

Adult Children's Education and Parental Health in the PSID

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Abstract

A growing literature shows that even in the presence of other controls, individual health and mortality outcomes are associated with education levels of family members. In this paper, we use PSID data to show a strong correlation between educational achievement of adult children and health status of parents over the time period 1999-2011, especially when the adult children are college graduates, even after accounting for the education of the parent (and parent's spouse). In preliminary analyses, we find that parents whose children are highly educated tend to report better self-rated health. They are also less likely to be diagnosed with serious health conditions, and those conditions that are reported tend to be slower to increase in severity. Ongoing work attempts to test possible mechanisms for these relationships between children's education and health.

1 Background

The positive association between education and health is well established. Prior research consistently shows that highly educated individuals experience lower rates of cardiovascular disease, diabetes, obesity, disability, psychological distress, and mortality than their less educated counterparts (Cutler and Lleras-Muney 2006; Mirowsky and Ross 2003). Highly educated persons also tend to smoke less, drink less, and exercise more often than their less educated counterparts

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(Cutler and Lleras-Muney 2010; Mirowsky and Ross 2003; Pampel, Krueger and Denney 2010). Prior research in the U.S. and Europe also consistently documents an inverse association between education and adult mortality risk (Baker et al. 2011; Elo 2009; Hummer and Lariscy 2011). There is evidence that educational attainment has a causal effect on a wide range of adult health outcomes (Berger and Leigh 1989; Conti, Heckman and Urzua 2010; Conti and Heckman 2010; de Walque 2007, 2010; Lleras-Muney 2005; Silles 2009).

Education clearly is an important individual-level health resource, but research also suggests that education has important “spillover effects” on health among family members. Most of these studies focus on spillover effects of education on health within parent-child dyads. Countless studies positively associate parental education with infant and child health and survival (Gakidou et al. 2010; Montez and Hayward 2011). There is also clear evidence that the positive association between parental education and child health continues into adolescence and later adulthood (Elo 2009; Galobardes, Smith and Lynch 2006; Montez and Hayward 2011). Although few studies have assessed whether education has intergenerational effects on health that flow from children to parents, research from Taiwan (Zimmer, Hermalin and Lin 2002; Zimmer et al. 2007), Sweden (Torssander 2013), and the United States (Friedman and Mare 2014) has found that an adult child’s educational attainment is positively associated with parental health outcomes. Only one previous study has examined this association in the United States (Friedman and Mare 2014). Consistent with prior research, Friedman and Mare found that an adult child’s education is associated with their parents’ risk of all-cause and cause-specific mortality. Importantly, this study also implied that social and behavioral factors play a major role in this association because the link between children’s education and parental mortality risk was especially pronounced for causes of death that have well-defined socio-behavioral etiologies. The notion that social, behavioral, and even economic factors mediate the association between children’s education and parental health outcomes is not surprising. Education is associated with better health and increased longevity at the individual-level because it provides material and non-material resources that allow individuals to maximize their health (Baker et al. 2011; Brown et al. 2012; Hummer and Lariscy 2011; Mirowsky and Ross 2003). These resources likely have spillover effects between family members that may help explain the association between children’s education and parental health outcomes. Here, we use spillover effects as an overarching term to signify several closely-related behaviors/activities that plausibly have health consequences when they flow from children to parents, including instrumental support, social support, information, and social control pro-

cesses. For example, economic resources are a major reason that education is associated with better health outcomes among individuals. Adult children often provide instrumental/financial support for their elderly parents and these economic resources likely play a major role in their parents health and general well-being. It is easy to see how a child's education may be important in this particular instance because educational attainment strongly influences one's labor market outcomes and earnings. Consequently, highly educated children typically would have more economic resources to transfer to their parents in times of need than their less educated counterparts.

Caregiving behaviors may also represent an important pathway that links a child's education with their parents health. Elderly parents routinely rely on family members, especially their adult children, to perform various caregiving responsibilities. However, an adult child's educational attainment may influence their ability to perform certain caregiving activities. Moreover, highly educated adult children may be more effective caregivers than their less educated counterparts because schooling likely increases health literacy (Schillinger et al. 2006) and, more generally, allows people to develop various cognitive skills - like critical thinking, organization, and information processing - that directly and indirectly influence health (Baker et al. 2011).

