

November 2014

EDePo

Evaluating development policy at IFS

Research at a glance:
child development

Child Development and Policy Interventions in Developing Countries

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- Early childhood is a period of rapid growth and development, which lays the foundations for later life, but it is also a period in which children are at their most vulnerable. Poverty, poor nutrition and under-stimulating and unhygienic surroundings, which affect millions of children in developing countries, hamper and stifle child health and development.
- It is possible to deliver high-quality, successful early childhood interventions, which help to overcome these negative influences, at scale and without prohibitive cost.
- Successful and scalable early childhood interventions in developing countries embrace the cultural and local context they operate in, are delivered by local people, and make use of local knowledge, resources and materials.
- Policies that target multiple facets of a child's environment are called for because poverty impedes child development in many ways.
- Successful policies need not provide expensive resources or services: giving only information and education to parents or caregivers can also be effective.
- For evidence on the effectiveness of early childhood interventions and policies to be transferable from one setting to another, it is important to understand not only *whether* they worked (or didn't) but also *why* and *how*.



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Introduction

The early years of a child's life, before age 3, are a period of rapid growth and development, which lays the foundations for productivity and well-being later in life. Yet, this is also a period when children are at their most vulnerable. Negative influences such as poverty, poor nutrition, under-stimulating environments and unhygienic surroundings can hamper and stifle their development.

These issues are particularly relevant for developing countries, where absolute poverty levels are very high, households frequently have inadequate nutritional and other child-related resources, infrastructure is poor, infectious diseases are widespread, and low education levels contribute to a lack of knowledge about children's developmental needs. In 2013, 6.3 million children died before their fifth birthday,^[1] the vast majority in developing countries; furthermore, 200 million children alive today in developing countries fail to reach their full potential in terms of cognitive development.^[2]

Striking disparities in child developmental outcomes by household economic resources have been documented in children as young as 1 year in both developed and developing countries. Work by EDePo researchers studying low- and middle-income children in Colombia documents large gaps in cognitive and language development by wealth that emerge soon after birth and that widen with age (see Figure 1).

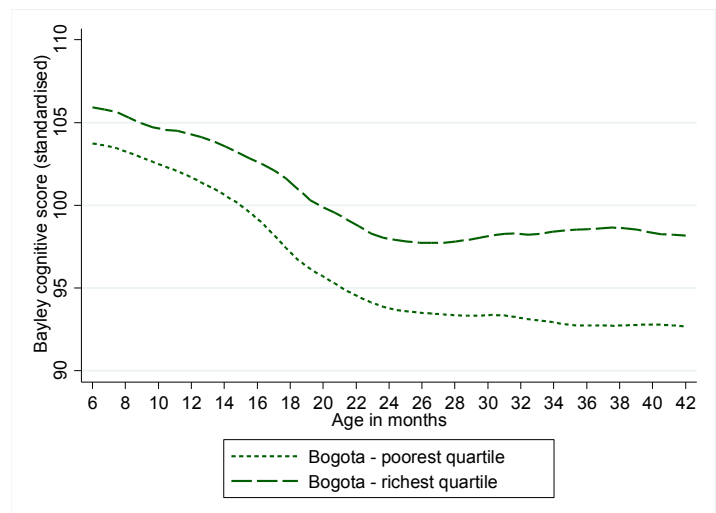
However, research shows that interventions, such as those improving nutrition, or encouraging increased interaction and play between caregivers and children (known as psychosocial stimulation in the child development literature), can alleviate these negative influences and can generate long-lasting improvements in children's outcomes.^{[2][3]} An important challenge lies, however, in identifying how to deliver these interventions in a cost-effective manner that respects and embraces local culture, conditions and constraints, so that they could be scaled up and adopted as nationwide policies.

Areas of development in the early years that have been identified to be particularly important include health (e.g. survival and incidence of illnesses), cognition and socio-emotional development (e.g. behaviour, making friends, patience) and language and motor skills. All these areas are related and interact in affecting future development. Health, skills and capabilities developed later on in life build on those achieved in the early years. For example, children in good health attend school more regularly and concentrate better once there; those with more advanced cognitive skills when they begin school can keep up better with the material taught and subsequently gain more in terms of cognition and knowledge. Adults' levels of skills and health directly affect whether or not they work, how much they earn, how many children they have, their own health as well as that of their children, and broader society-wide outcomes such as crime.

