Poverty and Potential: Out-of-School Factors and School Success

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Executive Summary

The U.S. has set as a national goal the narrowing of the achievement gap between lower income and middle-class students, and that between racial and ethnic groups. This is a key purpose of the No Child Left Behind act, which relies primarily on assessment to promote changes within schools to accomplish that goal. However, out-of-school factors (OSFs) play a powerful role in generating existing achievement gaps, and if these factors are not attended to with equal vigor, our national aspirations will be thwarted.

This brief details six OSFs common among the poor that significantly affect the health and learning opportunities of children, and accordingly limit what schools can accomplish *on their own*: (1) low birth-weight and non-genetic prenatal influences on children; (2) inadequate medical, dental, and vision care, often a result of inadequate or no medical insurance; (3) food insecurity; (4) environmental pollutants; (5) family relations and family stress; and (6) neighborhood characteristics. These OSFs are related to a host of poverty-induced physical, sociological, and psychological problems that children often bring to school, ranging from neurological damage and attention disorders to excessive absenteeism, linguistic underdevelopment, and oppositional behavior.

Also discussed is a seventh OSF, extended learning opportunities, such as pre-school, after school, and summer school programs that can help to mitigate some of the harm caused by the first six factors.

Because America's schools are so highly segregated by income, race, and ethnicity, problems related to poverty occur simultaneously, with greater frequency, and act cumulatively in schools serving disadvantaged communities. These schools therefore face significantly greater challenges than schools serving wealthier children, and their limited resources are often overwhelmed. Efforts to improve educational outcomes in these schools, attempting to drive change through test-based accountability, are thus unlikely to succeed unless accompanied by policies to address the OSFs that negatively affect large numbers of our nations' students. Poverty limits student potential; inputs to schools affect outputs from them.

Therefore, it is recommended that efforts be made to:

- Reduce the rate of low birth weight children among African Americans,
- Reduce drug and alcohol abuse,
- Reduce pollutants in our cites and move people away from toxic sites,
- Provide universal and free medical care for all citizens,
- Insure that no one suffers from food insecurity,
- Reduce the rates of family violence in low-income households,
- Improve mental health services among the poor,
- More equitably distribute low-income housing throughout communities,
- Reduce both the mobility and absenteeism rates of children,
- Provide high-quality preschools for all children, and
- Provide summer programs for the poor to reduce summer losses in their academic achievement.

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Introduction

No one doubts that schools can be powerful influences on youth, when those schools are safe and have engaging curriculum and experienced and caring teachers who possess subject matter competency and pedagogical skill. But America's public schools often come up short in these regards. And even near-perfect schools can show disappointing results, since school effects have limits. In part, this is because of time: U.S. students spend about 1,150 waking hours a year in school versus about 4,700 more waking hours per year in their families and neighborhoods.[2] Further, many schools have a one-size-fits-all orientation, not easily accommodating the myriad differences in talents and interests among youth or helping them cope, in ways that youth find nurturing or useful, with school as well as non-school factors associated with family, community, society, and life's problems. Such non-school factors, in fact, exert a powerful influence on student behavior and school learning, and those that are harmful (for example, having a mild birth defect) hurt impoverished youth more frequently and with greater severity than they do youth in middle-class or wealthy families.

Recently, some of the nation's educational leaders have become concerned about such deleterious out-of-school influences on students, an issue brought to the fore by the difficulties that the No Child Left Behind (NCLB) law has had producing sizeable achievement gains among poor children. Susan Neuman, for example, formerly Assistant Secretary of Education in the George W. Bush administration and an overseer of NCLB, has clearly stated what many education researchers have argued for some time—namely, that schools alone will not ordinarily be able to improve achievement for poor and minority students.[3] She and others who recognize the limits of NCLB, including some of the most distinguished educators in the nation, have joined together to promote a "broader, bolder approach" to education. They argue:

> The potential effectiveness of NCLB has been seriously undermined ... by its acceptance of the popular assumptions that bad schools are the major reason for low achievement, and that an academic program revolving around standards, testing, teacher training, and accountability can, in and of itself, offset the full impact of low socioeconomic status on achievement.[4]

This brief addresses these concerns, offering an overview of key out-of-school-factors (OSFs) that contribute to differences in student behavior and academic achievement.

The effects of OSFs on impoverished youth merit close attention for three reasons:

First, studies of school-age children during the school year and over their summer break strongly suggest that most of the inequality in cognitive skills and differences in behavior come from family and neighborhood sources rather than from schools. The research evidence is quite persuasive that schools actually tend to reduce the inequality generated by OSFs and have the potential to offer much greater reductions.[5]

Second, despite their best efforts at reducing inequalities, inequalities do not easily go away, with the result that America's schools generally work less well for impoverished youth and much better for those more fortunate. Recent test results from America's National Assessment of Educational Progress (NAEP) and from the international comparisons in both the Trends in International Mathematics and Science Study (TIMSS) and the Program on International Student Assessment (PISA) all show this pattern. Figure 1 (following), from TIMSS 2007, illustrates how closely linked school scores are to the school's enrollment of low-income students. Comparing the scores of schools in 58 countries in the TIMSS pool against only wealthier American schools, instead of overall averages, makes the link clear. Looking first at the American schools with the lowest levels of poverty—where under 10% of the students are poor—we find that the average scores of fourth grade American students are higher than in all but two of the other 58 countries.[6] Similarly, in American schools where under 25% of the students are poor, the average scores of fourth grade American students are higher than all but four of these other countries.

On average, then, about 31% of American students of all races and ethnicities (about 15 million out of some 50 million public school students), attend schools that outperform students in 54 other nations in mathematics. These are schools, however, that have few poor students.[7] This suggests that if families find ways for their children to attend public schools where poverty is not a major school challenge, then, on average, their children will have better achievement test performance than students in all but a handful of other nations.

In American schools where more than 25% of the schools' students are poor, however, achievement is not nearly as good. This suggests that policymakers might attend more to the OSFs among this population—even as NCLB, the nation's current educational policy, primarily focuses on within-school processes that contribute to the achievement gap. It also suggests the third reason for concern about OSFs and their impact on impoverished youth: the contemporary zeitgeist.

We live in "outcome-oriented," "bottom line," "accountability" times. This brief is being written after NCLB has dominated educational discourse for more than seven years. This law, reflecting and enhancing the accountability-oriented zeitgeist in which we live, focuses almost exclusively on school outputs,

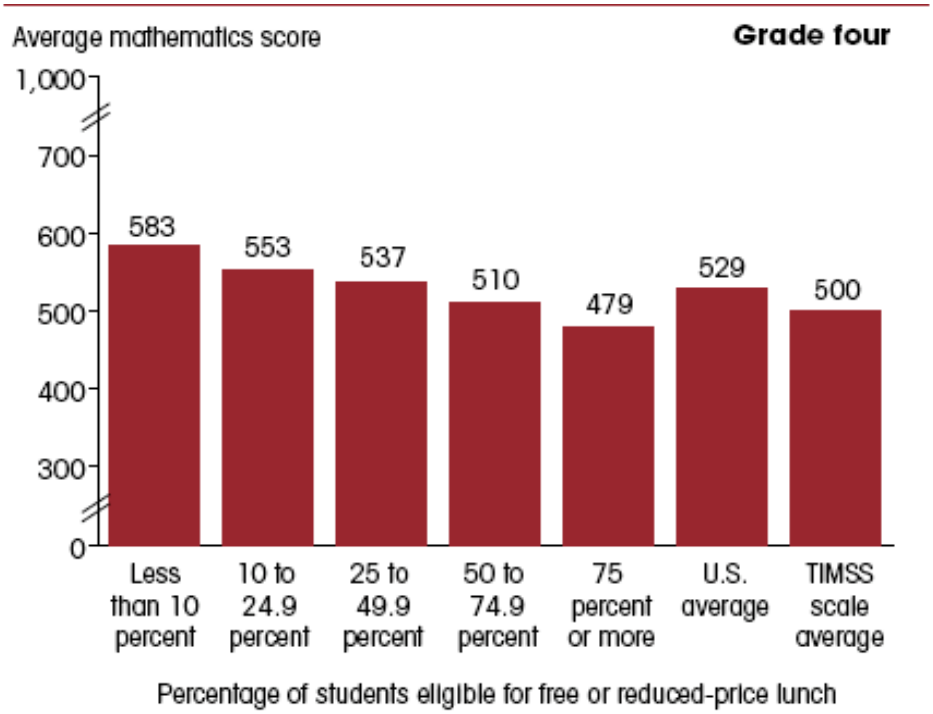


Figure 1. Average mathematics scores of U. S. fourth grade students on TIMSS 2007, by percentage of students in public school eligible for free and reduced lunch.[8]

particularly reading and mathematics achievement test scores. The law was purposely designed to pay little attention to school inputs in order to ensure that teachers and school administrators had "no excuses" when it came to better educating impoverished youth.

The occasional school that overcomes the effects of academically detrimental inputs—high rates of food insecurity, single heads of households, family and neighborhood violence, homelessness and transiency, illnesses and dental needs that are not medically insured, special education needs, language minority populations, and so forth—has allowed some advocates to declare that schools, virtually alone, can ensure the high achievement of impoverished youth. This point is made by Chenoweth[9] in a book documenting schools that "beat the odds," and it is the point made repeatedly by Kati Haycock, the influential head of the Education Trust,[10] and other organizations like hers.

From Equal Opportunity to the Achievement Gap

Let us be clear about their position and the one taken here: People with strong faith in public schools are to be cherished, and the same is true of each example of schools that overcome enormous odds. The methods of those schools need to be studied, evaluated, and if found to be worth emulating, promoted and replicated so that more educators will be influenced by their success.

But these successes should not be used as a cudgel to attack other educators and schools. And they should certainly never be used to excuse societal neglect of the very causes of the obstacles that extraordinary educators must overcome. It is a poor policy indeed that erects huge barriers to the success of millions of students, cherry-picks and praises a few schools that appear to clear those barriers, and then blames the other schools for their failure to do the same.

Yet the nation, through NCLB and the writings of people like those just cited, has effectively adopted this outcomes-oriented, input-ignoring philosophy. Policy makers pay great attention to "the achievement gap" that exists between poor and more-advantaged students and, via NCLB, now even require that schools eliminate the gap completely by 2014. This approach is perfectly sensible if divorced from the actual schooling context. But in the real world outputs have relationships to inputs that cannot be ignored. Our nation, perhaps grown weary of hearing the same old claims about U.S. children being made unequal by the economic and socials systems of our society, has turned to a callous policy that allows us to officially ignore the inputs or OSFs that unquestionably affect achievement. Schools are told to fix problems that they have never been able to fix and that largely lie outside their zone of influence.

