



# The relationship between lifetime health trajectories and socioeconomic attainment in middle age <sup>☆</sup>



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## ABSTRACT

A large literature demonstrates the direct and indirect influence of health on socioeconomic attainment, and reveals the ways in which health and socioeconomic background simultaneously and dynamically affect opportunities for attainment and mobility. Despite an increasing understanding of the effects of health on social processes, research to date remains limited in its conceptualization and measurement of the temporal dimensions of health, especially in the presence of socioeconomic circumstances that covary with health over time. Guided by life course theory, we use data from the British National Child Development Study, an ongoing panel study of a cohort born in 1958, to examine the association between lifetime health trajectories and socioeconomic attainment in middle age. We apply finite mixture modeling to identify distinct trajectories of health that simultaneously account for timing, duration and stability. Moreover, we employ propensity score weighting models to account for the presence of time-varying socioeconomic factors in estimating the impact of health trajectories. We find that, when poor health is limited to the childhood years, the disadvantage in socioeconomic attainment relative to being continuously healthy is either insignificant or largely explained by time-varying socioeconomic confounders. The socioeconomic impact of continuously deteriorating health over the life course is more persistent, however. Our results suggest that accounting for the timing, duration and stability of poor health throughout both childhood and adulthood is important for understanding how health works to produce social stratification. In addition, the findings highlight the importance of distinguishing between confounding and mediating effects of time-varying socioeconomic circumstances.

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## 1. Introduction

A growing body of sociological research reveals a strong association between early life adversity and life course patterns of inequality (Guo, 1998; Torche, 2011; Warren et al., 2012). Childhood is a key period for understanding the relationship between socioeconomic disadvantage and its persistent effects over the life course, and substantial evidence demonstrates the effects of socioeconomic disadvantage on socioeconomic processes and health over the life course (Mackenbach et al., 2008; Smith, 2003; Wagmiller et al., 2006). As a form of childhood adversity that is closely intertwined with both biological and social processes, recent evidence points to the role of poor health during childhood in generating social and economic

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inequality within and across generations (Palloni, 2006). Health is a marker of population welfare that is unequally distributed at the time of birth, remains unequally distributed with age, and has important implications for social and economic patterns observed over the life course. Evidence that health plays a role in determining social position suggests a process of “health selection” into social and economic roles. Socioeconomic background and health work simultaneously and dynamically to affect socioeconomic attainment, to the extent that socioeconomic background is a determinant of both health and socioeconomic attainment (Adler et al., 1994; Smith, 2003; Finch, 2003; Wagmiller et al., 2006), and health at different ages has both direct and indirect effects on opportunities for socioeconomic attainment and mobility. Health selection, therefore, results from and contributes to socioeconomic disadvantage.

Research on the life course effects of socioeconomic disadvantage has expanded to incorporate duration and exposure processes into its conceptual and analytic models (e.g., Ben-Shlomo and Kuh, 2002; Duncan et al., 2010; Wagmiller et al., 2006). However, despite an increasing understanding of the sizeable effects of health on social processes, limited theoretical and empirical attention to the temporal dimensions of health, especially in the presence of socioeconomic circumstances that covary with health over time, precludes a comprehensive understanding of how health works to produce social stratification. While several insights from life course theory are highly relevant to the study of health and social stratification, they are often overlooked (Elder, 1998; Mortimer and Shanahan, 2003). First, the accumulation of inequality is sensitive to developmental processes, meaning that the timing and duration of circumstances during childhood play a key role in producing inequality in adulthood (Elder et al., 2003; Ferraro et al., 2009). Second, the temporal dimensions of life circumstances—timing, duration, and stability—are related to one another and should be measured simultaneously (Ben-Shlomo and Kuh, 2002; Elder, 1998; Mortimer and Shanahan, 2003). Third, time-dependent exposures to adversity (in this case, poor health) are affected by social factors that themselves vary over time and that also influence socioeconomic attainment (Cerdá et al., 2010; Elder, 1985, 1998). We incorporate these insights into a model of health and social stratification and use life course data on health, social environment and socioeconomic attainment to work toward a more complete measurement of “health selection.” In particular, we simultaneously account for the timing, duration, and stability of poor health, and we rigorously adjust for the confounding influence of time-varying socioeconomic factors at different stages of the life course.

## 2. Background

Previous research offers a strong consensus that child health, most often measured by birthweight and sometimes by health during the school years, affects youths’ educational achievement and attainment (Boardman et al., 2002; Cheadle and Goosby, 2010; Conley et al., 2003; Jackson, 2010), and adults’ earnings and labor force participation (Currie and Stabile, 2006; Palloni, 2006). A parallel body of research links health later in life, whether measured by mental health in young adulthood (e.g., Miech et al., 1999) or nutrient deficiency (e.g., Thomas and Frankenberg, 2002), to economic productivity and downward social mobility. Existing evidence points to a role for health, often referred to as health selection (e.g., Warren, 2009), in both limiting opportunities for the accumulation of skills and education during the early life course, and restricting entry into—and, in some cases, leading to exit from—certain socioeconomic roles in adulthood.

### 2.1. *The importance of developmental processes for understanding health and social stratification*

Life course theory emphasizes the importance of developmental processes for understanding patterns observed in adulthood, placing primary importance on the connection between life stages and on the childhood circumstances that give rise to adults’ well-being (Ferraro et al., 2009). Embedded in a focus across life stages is the recognition that circumstances during each life stage may have differing and combined effects on longer-term outcomes (Ben-Shlomo and Kuh, 2002; Schoon et al., 2002). This perspective can be usefully applied to research on health and social stratification over the life course, which requires consideration of health during highly variable periods of sensitivity.

#### 2.1.1. *Timing*

A burgeoning body of evidence demonstrates that poor health during childhood has a durable impact on socioeconomic status in adulthood because it hampers cognitive and socioemotional development during critical or sensitive periods of development (Jackson, 2010; Palloni, 2006; Torche, 2011). The early life cycle is a highly sensitive period of brain development, with evidence that exposures in early childhood have a lasting influence on development and health (Knudsen, 2004)—some research even suggests that exposures in early childhood, or in utero, can permanently “program” aspects of physical and cognitive development (e.g., Barker, 1994; Gluckman and Hanson, 2009). Moreover, there is further evidence of learning and attainment effects associated with school-age health after the “critical period” of early childhood (Crosnoe, 2006; Thies, 1999). The effects of poor health during childhood may grow with age in a process of cumulative disadvantage, whereby the short-term effects associated with health widen as youth age to manifest in a longer-term “scarring” effect of poor health earlier in the life course (Diprete and Eirich, 2006; Ferraro and Shippee, 2009; Goosby and Cheadle, 2009; Haas et al., 2011). Because skills build on each other (Tsao et al., 2004), early differences successively affect children’s ability to effectively participate in academic curricula throughout the school years and, ultimately, to attain high socioeconomic status.

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