

Parental Education and Offspring's Mental Health

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In a nutshell

- We estimate the effect of parental education on the offspring's mental health (MH).
- Theory points at positive effect of parental education on offspring's MH.
- We exploit exogenous variation in education caused by a Compulsory Schooling Law (CSL) reform in Germany (2SLS).
- Results do not confirm a positive effect of parental education on the offspring's MH.
- We find evidence pointing at a negative relationship between parental education and the offspring's mental health.

Mental health problems cause large direct (and indirect) costs

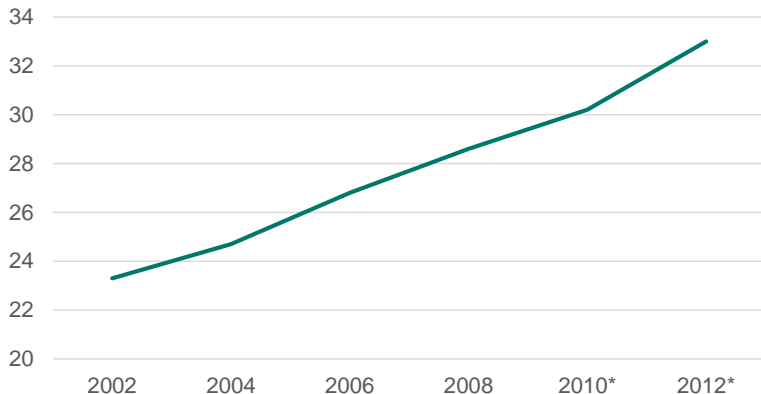


Figure 1: Direct costs of mental illnesses in billion Euro (BKK 2012)

Literature neglects the effect of parental education on offspring's mental health

The literature is centered on the causal effect of parental education on:

- Infant health (Currie and Moretti, QJE, 2003; McCrary and Royer, AER, 2011),
- physical health in developed countries (Lindeboom et al., JHealthEcon 2009; Lundborg et al., AEJ: AE, 2014),
- physical health in less developed countries (Chou et al, AEJ: AE, 2010; Rawlings, 2015).

Increased earnings capacities benefits offspring's mental health

Increased earning capacities enhances offspring's mental health through:

- Higher availability of medical care,
- better neighborhoods, peer group and home environment,
- and decreased financial worries of parents.

These effects amplify through positive assortative mating (Lefgren and McIntyre, JOLE, 2006).

But: Labor market effects may also have drawbacks!

Education induces behavioral changes which favor offspring's mental health

- Education increases efficiency of health production (Grossman, JPE, 1972).
- Higher educated parents may trade off quantity for quality (Becker and Lewis, JPE, 1973).
- Higher educated parents tend to have more stable marriages (Lefgren and McIntyre, JOLE, 2006).

The basic school track comprises 8 or 9 years

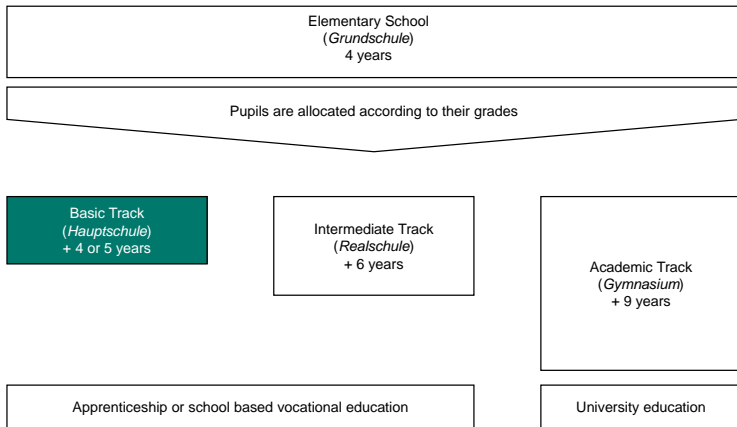


Figure 2: The educational system in Germany

The Compulsory Schooling Law Reform in Germany

Table 1: Increase in compulsory schooling from eight to nine years by federal state

	First school year with compulsory 9 years	First birth cohort with compulsory 9 years
Hamburg	1946	1931
Schleswig-Holstein	1947	1932
Bremen	1959	1944
Lower Saxony	1962	1947
Saarland	1958	1943
North Rhine-Westphalia	1967	1953
Hesse	1967	1953
Rhineland-Palatinate	1967	1953
Baden-Wuerttemberg	1967	1953
Bavaria	1969	1955
Source: Leschinsky and Roeder, 1980		