Journalist James Crawford has analyzed how major newspapers and educational weeklies have switched from concern with OSFs and issues of equity to concerns about the "achievement gap" (concerns focused solely on the

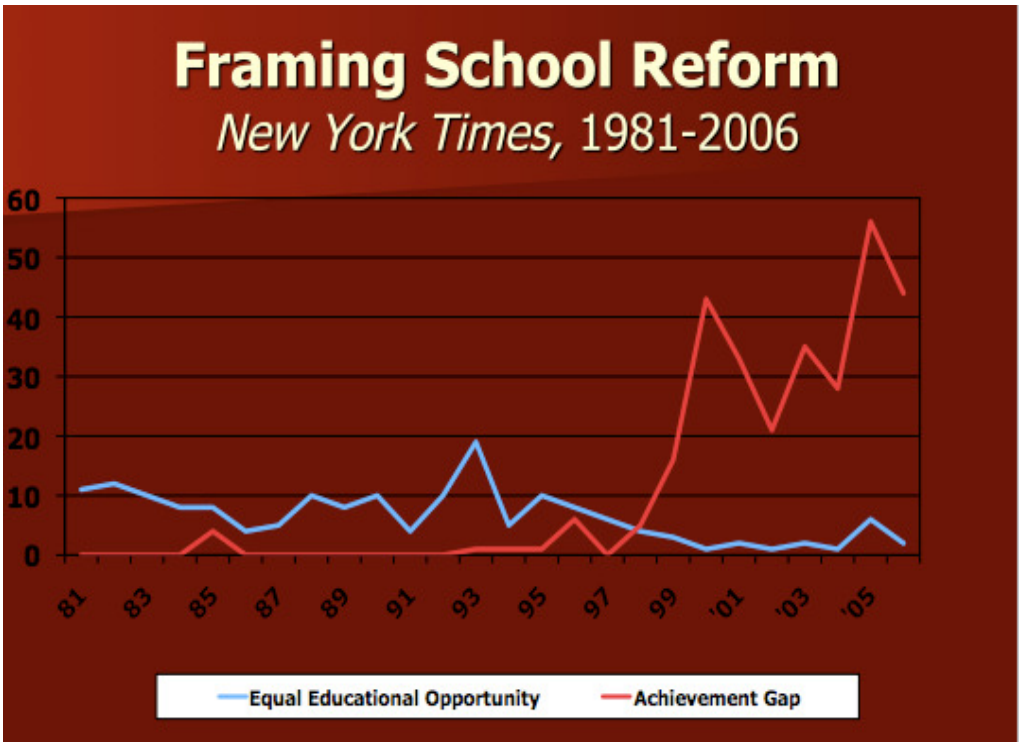


Figure 2. The number of times that *The New York Times* wrote about "equal educational opportunity" and "the achievement gap"[11]

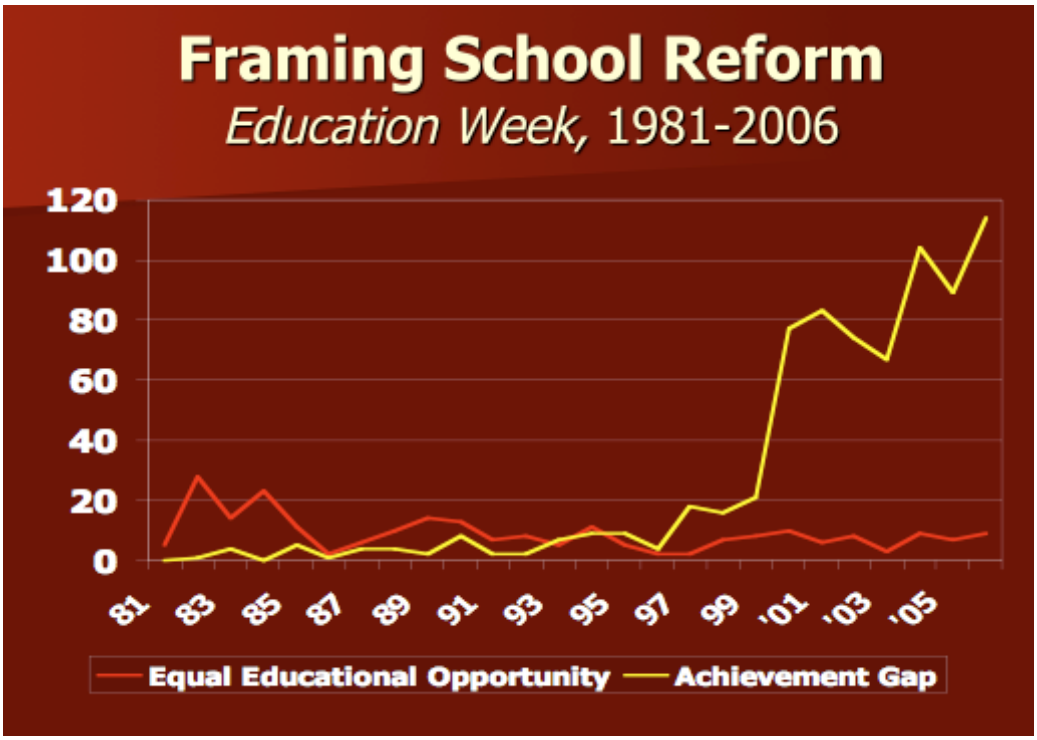


Figure 3. The number of times that *Education Week* wrote about "equal educational opportunity" and "the achievement gap"[12]

outcomes of the educational system). Figures 2 (previous) and 3 show how, over time, equity issues stopped framing the debate about how to improve our schools; instead, the "achievement gap," or outcome-oriented thinking, gained prominence as a way to frame the debate about school improvement. These data are from two of America's most influential press outlets in shaping education policy discourse.

It is within this context that this brief offers a reminder that inputs, including many of the equity issues that have dropped largely out of sight, have never stopped affecting the achievement of our most impoverished youth. In fact, it is the position taken here that we can never reduce the achievement gap between poor and non-poor children, between African American and white children, or between Hispanic and Anglo children, unless OSFs that positively or negatively affect achievement are more equitably distributed. In the U.S. today, too many OSFs are strongly correlated with class, race, and ethnicity, and too many children are in schools segregated by those very same characteristics.[13]

Data on the current state of school segregation by race and ethnicity are presented in Table 1 (following), showing that less than 1% of white students attend schools that are more than 90% black or Latino. On the other hand, about 40% of black and Latino students are in schools in which the students are almost all black and Latino. Data in Table 2 illustrate the relationship between race, ethnicity, and poverty among students. As the table shows, in 2006-07 the average white student attended a school in which about 30% of the students were low-income. But the average black or Hispanic student was in a school where nearly

60% of the students were classified as low-income; similarly, the average American Indian was in a school where more than half the students were poor.

Overall, fewer than 4% of white students and less than a tenth of Asian students—in contrast to 40% of black and Latino students—attend schools where 70-100% of the children are poor. These schools are often dominated by the many dimensions of intense, concentrated, and isolated poverty that shapes the lives of students and families. While most whites and almost half of Asians attend schools with 0-30% poor students, that is true for only one-sixth of blacks and one-fifth of Latinos.

Table 1. Percentage of Students in 90-100% Minority Schools, 2006-07[14]

Group	Percent of Students in 90-100% Minority Schools
white	0.92
black	38.5
Latino	40.0
Asian	16.2
American Indian	20.2

Table 2. Average Percentage of Poor Students in a Student's School by Race, 2006-07[15]

Group	Percent of low-income Students in the School
white	31.5
black	58.8
Latino	57.4
Asian	35.8
American Indian	52.6

Identifying Out-of-School Factors

This brief begins with the empirically supported premise that OSFs greatly influence school achievement and that OSFs are not distributed randomly throughout society. Instead, the negative effects of many OSFs are concentrated in the schools that serve poor and minority children and families. This increases the burden on these schools in such a way as to make broad reductions in the achievement gap nearly impossible. If this brief is convincing, readers will understand that NCLB and the philosophy that surrounds it has promoted an imbalance in the search for ways to eliminate the achievement gap, an imbalance that is both harmful to our country and embarrassing because our citizens believe that we should spread our democratic values worldwide. The potency of seven of these distinct but interrelated OSFs is presented below.

OSF1: Birth-weight and non-genetic prenatal influences

Measured school achievement consistently demonstrates racially disparate outcomes. Typically, African American students perform less well on traditional

measures of schooling than white students. Underlying current educational policy is an implicit theory of causal inputs that attributes this achievement gap to school mechanisms. Yet it seems clear that some of the gap originates in the available health care and social practices common among low-income African Americans. For example, normal birth weight in the U.S. is about 5 lb., 8 oz. Low birth weight (LBW) children are between 3 lb., 5 oz. and 5 lb., 8 oz. But very low birth weight children (VLBW) children and extremely low birth weight children (ELBW) have even lower weights. Modern medicine has increased the numbers of all LBW children who live, especially among the VLBW and ELBW populations. But these children have many more cognitive and behavioral problems—problems that schools (generally public schools) must accommodate.

This fact is relevant to the achievement gap because LBW babies are not distributed randomly among racial or income groups. Table 3 displays data on gestation time and birth weight.[16] Preterm children are born to black Americans 58% more frequently than they are to whites. While that is reason enough for concern, Very Preterm children are among those expected to have the most cognitive and behavioral trouble in school—and they are born to black parents 246% more frequently than to white parents. Hispanics, meanwhile, have gestation times close to whites, although Hispanic communities are frequently low-income. Hispanics also seem to have children who weigh more both at birth than their white counterparts, perhaps reflecting differences in the culture of the Hispanic American community.

In general, black Americans are almost twice as likely as whites to have a LBW child, and they are 270% more likely to have a VLBW child. LBW children often have a low Apgar score, a composite based on five variables measured immediately after birth: Appearance, Pulse, Grimace, Activity, and Respiration. Low Apgar scores indicate various problems that often include neurological damage; black American newborns have low Apgar scores twice as often as do other races. Fortunately, many LBW children show few signs of impairment. But many also display cognitive and behavioral difficulties soon after birth, often due to hemorrhaging and oxygen deficiencies affecting brain function, particularly memory. Many other birth-weight-related deficits, behavioral as well as cognitive, do not show until school begins. Public schools do help children with special needs achieve much in life, but schools heavily segregated by race and class have larger proportions of LBW children, making education at those sites harder and

Table 3. Percentage of live births very preterm and preterm and percentage of live births of very low birth weight and low birth weight, by race and Hispanic origin of mother: United States, 2006[17]

Very Preterm				**Preterm**			
All races	white	black	Hispanic	All races	white	black	Hispanic
2.04	1.66	4.08	1.80	12.8	11.7	18.5	12.2
Very Low or Extremely Low Birth Weight				**Low Birth Weight**			
All races	white	black	Hispanic	All races	white	black	Hispanic
1.49	1.20	3.15	1.19	8.3	7.3	14.0	7.0

more expensive.[18] And, at the end of the day, the students are much less likely to achieve at levels they could have if society had invested in them and their parents long before kindergarten.

The rise in multiple births since 1990, which has led to more live births of children with LBW and lower gestational time, also affects later school performance. The increase has been associated with more neonatal cognitive problems among all races, including 2.6 times more frequent displays of Attention Deficit Hyperactivity Disorders (ADHD) among the LBW children.[19] The relationship between birth weight (and its correlate, gestation age) and intelligence has long been known, although there is disagreement over how large the correlation may be and how much birth weight may affect intelligence.[20] An analysis of existing research that looked only at studies meeting high standards for methodology identified 15 studies of premature babies that: 1) matched preterm children to a control group of full-term children, and 2) included measures of cognitive outcomes at school age.[21] The results were clear: Control children had significantly higher cognitive scores than children born preterm. About 11 IQ score points separated the two groups. Although the relationship between birth weight or gestational time and intelligence is near zero among children with normal birth weight or gestational time, this is not so for LBW children. Among LBW children the correlation between birth weight and IQ (or gestation time and IQ) is about .70.[22]

This analysis does not endorse those who give importance to small IQ differences. Children vary in measured IQ and behavior enormously, and given the variability common to classrooms, a child varying a few IQ points one way or the other is not likely to cause classroom teachers or schools to notice anything unusual. The same is true of an occasional child who is harder to manage because of ADHD. But when a particular racial group on the whole experiences medical and social circumstances that lead much more often to LBW children, and when such children are then segregated by schools, their differences affect classroom instruction and the functioning of entire schools in systemic and negative ways.

There are additional problems associated with poverty and the intrauterine environment. If alcohol, tobacco, and cocaine use are higher in poor neighborhoods, as is often found, then the schools in those neighborhoods also will have more children whose intrauterine environment was compromised. Data suggest that intrauterine exposures to alcohol, cigarettes and cocaine are individually related to reduced head circumference, reduced cortical gray matter, and reduced total brain volume, as measured by MRIs taken at school age.[23] The greater the number of exposures to the different substances in utero—as, for example, to two legal drugs, alcohol and cigarettes—the greater the loss of brain volume and cortical grey matter.

Each of these three substances is thought to act cumulatively during gestation to exert lasting effects on brain size and volume, effects likely to diminish any school's aspirations about educational outcomes if it serves a greater percentage of poor children. Alcohol definitely is dose-related: the more consumed during pregnancy, the greater the chances of an impaired infant. Interestingly, the most consistent findings of impairment in children are those

related to mothers who smoked and drank—that is, the legal drug users. Marijuana and cocaine use during pregnancy seem to have smaller effects on the neonate. On the other hand, amphetamine and methamphetamine use during pregnancy has much greater long-term behavioral and cognitive outcomes on children than does the use of alcohol or tobacco.[24]

Other prenatal conditions affect the neonate and school child as well. If flu shots are not free, poor people do not receive them as frequently as do people who are better off. Yet influenza in the first half of pregnancy is associated with a rate of schizophrenia three times that found in the general population, while influenza during the first trimester is associated with rates of schizophrenia that are seven times the normal rates in the population.[25] Clearly, mental problems in the different income groups in society are not randomly distributed. Similarly, the most common viral infection in pregnancy is cytomegalovirus (CMV), which has been associated with autism spectrum disorders and learning disorders.[26] The overall rate of such infections in neonates is low, but a meta-analysis revealed that it is much higher among the non-white and lower-income populations.

