

## **Proposed Research**

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Static models of the production of health and education have been widely estimated in a variety of contexts and the theoretical underpinnings and limitations of the causal inferences that can be drawn are well established. For example, in the area of health, there is a large body of evidence on how health outcomes are a function of a vector of health inputs (e.g., use of health care services, nutrient intake, energy output, and time allocated directly or indirectly to the production of health) and behaviors (e.g., smoking, risky or very stressful lifestyles), as well as unobserved characteristics. These models, however, ignore the basic fact that measures of well-being and human capital, particularly health and cognitive abilities, evolve over the entire life course of individuals. For example, health outcomes of adults (such as the likelihood of being a diabetic) are conditioned by the earlier health outcomes and behaviors (such as neonatal health). Similarly in the area of education, there is a great deal of evidence about the importance of pre-school age learning and cognitive ability on subsequent school attainment and test score outcomes. These relationships that span a persons lifetime emphasize the importance of estimating dynamic models of health and education that take into account the entire life course of the individual.

Beyond the need for advances in understanding the evolution of health and education over the life-course is the importance of better understanding the inter-generational transmission of health and education. Indeed, there is a substantial amount of evidence that socio-economic status of parents affects child schooling and learning. Likewise, there is a growing literature on how health is transmitted across generations, for example, as mediated by the health behavior and inputs of the mother, and of course, through genetics. Other mechanisms underlie observed correlations in health and education across generations – both observable (e.g., wealth) and unobservable (e.g., innate ability to manage inputs into the production of health and education). While correlations between the human capital endowments of parents and their children are well established, there is a paucity of research on the causal mechanisms that underlie these relationships, and how they differ in various contexts. Problems such as unobserved heterogeneity, including time invariant factors such as genetics, commend the use of panel surveys to address the challenges of drawing causal inferences. Such data are rare, especially in sub-Saharan Africa, where I plan on conducting my research. However, I have been recently involved in collecting some innovative data sets, including the *Education et Bien-Etre des Menages au Senegal* (EBMS) survey, that will allow me to estimate dynamic models of the formation of human capital. Such knowledge is vital to formulating policies that will enhance health and cognitive abilities during the life course and across generations.