Thus, growth and development in the early years have very broad and long-lasting impacts.

Within EDePo, one strand of our work focuses on identifying best practice in the delivery of cost-effective interventions and policies targeted at early childhood development (ECD) in developing countries. We do so using a variety of evaluation methods, including the gold standard method for evaluation – the randomised control trial (RCT). In particular, researchers study interventions targeted at encouraging psychosocial stimulation (i.e. interaction and play between caregivers and children), improving nutrition and encouraging preventive care; these are delivered through different modalities – home visits and group visits, among others – in a range of developing country contexts. Our work goes beyond identifying whether an intervention works or not, and investigates the pathways through which impacts (or lack thereof) are achieved, which can help shed light on whether the intervention would work in a different context. A key ingredient for facilitating this is rich data on areas of child development, along with information on parent/caregiver behaviour and available resources. In this note, we describe interventions we have studied and their effects on early years' outcomes. We frame the discussion in terms of important questions to consider when designing ECD interventions.

Figure 1: Cognition by wealth and age among a sample of low- and middle-income children in Bogotá, Colombia



Note: Scores are standardised to US norms (with normal distribution, mean = 100, standard deviation = 15), so if a child of a particular age obtained the mean score for that age amongst children in the US then he/she would have a standardised score of 100.

Policy interventions

What to target? Areas of intervention

Many factors – from good nutrition, to a safe and supportive home environment, to stimulating play – are important in ensuring children grow up healthy and reach their developmental potential. Our work in EDePo has focused on two broad areas of intervention: (i) encouraging stimulating play and interaction between children and their caregivers, which we refer to as psychosocial stimulation; and (ii) improving the quality of childhood nutrition.

Psychosocial stimulation

Psychosocial stimulation is vital for the development of cognitive, language, socio-emotional and motor skills. Different psychosocial stimulation activities are relevant at different ages and levels of child development. In developing countries, poverty means many children grow up in households with few, if any, play materials and with high demands on parents' time. Low education levels and a lack of access to information often imply parents are not fully aware of the benefits of psychosocial stimulation. Consequently, many children in developing countries spend their pre-school years in under-stimulating environments. There could be large gains to interventions that change this.

EDePo is at the forefront of research on psychosocial stimulation interventions in developing countries, an avenue of work inspired by a programme and evaluation, led by Professor Sally Grantham-McGregor, in Jamaica in the late 1980s.^{[4][5]} The Jamaican study showed that weekly home visits, focusing on psychosocial stimulation, had remarkable effects on a range of cognitive, socio-emotional, language and motor skills, both in the short run and into adulthood. EDePo researchers have worked with Professor Grantham-McGregor to design and evaluate a psychosocial intervention targeted at young children from the poorest 20% of Colombian households, across 96 small towns in eight departments in Colombia.^[6] The intervention adapted the curriculum used in Jamaica (see Box 1). Trained local women worked through the curriculum with the young children (aged 12–24 months at the start of the intervention) and their primary caregivers – usually mothers – over an 18-month period. The intervention proved to be successful: home visits significantly increased children's cognitive and receptive language scores by 0.26 and 0.22 of a standard deviation, respectively, of our control towns' scores, as measured by the Bayley scales (see Box 2 later). The increase in cognitive scores – which corresponds to 1.32 points on the standardised Bayley scale in Figure 1 – accounts for one-third of the gap in cognitive development detected between the poorest and richest children in a sample of low- and middle-income children in Bogotá (see Figure 2 on the next page), with cognitive development levels for the poorest children in the Bogotá sample and in our control towns being very similar. In ongoing work, we are following these children as they start school, to investigate whether these gains are maintained over the longer term.

In further ongoing work, EDePo is currently designing and evaluating two psychosocial home-visiting interventions – one urban, one rural – in collaboration with an NGO in India (Pratham) in order to understand how a similar programme could be adapted to a poorer and very culturally different environment.