We instrument parental education with CSL reform exposure

Second stage:

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

First stage:

$$S_i^P = \gamma_1 + \gamma_2 reform_{it}^P + \gamma_3 age_{it} + \gamma_4 \delta_{it} + \epsilon_{it}, \quad (2)$$

The SOEP is perfectly suited for this analysis

The Socio-Economic Panel (SOEP) is a

- annual survey since 1984,
- and includes 11.000 households and about 30.000 persons in Germany,
- as well as information on household composition, occupational biographies, health, etc.
- Offspring surveyed first at age of 17 and followed thereafter.

The MCS score as mental health measure

The Mental Component Summary (MCS):

- Based on SF-12 questionnaire.
- 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).

SF-12 questionnaire

Life satisfaction and indicator for depression are additional measures

Life satisfaction:

- “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.

Sample selection

- Time horizon: 2002 until 2015.
- We drop observations for which we have no information on the father and mother.
- We choose $t = (b_i^P - \bar{b}_k)$ such that $t \in [7, -7]$.
- We also construct a complier sample with parental years of schooling < 10 years.

► School track choice

Sample characteristics

Table 2: Summary statistics

Variable	Mean	Std. Dev.	Min.	Max.	Observations
LS	7.321	1.625	0	10	25214
MCS	49.765	9.662	0.557	71.658	12255
Depression (MCS)	0.286	0.452	0	1	12255
Female	0.491	0.5	0	1	26415
Age	25.889	7.104	16	62	26415
Mat Years of Schooling	10.017	1.573	8	13	25862
Pat Years of Schooling	10.227	1.8	8	13	23822
Mat. Reform Exposure	0.673	0.469	0	1	25926
Pat. Reform Exposure	0.491	0.5	0	1	23789
Mat. Year of Birth	1954.772	5.974	1923	1977	25965
Pat. Year of Birth	1951.279	6.555	1921	1972	23866

Parental education is weakly associated with the offspring's mental health

Table 3: Parental education and offspring's mental health - OLS Results

	LS	Full Sample MCS	Depr.	LS	Basic Track MCS	Depr.
<i>Panel A: Mother</i>						
Years of Schooling	0.031*** (0.01)	-0.014 (0.01)	0.005 (0.01)	0.054 (0.10)	-0.193* (0.11)	0.114 (0.10)
N	3231	2972	2972	1207	1133	1133
Observations	20617	10163	10163	8169	4088	4088
<i>Panel B: Father</i>						
Years of Schooling	0.041*** (0.01)	0.000 (0.01)	-0.003 (0.01)	0.042 (0.10)	-0.133 (0.10)	0.159 (0.10)
N	3126	2802	2802	1110	1009	1009
Observations	18742	9111	9111	7005	3431	3431

Parental education has no positive effect on offspring's mental health

Table 4: Parental education and offspring's mental health - IV Results

	Full Sample			Basic Track		
	LS	MCS	Depr.	LS	MCS	Depr.
<i>Panel A: Mother</i>						
Years of Schooling	-0.030 (0.06)	-0.041 (0.06)	0.025 (0.06)	- -	- -	- -
Reform Exposure	- -	- -	- -	0.053 (0.10)	-0.195* (0.11)	0.114 (0.10)
F-Test First Stage	61.41	64.71	64.71	-	-	-
First Stage Coefficient	0.95***	0.98***	0.98***	-	-	-
N	3231	2972	2972	1207	1133	1133
Observations	20617	10163	10163	8169	4088	4088
<i>Panel B: Father</i>						
Years of Schooling	0.201 (0.13)	0.029 (0.12)	0.030 (0.11)	- -	- -	- -
Reform Exposure	- -	- -	- -	0.040 (0.10)	-0.132 (0.10)	0.156 (0.10)
F-Test First Stage	10.58	11.20	11.20	-	-	-
First Stage Coefficient	0.50***	0.52***	0.52***	-	-	-
N	3126	2802	2802	1110	1009	1009
Observations	18742	9111	9111	7005	3431	3431

