

Child Health and Future Success

A Minneapolis Fed-University of Minnesota conference

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The importance of early childhood development for school success and adult well-being is supported by a growing body of research from neuroscience, psychology, medicine, education and economics. Research also demonstrates that the future benefits of investing in the early years accrue not only to the children themselves, but to all of society through reduced social costs, higher tax revenue and a more productive and competitive workforce.

These findings led the Federal Reserve Bank of Minneapolis to bring researchers from several disciplines under one roof to discuss the science and policy of the early years, beginning with the first of three national conferences in 2003 with a focus on economic policy. The second conference in 2007 scoured cost-effectiveness studies on investments during children's first decade. On Oct. 14 and 15, 2010, researchers descended on the Minneapolis Fed for a third conference, "Health and Early Childhood Development: The Impact of Health on School Readiness and Other Education Outcomes."

All three conferences were co-sponsored with the University of Minnesota. The past two conferences were developed by the Human Capital Research Collaborative (recently renamed from Early Childhood Research Collaborative), a cooperative effort by the Minneapolis Fed and the University of Minnesota to advance multidisciplinary research on child development and social policy.

In describing why the Minneapolis Fed is interested in early childhood development issues, President Narayana Kocherlakota said in opening remarks, "We need turn no further than the first two words in the HCRC acronym, 'human capital.' One of the key ingredients to sustained economic growth is the development of human capital."

Robert Bruininks, president of the University of Minnesota, echoed this theme: "I think the key words for the 21st century are going to be human capital and the development of human capital." Bruininks described the current challenge as a perfect storm composed of two winds—just when the economy will need more highly skilled workers than ever before, the percentage of students from backgrounds that have historically underperformed educationally is at an all-time high. "If we are going to weather this perfect storm we will need to improve opportunity and performance for all students from early childhood through higher education."

What determines health and well-being?

A primary task of the conference presenters was to better explain the determinants of early health outcomes themselves.

Health outcomes are often considered from a medical perspective, that is, as a function of the health care system alone. But Paula Braveman, professor of family and community medicine at the University of California, San Francisco, pointed out that health improvements enjoyed during the past 150 years are probably due more to better living and working conditions than to advances in medical practices. As an example, infant mortality in England steadily decreased from the early 1900s through the 1960s, but neonatal intensive care units weren't widespread until the 1970s. While advances in medicine have improved overall well-being, current health disparities seem to be largely influenced by income, education, and racial and ethnic group. Furthermore, the situa-

tions young children are exposed to, for better or worse, leave their mark for the rest of their lives.

Greg Duncan, professor of education at the University of California, Irvine, looked specifically at the relationship between family poverty during early childhood and later adult earnings. Using data from the Panel Study of Income Dynamics and accounting for family characteristics, Duncan and colleagues found that for children growing up in families with average incomes below \$25,000, a \$3,000 annual boost to family income between the prenatal year and age 5 is associated with a 17 percent increase in adult earnings. The same relationship doesn't exist for family income while children are older than age 5, suggesting that family income during the early years has a stronger influence on adult earnings than family income during middle and later childhood.

Duncan and colleagues also concluded that neither educational attainment nor behavioral outcomes (lack of arrests or nonmarital births) account for links between early income and adult earnings. However, they found that \$3,000 increments to low income early in life are associated with reductions in the odds of obesity, hypertension and arthritis later in life. "Although more research is obviously needed," the authors noted, "these health pathways involving stress and inflammation appear to be very

promising linkages between poverty early in life and adult labor market productivity."

Michael Georgieff, professor of pediatrics and child psychology, University of Minnesota, turned to the impact of nutrition on brain development. Cells require certain doses of nutrients, such as proteins, vitamins and minerals, during specific time periods in order to grow and mature. "You can pretty well predict ... what types of outcomes you are going to get for a given nutrient deficit," he said. Nutrition deficits can affect motor development, learning and

memory, mental health and the immune system.

Georgieff noted that maternal nutrition is not the only influence on the transmission of nutrition during pregnancy; maternal stress can affect fetal nutrition. In this case, "the solution isn't a nutrient solution, but a nonnutrient solution."

How health interventions make a difference

Several researchers discussed programs that address adverse conditions in early life. Bernard Guyer, professor of children's health at the Johns Hopkins Bloomberg School of Public Health, presented a meta-analysis of studies on interventions to curb childhood tobacco exposure, unintentional injury, obesity and mental health issues, noting that "child health is more than the absence of disease."

Guyer and his colleagues calculated the total costs of these conditions, ranging from \$65 billion to \$100 billion per birth cohort. Research on reducing tobacco exposure was the most prevalent. One study estimated that a 15 percent reduction in parent smoking could save \$1 billion per year in direct medical costs. "It's important to put children's health in a life span perspective because it's easy to ignore children in a policy world that focuses primarily on cost and cost containment, because the costs are incurred later in life, but the antecedents occur early in life," he said. Guyer concluded that the evidence points to the power of broad public health approaches rather than relying on individual medical or behavioral change interventions.

