




January 10, 2006

COMMENTARY

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Catch 'em Young

By **JAMES J. HECKMAN**

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It is a rare public policy initiative that promotes fairness and social justice and, at the same time, promotes productivity in the economy and in society at large. Investing in disadvantaged young children is such a policy. The traditional argument for providing enriched environments for disadvantaged young children is based on considerations of fairness and social justice. But another argument can be made that complements and strengthens the first one. It is based on economic efficiency, and it is more compelling than the equity argument, in part because the gains from such investment can be quantified -- and they are large.

There are many reasons why investing in disadvantaged young children has a high economic return. Early interventions for disadvantaged children promote schooling, raise the quality of the work force, enhance the productivity of schools, and reduce crime, teenage pregnancy and welfare dependency. They raise earnings and promote social attachment. Focusing solely on earnings gains, returns to dollars invested are as high as 15% to 17%.

The equity-efficiency trade-off that plagues so many public policies can be avoided because of the importance of skills in the modern economy and the dynamic nature of the skill-acquisition process. A large body of research in social science, psychology and neuroscience shows that skill begets skill; that learning begets learning. There is also substantial evidence of critical or sensitive periods in the lives of young children. Environments that do not cultivate both cognitive and noncognitive abilities (such as motivation, perseverance and self-restraint) place children at an early disadvantage. Once a child falls behind in these fundamental skills, he is likely to remain behind. Remediation for impoverished early environments becomes progressively more costly the later it is attempted.

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Families are the major source of inequality in American social and economic life. The accident of birth has substantial lifetime consequences. Adverse early environments are powerful predictors of adult failure on several social and economic dimensions. The source of the adversity is the lack of stimulation afforded young children. Experimental interventions that enrich early childhood environments have been shown to produce more successful adults by raising both cognitive and noncognitive skills. At current levels of spending, early interventions targeted toward disadvantaged children have much higher economic returns than later interventions, such as reduced pupil-teacher ratios, public job training, convict rehabilitation programs, tuition subsidies or expenditure on police.

Adverse early environments contribute to many major social problems. One prominent example is the slowdown in the growth of labor force quality. The U.S. will add many fewer college graduates to its work force in the next 20 years than it did in the last 20 years. The percentage of each cohort of Americans who attend college has stagnated in recent decades. Properly counted, the high school dropout rate is increasing at a time when the economic return to schooling has increased. This increase is occurring among native populations and is not solely due to immigration. Crime is another social problem. The estimated net cost of crime in American society is \$1.3 trillion per year -- \$4,818 per capita. Crime reduction is extremely expensive, and spending on the criminal justice system is still increasing.

When we look at the origins of these and other problems, we find that shortfalls in cognitive and noncognitive ability are major predictors of these social ills. Noncognitive ability is neglected in many public policy discussions, yet it is a major determinant of socioeconomic success. Cognitive and noncognitive ability are both important in explaining schooling attainment, participation in crime and a variety of other outcomes. Moving persons from the bottom to the top of either cognitive or noncognitive distributions has equally strong effects on many measures of social and economic success.

Gaps in rankings of both cognitive and noncognitive ability by socioeconomic status emerge early in the life of the child, widen slightly in the early years of schooling, and stay constant after age eight. Research shows that schooling and school quality play only a small role in accounting for these gaps or in widening or narrowing them. Controlling for early family environments narrows the gaps greatly.

Family environments are major predictors of adult cognitive and noncognitive abilities. This is a source of concern because these environments have deteriorated. Using a variety of measures, relatively more U.S. children are born into disadvantaged environments compared to 40 years ago. The percentage of children born to single parent families, for example, has jumped from less than 5% in 1968 to more than 22% in 2000. Few of those families are headed by well-educated mothers. Interventions that enrich the early years of disadvantaged children improve both cognitive and noncognitive skills and produce successful adults.

A great deal of American public policy discussion judges the success or failure of education programs by their effects on cognitive test-score measurements. Head Start, for instance, was deemed a failure because it did not raise IQ scores. But such judgments are unwise. Consider the Perry Preschool Program, a family environment enrichment given to disadvantaged minority children that was evaluated by a randomized trial. The Perry intervention group had no higher IQ test scores than the control group. Yet, in a follow up to age 40, the Perry treatment children had higher achievement test scores than did the control children and on many dimensions the Perry children are far more successful than the controls. In terms of employment, schooling and participation in crime, among other measures, early interventions can partially compensate for

early disadvantage. The Perry program's economic benefits are substantial: Rates of return are 15% to 17%. The benefit-cost ratio is eight to one. Participant noncognitive skills were raised even if their IQs were not.

Perry intervened relatively late (at ages four to six) in the lives of the disadvantaged children. Earlier interventions like the Carolina Abecedarian program that also targeted disadvantaged children and that were administered when subjects are four months old permanently raised the IQ and the noncognitive skills of the treatment group compared to the control group.

Although much public policy discussion focuses on the failings of schools, a major finding from the research literature is that schools and school quality contribute little to the emergence of test-score gaps among children. By the second grade, gaps in ranks of test scores across socioeconomic groups are stable, suggesting that later schooling has little effect in reducing or widening the gaps that appear before students enter school. In work with Pedro Carneiro, I performed a cost-benefit analysis of classroom-size reduction on adult earnings. While smaller classes raise the adult earnings of students, the earnings gains do not offset the costs of hiring additional teachers. The best way to improve schools is to improve the students sent to them. A substantial benefit of early interventions is improvement of the performance of disadvantaged children in schools.

Because of the dynamics of human skill formation, the abilities and motivations that children bring to school play a far greater role in promoting performance than do the traditional schooling input measures that receive so much attention in public policy debates. Other evidence suggests that resources available to children when they make their college attendance decisions play only a small role in accounting for socioeconomic and ethnic differentials. At most 8% of the families in America cannot afford to send their children to school. While policies targeted to this 8% are cost effective, the major source of the gaps in college attendance across socioeconomic groups is the gaps in the abilities that children have in their late teens, which are formed much earlier in life.

Many politicians and citizens place their faith in adolescent and young-adult remediation programs. America is a second-chance society, fundamentally optimistic about the possibility of human change. However, the track records of criminal rehabilitation programs, adult literacy programs and public job-training programs are poor. A few selectively targeted versions yield modest benefits. They do not lift the vast majority of their participants out of poverty.

Studies of the dynamics of human skill formation show that later compensation for deficient early family environments is very costly. A lack of early skill and motivation begets a lack of future skill and motivation. If society waits too long to compensate for the accident of birth, it is economically inefficient to invest in the skills of the disadvantaged. A serious trade-off exists between equity and efficiency for skill policies directed towards adolescents and young adults. There is no such trade-off for policies targeted toward disadvantaged young children.

Important operational details of investment programs for disadvantaged children remain to be determined. Children from advantaged environments, by and large, receive substantial early investment, while children from disadvantaged environments more often do not. There is little basis for providing universal programs at zero cost, although some advocate such a policy. While there is a strong case for public support for funding interventions in the early childhood of disadvantaged children, there is no reason for the interventions to be conducted in public centers. Vouchers that can be used in privately run programs would promote competition and efficiency in the provision of early enrichment programs. They would allow parents to

choose the venues and values offered in the programs that enrich their child's earliest years.

Mr. Heckman, Nobel laureate in economics in 2000, is a professor at the University of Chicago.

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