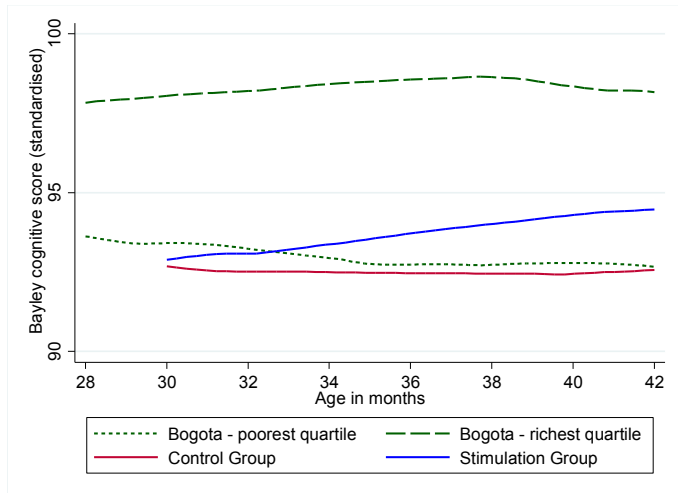
Box 1: Developing psychosocial curricula for ECD

The curricula used for the psychosocial stimulation interventions designed and implemented by EDePo are inspired by and draw heavily on the curriculum used in the Jamaica study (see the main text). The curriculum aims to promote child development through supporting the mother in her caregiving practices. Each week's home visit introduces her to several activities, such as songs, puzzles, books and games, which are designed to promote cognitive and language development in a fun way and also to promote the mother's and child's self-esteem. The mother is encouraged to continue with these activities in the subsequent week. While being rich in play materials, the curriculum requires little in the way of shop-bought materials – home visitors make toys themselves and many activities use recycled materials (e.g. bottle tops) or household objects (e.g. pots and pans). The child is encouraged to take the lead and be creative in the activities. Everyday activities, such as getting dressed, become opportunities for learning and play. Home visitors are trained to praise and use positive reinforcement for both the child and the mother and to encourage the mother to use these parenting techniques too.

The curriculum incorporates key insights from the psychology of early childhood development but is designed to be delivered by paraprofessionals (local women without any specific background in child development who are given a short intensive training). The structured nature of the curriculum, in which the activities to be performed in each week are clearly laid out, is well suited for delivery by paraprofessionals since it does not rely on home visitors to fully grasp the ideas behind child development or to create new activities themselves. Both the use of paraprofessionals and the use of cheap locally available materials mean that the curriculum can be scaled up to cover large numbers of children without extortionate cost.

The curricula used in Colombia and India have adapted the original curriculum from Jamaica to the particular cultural and economic contexts. In both countries, Sally Grantham-McGregor and EDePo researchers have worked with local child development experts to adapt the activities to the context, including integrating familiar songs and games, reworking activities to be suitable to the local environment and making use of locally available materials.

Figure 2: Impacts of the psychosocial home-visiting programme, compared with socio-economic disparities in cognitive development



Note: Bayley cognitive scores (standardised to US norms) for group of children receiving psychosocial stimulation and the control group, superimposed onto zoomed section from Figure 1.

Nutrition

Poor nutrition is estimated to be the root cause of one-third of child deaths worldwide, chiefly by increasing the death rate from common childhood illnesses such as diarrhoea and malaria. Poor nutrition stunts growth and increases the incidence of illness, in turn decreasing school attendance and achievement, as well as directly affecting the development of cognitive, language, socio-emotional and motor skills. In some contexts, poor nutrition means just not consuming enough calories, but more frequently it centres on diet diversity – children in poor countries often don’t eat enough proteins or foods high in certain vitamins and minerals, such as iron, zinc and iodine, which are crucial for brain development and offer protection against infections.

EDePo has evaluated a number of programmes aimed at improving childhood nutrition. We have studied a nutrition education programme in Malawi set up and implemented by an NGO, the MaiMwana Project (“Mother and Child”).^[7] In this intervention, trained local women delivered five educational home visits to pregnant women and new mothers, on a one-to-one basis. The visits focused on the importance of exclusively breastfeeding children during their first six months and of a varied and nutritious childhood diet later on, and particularly on how this could be achieved using locally available foods. The intervention was successful at improving the quality of children’s diets and led to a particularly large increase in the amount of protein that young children consumed.^[8] This improvement in diet led to an increase in height, a measure closely correlated with long-term health and cognitive outcomes.

