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Article

Adult health returns to education by key childhood social and economic indicators: Results from representative European data

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ABSTRACT

In the United States, associations between attained education and adult health typically are larger for those from disadvantaged childhood backgrounds. However, it remains unclear how specific key childhood indicators contribute to these adult health patterns, especially outside the United States. Drawing on the 2014 European Social Survey (20 countries; N=31544), we investigate the key childhood and adolescent indicators of parental education, childhood financial strain, and any serious household conflict growing up, given how these early exposures are known to correlate strongly with both educational attainment and adult health. In regressions with country fixed effects, we find across Europe that higher levels of education are more strongly linked to lessened adult depressive symptoms when childhood disadvantage is present in terms of lower levels of parental education or higher childhood financial strain specifically. However, adjusted predictions reveal that childhood financial strain contributes to this heterogeneity in educational returns far more strongly than parental education. For self-rated health, only childhood financial strain enhances estimated educational health benefits when considering all key childhood social and economic factors jointly. Similarly, childhood financial strain in particular enhances educational protection against overall rates of disease in adulthood. Overall, our findings support prior work on United States data revealing higher educational health returns given childhood disadvantage. At the same time, our findings across three distinct adult health indicators suggest the particular importance of childhood financial strain to understanding heterogeneity in educational health returns.

Around the world, individuals with higher levels of education enjoy better health, as marked by their lower rates of depression, inflammation, and major disease, and by their enhanced longevity (Beckfield, Olafsdottir, & Bakhtiari, 2013; Elo, 2009). To help shed light on what produces these health advantages seen with higher levels of education, recent work has illuminated how associations between higher education and better health vary according to childhood or adolescent Conti & Heckman (Bauldry, 2014, 2015; resources 2010: Ross & Mirowsky, 2011; Schaan, 2014; Schafer, Wilkinson, & Ferraro, 2013). These recent studies test the general hypothesis that educational health gains are concentrated among those with specific childhood or adolescent backgrounds. To the extent that this is true, observed educational health disparities may actually reflect heterogeneous treatment effects of education, with those who are disadvantaged during childhood perhaps benefitting more from schooling. Knowing how health returns to education vary by childhood background provides new information about potential causal mechanisms linking education to health, by revealing whether health gains linked to education are distributed evenly across segments of the general

population (Montez & Friedman, 2015).

Evidence is accumulating in the United States that educational health returns are heterogeneous across family socioeconomic origins, with higher education being substantially less predictive of adult health among those who come from advantaged families (Andersson, 2016; Bauldry, 2015; Ross & Mirowsky, 2011; Schafer et al., 2013). Some US studies find the opposite, such that observed educational health returns are higher among those with greater parental socioeconomic resources (Andersson, 2016; Bauldry 2014). However, existing work has not made clear how distinct key childhood and adolescent life exposures contribute to these heterogeneous returns. Specifically, by focusing either on singular childhood factors like parental education or social class (Andersson, 2016; Ross & Mirowsky, 2016; Schaan, 2014) or on complex vectors of educational determinants (Bauldry, 2014, 2015; Conti & Heckman, 2010; Schafer et al., 2013), work on educational health disparities in the United States leaves unclear intermediate mechanisms, by which key childhood or adolescent factors might jointly shape these disparities. Namely, parental social class, childhood financial strain, and abuse or maltreatment growing up all make

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distinct and well-established contributions to both final educational attainment and adult health (Carroll et al., 2013; Ross & Mirowsky, 2011; Schafer & Ferraro, 2012; Schafer et al., 2013; Wagmiller, Lennon, Kuang, Alberti, & Aber, 2006; Ziol-Guest, Duncan, Kalil, & Boyce, 2012). Yet, how each of these key factors contributes uniquely to health returns to education remains unclear. Also, existing work on heterogeneous educational health gradients has focused on the United States. Because socioeconomic health inequality differs substantially across advanced nations (Elo, 2009; Murray, Vos, Lozano, Naghavi & Flaxman, 2012), it is important to examine patterns of heterogeneous educational health returns outside the United States.

Therefore, in this study, we move forward existing work on three fronts. First, we offer an illustrative test of how key childhood and adolescent life exposures jointly contribute to adult educational health disparities. Second, we draw on national data from 20 European countries to offer a first representative test of heterogeneous educational health returns in Europe. Finally, we examine three distinct general health outcomes in adulthood, to evaluate any potential health outcome dependency in educational health returns.

