Why Do Unhealthy Children Do Worse in School? Understanding the Link between Race, Health and Education

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September 23, 2005

Introduction

This paper has two goals. First, I evaluate the role of several mechanisms that may mediate the connection between children's health and their educational achievement in young adulthood. Researchers have begun to pay more attention to the possibility that the relationship between health and socioeconomic status is bidirectional. While poor health has often been studied as a consequence of childhood and/or family socioeconomic conditions, it is also clear that illness and poor health during childhood have lasting socioeconomic effects. What is less clear is why poor health during childhood may influence educational outcomes in late childhood/young adulthood. Do unhealthy children have lower rates of high school completion, for example, because they miss more school, exhibit slower cognitive development, or benefit less from relationships with their parents? Understanding how unhealthy children may end up disadvantaged educationally is an important next step. Secondly, I consider the extent to which health disparities among children account for racial disparities in educational achievement in young adulthood. While childhood health disparities may contribute to socioeconomic disparities among the general population, they may also play a role in creating and maintaining the racial achievement gap that is so persistent in American society. Using data from the National Longitudinal Survey of Youth (NLSY79) Children and Young Adult files, I will examine these questions. In the end, the paper seeks to understand the role of childhood health in creating and maintaining educational disparities among older children and young adults.

Background

The Nature of the Health/SES Relationship

Research on the relationship between socioeconomic status and health is abundant, both in the United States and abroad. In the U.S., there is a strong positive association between financial, non-financial and contextual indicators of individuals' socioeconomic environments (education, income, family and neighborhood environment) and many health measures, including self-reported health and the incidence and prevalence of acute, chronic and disabling conditions (e.g., Kitigawa and Hauser, 1973; Moore and Hayward, 1990; Marmot, 2001; Lynch, 2003; Morenoff, 2003).

More recently, researchers and policymakers have begun to pay attention to the bidirectionality of this fundamental relationship. Often dubbed the "health selection" debate, researchers have raised the possibility that, just as aspects of a child's socioeconomic environment may affect health, health status during childhood may influence individuals' odds of socioeconomic success later in childhood and in adulthood (Smith, 2005). This seemingly common-sense notion has posed conceptual and methodological challenges for researchers who hope to draw causal conclusions from their work. Using appropriate statistical methods, though, researchers have shown that a health disadvantage in childhood, most often defined by low birthweight, adversely affects academic achievement and attainment later in childhood (Boardman et al., 2002; Conley and Bennett, 2000; Hack et al., 2002). While this relationship is still debated (e.g, Kaestner and Corman, 1995; Gorman, 2002), the growing body of work in this area suggests that health status early in life may play a significant role in determining individuals' socioeconomic trajectories (for a good review,

see Palloni and Milesi, forthcoming). In addition, this work consistently raises questions about *how* children who have a health disadvantage early in life may end up educationally disadvantaged relative to their healthy peers.

Why Should Health Matter for Educational Achievement?

Untangling how childhood health exerts its influence is equally important to identifying the presence of an influence, since an understanding of mechanisms exposes concrete areas for intervention. There are several pathways through which health during childhood could affect educational attainment in young adulthood. First, health disadvantage during childhood may simply cause a child to miss more days of school than his healthy peers, taking time away from class work and learning. Without the proper safety net to compensate for missed schoolwork, children may fall behind academically over time. Secondly, children with a health disadvantage may experience slower cognitive development. There may be lasting cognitive effects associated with being born under a normal birth-weight, for example, which may in turn influence overall educational attainment and opportunities for career mobility. In another example, children who suffer from anemia may become easily fatigued, which may alter their capacity to learn effectively and to perform well. There is evidence that children's health matters for levels of cognitive development during childhood (Wadsworth, 1986; Hack et al., 1995; Boardman et al., 2002; Matte et al., 2001). If so, does this partially explain disparities in educational attainment? Finally, a health disadvantage experienced during childhood may influence the nature of family relationships, altering parent-child relationships in a way that is detrimental to a child's educational progress. Conley and Bennett (2001) use the example of a low birth-weight child who is treated as fragile by family members, and many other examples also come to mind. Parents may focus more on keeping children healthy than on pushing them to excel academically, or they may invest more resources (both financial and non-financial) in their healthier children. I will consider these three general pathways in my analysis.

Broader Implications of Health Disparities

One interesting and important implication of the potential effect of health status during childhood on educational outcomes in young adulthood is the extent to which health explains the persistent black-white gap in academic attainment. Researchers have begun to pay close attention to the sources of the black-white disparity in test scores, overall attainment, and school readiness (e.g., Currie, 2005; Duncan and Magnuson, 2005). In addition, is it clear that race and ethnicity are important predictors of health status in the U.S. Black children, for example, have higher rates of chronic and infectious conditions, as well as lower rates of diagnosis and proper treatment (Center for Health Statistics, 2004: pg. 21; Weiss and Longquist, 2000: pg. 68). The health status of Latinos is less clear, given the "Latino mortality paradox," whereby Latinos exhibit lower rates of many diseases and conditions, despite their socioeconomic disadvantage relative to non-Latino whites (e.g., Landale et al., 1999). This effect diminishes with generation and length of time spent in the U.S., however, meaning that many Latino children have equal or higher rates of disease and illness than their non-Latino white peers. Currie (2005) suggests that health problems of children and their mothers may contribute substantially to the observed gap in academic achievement/attainment between blacks and whites. This possibility has not been examined empirically, however. This paper will examine the contribution of race-based childhood health disparities to race-based educational disparities among blacks, whites and Latinos, in an effort to consider one potentially significant consequence of childhood health.