Building on our work in Malawi, EDePo is currently carrying out two studies that look at the impacts of education about breastfeeding and early childhood diet, delivered both individually and to groups, in two very different environments – India and Nigeria.

The root causes of poor nutrition and the impacts of nutritional interventions can vary significantly across contexts. Without careful preliminary investigation of the causes of malnutrition, it does not necessarily follow that a successful intervention in country X will also succeed in country Y. An example of this is EDePo’s evaluation of a programme to supplement the diets of young children in Colombia with multiple micronutrients. Previous research had shown such programmes in other environments to be very successful in reducing childhood anaemia^[9] (a condition associated with a variety of short- and long-term negative developmental impacts). In Colombia, however, although rates of childhood anaemia were high enough at the start of intervention for the World Health Organisation guidelines to recommend multiple micronutrient supplementation for young children, we found no evidence that the intervention reduced rates of anaemia at all.^[6] Further analysis suggested that this was likely because the key causes of anaemia in Colombia were not iron and other micronutrient deficiencies beyond the breastfeeding period but, instead, behaviour in the breastfeeding period.^[10] This result highlights the problems of transferring evidence on one intervention to a very different setting.



Package of services

ECD policies typically provide a package of services. For example, nurseries usually provide childcare, along with stimulation and food, while conditional cash transfer programmes provide families with cash if they take young children for preventive health check-ups. The different components may (or may not) reinforce one another in their effects on child development. For example, poor physical health and nutrition, as well as poor psychosocial stimulation, hinder cognitive development, so addressing both aspects simultaneously could be better than addressing either individually.

Our work has evaluated the effectiveness of programmes offering packages of services targeted at alleviating different factors. These services include resources (either cash or in kind), childcare and nutrition education, among others. Researchers have studied the effectiveness of a government policy in Colombia that targets young children and provides a package of services. The policy – *Hogares Comunitarios* (Community Nurseries) – encourages poor parents with young children living in targeted poor neighbourhoods and towns to form parents' associations, which then choose a local woman to cook for and take care of 15 children under 6 years old in her home during the day. A government agency provides some food, along with pedagogic materials and a stipend to the woman, which is supplemented by funds from the parents' associations. The study, focused on nutritional outcomes, found significant improvements in the height of children as a result of the policy.^[11] Our work has also shed light on the effectiveness of preventive child health check-ups, which are key elements of widespread conditional cash transfer programmes. Findings from Colombia show that children are less likely to be underweight as a result of these check-ups.^[12]

Finally, EDePo's ongoing evaluation in rural India will be able to shed light on how nutrition and psychosocial stimulation work together in affecting child development, a question that few studies have attempted to answer. Targeted children in some randomly chosen villages will receive a combination of interventions relating to nutrition and psychosocial stimulation, while those in other villages will receive only one or none of these interventions.

What to provide? Providing information versus resources/services

A second question in designing ECD interventions is what specifically the intervention should provide – in particular, should it provide resources and services directly or should it provide information, or both? Part of the answer to this question relates to what one considers to be the key reasons preventing households and communities from achieving good levels of child development. In developing countries, poverty levels are high, and poverty comes hand in hand with low education levels, particularly among women, which inhibit parents' knowledge of best practices in rearing children. Moreover, access to such information is limited by low literacy and the lack of sources such as books, the internet and television. Low expectations can hinder parents from seeking this information in the first place. Thus, without having access

to and seeking out high-quality information, misperceptions about child development may be sustained through cultural practices, norms, and family and social networks. Providing information (perhaps as well as resources) could thus have large impacts on child development.

MaiMwana's nutrition education intervention, discussed above, provided only information on best practices in child feeding: no other resources (such as food or money) were provided. Despite this, and despite the households being extremely poor, the intervention still led to a large increase in children eating the energy- and nutrient-rich foods, particularly proteins, recommended by the intervention. Researchers investigated further to understand how these changes were achieved, and found that fathers worked more to fund the improved diet.^[8] Identifying how the effects of an intervention are achieved is crucial in understanding whether a similar intervention would work in a different context. An ongoing evaluation in rural India will study the effectiveness of another nutrition education intervention in which a home visitor will, in sessions every two months, discuss a specific aspect of good childhood nutrition (e.g. the importance of iron-rich foods) and demonstrate how to achieve this through locally available foods (e.g. by adding iron-rich green leaves to food). In subsequent weekly meetings, the home visitor will monitor feeding practices and offer encouragement and advice on any problems.