Maternal obesity is another factor affecting prenatal life, and such weight problems are also more prevalent in lower-income and among less well-educated women. Obese women frequently have or are developing diabetes, and either situation leads to more problems in pregnancy, including serious birth defects, preterm births, and growth retardation.[27] Lower-income women also have more stress and anxiety during pregnancy than do those of higher income—another factor that results in a greater frequency of LBW children.[28] Infants of anxious mothers are also found to cry more, starting a vicious feedback loop in which a mother's anxiety prompts a newborn's unhappy response, thereby increasing the mother's anxiety, potentially leading to an even greater negative response by the newborn, and so forth. Mothers who are anxious, depressed, or both also have children with a higher rate of sleep disturbances, temperament and attention disorders, and displays of inappropriate behavior at school age. Again, the overall incidence of these personal, familial and societal problems is small, but the occurrences of problems in children are not random across family income groups and neighborhoods. When the children affected negatively due to prenatal conditions are clustered into economically and racially segregated neighborhoods, the low rates in the general society become high rates of need at the neighborhood school site.

Given the evidence on how prenatal conditions and a mother's mental and physical health may affect an infant's later cognitive and behavior functioning, it is clear that the achievement gap cannot be simply attributed to the performance of teachers and administrators in schools that serve the poor, especially poor African Americans.

OSF2: Medical care and schooling

Few would deny that it would be a challenge to learn easily, or to meet high academic standards, if a child or a member of a child's family has unmet needs for medical care. Similarly, few would deny the increased challenge of

teaching classes where excessive student or student family illness is substantially more common. Medical insurance moderates these challenges for many students and their teachers. Yet in 2007, the number of those in the U.S. without health insurance was 45.7 million, or 15.3% of the population. The number of children under 18 years of age without insurance was 8.1 million, or 11% of all children.[29] These data do not include the additional children and adults covered by insurance polices that require large copayments or have limited coverage, discouraging those with such policies from seeking needed medical care or from purchasing needed medication. Thus, the underinsured add to the educational challenges a school faces due to illnesses among the uninsured. Furthermore, the troubling data cited above were gathered before the downturn of the economy and the large loss of jobs in 2008, a trend predicted to continue throughout 2009 and beyond. Given the employer-supplied insurance system in the U.S., the increasing unemployment is bound to swell the ranks of the medically uninsured, increasing the challenges public schools face due to illness among students or their families in the coming 18-24 months.

If a lack of medical insurance (and its correlate, untreated illness) were distributed equally across society, local public schools would all have the same challenges, with instructional problems due to increased illness and untreated injuries dispersed across schools. Schools and teachers would share equally the difficult job of dealing with more common and frequent absences among the un- and underinsured because of illness or because of the need to care for ill siblings or parents. The challenges would be distributed across class and racial lines, equally across all neighborhoods. But this is not the case.

The percentage of uninsured among those earning more than $75,000 per year is 7.8% (surprisingly high among people who can probably afford health insurance). But the uninsured rate among those earning $50,000-$75,000 is nearly double that, 14.5%. For those earning $25,000-$50,000, the rate of uninsured people rises to 21.1%, more than one in five. And for the lowest wage earners in the US, those earning less than $25,000 per year, the rate of medically uninsured people is 24.5%, about one in four. Thus, approximately 23% of all those earning under $50,000 per year (about the median U.S. income in 2007) are uninsured.[30] The poor are disproportionately represented among the uninsured, but it is not a surprise to find that whites have the highest rate of medical insurance while black, Hispanic, American Indian and other minorities have much lower rates (see Table 4). The lack of medical insurance is much more common in the lives of racial and

Table 4. Percentage Uninsured by Race and Ethnicity (Averaged over the years 2005-2007)[31]

white, not Hispanic	**10.6**
black	**19.6**
American Indian and Alaska Native	**32.1**
Asian	**16.5**
Native Hawaiian and other Pacific Islander	**20.5**
Hispanic (any race)	**32.8**

ethnic minorities as well as the poor of any background, affecting their physical and mental health and their family's functioning. In turn, the schools that serve poor and minority children are most heavily affected.

Further, the problem of inadequate health insurance is spreading across class lines, so that it will soon negatively affect achievement in a greater percentage of the nation's schools as increasing numbers of students lack medical care. Among those without health insurance, 68% reported forgoing needed medical care because they lacked money; they did not see a doctor when they were sick, fill prescriptions they had received, or take recommended diagnostic tests or treatments. Moreover, 53% of the underinsured reported that same set of problems.[32] The underinsured, because of barriers such as high deductible levels before reimbursement, limited coverage of illnesses, and the need for substantial co-payments, are beginning to resemble the uninsured. Forty-five percent of the underinsured reported having difficulty paying their bills, having been contacted by collection agencies for unpaid bills, and having been forced to curtail their way of life to pay their medical bills. In fact, 21% of those with "adequate" health insurance noted the same problems.

These patterns have consequences for children's school achievement. Research confirms what most people intuitively believe: childhood illness and injury do affect school performance.[33] Moreover, having medical insurance improves an individual's academic achievement, probably most simply by reducing absenteeism. While it's true that a person's insurance status makes little or no difference for some illnesses,[34] at the aggregate level any group with more frequent or longer-term illness will have lower achievement than another group with less illness for less time. And the availability of medical care helps mitigate medical problems. Accordingly, poor urban and rural children as well as racial and ethnic minority children are groups that can be expected to show lower academic achievement.

Medical attention can mitigate conditions for these groups. A recent study matched unusually well-funded Head Start county programs to ordinarily funded Head Start programs in demographically similar counties. It found a large drop in childhood mortality in children ages 5 to 9, with Head Start's health services appearing as the causal factor.[35] The study estimates that a 50% to 100% increase in Head Start funding reduces mortality rates in areas that Head Start might reasonably be expected to affect by 33% to 50% of the control mean. Most important, in the treatment counties, this was enough to drive mortality rates from these causes down to around the national average. If medical attention for poor youth changes mortality rates and the rates of illness and injury that are precursors to mortality, it's reasonable to also expect such well-funded Head Start programs that attend to children's medical needs to make the challenge to the schools serving poor students considerably less daunting. Unfortunately, few poor schools enjoy such support.

Rates for dental care follow a pattern similar to that for medical treatment, with comparable effects for schools that serve poor and minority children. Among those 2 to 17 years of age, in families earning more than about $80,000 per year, 13.4% of youth had not seen a dentist in the past year. Among families living in

poverty (under about $20,000 for a family of four), 33.8% had not seen a dentist in the last year, a rate 2.5 times greater.[36] Untreated dental cavities, while usually considered a personal problem, affect a student's behavior at school as well. Toothaches interfere with learning. Among school-age youth 6 to 19, in families ranging from below poverty level to 200% above poverty level, the rate of cavities was about 32%. Among families below the poverty line, white youth had the lowest rate of cavities, with black youth showing higher rates and youth of Mexican background showing the highest rates.[37]

Children from poor families also have undiagnosed vision problems, and when they are diagnosed, follow-up care is less likely. In part this is because 12 states currently do not require any vision assessments, either before or during school. While 36 states do require vision screening at school entry, 26 of them do not require follow up for children who fail the screening test.[38] This plays out as one would expect: low-income families follow up on a problem uncovered in a school screening at about half the rate of more affluent parents. In New York City public schools, with a large percentage of poor and minority children, the estimates are that up to 80% of kindergartners and first-graders who fail a vision-screening test never see an eye doctor.[39] Even worse, other research indicates that even vision screening in schools has a very high failure rate in detecting visual problems as compared to an examination by an eye care professional.[40] The poor and uninsured often cannot afford such examinations.

Simply put, children in poor families in most states are six times more likely to be in less than optimal health, experiencing a wide variety of illnesses and injuries, as compared with children in higher income families. Even in middle-income families, children in some states are twice as likely to be in less than optimal health than those in higher income families.[41] Health and income in America are strongly correlated. As a result, schools that serve the poor, whether urban or rural, almost always have more challenges to meet because of untreated medical problems among students and their families. This OSF impinges on the social relations and academic productivity of a school. This situation would likely be helped if schools employed school nurses at the federally recommend level of 1 nurse per 750 students. But the reality is that there is 1 nurse per every 1,151 students, and about 25% of the nation's schools don't even have a school nurse.[42] Schools without school nurses or with the highest ratios of students to nurses are more likely to be schools that serve the poor.

Universal medical coverage, currently being discussed in Congress, would likely help alleviate many of these problems, and the recent SCHIP legislation will probably also help. In fact, because of the relationship between health and school achievement, universal medical coverage, addressing an outside-the-school factor, is arguably as likely to narrow the achievement gap as any inside-school-factor now known.

OSF3: Food insecurity and schooling

The easiest way to demonstrate the effect of poor diets, hunger, food insecurity, and related nutritional problems on student achievement is with a

powerful example from the research literature. Between 1969 and 1977, Guatemalan children in four villages participated in a randomized clinical trial of a nutritional supplement. Some were given atole, a protein-rich enhanced nutritional supplement, while others were given fresco, a sugar-sweetened beverage. When 1,448 surviving participants from both groups, about 70% of the original sample, were interviewed and assessed cognitively at an average age of 32, it was found that those children exposed to atole between birth and age 24 months scored substantially higher on intellectual tests of reading comprehension and cognitive functioning in adulthood than those not exposed to atole. Most important, the cognitive gains were independent of years of schooling.[43]

Those who began the atole drinks after birth and consumed atole for a few years showed these effects, while those who began the supplement later did not. This corresponds to what developmental psychologists tell us: complex and rapid cognitive development takes place during the first three years of life. The advantage in schooling was greater for girls than for boys, but even for boys atole consumption in their first few years resulted in almost a half-year more school attendance than was true of the control children. The conclusion is that proper nutrition early in life gives rise to greater intellectual functioning and higher levels of education later in life.[44] It is also worth reporting that the children born of mothers who took either drink received a calorie supplement during their pregnancy. This resulted in a LBW rate of 9%, while the rate of LBW children among mothers that did not get the caloric supplement was 19%.[45] As detailed in the earlier discussion of birth weight, LBW is related to nutrition during pregnancy and is an out-of-school factor that generates problems for children and the schools they attend.[46]

Fortunately, food security in 2007 was adequate in almost 90% of U.S. households.[47] But food insecurity still was recorded in more than 10% of U.S. households, affecting about 13 million homes that had difficulty providing enough food for all their members. More seriously, about one-third of the food insecure households, totaling about 4.7 million households and representing just over 4% of all U.S. households, were classified as having very low food security, a category representing more severe deprivation. And in over 20% of the households with very low food security, one or more members reported that on three or more days per month they had nothing to eat.

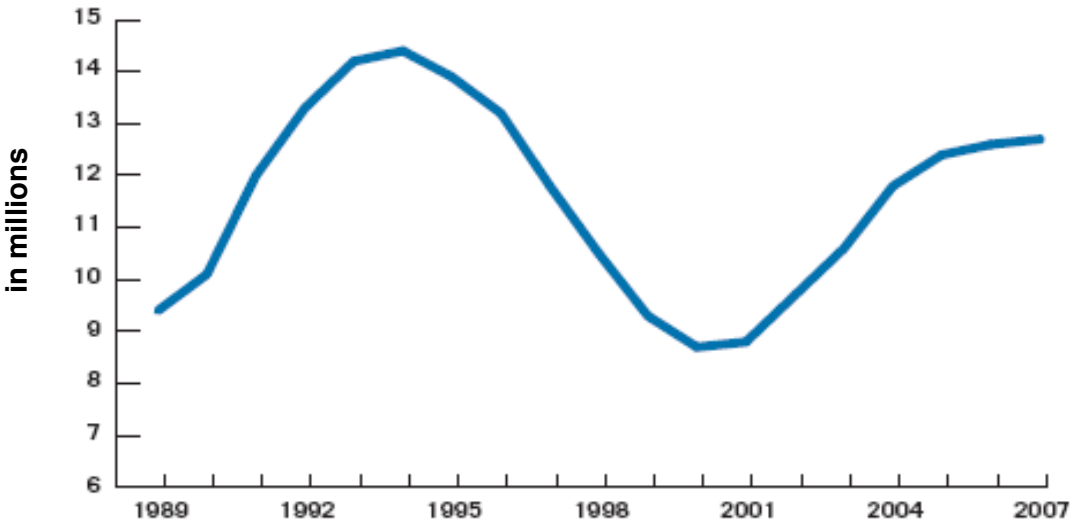
As was true for OSF's discussed earlier, if rates of the problem were distributed randomly throughout the population, schools would have little trouble handing problems caused by food insecurity. But this is not the case.[48] In comparison to the national average, rates of food insecurity were found to be 3.4 times higher in households with incomes below the official poverty line; 2.7 times higher in households with children headed by single women; 2 times higher among black households; and almost 2 times higher among Hispanic households. These data make clear that whatever the cognitive and behavioral problems associated with hunger, they will be felt disproportionately in the schools that serve low-income, racially and ethnically segregated Americans.

