A sobering fact to consider: the likelihood that any of us will achieve a state of sustained well-being as adults is bounded quite early in life by factors entirely beyond our control. Where one is born, when, and to whom establishes guardrails for a path of development to which merit or effort contributes but modestly. Of all the disadvantageous contingencies to which one might be exposed in early life, poverty is among the most punishing. Its effects are known to be pervasive, long lasting, and protean in their manifestations.\(^1,2\) Those who start out life poor grow less well,\(^3\) are subject to more frequent and grave episodes of illness,\(^4\) attain lesser levels of academic advancement, experience cognitive challenges unlike their more fortunate counterparts,\(^5\) earn less money,\(^6\) acquire fewer assets, develop adult-onset chronic illnesses at higher rates,\(^7\) marry less often, and die earlier.\(^8\) Despite voluminous documentation of these associations, there is yet much that remains to be explained about the pathways through which poverty exerts these pernicious influences and, in particular, its impact on cognitive development.

In this issue of Pediatrics, Hamadani and colleagues contribute to our understanding of this dynamic through their study of a cohort of children in rural Bangladesh.\(^9\) The authors enrolled 2853 singleton children born between May 2002 and December 2003 and collected data on their parents, their growth parameters over the succeeding 64 months, the material resources available to their families, and information about the richness of the environments in which they were raised. They then linked these factors longitudinally to objective measures of the children’s cognitive function. The authors divided the cohort into wealth quintiles and compared the cognitive outcomes of the children at 7, 18, and 64 months of age. They found differences in cognitive ability between children from the poorest compared with the richest quintile as early as 7 months, and they documented that those differences increased over time. Once parental education, growth, and the home environment were taken into account in their multivariate analytic framework the effect of poverty was dramatically reduced suggesting that these 3 elements constitute important mediating pathways through which wealth affects cognitive ability over time.

The study design these authors used has much to recommend it. It is a longitudinal cohort study that collected data on children’s parentage and environment from the outset rather than depending on recall, as is the case in many cross-sectional studies performed to date. The authors took great pains to amass data from objective measures including the age-appropriate developmental screening instruments that had been translated and adapted for use in this rural community. They used wealth rather than simply income to estimate a broad range of material resources available to families. Multivariate logistic regressions helped isolate the impact of specific features of the child’s...
reason so that mediating pathways could be more clearly delineated. The authors accounted for attrition and were careful to compare those subjected to repeated tests by using bootstrapping techniques in their analyses.

For readers in the United States, the question posed by this well-crafted study is what relevance the experience of families in developing countries might have for children growing up in this country. On the one hand, there are legitimate questions regarding the generalizability of these findings. Poor rural villages in Bangladesh experience a level of absolute resource deprivation that would be hard to find in countries such as the United States, even among our poorest citizens. The effects, for example, of nutrition deprivation are not likely to be relative but absolute. One indication of this is that the authors report a low birth weight rate among their sample of between 31% and 34%. The comparable figure for the United States in 2012 was 8%.10 These low birth weights, given the mean gestational age of 39 weeks, suggest a degree of in utero nutritional compromise that we generally do not see in the United States. A similar observation might be made about the parental schooling levels. The authors report that fully one-third of mothers among the children for whom cognitive testing results at 64 months were available had no schooling whatsoever; and another 22.8% had between 1 and 5 years of schooling. In the United States, >87% of all persons 25 years and older had graduated high school as of 2010.11 Because maternal education, even in the fully populated model, retained important explanatory power regarding the level of cognitive achievement attained by the children being studied, it is difficult to determine exactly how the findings of the current study ought to be interpreted in this regard in an American context. One might ask similar questions regarding the absolute living standards of the poorest quintile in this sample or the HOME (Home Observation for Measurement of Environment) inventories for these families relative to anything likely to be encountered in the United States.

These questions, however, ignore the broader import of what Hamadani and colleagues present. We know that just as in Bangladesh, a gradient exists in this country regarding a host of health- and development-related outcomes between children raised in poverty and those raised with more resources. As far back as the 1990s, reviews of the relationship between poverty and child cognitive development in the United States using data from the National Longitudinal Survey of Youth indicated that parental education and nutritional status in US children are associated with a variety of cognitive outcomes, and one-third to one-half of the difference between poor and nonpoor children could be attributed to differences in the HOME assessment of these families.12 The scales used by Hamadani and colleagues may differ from those used to study children in urban and rural settings in this country, but American children who grow up in poor families experience similarly less optimal outcomes compared with richer children, as do those in rural India.

Hamadani et al’s findings reinforce what has been observed in cross-sectional studies in the United States. The point estimates may differ, but parental endowments and educational attainment,13 home environments (as best as we can measure them), and nutritional support are as crucial to the cognitive attainment of US children as they are of Bangladeshi children. The absolute levels attained may be different, the influences of these inputs may vary in strength, the interactions may be stronger or weaker, but the essential message should not be obscured by the setting in which these findings were generated. Poverty acts through specific concrete mechanisms to affect child cognitive outcomes. The quantity and quality of caloric input, parental nurturing, and home environment derive from the availability of material resources and in turn combine to fashion those resources into developmental realities.

Hamadani and colleagues have pointed the way toward a richer understanding of how poverty works on children over time. Their findings challenge us to replicate similar longitudinal investigations that might generate estimates more attuned to US populations. Such studies will be neither inexpensive to mount nor quick to execute. Yet this must not discourage these undertakings. Characterizing the long-term impact of poverty on children continues to represent a scholarly investment in the future health of the US citizenry with direct policy implications at once eminently actionable and perilous to ignore.

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