Though interventions providing information only are relatively cheap, they could lead to larger and more sustained improvements in child development outcomes if combined with resources (cash or in kind). Indeed, the psychosocial stimulation intervention in Colombia described above showed parents different activities they could engage in with their children using everyday activities and objects, and provided toys (constructed from waste/recycled materials) and books, which would otherwise have been unaffordable. Moreover, further analysis investigating how the intervention worked showed that it induced mothers to spend more time with their children as well as increasing the number and variety of toys and play materials in the home.^[13]

One factor that was common across the Malawian and Colombian interventions, and which may explain their effectiveness, was that information provided in both interventions showed how relatively inexpensive locally available resources could be used to improve child development outcomes. This made it easier for parents to adopt the new practices suggested by the interventions.

In contrast, interventions may directly provide resources or services, as is the case with *Hogares Comunitarios* in Colombia. Food and (hopefully stimulating) care were directly provided to children in the nurseries. As noted above, our research shows that the policy led to improvements in child height,^[11] suggesting that the direct provision of resources is effective. Similarly, the preventive check-ups provided within the Colombian cash transfer programme, which included child development monitoring, provision of iron supplements and de-worming drugs to the child, and giving nutrition advice to the mother, were effective in improving children's health.^[12]

How to provide it? Group visits versus individual visits; professionals versus paraprofessionals

A third question that arises in designing an early years policy or intervention is how to deliver the policy. This is a crucial question with important implications for policy costs and scalability, as well as for the success or failure of the policy in producing the desired outcomes.

Group visits or individual visits

The interventions in Malawi and Colombia were home-visiting interventions, where trained local women visited mothers of young children multiple times to deliver the content of the intervention, whether it be nutrition education or psychosocial stimulation. Such one-on-one interventions are relatively intense, and costly. Although the use of local women and relatively low labour costs in developing countries mean that individual home-visiting interventions need not be as expensive as they first appear, the cost does warrant studying the effect of providing the interventions to groups instead. As well as reducing the cost per child of providing the intervention, groups offer other potential benefits. In particular, messages learnt from, and behaviours shifted by, the intervention or policy may be reinforced through social interactions among group members. A group setting may also make it easier for women to discuss broader child-development-related issues and to raise concerns or questions. In contexts where women are relatively disempowered within their community, and are often not free to socialise with other women outside of the family setting, these groups could

provide an invaluable opportunity to build social support networks within the community, ultimately altering the environment a child grows up in. However, groups come with potential disadvantages too: attendance may be low, the intervention cannot be as tailored to individual children's needs, and groups might be more challenging to manage.

In ongoing evaluations, we are comparing the effectiveness of group-visiting and individual home-visiting interventions. In particular, in rural India, we are evaluating how effective small group visits (among six or seven women) are relative to individual home visits when similarly qualified local women deliver the same nutrition education and psychosocial stimulation curriculum. In Nigeria, the study on nutrition education will compare the effects of group and individual nutrition education sessions, in combination with a cash transfer, on child outcomes including height.

Professionals or paraprofessionals

Another question we must consider in the practical design of an intervention is who will deliver it. A psychosocial stimulation intervention may have best results if carried out by psychologists or child development specialists with extensive experience and knowledge of child development from both a practical and a theoretical point of view. However, it is extremely difficult to find sufficient suitably qualified staff in developing country contexts and, even when available, employing them can be extremely expensive. Moreover, large differences in socio-economic status between professionals and targeted families might mean that professionals don't know how to relate to the mothers and, in turn, mothers might feel intimidated and uncomfortable, thus limiting the effectiveness of the intervention. Therefore, there is a clear rationale for using paraprofessionals – local people without any specific experience in child development who are trained specifically by experts to deliver the intervention of interest. The interventions highlighted in this note all rely on paraprofessionals to deliver them. Paraprofessionals could be more effective than qualified staff since they may be well known in the community and be perceived to be more accessible to the target population. However, their lower levels of formal training could potentially hamper intervention quality. There is thus a clear trade-off between quality, accessibility and scalability in making this choice. So far, little work has looked at the effect of such decisions, although it is an important question going forward.



