

Parental Education and the Offspring's Mental Health

Daniel Graeber and Daniel S. Schmitzlein

MOTIVATION

Worldwide, mental health conditions are a leading cause of disability-adjusted life years (DALYs) and health costs. They account for 199 million DALYs or 37 percent of healthy life years lost from non-communicable diseases worldwide. The sum of direct and indirect costs worldwide were estimated to amount to 2.5 trillion US Dollar in 2010 and projected to increase to 6 trillion US Dollar in 2030 (Bloom et al., World Economic Forum, 2011).

Given this high financial and societal burden of mental health impairments, prevention measures that alleviate mental health problems will have high financial and societal returns. While much of the literature is centered on the relation between income and subjective well-being, little is known about the long run determinants of mental health.

RESEARCH QUESTIONS AND CONTRIBUTIONS

Research Questions:

- Does parental education have a positive effect on the offspring's mental health?
- Do there exist any gender differences in the effect of parental education on the mental health of the offspring?

Contributions:

- We are the first who identify the causal effect of parental education on the offspring's mental health by exploiting plausibly exogenous variation in parental education across time and space.
- In line with related literature, we find differential effects across parental and the offspring's gender.

THEORETICAL LITERATURE

Direct effects:

- Higher educated parents are more efficient producers of health (Grossman, JPE, 1972). (+)
- Higher educated parents could trade off the quantity of children for quality of children (Becker and Lewis, JPE, 1973). (+)
- Higher education could alter marital trajectories of parents (Lefgren and McIntyre, JOLE; 2006). (o)

Indirect effects:

- Higher education leads to higher income which can be directed towards the children. (+)
- Higher education could cause individuals to mate with higher educated partners. This could amplify the previous mentioned effect. (+)
- The labor market attachment increases if individuals are better educated. This then translates into increased absence from home. (-)

DATA

Socio-Economic Panel (Wagner et al., JCE, 2007):

- Annual survey since 1984.
- Includes 11.000 households and about 30.000 persons in Germany.
- Contains information on household composition, occupational biographies, health, etc.
- Offspring surveyed first at the age of 17 and followed thereafter.

Mental Component Summary (MCS) Score:

- Based on SF-12 questionnaire which is administered to the respondents biannually.
- Extracted by means of factor analysis.
- Continuous measure ranging from 0 to 100.
- Standardized to have mean 50 and standard deviation 10 in 2004 population of SOEP (Andersen et al., JCE, 2007).

Life Satisfaction (LS):

- "How satisfied are you at present with your life as a whole?"
- Answers range from 0 "completely dissatisfied" to 10 "completely satisfied".

Indicator for Depression:

- Vilagut et al. (Value Health, 2013): MCS score below 45.6 has high predictive power for a thirty day depression.
- $I(MCS < 45.6)$ indicates a thirty day depression.

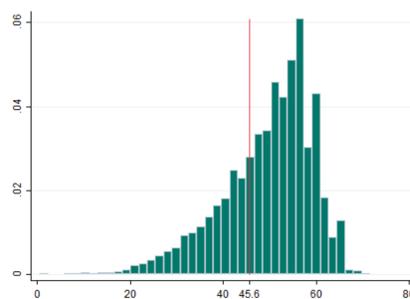


Figure 1: Distribution of offspring's MCS score

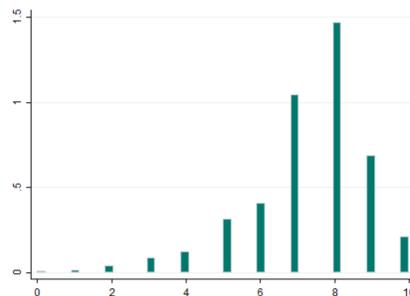


Figure 2: Distribution of offspring's LS

IDENTIFICATION AND SAMPLE SELECTION

In Germany, the number of compulsory years of schooling was increased from 8 to 9 years between 1946 and 1969. Since educational policy is performed on the state level in Germany, the CSL reform was performed in a staggered way.

This reform was binding for the parents which went to the basic track only. Further mobility between school tracks is very low with downward mobility being more frequent (Juerges and Schneider, 2007). In addition, reform exposure did not affect school track choice.

Thus, we know that our complier parents were completely allocated in the basic track (Pischke and von Wachter, REStat, 2008). Thus, to estimate the causal effect of interest, it is sufficient to run the following reduced form regression in a sample consisting of parent offspring pairs whose respective parent went to school in the basic track:

$$MH_{it}^C = \beta_1 + \beta_2 reform_i^P + \beta_3 age_{it}^2 + \beta_4 \delta_{it} + \eta_{it}, \quad (1)$$

with δ_{it} containing indicators for parental state of schooling, year of birth, state of schooling trends and wave indicators.

Sample

- Observations from 2002 until 2015.
- We keep observations of parent offspring pairs of which at least one parent was born h years before or after the first birth cohort was affected by the CSL reform in the respective state.

RESULTS

Table 1: Results of RF regressions of offspring' mental health on parental reform exposure.

	Panel A: Mother			Panel B: Father		
	$h = 5$	$h = 7$	$h = 10$	$h = 5$	$h = 7$	$h = 10$
MCS	-0.284** (0.13)	-0.195* (0.11)	-0.137 (0.09)	-0.275** (0.12)	-0.132 (0.10)	-0.157* (0.09)
Depression	0.181 (0.11)	0.114 (0.10)	0.062 (0.08)	0.289** (0.12)	0.156 (0.10)	0.160* (0.09)
N	866	1133	1530	739	1009	1377
Observations	3172	4088	5417	2524	3431	4523

LS	0.102 (0.11)	0.053 (0.10)	0.046 (0.08)	0.031 (0.12)	0.040 (0.10)	-0.007 (0.08)
N	918	1207	1662	808	1110	1541
Observations	6325	8169	10895	5145	7005	9338

Notes: SOEPv32 waves 2002 to 2015. OLS regressions. Age, age squared, parental state of schooling, parental year of birth, parental state of schooling trends and wave indicators are included. Robust Standard errors (in parentheses) clustered on the offspring's level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Summary of main results:

- Parental education has a negative effect on the offspring's MCS score. Relative effect sizes amount to approximately 5.5 percent.
- Paternal education has a positive effect on the likelihood of having a depression. The relative effect size amounts to approximately 47 percent.

Heterogeneous effects:

- Paternal education has negative effect on the MCS score and a positive effect on the likelihood of having a depression of sons and daughters.
- Maternal education has a negative effect on daughter's MCS score and a positive effect on the daughter's likelihood of having a depression.
- The effects are pronounced along the mother daughter and father son line.

To Do

- Clustering on different levels and with different approaches. For instance, we will cluster on the parental state of birth or parental year of birth. In addition, we will also employ two way clustering, Moulton-corrected standard errors and wild cluster bootstrap standard errors.
- Averaging the outcome to account for classical measurement error. High standard errors could be explained by classical measurement error in our outcomes.
- Exclusion of first state in which the CSL reform has been implemented. Organizational problems during the implementation of the CSL reform could alter our identification strategy invalid. Moreover, parents may have been affected by WW2.
- Replication of the results with the National Educational Panel Study. Additional evidence could strengthen our results.
- Use of alternative measures for years of schooling. For example, we can use the year when parents left school to construct an alternative measure for years of schooling.
- Mechanism for the counter intuitive results: Can these effects be explained by changes on the household level, changed parental behavior of labor market outcomes?