Although many (correctly) assume food insecurity is an urban problem, it is actually a rural problem as well. For example, Susan Phillips, a teacher at a

rural New York school, reported that one of her fourth-grade students always seemed to be cranky and distracted at the start of the week, but turned mild mannered by Tuesday.[49] She discovered that the cause was hunger. The student received adequate amounts of food through subsidized school breakfasts, lunches, and after-school snacks, but over the weekend, he was unable to get enough food at home. The school would resume feeding him on Monday, and by Tuesday he was back to his usual self. Realizing this problem, the school became proactive and started sending its neediest students home every Friday with a backpack full of ready-to-eat provisions. Five of Phillips's twenty-eight students received the food supplements, and Monday mornings became a lot easier. Phillips said she saw a dramatic change in student behavior.[50] Dozens of reports of the same phenomena are in the news, though most Americans have no idea of the numbers of children who are hungry on the weekends, and thereby deprived of the nourishment they need to be learning in school, especially on Mondays.[51]

Some schools have figured out that such nutritional deficits are affecting all-important test scores in this age of NCLB high-stakes accountability. So, they provide extra rich foods on test days, essentially calorie-loading students to give them the energy they need to perform well. It works. Gains of from 4-7% on tests accrue to the schools that calorie-load their chidren.[52] Sadly, even knowing that this strategy works during test week, indicating convincingly that a district's children have trouble performing academic tasks on their inadequate normal diets, most or all of these school districts nevertheless continue with the less rich diet throughout the rest of the year. They fail to address what they know to be true given their attempt to raise test scores through calorie-loading: many children are getting diets that minimize their opportunities to learn in school.

Food stamps for children are one of the means that the U.S. uses to reduce hunger among children. But the number of children requiring food stamps has been rising for the last eight years, straining the program's budget (see Figure 4, following).[53] The increases can be expected to be accelerate in 2008 and 2009 due to the severe economic recession that began in late 2007. To make matters worse, the value of the food stamps has fallen dramatically with increases in food costs. For the 12 months ending November 2008, The Labor Department reports that the cost of groceries for home consumption increased about 7%.[54] And it is staples such as bread (up 12% for the year), cooking oil (up 17% for the year), milk and eggs that have risen the most.[55] This rise should be understood in the context of the relatively high cost of eating healthily. The U.S. Department of Agriculture has determined what a Thrifty Food Plan (TFP) should be so that poor people are able to eat inexpensive yet nutritious food. The problem is that even if low-income families received the maximum food-stamp benefit, they still would not be able to afford the TFP. The rise in food prices without a corresponding increase in the value of allocated food stamps means that the poor simply cannot afford an adequate diet. In fact, the actual cost of the TFP is more than 35% higher than the maximum food-stamp benefit. In other words, a family of four that received the maximum food-stamp benefit and tried to follow the TFP would accrue a $2,000 debt for food by the end of a year.



Starting in 1989, the number of children receiving Food Stamps rose for several years, then fell for several years, but has been rising since 2000. These numbers are expected to continue to rise with the onset of the recession.

Source: U.S. Department of Agriculture, Food and Nutrition Service, unpublished tabulations.

Figure 4: Children receiving food stamps: 1989-2007 [56]

Pediatric researchers in Philadelphia have noticed this trend:

> we don't need the morning paper to tell us about rising food...prices. We see the evidence every day on the bodies of babies in the emergency room at St. Christopher's Hospital for Children. Young children arrive anemic and underweight; some even require hospitalization to treat the health effects of inadequate nutrition.
>
> Research on more than 27,000 infants and toddlers by the Children's Sentinel Nutrition Assessment Program (www.c-snap.org) finds that food insecurity has serious health consequences for babies and toddlers. It puts them at risk for poor health, increased hospitalizations, and developmental delays, which can jeopardize their mental and physical readiness for school.[57]

To those who see infants daily, the evidence of a growing nutrition crisis is clear.

More evidence comes from still other sources. For example, a November, 2008 New York City survey reflects a growing nutritional problem there, with straightforward consequences for schooling.[58] It revealed that the number of city residents who report having difficulty affording food has doubled in the past five years (see Figure 5, following). Currently about four million New Yorkers—that

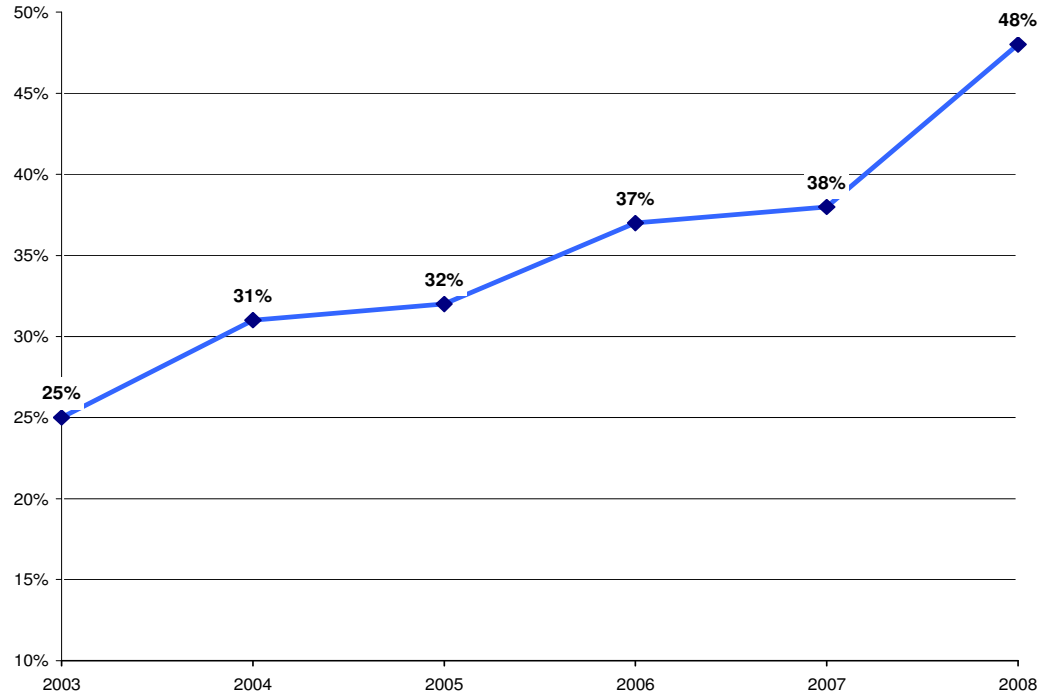


Figure 5. Percentage of New York City residents experiencing difficulty in affording needed food, 2003-2008[59]

is, half of all New Yorkers—say they have trouble paying for groceries, a 26% increase since the survey conducted 10 months earlier. The newest survey revealed that 56% of households with children report having trouble feeding them, an increase of 75% since 2003. In this same period, the rate of food problems for the lowest income earners went up almost 50%. And not even the middle class (earning between $50,000 and $75,000 per year) has been spared in this economic downturn. Since 2003, the number of middle-income households in New York City that report needing assistance has more than tripled.[60] The ethnic and racial breakdown reveals the usual: Between 55% and 60% of all Latinos and African Americans experienced difficulties affording food, while white New Yorkers expressed the same needs at rates approximately 20 to 25 percentage points lower. In a city and nation of enormous wealth, fully 1.3 million New Yorkers currently rely on some sort of food assistance, such as food stamps, a food pantry, or a soup kitchen. Many of these are struggling families with children whom schools also help to feed.

A broad spectrum of professionals such as psychologists, nutritionists, and physicians agree that there is strong evidence that nutrition is linked with school behavior and achievement.[61] For children under three, it is likely that nutritional deficiencies will affect their entire school and employment experiences. In the words of Brown, Beardslee, and Prothrow-Stith:

> There exists no "safe" level of inadequate nutrition for healthy, growing children. Even nutritional deficiencies of a relatively short duration—a missed breakfast, an inadequate lunch—impair children's ability to function and learn. When children attend school inadequately nourished, their bodies conserve the limited food energy that is available. Energy is first reserved for critical organ functions. If sufficient energy remains, it then is allocated for growth. The last priority is for social activity and learning. As a result, undernourished children become more apathetic and have impaired cognitive capacity. Letting school children go hungry means that the nation's investments in public education are jeopardized by childhood under-nutrition.[62]

OSF4: Pollutants and Schooling

Children and adults may no longer be aware that the reason Alice in Wonderland met a "mad" hatter is because the hat makers of that time were often mentally impaired. Hatters commonly exhibited slurred speech, tremors, irritability, shyness, depression and other neurological symptoms, giving rise to the expression "mad as a hatter." They were driven mad by the mercury they used in manufacturing hats in poorly ventilated shops. In recent decades, humans have again been affected. One way is by consuming too much fish with dangerously high mercury concentrations. Mercury, which enters the food chain through pollution, is known to be a neurological poison that can cause a wide variety of symptoms that resemble ADHD when they occur in school children, including hyperactivity and loss of focus.

Coal-fired power plants are one of two large sources of mercury in the environment. More than 50% of the electricity in the U.S. is generated from such plants, and regulation of their emissions has been inconsistent. The second major source is municipal waste incinerators. These burn consumer and medical waste containing mercury that escapes into the atmosphere. Although concentrations of mercury are greatest close to the incinerator, the wind spreads it widely before it falls to earth, where it becomes bio-concentrated in the fatty tissue of animals (and fish), along with other pollutants such as PCBs and DDT. These incinerators also release dioxins, known to cause cancer and suspected of causing neurological damage. In addition, the incinerators release lead. Several pernicious effects of dioxins and lead are relevant to this discussion.

Although mercury poisoning is not likely to be a major problem for most American schools, it is significant for those that serve communities closest to medical and municipal waste incinerators and to coal-fired power plants—and these are communities of the poor. For example, when New York City wanted to locate a new medical incinerator expected to release vapors from around-the-clock processing of 48 tons of waste a day, it selected the South Bronx.[63] Its location was in the St. Ann's church area, whose poor children have been vividly described by Jonathan Kozol.[64] It was placed among the city's poorest and politically least powerful residents. They had to fight hard, for years, to get it

closed down, and that might not have happened at all had it not been for the participation of the richer and politically more powerful of the city, who joined the fight because their neighborhoods were also receiving fallout.[65]

Ohio found that 150,000 of its children live within two miles of a permitted medical waste incinerator. Again, those incinerators are not distributed randomly. Seventeen percent of Ohio's minority population lives within two miles of a permitted incinerator, compared to 4% of white Ohio residents. Twelve percent of those below the poverty line live within two miles of a medical waste incinerator.[66]

Mercury "hot-spots," regions with high concentrations of mercury, are also being discovered. The levels of contamination reached in these "hot-spots" are known to cause brain and nerve damage in developing fetuses and young children.[67] The Centers for Disease Control and Prevention has shown that about 6% of American women of child-bearing age have mercury levels in their blood that could harm their babies if they were to become pregnant. Again, these are not a random cross-section of American mothers-to-be, and their homes are not scattered randomly throughout the land: the affected populations are disproportionately poor and minority.

Moreover, if pollutants such as mercury affect the health and behavior of poor people more because their exposure rates are higher, then the effects of these toxic agents will be found more frequently among children in schools serving the poor (who are also more likely to black and Hispanic). Schools that serve children from wealthier, predominantly white families are unlikely to face the extra challenge that occurs when trying to teach the few additional children in each grade who have cognitive and behavioral problems caused by mercury contamination.

