooper *et al.*, 2002). Home visiting programmes vary in their goals (such as stimulation, prevention of child maltreatment), target population, service providers (professionals, paraprofessionals, volunteers), and type of activities or protocols (curriculum). However, their overall aim is to promote child development by improving parents’ child-rearing beliefs and their ability to provide an enriching environment for their children. By reaching out to socio-economically vulnerable families and caregivers, some home visiting intervention programmes have been successful at changing parental child-rearing beliefs and practices, and have shown positive and long-lasting

impacts on important child outcomes (see Kendrick *et al.*, 2000 for a review).

However, there is still a lot to be learned about how to develop *at-scale* programmes that may offset some of the developmental risks associated with growing up in a low-quality home environment. The issues to be faced are both related to costs and to the availability of the social infrastructure and human capital required for their delivery. One promising avenue for scaling-up interventions that promote early child development is linking them to existing social welfare systems (Engle *et al.*, 2011). To date, however, there is not enough evidence showing that the positive effects of well-designed home visiting programmes can also be achieved when scaled-up services are delivered under very different implementation, and perhaps less controlled conditions than those provided in effectiveness studies.

'The overall aim of home visiting programmes is to promote child development by improving parents' child-rearing beliefs and their ability to provide an enriching environment for their children.'

The home visiting intervention we describe here was designed as a scalable strategy to support the development and well-being of socio-economically vulnerable children in Colombia. The strategy consisted of linking a psychosocial stimulation curriculum – developed for Jamaica and having previously demonstrated positive short- and long-term effects on child development (Grantham-McGregor *et al.*, 1991; Walker *et al.*, 2006, 2011) – with the established administrative capacity and built-in local community networks of *Familias en Acción*, the existing Conditional Cash Transfer (CCT) programme in Colombia.

The goal of the home visiting programme was to promote child development by supporting and strengthening mother-child interactions and by engaging families

in play activities, many centred on children's daily routines. It also aimed to improve the mother's self-esteem and knowledge of child development. The intervention model focused on the mother as the central agent of change and included modelling (demonstrating play activities and interactions with the child to the mother), scaffolding (providing tasks that were at the developmental level of the child and were challenging but not too difficult), practice (encouraging the mother to practise the activities) and contingent positive reinforcement for both mother and child. Home visitors conducted weekly home visits, with approximately five families each, during an 18-month intervention period. During the 1-hour visits, the home visitors demonstrated developmentally appropriate activities to promote cognitive, language and socio-emotional development, making use of low-cost home-made toys and identifying learning opportunities for children during family daily routines.

The intervention tapped into the nationwide network of community leaders from the CCT programme in Colombia to deliver the home visits on a large geographic scale and in a way that could be scaled up. Three core implementation components – programme adaptation, staff selection and staff training – were emphasised.

- Firstly, the programme and associated materials were adapted for cultural appropriateness, and were adjusted to fit the ability level of the community home visitors.
- Secondly, local administrators of the CCT programme collaborated with the recruitment of home visitors. Home visitors were local women, elected representatives of the beneficiaries of the CCT local programme network (known as CCT Mother Leaders), or were recommended by them. We ensured that all home visitors had the required levels of availability, interest and reading comprehension.
- Thirdly, home visitors underwent a 2-week pre-service and a 1-week in-service training. In addition, they were supervised and mentored on a frequent basis by a team of six mentors. Mentors were mostly women with backgrounds in psychology or social work, or

sufficient experience conducting fieldwork with families and children. They received training over 6 weeks, during which time they learned about child development, supervision techniques, toy making, and mastered all of the activities in the curriculum. Following an itinerant supervision model, mentors rotated throughout their designated intervention communities providing technical advice and support to home visitors in person (every 7–10 weeks), discussing progress and problems during fortnightly telephone calls, and sending text messages and one-page bulletins containing reminders of key aspects of the stimulation curriculum.



Involving the primary caregiver and other family members in learning and play activities is at the core of the home visits.
Photo • Courtesy Marta Rubio Codina

Programme findings and lessons learned

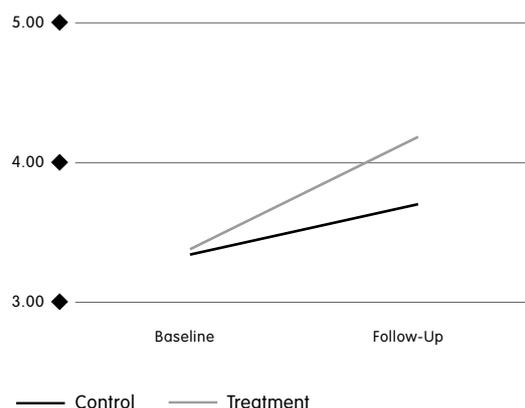
The impact of the programme on the quality of the home environment, parental caregiving practices, and children's developmental outcomes was assessed using a randomised controlled trial. The evaluation sample consisted of 1429 children in relatively poor households, beneficiaries of the CCT programme, in 96 towns. Information on children's development and family characteristics, including the quality of the home environment using the FCI, was collected prior to programme roll-out when children were between 12 and 24 months of age, and 18 months later once the intervention was phased out.