Background

Although the association between higher education and better health is one of the most robust in the population health literature, ample evidence now exists for the presence of heterogeneous associations between education and health. Childhood or adolescent advantages, in terms of higher social and economic resources while growing up, may ultimately make attained education less important to adult health. Specifically, educational attainment may correlate less strongly with adult health given childhood advantage, and childhood disadvantage may enhance the value of education for predicting adult health. This mutual compensation mechanism linking educational attainment and childhood conditions often is termed "resource substitution" (Ross & Mirowsky, 2011; Schafer et al., 2013). Researchers who propose resource substitution generally make the argument that human capital acquisition through schooling on the one hand and childhood factors or advantages separate from schooling on the other hand essentially provide the same basic kinds of cognitive, noncognitive, psychosocial, or material resources correlated with physical health throughout the life course. Thus, educational and extra-educational resources are essentially substitutable in the production of adult health or well-being (e.g., Cutler & Lleras-Muney, 2010; Ross & Mirowsky, 2011; Schafer et al., 2013).

Other studies obtain results consistent with an opposing mechanism, in which education favors those with advantaged childhood backgrounds. Namely, a "resource multiplication" perspective usually posits that educational systems tend to favor individuals from privileged childhood backgrounds, thus amplifying rather than reducing health inequality present during childhood (Andersson, 2016; Bauldry, 2014; Schafer et al., 2013). This perspective highlights how pre-educational resources and active parental guidance dramatically increase the odds of educational engagement, success, and attainment, beginning as early as preschool and carrying through high school and college graduation (Conti & Heckman, 2010). Individuals who begin life in an advantaged socioeconomic position are more likely to obtain higher levels of schooling and more likely to obtain higher-quality schooling (Hout, 2012). However, still unclear is whether these patterns of educational inequality also result in health inequality by level of education; namely, whether these differences in educational experiences linked to childhood factors also result in differing health returns to higher levels of education once obtained.

Overall, the opposing frameworks of resource substitution and resource multiplication take differing stances on how educational attainments and experiences on the one hand, and childhood and adolescent social and economic resources separate from schooling on the other hand, may powerfully interact to either narrow or widen health disparities.

Limitations of existing work on heterogeneous educational health returns

Relevant studies of national US data usually find adult health disparities that are consistent with resource substitution across educational attainment and childhood and adolescent resources (Bauldry, 2015; Ross & Mirowsky, 2011; ,2014; Schafer et al., 2013), though occasionally they find patterns consistent with resource multiplication (Andersson, 2016; Bauldry, 2014). However, existing work leaves unclear how specific key childhood and adolescent factors contribute to these patterns, and this work also does not resolve whether similar patterns hold outside the United States – or across diverse physical health measures in adulthood.

Investigating key childhood social and economic exposures

Existing work has yet to establish the unique contributions of key childhood social and economic factors to heterogeneous educational returns. In one typical approach, education-health correlations are analyzed across different levels of singular childhood factors such as parental education or socioeconomic class (e.g., Andersson, 2016; Ross & Mirowsky, 2011; Schaan, 2014). In another common approach, researchers specify rich and complex vectors of childhood social and economic factors; these vectors then are used as a basis of forming statistical groups or categories for comparing differences in education-health correlations (e.g., Bauldry 2014, 2015; Conti & Heckman, 2010; Schafer et al. 2013).

Focusing on singular childhood factors or on complex vectors of factors both are valuable techniques, as they both provide answers to the guiding question of whether observed educational health returns are higher or lower given approximate levels of childhood disadvantage or privilege. However, the answers provided are limited ones, as they leave unclear how certain key childhood and adolescent life exposures may matter jointly to educational health returns. Conti and Heckman (2010) isolate vectors of childhood cognitive, noncognitive, and health factors and show how they contribute separately to observed health returns to education. Because their analysis focuses on how estimated educational health returns vary across percentile scores of endowment factors observed prior to finishing school, it leaves unclear whether or how this effect heterogeneity linked to endowments is based in key childhood life exposures. Cognitive, noncognitive, and health factors are bundled within individuals, and they carry shared origins in specific key childhood social and economic exposures. Vector-based analyses of educational health returns overlook this emphasis on critical life exposures by instead focusing on summative propensity or percentile scores calculated across groups of variables that represent highly intermingled childhood processes, leaving basic structural antecedents unclear (see also Bauldry, 2014, 2015; Schafer et al., 2013).

Adult health disparities carry multifaceted roots in distinct key childhood social and economic conditions. Therefore, it is valuable to analyze these childhood exposures as distinct factors, in terms of how they contribute distinctly to observed educational health returns. As key examples, childhood social class, financial strain, and abuse or maltreatment are three distinct childhood exposures linked to schooling and health across life course. Research on heterogeneous health returns to education has yet to show that parental education in particular modifies educational health returns net of other key childhood exposures such as childhood household conflict or financial strain. This is a vital oversight, given extensive evidence that maltreatment by parents or childhood financial hardship, while they correlate with parental education, still carry consequences for life-course health that are separate and distinct from those of parental education or social class generally Schafer, & Wilkinson, more (Ferraro, 2016: Hertzman & Boyce, 2010; Johnson & Schoeni, 2011; Schafer & Ferraro, 2012; Ziol-Guest et al., 2012). Meanwhile, existing work also has shown

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