Adult Children's Education and Parental Health in the PSID

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Research Question(s)

- How does adult children's education affect parents' health?
  - Q1: Is there an association?
  - Q2: Can we identify certain measures/aspects in which the association is stronger or weaker?
  - Q3: Can we identify causal explanations for this association?

Educational Spillovers

- Education is earned by an individual, but may be a family-level asset
- Greater human capital/knowledge, can affect health behaviors
- Extensive literatures on parental characteristics & investment in children and caregiving of adult children to elderly parents
- Specific focus on linking adult child education to parent mortality/health: Zimmer et al. (2007) (Taiwan), Friedman & Mare (2010) (USA), Torssander (2013) (Sweden), Yahirun et al. (2014; stay tuned...) (Mexico)

PSID Health Data

- Use Panel Study of Income Dynamics - US household panel survey from 1968
- Genealogical survey design makes it a good focus for investigating intergenerational effects because multiple generations are respondents
- Battery of health questions from 1999 wave to present (waves every other year)
  - Self-rated health (SRH)
  - Diagnosis of health conditions & associated difficulties
- PSID health data corresponds well to NHIS (Andreski, McGonagle and Schoeni (2009))

PSID Health Data - Today's Focus

- Focus HH is "parent" household; use adults over 50 (likely to have adult children)
- Evaluate measures of health status instead of mortality
- Key outcomes: SRH is Fair/Poor; whether report being diagnosed with various health conditions; self-reported severity/limitations due to those conditions
- Children's education key characteristic of interest
- Ongoing/future work, some with restricted-access data, will expand set of outcomes and conditioning variables

Self-Rated Health and Conditions

Table : Logistic Regression Coefficients: SRH Fair/Poor

	Men	Women
Stroke	**0.9398**	**1.1533**
High BP	**0.5163**	**0.6945**
Diabetes	**1.0397**	**1.4679**
Cancer	**0.4225**	**0.2246**
Lung Dis.	**1.3544**	**0.8651**
Heart Attack	**0.8265**	**0.7233**
Heart Dis.	**0.3763**	**0.6228**
Emot/Psych	**0.9383**	**1.0640**
Arthritis	**0.7938**	**0.8915**
Asthma	0.1380	**0.3376**
Memory Loss	**1.2550**	**1.2037**
Learning Disab.	0.2437	0.2974

- All significant at 1% except men asthma, men/women learning disability

Self-Rated Health and Limitations

Table : SRH Fair/Poor by Greatest Condition Severity

	Men		Women	
	Coeff	Odds	Coeff	Odds
A Lot	**4.10**	**60.19**	**3.61**	**36.79**
Somewhat	**2.52**	**12.41**	**2.46**	**11.75**
A Little	**1.80**	**6.07**	**1.67**	**5.31**
Not at All	**0.57**	**1.77**	**0.69**	**1.99**

- All severity coefficients/OR significantly different from each other as well as the reference category (no conditions)
- Separate regression of SRH on presence of each health condition shows all significant relationships

Adult Children & Health

General specification:

$$\begin{aligned} Health_p &= \beta_{0e} I[Ed_p = e] + \beta_{1e} I[Ed_s = e] \\ &\quad + \beta_{\mathbf{2e}} \mathbf{I}[\mathbf{Ed_c} = \mathbf{e}] + \beta X_{p,s,c} + \varepsilon \end{aligned}$$

- p, s, c subscripts indicate parent (focus person), spouse, child; $I[Ed = e]$ education category indicators
- Education categories used: <HS, HS, Some College, College Graduates (reference group)
- Specifications also account for age (of parent), robust to including own/child income

Health and Children's Education

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

	Men (Fathers)		Women (Mothers)	
	Own Ed	Child Ed	Own Ed	Child Ed
$<$ HS	**4.3111**		**3.0729**	
HS	**1.8173**		**1.3737**	
S. Coll	**1.9507**		**1.3086**	

- Bold at p-value of .01
- Specification controls for quadratic in age, spouse education; robust to including own/child's income

Health and Children's Education

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

	Men (Fathers)		Women (Mothers)	
	Own Ed	Child Ed	Own Ed	Child Ed
$<$ HS	**4.3111**	**1.5517**	**3.0729**	**1.5805**
HS	**1.8173**	**1.7636**	**1.3737**	**1.2598**
S. Coll	**1.9507**	**1.3707**	**1.3086**	**1.2894**

- Bold at p-value of .01
- Specification controls for quadratic in age, spouse education; robust to including own/child's income

Q1 and Q2

- Probability of fair/poor parents' health decreases in children's education, almost as strongly as own education
- In particular, children who are college graduates have parents in significantly better health than other categories, adjusted for characteristics of the older household
- There is an association (Q1); next set of regressions look at whether children's education affects prevalence, severity, or onset of parental health conditions (sneak preview: yes, yes, yes)

Children's Education and Prevalence

Table : Odds Ratios: 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**

- Bold at p-value of .1
- Specification controls for age, own/spouse education

Children's Education and # of Diagnosed Conditions

Table : LPM: Number of Health Conditions

Child Ed	Fathers	Mothers
$<$ HS	0.0346	**0.3135**
HS	**0.26**	**0.3165**
S. Coll	**0.1534**	**0.2294**

- Bold at p-value of .1
- Specification controls for age, own/spouse education
- Mean # conditions in sample $\approx$ 1.5

Children's Education and Severity

Table : Ordered Logistic Odds Ratios: Severity of Health Condition

Child Ed	Fathers	Mothers
$<$ HS	**1.7351**	**1.4682**
HS	**1.4267**	**1.1862**
S. Coll	**1.2445**	**1.1147**

- Bold at p-value of .1
- Specification controls for age, own/spouse education

Children's Education and Health Change

Table : Odds Ratios: 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

- Bold at p-value of .1
- Specification controls for age, own/spouse education

Summary of Condition/Severity Regressions

- Mothers and fathers of college graduates:
  - are significantly less likely to have been diagnosed with a major health condition than those of less educated children
  - have significantly fewer health conditions
  - report less severe limitations, conditional on being diagnosed with a major health condition
- There is some support (partly sample size concerns) for difference in changes in health conditions as well as levels
- In some cases, effects are not seen for fathers whose children have not graduated from HS (possible mortality selection)

Overall Summary

- Adult children's education is associated with better parental health, across measures and after accounting for parents' own characteristics (and child's income)
- This tends to hold across education categories, but is strongest for children who are college graduates
- Evidence suggests association both with later onset and lesser severity of health conditions

Possible Mechanisms and Ongoing Work

- Child ed proxies for income/wealth
  - Very slight attenuation when including income controls
- Educated children provide better information/caregiving
  - No change when controlling for child's location by US state, suggesting this channel does not work locally if at all; revisit with restricted data (more geographic precision)
- Differing behavioral patterns by family education
  - Can look into health behavior questions; study 2013 transfer module for direct evidence of monetary/time transfers by education and family type
- Child ed capturing unobserved parent quality
  - Can use more human capital measures (i.e. occupation); possible use of "family tree" fixed effects