Home-made toys created from recycled materials in Colombia

Box 2: Measuring child development

Key to all studies on child development is a fundamental question: how to measure it. There are well-tested, but expensive, instruments for measuring different dimensions of development. Of these, the Bayley Scales of Infant Development – which measure young children’s development in domains including cognition, fine and gross motor skills, receptive and expressive language, and socio-emotional development – are often taken to be the gold standard measure for children under 3½ years old. However, assessment must be done in a centre (or controlled environment) by highly trained and qualified professionals and takes around 90 minutes to administer. Moreover, the kit is costly (over US\$1,200 per child), making the Bayley scales prohibitively expensive for use in evaluations of large-scale programmes.

Alternative instruments that are shorter and can be easily administered in the field by relatively low-skilled personnel are needed. Such tests – screeners, parental reports or a combination – are also available, but little is known about their ability to measure child development reliably when administered in a non-controlled environment, by non-specialised personnel, amongst lower-income families in developing countries.

EDePo researchers assessed how a battery of such instruments correlated with the Bayley scales in children from low- and middle-income households in Bogotá, Colombia.^[14] The shorter tests were administered in the child’s home by trained survey interviewers, thus mimicking an affordable-at-scale assessment situation. The Bayley was administered under ‘ideal’ conditions (in a centre, by a psychologist).

As would be expected, none of the shorter tests could replicate the sensitivity of the Bayley, nor could any single test garner information about all domains. However, the WHO gross motor milestones – a short test exclusively assessing gross motor development – was particularly informative of gross motor development, and was also the most informative about other domains, including cognition, for children aged 6–12 months. For children aged 12–24 months, maternal reports from the MacArthur-Bates Communicative Development Inventories were highly correlated with language development, cognition and fine motor skills. For older children, the findings show that the shorter tests correlate more closely to the Bayley.

Lessons from our work

The first lesson from EDePo’s work is a very positive one: **it is possible to deliver high-quality, successful early childhood interventions at scale and without prohibitive cost.** Our studies have involved very large numbers of children spread across large and often inaccessible geographical areas. Moreover, they have made use of existing institutional infrastructure, whether that be government social welfare programmes or established NGOs, meaning that they could be easily expanded if found to be effective. In terms of another factor influencing scalability, the successful use of local, and often home-made, materials and of paraprofessionals to deliver interventions implies that programmes need not be prohibitively expensive for resource-constrained governments.

EDePo’s experience highlights how **successful early childhood interventions embrace the cultural context they operate in.** The adaptations of the Jamaican psychosocial curriculum to the Colombian and Indian contexts use local stories, songs and games to introduce nuanced ideas about the importance of psychosocial stimulation for child development through media that are familiar, fun and acceptable. Another important lesson from our work is that, even in very resource-constrained settings, **giving information and education to parents or caregivers can be effective in improving child development even if no other resources or services are provided.** This demonstrates the multifaceted ways in which poverty hinders child development, not only through the lack of tangible resources but also through lack of knowledge. The fact that poverty impedes child development in many ways

creates a **rationale for policies, or sets of policies, that address multiple margins.** Ongoing studies at EDePo are looking at the impact of packages of policies targeting different factors associated with child development, e.g. psychosocial stimulation and nutrition.

EDePo’s work also demonstrates the **importance of evaluation strategies that not only tell us whether a policy worked in a particular setting but also why and how it worked.** This deeper understanding allows us to extrapolate insights from evaluations across very different settings and to assess the likely effects of the policy if it were changed slightly.

Research highlighted in this note has been funded by ESRC (grants RES-062-23-1548, ES/K01070011), Inter-American Development Bank, World Bank, International Growth Centre, DFID, ESRC-DFID (grants RES-167-25-0563, RES-167-25-0124), European Research Council Advanced Grant (249612), ESRC-NCRM Node ‘Programme Evaluation for Policy Analysis’, ESRC/Hewlett Joint Scheme (grant RES-183-25-008) and Eunice Kennedy Shriver National Institute of Child Health & Human Development of the National Institutes of Health (R01HD072120).

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