2013 Harvard-Brazil Early Childhood Development Projects

**Project**
Executive Functions and Early Cognitive Development of Low-Income Children in Salvador-Bahia, Brazil

**Synopsis**
The purpose of this study is to begin establishing validated executive functions measures in the Brazilian context. We propose a feasibility study to ascertain the ability to conduct similar research in such settings, as well as to assess the transferability of existing EF constructs and measures. As an example, the Cambridge Automated Neuropsychological Test and Battery (CANTAB), a well validated, touchscreen-based battery of memory and executive function tasks, could be tested in this particular context to be used at a later date in other geographic locations in the country, as well as to be combined with neuroimaging and intervention trials.

The outcomes of this study will provide a contextualized assessment tool for early childhood cognitive development. As a result, researchers will be able to incorporate this tool to perform large-scale cognitive assessments of these children to aid local and national policy makers in designing sensitive interventions targeting children in Brazil.

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Project
Early Life Adversity and Child Development: Evidence from the Western Region Project

Synopsis
This project aims at assessing the developmental impact of early life adversity among 1200 children born in São Paulo’s Western Region in 2012. Complete medical birth records, as well as data on adversity experienced during pregnancy have already been collected for this cohort. We propose to conduct a one-year follow-up assessment of these children to i) assess the empirical associations between child development and adversity experienced in utero and during the first year of life in a modern urban Latin American setting; and ii) to estimate the causal impact of community based health care (the PSF model) on child health and development.

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**Project**
Disease Burden and Early Childhood Development: A Birth Cohort Study in the Brazilian Amazon

**Synopsis**
The long-term goals of our research in Brazil are to (i) set up a birth cohort study in the Brazilian Amazon, endemic for *P. vivax* malaria (among other infection diseases), followed up for at least five years; (ii) collect prospective information on maternal (e.g., malaria in pregnancy, smoking, dietary and nutritional status, education), environmental (e.g., climate, housing conditions, land use), societal (e.g., socioeconomic status, political context, access to health care, malaria control interventions), and genetic factors (e.g., HbS, Duffy-DARC genotype); and (iii) answer a variety of questions addressing malaria biology/immunology, disease burden, and child development. These long-term goals are matched by similar efforts to launch a birth cohort in Tanzania (an area endemic for *P. falciparum* malaria, among other infectious diseases), which would allow for a comparative analysis. Specifically, we expect to address the following issues during the first five years of cohort follow-up: (i) natural malaria infection response (from 1st infection to acquired immunity); (ii) determinants of anemia prevalence given the local burden of diseases; (iii) genotyping malaria parasites; (iv) parasite diversity and immunity; (v) links between malaria and nutritional deficiencies; and (vi) disease burden and child development (growth and nutritional status). All these issues will be addressed controlling for maternal, environmental, societal, and genetic factors.

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Project
Number and Counting in Indigenous Communities in Brazil

Synopsis
This project investigates the acquisition of number words by Brazilian indigenous children, and how it affects their understanding of number concepts, exact numerosities and counting. One central question in this project is whether the development of numerical knowledge depends on language and cultural factors.

The outcomes of the project will be theoretical as well as practical. From a theoretical perspective, the study of the cross-linguistic and cross-cultural factors that influence the acquisition of number words and of counting will ultimately contribute to a better understanding of the cognitive processes that characterize human numerical abilities; more specifically, the abilities involved in counting precise/exact numerosities. From a practical perspective, the understanding of the cognitive factors involved in the acquisition of number words by preschool children will contribute to the development of educational strategies for young children, and to the production of pedagogical materials for use in Brazilian indigenous communities.

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