Lead is another major pollutant affecting children's behavior. A January, 2009 news report from Senegal began:

> First, it took the animals. Goats fell silent and refused to stand up. Chickens died in handfuls, then en masse. Street dogs disappeared.
>
> Then it took the children. Toddlers stopped talking and their legs gave out. Women birthed stillborns. Infants withered and died. Some said the houses were cursed. Others said the families were cursed. The mysterious illness killed 18 children in this town...before anyone in the outside world noticed. [The doctors] did not find malaria, or polio or AIDS, or any of the diseases that kill the poor of Africa. They found lead. The dirt [in the area] is laced with lead left over from years of extracting it from old car batteries. So when the price of lead quadrupled over five years, residents started digging up the earth to get at it.[68]

The neurological damage caused by lead pollution has been common knowledge for about a century, but even over recent decades, tragic effects such as this have been documented in families and communities around the world.

Even after some obvious sources of lead in the environment were finally banned, reducing the numbers of children showing effects, too many children in the United States are still affected.[69]

Deteriorated leaded paint and elevated levels of lead-contaminated house dust are found in about 4.5 million U.S. homes with young children. As a result, there are about a half a million lead-poisoned children in the U.S., and a huge but uncounted number of adults have lived lives of lower quality because they were affected by this highly toxic metal.[70] The urban Northeast is home to a high percentage of housing built when concentrations of lead in paint were at their peak (before 1950)—and these buildings are now home to high concentrations of poor and minority children. Not surprisingly, the problem of lead poisoning is especially dramatic in these locations, and their schools face significant challenges related to lead-poisoning of the children.

In Providence, R.I., for example, 20% of the children who entered kindergarten in 2003 were found to have been lead-poisoned.[71] That's one in five; five children in every class of 25. Although none of these children are likely to die from the lead, their low-level, clinically asymptomatic lead poisoning may well have lifelong, crushing effects, including diminished learning capacity and behavioral problems such as attention deficit disorder and hyperactivity—all affecting school performance. Ultimately, even low doses of lead can limit prospects for employment and stigmatize a whole ethnic or racial group as "low in ability" when they are more accurately classified as "high in lead."[72]

It is now understood that there is no safe level of lead in the human body, and that lead at any level has an impact on IQ.[73] Small doses from paint on toys or in cosmetics have the power to subtly harm children. The present-day cut off for concern about toxic effects is usually a measured lead level of 10 micrograms per deciliter of blood (10 µg/dl). Anything higher than this is considered unsafe by the U.S. government. However, a five-year study of 172 children indicates that lead causes intellectual impairment even at much lower levels. The researchers found that as lead levels went from 1 to 10 µg/dl over the course of this longitudinal study, the IQ scores for children showed a roughly linear decline of 7.4 points. These data demonstrate that even very small changes in lead contamination can have serious long-term effects.[74] Another study replicating the finding that low levels of lead significantly affect IQ also found that ADHD children, compared to controls, showed elevated (though levels still technically consider low) levels of lead in their blood. The hyperactivity and impulsivity seen in these children was attributed to poorer cognitive controls due to the effects of lead on the brain.[75]

Other pollutants affecting adults and children are the ubiquitous industrial chemicals known as PCBs (polychlorinated biphenyls). PCBs are related to a class of compounds known as dioxins. Though banned in 1979, they have persisted in the environment and are stored in human fatty tissue.[76] Before their ban, PCBs entered the environment during their manufacture and use in the United States. But PCBs are still released into the environment from poorly maintained hazardous waste sites, illegal or improper dumping of PCB wastes, leaks or releases from electrical transformers containing PCBs, and disposal of PCB-containing consumer products into municipal or other landfills not designed

to handle hazardous waste. PCBs are also released into the environment by municipal and industrial incinerators. They do not readily break down and therefore may remain for long periods of time cycling between air, water, and soil. PCBs are carried long distances, having been found in snow and sea water in areas far away from where they were released into the environment. As a consequence, PCBs are found in environments all over the world.

Numerous studies now show a dramatic effect that appears related to contamination by exposure to PCBs: a change in male/female birth ratios. Either male (Y-chromosome carrying) sperm or the survival of male fetuses is being affected by the level of PCB exposure, although other pollutants may also be involved.[77] Among the steepest declines in the ratio of the sexes observed in the world are those on the 3,000-acre Aamjiwnaang (pronounced AH-jih-nahng) First Nation reservation in Canada. Although a typical ratio throughout North America is for boys to be born in slightly greater numbers than girls, on the reservation the ratio of boys to girls began dropping in the early 1990s. Only 35% of the 132 recorded births between 1999 and 2003 were boys. Additional analysis showed that from 2001 to 2005 boys made up only 42% of the 171 babies born to those on the reservation or nearby.[78] The factories around the reservation are thought to be the cause of what appears to be chemical damage to the human endocrine and reproductive system. The reservation is surrounded on three sides by dozens of petrochemical, polymer, and other chemical manufacturing plants. Mercury and PCBs were found to contaminate the creek that runs through the reservation. Studies of air-quality show the highest toxic releases of these chemicals in all of Canada.[79] Poor, ethnic minority Canadians are bearing the brunt of the apparent environmental poisoning. It should also be noted that the Aamjiwnaang reservation is directly across from Port Huron, Michigan, which is near the chemical and manufacturing plants that surround Detroit, a majority-minority city.

Effects of PCBs on nervous system development have been studied in monkeys and other animal species. Newborn monkeys exposed to PCBs showed persistent and significant deficits in neurological development, including visual recognition, short-term memory and learning. Some of these studies were conducted using the types of PCBs most commonly found in human breast milk.[80] Studies with humans in Michigan and New York, as well as in Taiwan, Holland, Germany and the Faroe Islands, have all reported negative associations between prenatal PCB exposure and measures of cognitive functioning in infancy or childhood.[81] The German study also found postnatal PCB exposure to be associated with decreased cognitive function in early childhood.[82] The similar observations in humans and animals provide strong support that PCBs and related chemicals are causally related to a set of negative neurobehavioral effects.

Many other pollutants also affect health and learning in schools. Pesticides offer one example. These are used more frequently in inner cities, due to the larger presence of vermin. But so-called “cosmetic pesticides,” those used to keep lawns beautiful, also have effects on suburban dwellers. Infants and children may be especially sensitive to health risks posed by pesticides for several reasons: their internal organs are still developing and maturing; in relation to their body weight,

infants and children eat and drink more than adults, possibly increasing their exposure to pesticides in food and water; and children's behaviors, such as playing on floors and lawns, or putting objects in their mouths, increase a child's exposure to pesticides used in homes and yards. It should be remembered that the majority of pesticides (and other toxic substances) in commercial use today were evaluated based on the hypothetical healthy 70 kg adult male, and not the 7-kg child, or the less-than-14-gram embryo.[83]

The greatest effects of toxic pesticides are found in agricultural workers and their families. In the West these are often poor Hispanic workers. The Federal National Hispanic Health and Nutrition Examination found, after controlling for a large set of child and family characteristics, that children of parents exposed to more pesticides were themselves more likely to develop chronic conditions and less likely to attain good health than children of unexposed parents.[84] In addition, children from low socioeconomic status families proved most vulnerable to health shocks from pesticides and related environmental toxins.[85] Therefore, schools that serve these children, particularly in rural agricultural regions, have an extra set of health problems to deal with due to the illnesses of family members and the children themselves, relatively few of whom have medical insurance. Since these children are also more likely to be English Language Learners, their schools face even greater challenges. It is difficult to believe that many schools that serve such needy children can keep pace with Adequate Yearly Progress on the way to 100% proficiency, as required by the NCLB law.

Finally, there is the issue of air quality, which affects poor children and their families in larger numbers than it does wealthier children. The South Bronx, for example, has one of the highest incidences of asthma hospital admissions in New York City. A recent survey of asthma in the South Bronx's Hunts Point elementary schools (a poor section of New York City) found an asthma prevalence rate of 21-23%. The South Bronx is surrounded by at least four major highways; at the Hunts Point Market alone, some 12,000 trucks roll in and out daily. A five-year research study found that soot particles spewing from the exhausts of diesel trucks were the probable cause of the alarmingly high rates of asthma symptoms among school-aged children in that area. As a result, elementary school children's asthma symptoms increased on high traffic days.[86] California, no stranger to air pollution, has almost identical data and findings.[87] And in 2008, the National Academies of Science confirmed that ozone, a key component of smog, can cause respiratory problems and other health effects, including premature deaths, even if present for only short periods of time.[88] Smog effects tend to be largest in the inner cities, where the poor live in the greatest numbers. Air quality, therefore, affects the health of families and children in those communities more frequently and more severely than in the wealthier suburbs—demonstrating once again that educating children in schools that serve the poor is more difficult than educating children in schools that serve the wealthy.

OSF5: Family relations, stress, and schooling

As 2008 closed and the recession deepened, the *Washington Post* reported the dual effects of poverty and stress on families and their children. It wasn't a pleasant report.[89]

> ....[C]hild welfare workers across the region are seeing a marked rise in child abuse and neglect cases, with increases of more than 20 percent in some suburban counties. Neglect investigations appear to have increased most, many resulting from families living without heat or electricity or failing to get children medical care. In Fairfax County [VA], for example, such cases jumped 152 percent, from 44 to 111, comparing July through October with the same four-month period in 2007.....Similarly, cases in Montgomery County [MD] increased by 29 percent, and Arlington County, with smaller numbers, was up 38 percent….In the District [of Columbia], there was an 18 percent increase in child neglect and abuse investigations....[90]

The well-established nexus between poverty and child abuse is reason for many child experts to be concerned that the country might see more neglect and abuse as the current recession deepens. The *Washington Post* article continues:

> History and experience tell us when the economy is bad and unemployment rises, children don't do well.
>
> [For example], [a]bout a month ago, Allison Jackson began to notice an increase in the number of children coming into the emergency room at Children's National Medical Center in the District with burns, broken bones, fractured skulls and injured stomachs. Puzzled, she called colleagues across the country, who told her that they, too, noticed an increase in child abuse cases.
>
> "We're seeing parents facing unemployment, foreclosure, losing their automobiles....And that increase in stress can lead to drug and alcohol abuse, and that's directly linked to child abuse."
>
> In Alexandria [VA], [the] director of social services, said that... her area has seen a 13 percent rise in investigations of child abuse and neglect... [with many] more instances in which domestic violence seemed to be part of the complaint. "That seemed to be related to the economy," she said.[91]

It is estimated that some form of serious family violence occurs annually in 10-20% of U.S. families, again with variation by race and class.[92] The numbers of individuals affected by such violence, then, are quite high. Family violence is much more likely to be directed at females than males, and it occurs more frequently among the poor than the middle class and wealthy. In fact, studies consistently show that 50% to 60% of the women who receive public benefits

have experienced physical abuse by an intimate partner at some point during their adult lives. Other data suggest this rate may be as high as 82%. As many as 30% of women on public benefits report abuse in their current relationship, and a significant number of these woman reported that they had suffered physical and sexual abuse in childhood.[93]

Racial and ethnic rates of familial violence vary as well. For example, when male and female Hispanics were surveyed in Texas, it was found that 64% of them indicated that they or a member of their family have experienced at least one form of domestic violence in their lifetime. Almost two out of every five Hispanic females in Texas (39%) reported experiencing severe abuse, and about 1 out of every 5 Hispanic Texas females (18%) reported being forced to have sex against her will. In a study that confirms other research about the immigrant experience and family life, as well as the effects of poverty and the stresses of coping with a new country and a new language, 48% of immigrant Latinas reported that their partner's violence against them had increased since they immigrated to the United States.[94]

Similarly, black females have experienced intimate partner violence at a rate 35% higher than that of white females and many times the combined rate of women of other races. In fact, the number one killer of African American women between 15 and 34 years old is homicide at the hands of a current or former intimate partner. Black males do not fare much better, though the rate of violence against men is considerably less than it is against women. They experienced intimate partner violence at a rate about 62% higher than white males, and many times the combined rate of men of other races.[95]

It should not be surprising to find that domestic violence impairs the ability of parents to nurture the development of their children. Mothers who are abused may be depressed or preoccupied with the violence. In turn, they often appear to be emotionally withdrawn or irritable. They may communicate feelings of hopelessness. The result of familial violence is too often a parent who is less emotionally available to his or her children, or unable to care for the children's basic needs. Battering fathers have been found to be less affectionate, less available, and less rational in dealing with their children.[96]