The proposed paper examines the relationship between adult children's education and parental health outcomes in the Panel Survey of Income Dynamics (PSID). The paper will build on and extend previous research in three main ways. First, prior research only examines a limited set of parental health outcomes, but the proposed paper will examine the relationship between children's education and multiple parental health outcomes. More descriptive research examining the association between children's education on parental health outcomes is needed and this is particularly true in the United States. Second, the paper will systematically examine several major social and behavioral mechanisms thought to mediate the association between children's education and parental health outcomes. This is important because although Friedman and Mare provide compelling evidence that socio-behavioral factors mediate the association between children's education and parental health outcomes, research in the U.S. and elsewhere that systematically examines these hypothesized mechanisms is still relatively sparse. Finally, the paper will replicate the identification strategy recently taken in a recent paper in Sweden that examined the association between children's education and their parents risk of all-cause mortality (Torssander 2013) and attempt to discern the extent to which the association is causal.

2 Health Measures

Starting in 1999, the PSID asked a number of health questions to respondents. To begin our analysis, we focus on two types of outcomes; self-rated health (SRH), and particular health conditions. For SRH, respondents are asked to rate their overall health as excellent, very good, good, fair, or poor, and in some analyses we will simplify this to a binary scale distinguishing between healthy (excellent, very good, good) or unhealthy (fair, poor). Another is a set of indicators for whether the respondent has ever been diagnosed with a variety of health problems. The twelve categories are stroke, heart attack, heart disease, high blood pressure, lung disease, asthma, diabetes, arthritis, memory loss, cancer, emotional/psychological/mental problems, and a learning disorder. We also will use reported severity of limitations due to these health conditions, which respondents are asked to characterize as a lot, somewhat, a little, or not at all, as outcomes.

First, we chart the total number of PSID heads/wives that have a valid health measurement in a 1999-2011 wave and their self-reported health. On average, men report better health than women and married individuals of both genders report better health than their unmarried counterparts.

Table 1: Health Self-Report

	Single		Married			Single		Married		
	Men	Women	Men	Women	Total	Men	Women	Men	Women	Total
Excellent	1,878	2,429	7,428	6,275	18,010	22.7%	14.3%	24.3%	20.5%	20.8%
Very Good	2,611	5,067	10,766	10,628	29,072	31.6%	29.8%	35.2%	34.8%	33.6%
Good	2,330	5,628	8,499	9,573	26,030	28.2%	33.1%	27.8%	31.3%	30.1%
Fair	1,045	2,853	2,876	3,140	9,914	12.6%	16.8%	9.4%	10.3%	11.5%
Poor	405	1,036	983	954	3,378	4.9%	6.1%	3.2%	3.1%	3.9%
Total	8,269	17,013	30,552	30,570	86,404					

PSID Heads/Wives, person-years, 1999-2011

Missing values excluded, accounting for slight difference in married men/women

Unmarried includes divorced/widowed/separated

Table 1 shows that there is considerable variation in self-reported health of PSID heads and wives. However, the PSID also asks a number of more objective health questions about whether heads/wives have been diagnosed with various health conditions. In Table 2, we show the incidence in PSID respondents of having been diagnosed with a variety of health conditions.

Table 2: PSID Heads/Wives: Ever Diagnosed?

Health Condition	Single		Married	
	Men	Women	Men	Women
Stroke	3.1%	4.6%	2.5%	2.1%
Heart Attack	4.1%	3.4%	4.6%	1.4%
Heart Disease	5.5%	6.9%	5.7%	3.5%
High BP	23.6%	32.6%	25.9%	20.5%
Asthma	10.0%	13.0%	6.9%	9.1%
Lung Disesase	4.1%	7.0%	3.2%	3.4%
Diabetes	7.7%	9.9%	8.6%	6.9%
Arthritis	13.0%	24.9%	13.0%	14.6%
Memory Loss	2.6%	3.4%	1.3%	1.1%
Learning Disorder	4.8%	2.3%	2.0%	1.3%
Cancer	3.3%	6.1%	4.4%	4.9%
Emot/Psych/Mental	8.3%	11.4%	4.1%	7.0%

PSID Heads/Wives, person-years, 1999-2011

Missing values excluded

Unmarried includes divorced/widowed/separated

3 Preliminary Evidence

After showing summary statistics, we begin our descriptive analysis by showing the relationship between self-reported health and children's education for PSID respondents. In all cases, education was simplified to a categorical variable in which the education categories are non-HS graduate, HS graduate with no higher education, some college (includes 2-year degrees), and four-year college graduates (includes those with post-graduate education). When appropriate in regression analysis, the group with at least a four-year college degree is the omitted reference

group.