Findings showed that the intervention was successful in achieving behavioural changes in the families, leading to enriched home environments for children. Figure 4 shows that the level of the 'variety of play materials' index (the number of different types of toys) increased both in the treatment households (those that received the home visits) and the control households during the 18 months of intervention. This is consistent with older children having more toys and other pedagogical materials than younger children. However, as shown in Figure 4, the increase in the 'varieties of play materials' was larger in the treatment than in the control households. The estimated impact of the programme on play materials index – after controlling for the child's age, sex, the baseline level of the index and interviewer effects – is a significant 13.7% increase (effect size = 0.53, SE 0.14). Figure 5 shows that the 'varieties of play activities' index (the number of types of activities done with an adult) marginally decreased in the control households during the intervention period, but substantially increased in the treatment households, leading to a significant positive programme impact of a 13.6% increase (effect size = 0.54, SE 0.15).⁴

The significant increases in the variety of play materials being used with young children as well as the types of play activities being carried out, show that important behavioural changes in caregiving practices and therefore in an enriched home environment for children resulted from 18 months of weekly one-hour home visits. This is important because it suggests that if improvement in the quality of the home environment and parenting behaviours is sustained it has the potential to improve child development even after the intervention stops.

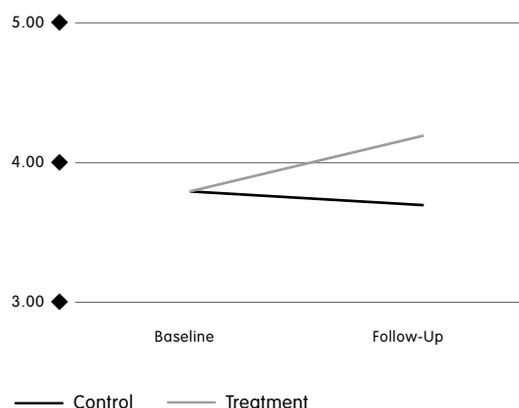
Overall, this study shows that linking early childhood development interventions to existing social welfare systems is indeed a promising avenue to address in order to reduce socio-economic gaps in child development during the sensitive early years, while taking into account – at least to some extent – the challenges of cost, social infrastructure and human capital required for service delivery.

Figure 4 Programme impacts on varieties of play materials index



Source: authors

Figure 5 Programme impacts on varieties of play activities index



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Notes

- Sample representative of children 6–42 months living in the lowest 3 (out of 6) socio-economic strata in the city of Bogotá, Colombia, which include 85% of the city’s population. The average difference in cognitive development scores (assessed using the Bayley-III) between children in the lowest and the highest quintile of a household wealth index is close to 0.6 SD across age groups. The household wealth index is the first component of performing principal component analysis on household assets and dwelling characteristics.
- The FCI has been added to the Multiple Indicator Cluster Survey (MICS) that UNICEF conducts in a number of developing countries every 3–5 years. Current information on MICS is available on UNICEF’s childinfo web pages at: http://www.childinfo.org/mics3_surveys.html (accessed May 2013).
- Same sample as in Figure 1, representative of children aged 6–42 months living in the lowest 3 (out of 6) socio-economic strata in Bogotá. Children’s cognitive scores assessed using the Bayley-III. The quality of home environment is assessed with two indices from the FCI: (a) ‘varieties of play materials index’, which includes toys which make/play music, things for drawing/writing/painting, colouring books, picture books for children, toys to play pretend games, toys for moving around, things meant for stacking, constructing or building, and toys for learning shapes and colours; and (b) ‘varieties of play activities’, including reading books or looking at picture books, telling stories to the child, singing songs with the child, taking child outside the home place/going for a walk, playing with the child with toys, spending time with the child scribbling/drawing/colouring, and spending time with the child naming things or counting.
- Figures 4 and 5 represent the authors’ own calculations using data from the evaluation study. Predicted means in ‘varieties of play materials’ and ‘varieties of play activities’ (using the FCI as described in note 3 above (for Figure 2) after adjusting for age (in months) and sex of the child, baseline level of the dependent variables and interviewer dummies.