Children from families that suffer from violence, from whatever income group and race, often display social and emotional problems that manifest themselves in the schools they attend. Too often these children show higher rates of aggressive behavior, depression, anxiety, decreased social competence, and diminished academic performance. In a study of low-income pre-school children in Michigan, nearly half (46.7%) had been exposed to at least one incident of violence in the family.[97] In fact, estimates are that between 3 million and 10 million children witness family violence each year. That affects the schools. Children exposed to violence were found to suffer symptoms that resemble post-traumatic stress disorder. They showed increased rates of bed-wetting or nightmares, and they were at greater risk than their peers of having allergies, asthma, gastrointestinal problems, headaches and flu.[98] Further, there is now ample evidence that stress during childhood because of poverty, family violence, parental depression, rejection by caretakers, and so forth has physiological effects,

changing the hormonal levels and the architecture of a child's brain. Loving and secure relationships with caregivers early in life lead to mentally and physiologically healthier children.[99]

There are two factors to consider in these depressing data. One is that such families and children are overrepresented among the poor and in the African American community, increasing the difficulty of the instructional and counseling missions of schools that serve those populations. Secondly, the effects these troubled children exert on others in the classroom are strong.[100] For example, within an elementary grade cohort, an increase in the number of children from families known to have a history of domestic violence shows a statistically significant correlation to a decrease in the math and reading test among those students' peers, and to an increase in disciplinary infractions and suspensions among the peers as well. These negative effects were primarily driven by troubled boys acting out, but the effects were present across gender, racial lines and income levels. The researchers estimate that adding one more troubled boy peer to a classroom of 20 students reduces the overall test scores of boys by nearly two percentile points.[101] Girls seem to be less affected by the presence of another troubled child. Overall, however, when another troubled child of either sex is added to a class, the mean test score of the class drops by about two-thirds of a percentile, and the probability that disciplinary infractions will occur increases by 16%. The data analysis even revealed that when a child shares a classroom with a victim of family violence, she or he is likely to perform less well than a sibling who attends the same school but in a different classroom with peers experiencing less domestic violence. This study provides support for teachers and parents who believe that "One bad apple can spoil the bunch." And these negative adult attitudes, though rooted in reality, make the classroom and social lives of children from abusive households even harder, especially in schools with weak counseling programs or few social workers.

The rate of mental illness in the community is another outside problem that generates problems within a school. A comprehensive study in Massachusetts revealed that the base rate of mental illness in its wealthier communities was about 3%, but that rate more than doubled (to about 7%) in the state's poorer communities. The data set allowed a test of the direction of the relationship between mental illness and income. Results strongly suggest that it was not only that mental illness makes people poor, as might be expected, but also that poverty, on its own, was a causal factor in making people mentally ill.[102] These social (rather than biological or genetic) factors identified as a cause of much mental illness makes much clearer the impact of poverty on families, and, in turn, the schools. Impoverished communities are toxic not only in terms of chemicals, but also in terms of mental health and safety within the home.

It needs to be noted again that although rates of severe mental illness are generally low, the mentally ill are not scattered equally throughout society. While each school does have to deal with some problematic, perhaps difficult, parents and children, the key question is whether the rates of mental illness in some communities are higher than in others, giving the schools in those communities extra responsibilities. One seriously mentally ill parent or child is difficult enough

for a school to work with. Five such parents or children might stretch the emotional resources of the school's staff to the limit. And the studies cited above suggest that the distribution of mental illness does indeed burden lower-income communities the most.

Schools serving the poor face still other challenges in addition to rates of domestic violence or mental illness in the community. Researchers have found poverty itself, even without the worst of its side effects, to have a negative influence on family life and schooling. For example, poverty is a risk factor in the development of oppositional defiant and conduct disorders.[103] Youth in transient poverty, in particular, seem to externalize their circumstances in these ways. The volatility in their economic lives gives rise to volatility in their behavior, with aggression and hyperactivity being additional common responses to family problems. Other research suggests that poverty increases by 10% the likelihood of a serious crime being committed.[104] In addition, poverty predisposes one to anxiety and depressive disorders. Youth in consistent poverty are prone to internalizing their stress in this way. They manifest psychosomatic problems and those associated with anxiety and depression, perhaps because their biological systems (hypothalamic, pituitary, and adrenocortical systems) are affected by the poverty they must live with.[105]

Families that are poor, even if healthy physically and mentally, and with loving relationships among the members, are usually not as educated and hence not as verbal as are middle-class families. Yet schools are institutions that depend on the language of instructors who are predominantly middle class and in possession of superior verbal skills. They, in turn, are predisposed to reward those

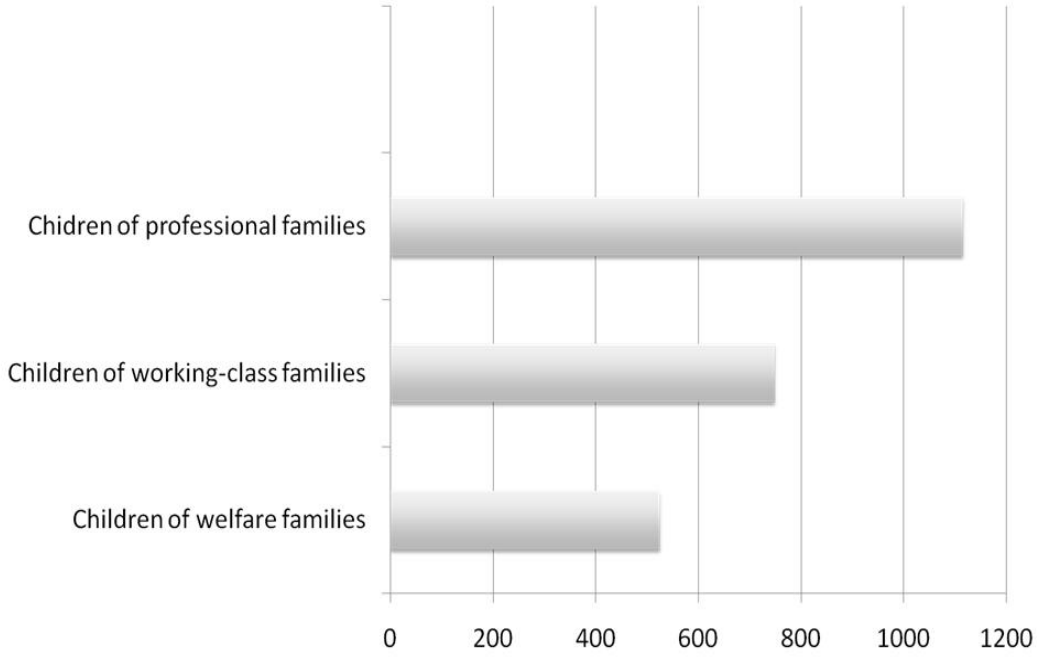


Figure 6. Cumulative vocabulary for 3-year-old children in three different social classes[106]

who are verbally adept. This, then, is another way that the poor are at a disadvantage in schools because of their disadvantages out of school. Research is clear that even before school begins for children, the rates of verbal learning in families of different income groups are remarkably different.[107] These data are presented in Figure 6 (previous).

The language experience of the children shows that by about age 3, children from welfare families had acquired, on average, 525 vocabulary words, while children of working families had acquired 749 words. But by this age children of professional families had acquired 1,116 vocabulary words. These researchers went on to assume that the patterns of verbal interaction they recorded in the homes of these families would continue in a similar way over time. So they extrapolated from the data they had obtained through age three, to estimate language experience by age four. They found that an average child in a professional family is likely to have experience with almost 45 million words, while an average child in a working-class family would have experience with 26 million words, and the average child in a welfare family would have accumulated experience with 13 million words.[108]

What this research tells us is that, on average, the less affluent the family, the fewer words said to the child, and the less complex the language used. In fact, at age 3, the child from a professional family who had the smallest vocabulary still had a much more extensive vocabulary than did the child from the welfare family with the largest vocabulary.[109] This restricted experience with language early in development seems to be causally related to academic achievement later in life. Right from the start, at entrance to kindergarten, higher SES children were found to have cognitive scores about 60% higher than did children from lower SES families.[110] It appeared that it was SES, not race or family structure, that produced the differences noted. This is consistent with other research estimating that the effects of poverty on cognition are at least as great as the effect of parental education or innate intelligence.[111] School success, apparently, is related strongly to earlier engagement in consistent, extensive, and rich verbal interactions with people who are more linguistically developed. This is exactly what is lacking in many poor families and in lower-income communities, and this makes the job of the schools that serve the poor a great deal harder.

Language conveys meaning and ideas, of course. So it is not surprising that the content of communications to children in families that differ in SES will show differences as well.[112] Recordings of language use at home reveal that at about age 3, the typical child in a professional family was accumulating 32 affirmative messages and five prohibitions per hour. This is a ratio of 6 encouragements to 1 discouragement. The typical child in a working-class family accumulated 12 affirmatives and seven prohibitions per hour. This is a ratio of about 2 encouragements to 1 discouragement. But the average child in a family on welfare accumulated five affirmatives and 11 prohibitions per hour, a ratio of about 1 encouragement to 2 discouragements. These data reveal clearly that the form of verbal interaction expected from adults and received by the children of professional families is quite different than that expected and received by children from poorer families. Compared to lower SES children, these differences in

expectations about and experience with particular kinds of linguistic forms will no doubt serve the higher SES children better when they encounter their first adult educators. The compatibility or incompatibility of the language experiences at home and at school simply adds another source of family influence that makes it harder for schools that serve the poor to do well.

OSF6: Neighborhood norms and schooling

Income, race, ethnicity, and religion are all are factors that affect the residential options of different people. Neighborhoods, therefore, have different characteristics. Not surprisingly, then, one's zip code has both direct and indirect, and both positive and negative, effects on student achievement. On occasion, a school can substantially influence its own neighborhood characteristics and thus improve student performance both directly and indirectly. Far more often, however, it is the neighborhood characteristics that affect schools and their students' achievement.

One study of literacy achievement in 16 secondary schools with students from 437 neighborhoods showed the power of neighborhood as an independent factor in student achievement.[113] The neighborhoods were scaled to reflect socio-demographic characteristics, including overall unemployment rate, youth unemployment rate, number of single-parent families, percentage of low-earning wage earners, overcrowding, and permanently sick individuals. In this study, significant school-to-school variance in achievement was found, even when controlling for family background and neighborhood characteristics. This study and many others demonstrate that school effects on achievement are real and powerful. Research like this provides support for those who choose to focus on schools as the primary influence on achievement, and who downplay the effects of out-of-school factors influencing achievement.

In this same study, however, the variable labeled "neighborhood deprivation" also showed a very large negative effect on educational achievement. This was true even after variation in the individual students and the schools they attended were stringently controlled. This finding is much more than a trivial statistic. For two students with identical prior achievement background, with identical family backgrounds, and even with identical school membership, the differences in educational achievement as a function of their neighborhood deprivation was estimated to be a difference of between the 10th and the 90th percentile on an achievement test. In another study, these findings were essentially replicated using mathematics achievement as the outcome.[114] It is indisputable that neighborhoods independently have significant effects on achievement, often by weakening parental influences associated with better student achievement. In neighborhoods in which it is difficult to raise children, too many parents have their decent family values undermined by neighborhood youth cultures that are oppositional, dysfunctional, or both.

Every urban dweller knows that neighborhoods are reputed to have characteristics that either promote or reduce crime and deviant youth behavior. Schools whose attendance boundaries include dysfunctional neighborhoods,

therefore, face far greater challenges in nurturing student achievement than do those that draw students from healthier neighborhoods. This is illustrated by a news story from Chicago in the first half of 2007.[115] The reporter comments on the murder of 27 public school students in the city, a murder every 10 days during the school year, and vividly describes the effects of neighborhood violence on the schools.

