Long-term Implications of Under-nutrition on Psychosocial Competencies: Evidence from Four Developing Countries - Undernutrition and poverty interlinkages - School age children (SAC)

Programme: Long-term Implications of Under-nutrition on Psychosocial Competencies: Evidence from Four Developing Countries

Programme Data

Programme Description
Young Lives is an innovative long-term international research project investigating the changing nature of childhood poverty. The project seeks to:

- improve understanding of the causes and consequences of childhood poverty and to examine how policies affect children’s well-being
- inform the development and implementation of future policies and practices that will reduce childhood poverty.

Young Lives is tracking the development of 12,000 children in Ethiopia, India (Andhra Pradesh), Peru and Vietnam through quantitative and qualitative research over a 15-year period.

Both cognitive and non-cognitive skills matter to understand a child’s opportunities and outcomes in adulthood. However, it is unclear how non-cognitive skills are produced and what the role played by household investments is in this process. Motivated by suggestions from the medical literature and by the skills formation model proposed by Cunha and Heckman (2007, 2008), in this paper we use longitudinal data from children growing up in developing country contexts to study the role of early nutritional history in shaping these skills. To do this, we link height-for-age at the age of 7 to 8 to a set of psychosocial competencies measured at the age of 11 to 12 that are known to be correlated with earnings during adulthood: self-efficacy, self-esteem and educational aspirations. The estimation procedure is OLS with community fixed effects, controlling for a wide array of factors that can be deemed as determinants of parental investments – including an extended set of household wealth controls. We find that height-for-age predicts the three observed psychosocial measures. Auxiliary estimations suggest that the nutrition effect found is unlikely to be mediated by the effect that under-nutrition can have on cognitive skills.

Program type
Multi-national

Cost
£16,000,000

References
- [http://www.dfid.gov.uk/r4d/PDF/Outputs/Younglives/wp72_long-term-implica...](http://www.dfid.gov.uk/r4d/PDF/Outputs/Younglives/wp72_long-term-implica...)

Implementing organisations

- International NGOs
  - Save the Children

  - Details:
    more
    Save the Children UK (staff in the Policy Department in London and programme staff in Ethiopia).

- Research / Academia
  - Details:
Data come from Young Lives, a study tracking the lives of eight cohorts of children in four countries: Ethiopia, India (Andhra Pradesh), Peru and Vietnam. There are two age cohorts in each country. In this paper we concentrate on the Older Cohort, which consists of approximately 1,000 children from each country (700 in Peru) born in 1994?5. To select the children, a multi-stage sampling procedure was used. Firstly, 20 clusters were selected within each country; at random in Peru and based on a number of predetermined criteria in the other three countries. Secondly, within each cluster, a village/town (or a group of villages/towns) and a group of eligible households within each village/town was chosen at random, respectively. While the samples (with the exception of Peru) were not selected to be nationally representative, their wide geographical and ethnic coverage make them informative of the living conditions faced by the population in each of the selected countries. Approximately 50 households were selected in each village/town or group of villages/towns and in-depth information was collected for the eligible child (aged 7 to 8 at the time of the baseline survey) within each household. The sampled children and their caregivers were interviewed twice: in 2002, when they were aged 7 to 8 years; and, in 2006?7, when they were aged 11 to 12 years. The survey provides information on a variety of aspects related to child development, including child and maternal indicators of perceptions, attitudes and aspirations, child cognitive test scores, child and maternal anthropometric measures, as well as a wide array of information on child, family and other contextual characteristics. Attrition in the samples is exceptionally low: only 1.4 per cent of the children were lost or dropped out in the samples between the two rounds on average, with the Peru sample facing attrition of 3.5 per cent and the Vietnam sample only 0.5 per cent.

**Action data**

| Start date | January 2009 |
| End date | January 2017 |
| Country(ies): | Ethiopia |
| Status: | On-going |
| Area: | Urban, Rural, Peri-urban |
| Target group: | School age children (SAC) |
| Age group: | Children born in 1994 |
| Delivery: | Community-based |

**Implementation details:**

**The sample**

Data come from Young Lives, a study tracking the lives of eight cohorts of children in four countries: Ethiopia, India (Andhra Pradesh), Peru and Vietnam. There are two age cohorts in each country. In this paper we concentrate on the Older Cohort, which consists of approximately 1,000 children from each country (700 in Peru) born in 1994?5. To select the children, a multi-stage sampling procedure was used. Firstly, 20 clusters were selected within each country; at random in Peru and based on a number of predetermined criteria in the other three countries. Secondly, within each cluster, a village/town (or a group of villages/towns) and a group of eligible households within each village/town was chosen at random, respectively. While the samples (with the exception of Peru) were not selected to be nationally representative, their wide geographical and ethnic coverage make them informative of the living conditions faced by the population in each of the selected countries. Approximately 50 households were selected in each village/town or group of villages/towns and in-depth information was collected for the eligible child (aged 7 to 8 at the time of the baseline survey) within each household. The sampled children and their caregivers were interviewed twice: in 2002, when they were aged 7 to 8 years; and, in 2006?7, when they were aged 11 to 12 years. The survey provides information on a variety of aspects related to child development, including child and maternal indicators of perceptions, attitudes and aspirations, child cognitive test scores, child and maternal anthropometric measures, as well as a wide array of information on child, family and other contextual characteristics. Attrition in the samples is exceptionally low: only 1.4 per cent of the children were lost or dropped out in the samples between the two rounds on average, with the Peru sample facing attrition of 3.5 per cent and the Vietnam sample only 0.5 per cent.