The general equation that we use is the following:

$$\begin{aligned} Health_r = & \beta_{0e}I[Ed_p = e] + \beta_{1e}I[Ed_s = e] \\ & + \beta_{2e}I[Ed_c = e] + \beta X_{r,s,c} + \varepsilon \end{aligned} \tag{1}$$

In this equation, r subscripts denote the respondent, s spouse, and c child. The regression includes indicators for respondent, spouse and children to be in each of the education groups discussed above, denoted e . When there are multiple children, we use the category of the child with the most education.¹ We also can condition on observable characteristics of the respondent, spouse and children. In the most basic case, in describing the empirical relationship between health and family education, we include only respondent age, and whether the respondent is currently married, in our X .

In Table 3, we show results estimated from two variants of this equation for PSID respondents with adult children also in the survey. Model (1) is as described above; in Model (2), we include separate coefficients for sons' and daughters' education, including indicators as well for whether the parent has at least one adult child of each gender. We show odds ratios of the respondent to report fair or poor health compared to the reference group of children with college degrees. In general, the table shows significant differences in health between parents of higher and lower-educated children, with little apparent difference between sons and daughters.

¹Our substantive results were not sensitive to using lowest or average child's education.

Table 3: Odds Ratios: SRH F/P and Child's Education

	(1)	(2)	(1)	(2)
	Men (Fathers)		Women (Mothers)	
Child Ed:	All	Son	All	Son
< HS	1.5517	1.6187	1.5805	1.4708
HS	1.7636	1.6457	1.2598	1.4071
S. Coll	1.3707	1.1715	1.2894	1.2198
Child Ed:		Daughter		Daughter
v. son		1.0407		1.0545
< HS		1.4420		1.3313
HS		1.3628		1.1649
S. Coll		1.3303		1.1182

PSID Heads/Wives, 1999-2011, with adult children

Specifications also include age, own/spouse education

Bold significant at .1 level

Next, we look at other outcomes. First, we report odds ratios from a logistic regression in which the dependent variable is whether the respondent reports having been diagnosed with any of the health conditions described above. Like the result in Table 3, this is not taking full advantage of the panel nature of the PSID. Thus, in the second part of Table ??, we limit the sample to those who did report at least one health condition in a given period, and use as our dependent variable whether the reported severity of their condition increased in between waves.

Table 4: Odds Ratios: Health Outcomes

Probability of >0 Health Conditions		
Child Ed	Fathers	Mothers
< HS	0.9797	1.409
HS	1.3957	1.4496
S. Coll	1.1984	1.1929
Change in Severity of Health Condition		
Child Ed	Fathers	Mothers
< HS	1.2889	1.1953
HS	1.2346	1.2416
S. Coll	0.9781	1.1125

PSID Heads/Wives, 1999-2011, with adult children

Specifications also include age, own/spouse education

Bold significant at .1 level

In general, those parents whose children are college graduates do better in all health measures. Except for fathers whose children have less than a HS degree, parents of either gender who have a child with a college degree are less likely to have been diagnosed with a serious health condition than those whose children are in any other education category, conditional on own and spouse's education.² This holds even though there is a potential bias in diagnoses; if education is correlated with medical visits, parents of more educated children may be more likely to have been diagnosed, conditional on the existence of health problems. Upon diagnosis with a health condition, parents whose children have a college degree tend to be less likely than others to experience an increase in severity of limitations due to the condition, again conditioning on age and own and spousal education. Across a variety of measures, children's education - especially college completion - is strongly correlated with parents' health.

²The non-significant result of fathers whose children have very low education is likely due to differential selection on mortality, which we have not yet accounted for in preliminary results; however, we do have access to the restricted PSID linkage to the National Death Index, so this is something we will be able to correct for in final results.

4 Summary and Direction

We contribute to the literature on family relationships and health by documenting the relationship between adult children's education and parental health outcomes in the PSID. Our results are consistent with the findings of a recent literature that finds similar relationships between children's education and parent's mortality in the U.S. and other countries. In current work, we are expanding our analyses to shed light on the mechanisms for the correlations shown in this and other work. In particular, there are three aspects that we are currently investigating which are particularly well-suited to study in the PSID. One is to consider the labor market and financial situation of each generation. By design, the PSID has extensive information about income and occupation, with some wealth supplements. If education is operating on health through financial resources or occupational demands, that can be included in the model easily. Second is unobserved similarities among family members. Because of the PSID's genealogical design, we can examine related older adults (such as siblings) and their children (cousins), which is similar to the identifying variation in Torssander (2013). Third is location. In the PSID, we will have complete sequences of parent and child's location choice, and thus we can see not only relative location at the time of health problems but how those change in response to health shocks. We plan to use these types of variation to test their relationship to both onset and severity of health problems in the data. Our descriptive results show that education plays a role in both onset and management of health problems, a result that itself begins to decompose previous findings on mortality, and by testing these avenues we hope to continue to extend our understanding of the relationship between children's education and parental health.

5 References

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