Researchers have uncovered evidence that depression among parents impacts their children. Mary Jane England, president of Regis College, noted that 7.5 million parents are affected by depression each year. Depression among parents is associated with more sick-child emergency room visits, fewer well-child visits to a clinic and



Michael Georgieff
University of Minnesota



Bernard Guyer
Johns Hopkins Bloomberg School
of Public Health



Mary Jane England
Regis College

increased risk of low birth weight and child obesity. England emphasized the importance of screening adults for depression, particularly “if we want to give individuals the right to control their own health and services they receive.” A number of effective tools are available to treat depression. England noted that community-based approaches (screening and treatment) among vulnerable populations are critical for overcoming depression-related stigma and reducing health disparities.

The agenda then shifted to two efforts that augment existing programs. First,

Karen Bierman, professor of psychology at Pennsylvania State University, discussed the impact of the Head Start REDI Project, which enriches Head Start programs with curriculum and teacher training to improve language, literacy and mental health for 3- and 4-year-old children living in poverty. Bierman showed that measures of teaching practices and child cognitive and social-emotional outcomes improved in one year.



Karen Bierman
Pennsylvania State University

Second, Diane Stanton Ward, professor at the Gillings School of Global Public Health, University of North Carolina at Chapel Hill, described the implementation of a self-assessment tool for child care centers to evaluate nutrition and physical activity as a way to help address childhood obesity. Ward noted that the incidence of child obesity has grown threefold since the early 1970s. Today about one of seven low-income preschool children is considered obese, and obesity is associated with poor school performance and behavior problems.

National health policy

Researchers then discussed the impact on children of sweeping changes in federal health care policy. Jean Abraham, assistant professor at the University of Minnesota School of Public Health, found that prior to passage of the Patient Protection and Affordable Care Act (PPACA), about 10 percent of children (below age 18) were uninsured and about 20 percent of families with health insurance were underinsured. Abraham noted that eligibility for Medicaid will expand in 2014 and that state exchanges for individual coverage will provide subsidies for families who earn low to moderate levels of income but don't qualify for Medicaid.

“There is a positive association between having health insurance and preventive care, which is valuable for well-child visits for assessing development, as well as insuring children receive clinically recommended immunizations,” Abraham said. In addition to expanding health insurance access, PPACA provides funding for maternal and child home-visiting programs.

Laurie Martin, policy researcher at the RAND Corporation, broadened the discussion beyond PPACA to the impact of parents' health literacy on their children, that is, “their ability to find [and] ... understand information, and ability to use information and act on it.” Martin described a number of areas where disseminating accessible health information to parents could be improved, including through early childhood programs.

Martin Gaynor, professor of economics and public policy at Carnegie Mellon University, presented research on the effect of competition on health care quality. Gaynor and his colleagues investigated the impact of a policy to promote competition between hospitals in England. After implementing the policy, the researchers found that mortality rates for heart attacks were lower in markets with higher levels of competition. “We find that the effect of competition is to save lives without raising costs.”



Jack Shonkoff
Harvard University



Art Rolnick
University of Minnesota

Bringing it all together

Many policy areas affect child development, such as education, health, human services and economic development, noted Jack Shonkoff, professor of child health and development and director of the Center on the Developing Child at Harvard University. “An integrated science of early childhood development could drive more productive investments across these sectors.”

Shonkoff noted that the science base on early childhood development is rich and growing rapidly, yet there are “persistently ineffective or inadequate inter-

ventions to reduce disparities in health, learning and behavior.” Expanding health insurance and reducing inequalities within the medical care system do not address the fundamental causes of disparities in health related to social class, race and ethnicity. Shonkoff argued that science can “enhance our capacity to promote health and prevent disease, not just treat illness.”

The conference concluded with three observations by HCRC co-directors Arthur Reynolds, professor at the University of Minnesota’s Institute of Child Development, and Art Rolnick, senior fellow at the University of Minnesota’s Humphrey Institute for Public Affairs and retired director of Research at the Minneapolis Fed.

1. Strategies have expanded greatly in a number of disciplines to promote health and well-being.
2. There is a reciprocal and dynamic influence between health and education across the life span that requires not only a service delivery strategy, but also a research and development strategy.
3. The determinants of health and well-being are important to understand at the individual level, but also at the parent, family, community and state/federal policy levels.

Reynolds noted that “we have to integrate knowledge and information across fields, which requires collaborative groups like the HCRC.” ^R

For video, papers and presentation slides from the conference, visit the HCRC Web site at www.humancapitalrc.org. The site also has information about *Childhood Programs and Practices in the First Decade of Life*, based on the 2007 conference, published by Cambridge Press.