The Present Study

Overall, this project extends previous work in three ways. First, I consider a broad range of health indicators during childhood. Most research on the effects of child health has studied birthweight. Birthweight is not the only marker of a child's health status, however, and does not provide a general picture of child well-being. Using multiple measures of children's health status also provides a sensitivity analysis for the concept of children's health. Secondly, I examine not only whether or not childhood health affects educational outcomes in young adulthood, but also how it does so. Previous work has made great strides in identifying the presence of a health/education relationship, but the pathways of health's influence are still unclear. While ostensibly common-sense, understanding pathways is vital for developing intervention strategies. Finally, I will consider the role of health disparities among children in creating racial disparities in educational achievement and attainment. Large black/white inequality in both health status and academic achievement/attainment exist in the U.S., yet we lack an understanding of their relationship. The paper investigates the role of childhood health in generating educational disparities among in young adulthood.

Data

Data from the National Longitudinal Survey of Youth (NLSY79) Child/Young Adults files provide the basis for this examination of the relationship between childhood health and educational attainment in young adulthood. The NLSY79 is a nationally representative panel survey of U.S. men and women born in the years 1957-1964. Beginning in 1986, a separate survey of the children of the female NLSY79 respondents was begun, which has been repeated biennially. Information is collected from both mothers and children (depending on their age). Children ages 15 and older also complete a young adult survey that includes the same information, as well as marital and fertility histories and household composition. As of 2002, a total of 11,340 children were born to the original 6,283 NLSY79 female participants (NLSY79 Child and Young Adult User Guide, 2002). In 2002, 7,567 children/young adults were interviewed.

The Child/Young Adults files of the NLSY79 provide extensive longitudinal information on children's health, development, family relationships and education, rendering them useful for examining pathways in the relationship between health and academic attainment. Many of the children in the sample are now young adults, providing a large sample for analysis. Multiple observations per child and the large number of sibling pairs in the data permit the use of statistical methods that reduce the likelihood of observing spurious relationships. The data contain large numbers of blacks, whites and Latinos.

Methods/Approach

The first step of the project is to establish whether or not there is an independent effect of childhood health on educational attainment in late childhood/young adulthood, net of family and parental characteristics. Several measures of health during childhood are used, including birthweight (the most widely used measure) but also other indicators such as asthma, anemia, diabetes, overall health status and child mental health problems. Educational attainment can be measured at multiple points, including traditional high school ages (e.g., timely high school completion) and also at older ages (college degree vs. high school degree, etc.). Family fixed-effects models will be used in order to eliminate potential bias from unobserved characteristics of children. I will also experiment with instrumental variables as a sensitivity analysis.

Examination of the sources of any observed relationship is the next step of the project. If there is an independent effect of children's health on their educational attainment

in young adulthood, how does it work? Three potential pathways are operationalized in this analysis. First, I will consider the possibility that compromised health during childhood decreases educational attainment because of the competing demands associated with being sick. I will use several measures of competing demands, including days of school missed due to illness, doctor's visits or hospitalizations, as well as time spent on homework and school-related activities. These measures are reported by children and/or their mothers, depending on the age of the child. Because I observe children over a long period of time, I can construct a longitudinal measure of competing demands over several years, to get a more representative sense of their general experience.

A second and related pathway considered in this paper is children's cognitive development/achievement. The NLSY79 includes several measures of cognitive development, including children's math and reading progress, verbal memory (ability to remember words and sentences), memory for digit span, and motor/social development for young children. As with the measures of competing demands, I can measure children's progress on many of these indicators at several points in time, to holistically represent their progress. Finally, I will model the nature of children's relationships with their parents with several responses reported by both children and their mothers. Both children and their mothers report their educational expectations for the child, and provide information on the amount of time spent working on homework together and alone. Children also answer questions about how often they discuss school-related topics with their parents.

The last step of the project is to examine how much racial disparities in child health contribute to racial disparities in academic achievement and attainment. Using regression decomposition techniques, I will decompose racial differences in academic achievement and attainment to understand how significant health differences between groups are in explaining the educational variation between groups (relative to family characteristics, demographic characteristics, and unexplained factors). Similar methods have been used to understand discrimination and racial differences in marital disruption (Jones and Kelley, 1984; Phillips and Sweeney, forthcoming).

Conclusions

This project analyzes the role of childhood health in creating and maintaining educational disparities among older children and young adults. In doing so, it extends research in two important and related areas. First, I comprehensively examine the effects of childhood health on education in early adulthood, including several measures of health status in an attempt to represent many dimensions of health and to identify the impact of various types of health problems. Secondly, I ask not only whether or not childhood health affects educational attainment, but how it does so. I will consider three pathways during childhood—health-related competing demands, cognitive development, and parent/child relationships—as mechanisms mediating the health/education relationship. Finally, I will link the study of childhood health disparities and racial inequality in educational achievement/attainment by empirically considering the importance of racial disparities in childhood health as a determinant of racial educational disparities.

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