> At Avalon Park Elementary School, the 8th graders in Room 104 still wrestle with the pain. It's in the eyes of the young man who cannot bring himself to talk about last month's brutal stabbing death of his classmate and best friend, 14-year-old Quinton Jackson. It's in the tears of the girl reading a poem about missing Quinton's smile and his mischievous antics. It's in the unsettled voice of the child who recounts recent nightmares of dead bodies and coffins.
>
> Upstairs, in Room 301, the pain exists, but it's harder to see.
>
> The teacher sees it, however, in the quiet temperament of the little boy who sits alone in the cafeteria because his best friend, Quinton's 12-year-old brother, Marquise, is no longer there to eat with him. Marquise, too, was stabbed to death in an attack last month. But his friend sits there, alone, in the lunchroom, as if waiting for Marquise to show up.
>
> This is how the violent death of a student unhinges a school... [T]he deaths damage the community inside the school walls.
>
> Teacher Kevin Wiley... says his [fifth-grade] boys have been acting out more since Marquise's death. They start fights and pick on each other.
>
> "They try to hide it, act like tough guys," he said. "But I know they are hurting."
>
> Teachers are not immune to the loss. Avalon Principal Geraldine Laury said she has found teachers sobbing. Staff members come into her office and break down at the mere mention of the Jackson boys. "Our hearts are heavy," she said.
>
> Quinton's teacher, Ernestine Jefferson-Martin, said the most painful part is watching her students cope with the loss. "It's a family in here and I am the mother," she said. "I know how every child will react. I know who will cry and I know who will try to hide it. I can see and feel all the hearts of my children and I know there are a lot of broken hearts."[116]

Journalism like this reveals the severe shortcomings of insisting on reforming schools using assessment of academic progress as the primary indicator of school effectiveness. In its near total focus on manipulating in-school factors as

a means to improving standardized test achievement, NCLB misses the patently obvious interconnectedness of inputs and outputs.

Some research in Chicago makes this clear. The researchers tried to identify the causal factors behind the striking differences in the achievement of children from various neighborhoods.[117] They began by profiling 343 Chicago neighborhoods. Characteristics such as poverty, unemployment, public assistance, immigration, age, race and class segregation, rapid population change, residential mobility, home ownership, family composition, friendship and kinship ties, neighborhood participation, neighborhood responsibility, and neighborhood trust were all measured. Neighborhood responsibility and trust were gauged by asking local residents such questions as "Can your neighbors be counted on to intervene in various ways if children were skipping school and hanging out on a street corner?" "If children were spray-painting graffiti on a local building?" "If children were showing disrespect to an adult?" The local residents were also asked whether people in the neighborhood were willing to help their neighbors, whether people in the neighborhood could be trusted, what they might do if the firehouse nearest them were threatened with budget cuts, and so forth. Responses to the trust and responsibility questions allowed for neighborhoods to be described as having "low" or "high" collective efficacy.[118] People in different neighborhoods, as a collective force, were either more like "pawns" or more like "origins" in their behavior. That is, the people in different neighborhoods seemed to possess, collectively, a sense either that they were controlled by forces outside themselves or that they themselves had control over their lives. Collective sense of control (or "efficacy") and the other variables were then compared to crime rates in each Chicago neighborhood.

Collective efficacy accounted for more than 75% of the variation in violence levels in different neighborhoods. This establishes low neighborhood "collective efficacy" as an important risk factor. Low collective efficacy is in turn associated with violent crime and its many problematic correlates, all of which affect poor youth and the schools that they attend, as in the Avalon Park Elementary School, described above. These data also point out the power of high collective efficacy in poor neighborhoods. The research suggests that high collective efficacy can be a powerful factor in keeping poor youth in impoverished neighborhoods on track for obtaining a more productive life.

Neighborhoods also play a role in the verbal achievements of children. For example, it is common to find that the verbal achievement of poor and inner-city school children is low in comparison with that of children from wealthier and suburban schools. Three hypotheses link neighborhood to those differences in verbal achievement, independent of the schools in poor neighborhoods, which are often overcrowded, underfunded, and with less qualified teachers. First, in the most impoverished neighborhoods, and those with high rates of crime and low efficacy, parenting factors, particularly the mental health of mothers, are known to be more problematic (as discussed earlier in the section on family stress). Second, the size and the linguistic competencies of members of the speech community in impoverished communities may be restricted, as has been found in studies of low-income families and in communities where immigrants live (see the section on

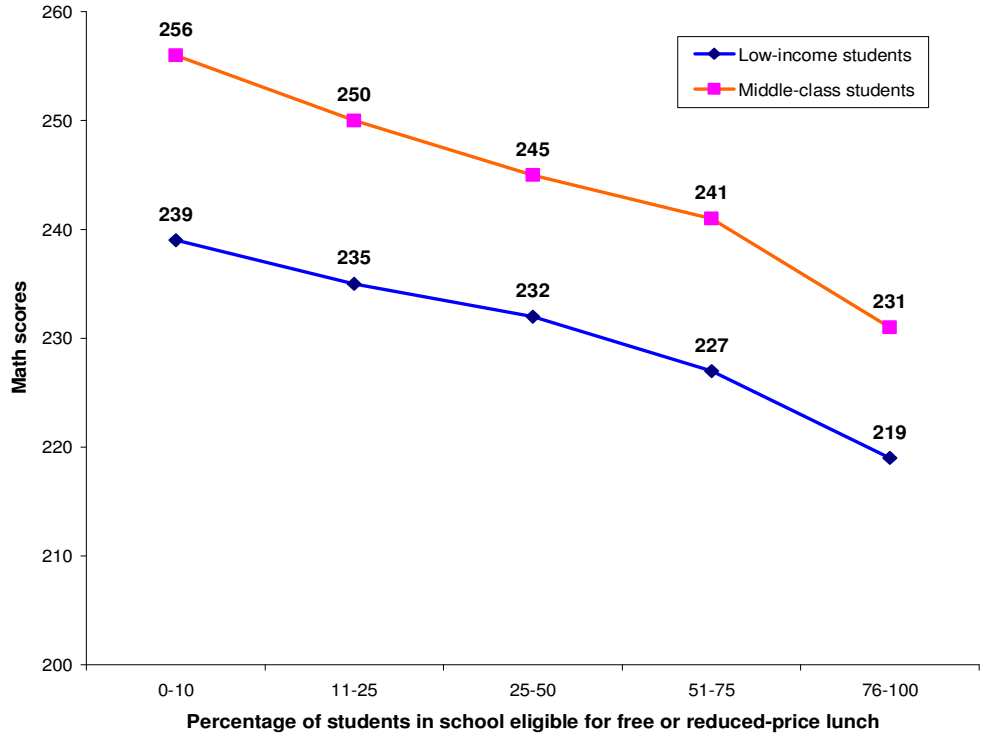
families, above). Third, because of widespread distrust, fear of violence, and isolating physical environments, public communication patterns for both adults and youth in impoverished communities with low levels of collective efficacy are likely to be severely inhibited. This is important because public speech is very different from private and family speech. Familiarity with public speech patterns is a form of social capital, often unavailable to low-income students. Thus the entire communication infrastructure of impoverished and unsafe communities may be a powerful negative influence on the verbal achievement of youth from such communities.[119]

To test the hypothesis of cumulative effects on verbal skills as a function of being raised in neighborhoods with concentrated poverty, researchers followed and questioned a large sample of Chicago African American children and their caretakers for several years, no matter where in the U.S. they moved. Each new community where they settled was rated as more or less impoverished than the ones from which they came. Verbal ability of the children was assessed with a composite scale made up of an IQ vocabulary test and a standardized achievement test. The results showed that staying in neighborhoods of concentrated poverty (neighborhoods at the bottom quartile of income in Chicago) has a cumulative and negative effect on verbal achievement independent of a host of other factors.[120] And being in that neighborhood for a lengthy period of time as a child may influence verbal ability even if the child moves later in life. Growing up in concentrated poverty results in about a quarter of a standard deviation loss in verbal ability. The authors of this longitudinal study say:

> ...durable inequality matters. Indeed, exposure to concentrated disadvantage in Chicago appears to have had detrimental and long-lasting consequences for black children's cognitive ability, rivaling in magnitude the effects of missing 1 year of schooling.... Policy discussions of investment in children are to be applauded, but if our study is any guide, these discussions should be expanded to include a more comprehensive approach to investing in and thereby improving the neighborhood contexts to which children are exposed as they develop cognitive skills crucial for later achievement.[121]

A different set of researchers also found large effects of average neighborhood income on children's reading and mathematics achievement. Their results suggested that living in a low-income neighborhood may have a greater effect on inequality in test scores than coming from a low-income family.[122]

Figure 7 (following) demonstrates that the characteristics of the student body in local neighborhood schools matters a lot. NAEP math scores for fourth graders in 2005 are displayed for two groups: middle-class children and low-income children.[123] It is not surprising that lower-income students do less well than middle-class students, as is clearly shown. But there is another important lesson here. Low-income students attending the schools with little poverty (as



Note: "Low-income student is defined as eligible for free or reduced-price lunch, "middle-class student" as not eligible. Math scores are the average scores of public school students in fourth-grade mathematics on the National Assessment of Education Progress (NAEP) in 2005.

Source: U.S. Department of Education, *The Condition of Education 2006* (Washington, DC: Government Printing Office, 2006), p. 47

Figure 7. Fourth grade NAEP mathematics scores for middle- and low-income children in schools that vary by rate of poverty[124]

when they have rent subsidies and live in more affluent neighborhoods, or are bussed to schools with low poverty rates) score eight points higher, equivalent to about half a grade level, than do middle-class students in high-poverty schools. Neighborhood norms and family traditions, interacting with local school characteristics, affect achievement in powerful ways.

Families with enough money move out of dysfunctional neighborhoods because they believe, as research confirms, that neighborhood effects are strong. They know that good parents too frequently lose their children to the streets because neighborhood effects rival family effects in influencing child development.[125] It appears that the absence of more affluent neighbors rather than the presence of low-income neighbors is more important for youth development.[126] It is precisely those more affluent role models that are missing in low-income neighborhoods. Without such role models for youth, the job of the local public school is much harder. So it is no wonder that poor parents given

vouchers to live in better neighborhoods stayed in those neighborhoods, and their children chose such neighborhoods to live in as they grew older.[127]

Even health is affected by neighborhood location, and that affects absenteeism, which in turn affects achievement. For example, as explained earlier, there are neighborhoods that influence the rate of childhood asthma or other illnesses, affecting absenteeism, and thereby affecting school achievement. Building on that earlier discussion, consider the following data concerning the likelihood that poor people's neighborhoods are located in chemically toxic areas, with the corresponding impacts on health. Table 5 presents data that show the percentage of minority residents in a zip code and the likelihood of proximity to a hazardous waste site.[128] Some neighborhoods are clearly likely to be more toxic to children and their families than are others. The schools that serve those communities can expect to see this reflected in increased absenteeism.

Table 5. Minority proximity to environmental dangers in the USA.[129]

Characteristics of a particular Zip Code	Percent minority in that Zip Code
No treatment, storage, or disposal facility is in zip code	12.3
One treatment, storage, or disposal facility that is not a landfill is in zip code	23.7
A hazardous waste landfill, not one of the nations' five largest, is in zip code	22.0
More than one treatment, storage, or disposal facility, or one of the nations' five largest hazardous waste landfill is in zip code	37.8

But absenteeism rates in different neighborhoods are also determined by rates of family ineptness, family breakdown, the school curriculum, and child willfulness. Moreover, absenteeism from school by neighborhood provides a separate and powerful negative influence on local schools. It hurts the individual child a great deal, placing him or her on a path to dropping out of school. However, children with good attendance at schools in neighborhoods with high absenteeism also suffer because their teachers have to give extra help to those who have missed classes, and they must re-teach material they have gone over before.

New York City is probably not unlike other major urban areas. It has high poverty rates, with poverty concentrated by neighborhood and affecting school attendance. For example, during the 2007-2008 school year, in 12 of New York City's 32 school districts, well over 25% of primary school children were chronically absent from school. Chronically absent is defined as missing more than 20 school days per school year—more than 10% of the school year. In five of these districts, fully 30% of primary school children, kindergarten through fifth grade, were chronically absent. And, perhaps most shockingly, in six of these districts, between 8% and 11% of primary school children missed 38 or more days of school during the 2007-2008 school year.[130]

In that year, at least 30% of the children were chronically absent in 123 individual New York City primary schools; in 96 of the city's 366 middle schools,

more than 30% of children were also chronically absent. In 27 of those schools, more than 40% were chronically absent. Norms for not going to school develop in some neighborhoods. Table 6 describes some elementary and middle schools, all from the same zip code in the Bronx, in which the norms for non-attending school are almost as powerful as the norms to attend school. From a third to a half of the students at these schools are chronic school non-attenders. It is unimaginable that these schools will ever make Adequate Yearly Progress unless some OSFs are addressed first: neighborhood poverty, health care, immigration status, and mental health problems are likely to be among the most important. But in such neighborhoods, an engaging curriculum in a school where all children feel welcome will surely help, as well.