**Measurement variables**

**Under-nutrition**

Crucial to the analysis is the availability of a valid measurement of early nutritional investments. As a proxy we use physical height observed at the age of 7 to 8. This variable is informative of height at an earlier age, and linear growth retardation at the first few years is, primarily, the result of an inadequate nutrition over an extended period of time? in this case, the period between gestation and the age of 2 (Martorell 1999). Thus, height-for-age at 7 to 8 is reasonably informative of the history of early nutritional investments. We use the growth curves reference for school-aged children recently developed by the World Health Organization (WHO 2007 standards). Based on this growth reference, a child of a given age and gender is catalogued as moderately stunted (chronically malnourished) if her (his) height is ranked two standard deviations below the median height corresponding to a well-nourished child of...
the same age and gender; severely stunted is the analogous term when child's height is three standard deviations below the norm. For the purpose of calculation, this implies reexpressing height-for-age in terms of height-for-age z-scores. In the Young Lives country samples, the percentage of children classified as moderately stunted at 7 to 8 years old fluctuates around 30 per cent (see Table 1). For the estimations, we chose to use the height-for-age variable in its continuous form (as opposed to the binary variable based on the <-2 SD cut-off point) to fully exploit the information conveyed by this variable.

**Measurements of psychosocial traits**
Using survey data, we construct a set of indicators that intend to approximate children's competencies in the following non-cognitive dimensions: (a) self-efficacy; (b) self-esteem; and, (c) aspirations. These dimensions have all been found to correlate well with future social and economic opportunities. Within the economic literature, see Bowles et al. (2001) for a summary of the evidence about the relationship between self-efficacy, self-esteem and earnings. On a different front, the psychological literature (Stajkovic and Luthans 1998; Trzesniewski et al. 2003; Goldsmith et al. 1997; Gutman and Akerman 2008) highlights that the selected non-cognitive dimensions are thought to be shaped early in life, to be heavily influenced by experiences and the environment and to become more stable as adolescence is reached. The influence of genes as a determinant has not been ruled out. The concepts of self-esteem and self-efficacy have been extensively studied in the field of psychology, particularly the former. Self-efficacy is related to a person's overall evaluation of her own worth. In turn, self-efficacy is related to a person's sense of agency or mastery over his life. Individuals hold beliefs about whether outcomes are due to their own efforts or the result of luck, fate, or the intervention of others. Individuals who believe that outcomes are due to their own efforts have a high 'internal' locus of control (Maddux 1991), i.e., a high sense of agency. To measure these two psychosocial traits, we estimated indicators based on respondents' degree of agreement or disagreement with a number of statements. The degree of agreement is measured on a 4-point Likert scale that ranges from strong agreement to strong disagreement. In turn, answers to these statements are used to construct individual average scores on self-efficacy and self-esteem.

Statements used for the construction of each index were drawn from the educational psychology literature, although they were adapted and extensively tested during piloting for use with children across different cultures. For self-efficacy, the statements explored in the Young Lives survey focused largely on positive and negative dimensions of pride and shame. They are effectively an adapted version of the Rosenberg Self-Esteem Scale (Rosenberg 1965), more focused on specific dimensions of children's living circumstances (housing, clothing, work, school). To feel proud to show my friends or other visitors where I live?, ?I am ashamed of my clothes?, ?I feel proud of the job done by the head of my household?, ?I am often embarrassed because I do not have the right books, pencils or other equipment for school?, ?I am proud of my achievements at school?, ?I am embarrassed by/ashamed of the work I have to do?, ?I am ashamed of my shoes??. What I do makes me feel proud??. The self-esteem index is the average score of the above items (with negative statements recoded in the inverse order). In the case of self-efficacy, we focused on five statements explored in the Young Lives survey: ?If I try hard, I can improve my situation in life?, ?Other people in my family make all the decisions about how I spend my time?, ?I like to make plans for my future studies and work?, ?I have no choice about the work I do ? I must do this sort of work? and ?If I study hard at school, I will be rewarded by a better job in future?. The self-efficacy index is the average score of these items.
One concept often assessed in the context of psychological tests is internal consistency (sometimes called reliability or homogeneity). The notion is that, in a homogenous psychological test, items measure the same thing (Cronbach 1951). The Cronbach's alpha, a statistic based on the correlation of different items of the same test, is deemed a test of internal consistency in the sense that a relatively high alpha (above 0.70) supports the notion that there is a common factor behind answers to different items. In our analysis we obtain values of 0.89 and 0.95 for the self-efficacy and self-esteem indicators in the pooled sample, respectively. Another competence that interests us is related to a child's aspirations. Quaglia and Cobb (1996) define aspirations as the ability to identify and set goals for the future, while being inspired in the present to work toward those goals. As with self-esteem and self-efficacy, this dimension is considered to be shaped early in life and is correlated with better economic and social outcomes during adulthood (Gutman and Akerman 2008). Because of the age-period in which the sampled children are observed we focus on educational aspirations as the outcome of interest, measured by asking the child how far she hopes to get in educational terms. The answer is expressed in equivalent years of education, asking for the highest grade of education that the child hopes to complete.

**Target population size:** 1000 children

**Coverage level (%):** 1000

**Outcome indicator(s):**
- Height-for-age at 7 to 8
- Self-efficacy
- Self-esteem
- Aspirations

**Baseline:** Communities where more than 25% of children are stunted; Communities where more than 10% of children are stunted

**Post-intervention:** Communities where more than 25% of children are stunted; Communities where more than 10% of
Outcome reported by social determinants:

<table>
<thead>
<tr>
<th>Typical problems</th>
<th>Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>children are stunted</td>
<td>Socio-economic status</td>
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Links to policies in GINA

- Poverty Reduction Strategy Programme (PRSP)
- National Nutrition Strategy