Table 6. The chronically absent in a sample of schools within a single zip code in the Bronx, NYC.[131]

School	Grades served	Number chronically absent	Percent chronically absent	Percent on free and reduced lunch
PS 2, Morrisania	K-5	133	41.7	85.0
PS 132, G. A. Morgan	PK-5	210	36.0	53.6
PS 53, Basheer Quisim	PK-5	475	35.9	90.0
M.S. 301, P. L. Dunbar	6-8	181	48.1	90.5
PS 245, New day Academy	6-10	196	45.9	84.5

Poverty also has an impact on residential mobility rates—the rate at which people move from place to place—causing problems similar to those caused by non-attendance. There are primarily two types of residential mobility: opportunity-driven, where people move to seek a better life, and poverty-driven, where movement is necessary because the family cannot pay rent or experiences dislocation for some other reason: foreclosure, illness, divorce, job loss, and the like. A factor in mobility is that poor people have not seen gains in real dollars in their income over the last few years, while the inventory of low-cost rentals has shrunk.[132] Even before the recent crisis, those who owned homes in 2006 were severely burdened by the cost. At that time 18 million home owners were paying more than 50% of their income to keep their homes. Half of the members of this group were from low-income households (those in the bottom quartile). Looking at 2006 and at those low-income homes with children, after mortgage payments, on average, $257 a month remained for food, $29 for clothing, and $9 for health care.[133] Because energy and food costs have been rising, and many job losses have been associated with the recession that started in 2007, these homeowners were among the most likely candidates to face foreclosure and increase the U.S. rate of residential mobility, already high compared to many other nations. But renting is also problem for low-wage earners; even in the lowest cost-of-living counties in the nation, a minimum-wage worker cannot afford a one-bedroom

apartment at local fair market rents without working more than 40 hours per week.[134]

According to one 2008 report, about 6.5% of all children in the U.S. have been in their current home for six months or less. That rate climbs to more than 10% among poor children. Thirty percent of the nation's poorest children have attended at least three different schools by third grade. Middle-class children have a rate that is one third lower. And compared to white children, black children were found to be twice as likely to change schools this frequently.[135] Schools that serve poor and minority children, therefore, are most likely serving neighborhoods that have the highest rates of residential mobility in a region. Some neighborhoods also have within them many homeless families. These families are even more mobile than the frequent residential movers, as they move quickly throughout a city or region seeking support. High rates of mobility and homelessness in neighborhoods where poor people live place an extra burden on schools and teachers.

An illustration of the problem comes from a school in an upstate New York city that had a mobility rate of more than 100% one year.[136] New students were arriving and old students were leaving almost every day, often with no warning to the school's administrators. In a particular classroom, only three of the students who started that year remained throughout the year, while others entered and left and were replaced by still other new students. Because of migration patterns among farm workers whose children were in this school, some of the children came, and went, and came back again in the same year.[137] One child in this school had been in seven different schools between kindergarten and third grade. In schools with high mobility, instructional routines are disrupted, the pace of instruction slows down, and the design of the curriculum is driven by the needs of the movers rather than by those who stay. Administrative resources are diverted to incorporating new students and processing the records of students who leave. As can be expected, teacher morale often falls and any sense of community at the school is fractured.

Transient students have more behavioral problems, and the more they move the greater the severity of the behavioral problems teachers note.[138]

Those who move three or more times between the ages of 4 and 7 are 20% less likely than non-movers to graduate high school, after controlling for other student characteristics. Those students who stay at schools with high turnover rates suffer academically as well, and the student transiency even increases the rate of teacher turnover.[139] The evidence is persuasive that if the low-income residential mobility rate could be brought down to the middle-class rate, the achievement gap between low and middle income students would drop by about 8%.[140] Similarly, if the mobility rate of black students were to equal that of white students, the predicted reduction in the achievement gap between these two groups would be 14%.[141]

Clearly both movers and stayers pay a price for living in neighborhoods with high rates of residential mobility. Such neighborhoods are common and may be increasing because of the nation's current economic recession. High rates of residential mobility, along with other characteristics of neighborhoods noted in

this section, indicate how powerful an out-of-school factor neighborhoods can be. Neighborhoods exert influences on events inside schools serving poor and wealthy alike. But in poor neighborhoods that influence is likely to be powerfully negative, while in wealthier neighborhoods those effects can be powerfully positive. For example, in California's tiny Ross School District, the community held an auction to fund increases in teacher salaries in order to attract the best teachers in the state. A glass of lemonade, with a pass to play golf, went for $1,100. The 240 families in support of this one public school raised $1.3 million over and above the budget the state provided.[142] As John Dewey once noted: "What the best and wisest parent wants for his own child, that must the community want for all its children. Any other ideal for our schools is narrow and unlovely; acted upon, it destroys our democracy."[143]

OSF7: Extended learning opportunities and achievement

As just noted, not all OSFs have negative effects on students. In this final, short section, some programs that can improve the education of youth, particularly poor youth, are discussed. These programs offer extended learning opportunities, and so they are all educational programs; however, they typically operate separately from traditional school programs, and thus they are classified as an OSF influencing achievement.

This section is also a reminder that education does not take place only within schools. The many opportunities for learning outside of school, where some students learn more (and more easily), are not equally available across the income groups. In addition, poorer students or their families who are not or cannot be motivated to take part in available out-of-school learning opportunities will not learn as well or as much as those who do.

Summer programs

When poor children enter high schools with students from a range of income groups, many have lower grades and lower test scores than their middle-class counterparts. They may also exhibit poorer study habits and less well-developed ideas about how to succeed in life. The student advising office might then suggest (or assign) to those students courses that are often less rigorous and not necessarily college preparatory.[144] Accordingly, from the first days of high school a poor child's job opportunities may be limited, as may be their potential for lifetime earnings.[145] Thus, critical decisions are made at a student's entry to high school. Yet what if their entering scores, which determine so much about their future, were based not on their fall, winter, and spring achievements in regular classes over the course of the school year, but instead were based on their summer *losses* in achievement? This may be the case.[146]

Research suggests that, as a function of family dynamics, income, parental education, and so forth, poor children do not grow in achievement during the summer as much as middle-class children. Convincing evidence exists that about 50% of the achievement gap between children of higher and lower income

families at the start of high school is due to the cumulative lack of summer gains among low-SES children.[147] Among the children studied, those in higher income groups had extended learning opportunities during the summer (travel, museum trips, academic camps, summer school, and so forth) and therefore they appeared "smarter," even though the lower- and upper-income children each had substantial achievement gains during the regular school year.[148] The upper-income students appear to be better educated as they enter high school because they, in fact, are better educated. While that is based, in part, on OSFs such as those noted in the previous sections, it also is a function, in particular, of lower-income students' lack of summer learning that promotes school learning.

Summer programs, therefore, could help in reducing this gap by providing poorer students a better chance to succeed in school. A recent review of 93 evaluations found that summer school programs focusing on remedial, accelerated, or enrichment learning all can have positive effects on students' knowledge and skills.[149] Program elements that seemed to make a bigger difference in what was learned were smaller class sizes, more one-to-one tutoring or individualized instruction, and the requirement for some form of parent involvement. The problem is that these programs are not always available for or attended by the students (or their parents) who most need them.

Preschool programs

Preschool is another OSF that provides an opportunity for learning not always distributed evenly across income groups. A recent and comprehensive meta-analysis, examining 123 studies over five decades that focused primarily on low-income children of lesser educated parents, found preschool to be associated with positive and relatively large effects on cognitive outcomes for children entering kindergarten.[150] Preschool also clearly made a positive difference not only in children's academic achievements, but also in their social skills and in their progress through school. As is often the case with early interventions, the magnitude of the measureable advantage that preschool provides fades over time. Preschool is, however, an OSF that can do much to reduce the gap between poorer and wealthier students at the start of kindergarten or first grade. If low-income students can be provided with and attracted to high-quality preschool programs, the extended learning time does help ensure a good start to their school years.

After-school programs

Replacing excessive television viewing with organized after-school activities is another way to extend learning opportunities. Students who watch six or more hours of television each day—more often lower-income students—tend to score lower on achievement tests. More generally, U.S. students spend more time than their international counterparts watching TV, playing and talking with friends, playing sports, and using the Internet—time and activities (depending on the specifics) not necessarily likely to improve educational attainment.[151] Substituting an effective after-school program could prove a productive alternative.

A recent review of 35 evaluations of after-school programs having explicitly instructional aims and serving at-risk youth found that the programs on average produced gains in both reading and mathematics achievement, although the size of the gains varied widely from program to program.[152] Those more effective in raising student achievement served the early elementary and high school grades and included tutoring. After-school programs also had a positive influence on non-academic outcomes, although these effects were variable. Nevertheless, some characteristics of grass-roots, non-school programs for disadvantaged high-school age youth have been described that do appear to have lasting effects on character and identity formation, shaping much more pro-social behavior.[153]

It should be noted that it is possible—even likely—that the students who participate in these programs are those who are already on the track for higher academic achievement, and that those who might most benefit from such programs do not attend, or do not attend with the regularity that might provide benefits. If this is the case, then programs themselves may appear more effective than they actually are, depending on the nature of models used by the researchers. Nevertheless, the overall body of evidence suggests that after-school extended learning programs could provide a way to improve school achievement, particularly if such programs can recruit the students who need them the most and if they coordinate their curriculum with the schools that students attend.

In short, the negative effects of many of the OSFs discussed earlier might be moderated by out-of-school educational programs like summer school, preschool, and after-school programs. These benefits are most likely if the educational component is strong, community support for the program exists, and if the program also provides medical and social supports for poor children. High quality programs with the ability to attract the students most in need are badly needed.

Conclusion and Recommendations

Seven interwoven out-of-school factors that influence what occurs in schools have been described. Although the literature demonstrating the effects of each of these factors is sometimes controversial, existing evidence still persuasively suggests that OSFs do have powerful effects on schools. The effects of many OSFs on low-income students make the job of schooling those students much harder. Moreover, the factors are intertwined, so their victims often are hit with multiple blows. Pre- and neonatal factors overlap with medical and nutritional factors, and these factors are not independent of the environmental pollutants, neighborhood, and family factors that have been described. These all relate in turn to the availability of and participation in extended learning opportunities for children.

All this strongly suggests that a good portion of the achievement gaps that have become the focus of U. S. educational policy is caused by OSFs, and schools, as they are ordinarily configured, are not in a position to eliminate those gaps. It also means that increased spending on schools, as beneficial as that might be, will probably come up short in closing the gaps. On the other hand, the gaps

might shrink more readily if we spent our nation's precious resources on such strategies as trying to:

- Reduce the rate of low birth weight children among African Americans,
- Reduce drug and alcohol abuse,
- Reduce pollutants in our cites and move people away from toxic sites,
- Provide universal and free medical care for all citizens,
- Insure that no one suffers from food insecurity,
- Reduce the rates of family violence in low-income households,
- Improve mental health services among the poor,
- More equitably distribute low-income housing throughout communities,
- Reduce both the mobility and absenteeism rates of children,
- Provide high-quality preschools for all children, and
- Provide summer programs for the poor to reduce summer losses in their academic achievement.

Economists already suggest that the black-white achievement gap can be reduced by 25% just by reducing residential mobility and improving the availability of healthcare for black children and of mental health services for their caregivers.[154] That is a big effect for only three of the many OSFs discussed above.

It should also be remembered that the OSFs discussed in this brief not only interact with each other; they also interact with a child's genetic makeup in ways we have yet to understand. Emerging research suggests that the effects of poverty can be severe enough that the genetic potential of children fails to express. What that means is that for poor children of any race and ethnicity we more often see the effects of the poverty, not the effects of the poverty x genetics interaction.[155] What is known now, however, is that these factors have a significant impact on what occurs, and what possibilities exist for achievement, inside our nations' schools.

Inputs to schools matter. As wonderful as some teachers and schools are, most cannot eliminate inequalities that have their roots outside their doors and that influence events within them. The accountability system associated with NCLB is fatally flawed because it makes schools accountable for achievement without regard for factors over which schools have little control.[156] In part, for this reason, NCLB is failing to show reductions in the achievement gaps on which it is focused.[157] A broader, bolder approach to school improvement is indeed required. It would begin by a reasonable level of societal accountability for children's physical and mental health and safety. At that point, maybe we can sensibly and productively demand that schools be accountable for comparable levels of academic achievement for all America's children.

Notes and References

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