Parental education has no positive effect on daughter's mental health

Table 5: Parental education and daughter's mental health - IV Results

	Full Sample			Basic Track		
	LS	MCS	Depr.	LS	MCS	Depr.
<i>Panel A: Mother</i>						
Years of Schooling	0.042 (0.07)	-0.068 (0.08)	0.058 (0.08)	- -	- -	- -
Reform Exposure	- -	- -	- -	0.010 (0.14)	-0.304* (0.16)	0.226 (0.14)
F-Test First Stage	40.32	43.27	43.27	-	-	-
First Stage Coefficient	1.07***	1.11***	1.11***	-	-	-
N	1547	1413	1413	580	548	548
Observations	10175	4994	4994	4054	2026	2026
<i>Panel B: Father</i>						
Years of Schooling	0.122 (0.09)	0.074 (0.09)	-0.022 (0.08)	- -	- -	- -
Reform Exposure	- -	- -	- -	-0.089 (0.14)	-0.123 (0.14)	0.122 (0.14)
F-Test First Stage	19.32	20.18	20.18	-	-	-
First Stage Coefficient	0.98***	1.02***	1.02***	-	-	-
N	1501	1340	1340	534	491	491
Observations	9146	4429	4429	3418	1679	1679

Parental education has no positive effect on son's mental health

Table 6: Parental education and sons's mental health - IV Results

	Full Sample			Basic Track		
	LS	MCS	Depr.	LS	MCS	Depr.
<i>Panel A: Mother</i>						
Years of Schooling	-0.136 (0.10)	0.019 (0.10)	-0.037 (0.09)	- -	- -	- -
Reform Exposure	- -	- -	- -	0.087 (0.13)	-0.043 (0.13)	-0.033 (0.12)
F-Test First Stage	23.62	24.61	24.61	-	-	-
First Stage Coefficient	0.84***	0.87***	0.87***	-	-	-
N	1684	1559	1559	627	585	585
Observations	10442	5169	5169	4115	2062	2062
<i>Panel B: Father</i>						
Years of Schooling	0.807 (1.77)	-0.557 (1.31)	0.645 (1.41)	- -	- -	- -
Reform Exposure	- -	- -	- -	0.158 (0.14)	-0.210 (0.15)	0.241 (0.15)
F-Test First Stage	0.23	0.29	0.29	-	-	-
First Stage Coefficient	0.10	0.11	0.11	-	-	-
N	1625	1462	1462	576	518	518
Observations	9596	4682	4682	3587	1752	1752

- Clustering on the birth year \times state level **does not** alter the results.
- Increasing/decreasing the width of the time window centered on the the first birth cohort affected by the CSL reform **does** change the results. [▶ Varying the time window.](#)
- Taking the mean leaves us with a significant effect of paternal education on the offspring's indicator of having a depression.

Potential mechanisms

- Reform had no wage effects (Pischke and von Wachter, REStud, 2007), but what about mating patterns?
- Reform had negative fertility effects....
- ...mediated by increased non-monetary opportunity costs for women (Cygan-Rehm and Maeder, Labour Econ., 2013).
- There exists no causal effect of education on mental health (Schnitzlein and Dahmann, 2017).
- Education is transmitted across generations (Piopiunik, SJoE, 2014).

Varying the window around focal cohort

Table 7: Parental education and offspring's mental health - OLS Results

	LS	10 years MCS	Depr.	LS	5 years MCS	Depr
<i>Panel A: Mother</i>						
Years of Schooling	0.046 (0.08)	-0.137 (0.09)	0.062 (0.08)	0.102 (0.11)	-0.284** (0.13)	0.181 (0.11)
N	1662	1530	1530	918	866	866
Observations	10895	5417	5417	6325	3172	3172
<i>Panel B: Father</i>						
Years of Schooling	-0.007 (0.08)	-0.157* (0.09)	0.160* (0.09)	0.031 (0.12)	-0.275** (0.12)	0.289** (0.12)
N	1541	1377	1377	808	739	739
Observations	9338	4523	4523	5145	2524	2524

105. How would you describe your current health?

- Very good ☐
- Good..... ☐
- Satisfactory..... ☐
- Poor..... ☐
- Bad ☐

106. When you have to climb several flights of stairs on foot, does your health limit you greatly, somewhat, or not at all?

- Greatly..... ☐
- Somewhat ☐
- Not at all ☐

107. And what about other demanding everyday activities, such as when you have to lift something heavy or do something requiring physical mobility: Does your health limit you greatly, somewhat, or not at all?

- Greatly..... ☐
- Somewhat ☐
- Not at all ☐

108. During the last four weeks, how often did you:

Always Often Some- Almost Never
times never




- | | Always | Often | Some-
times | Almost
never | Never |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| • feel rushed or pressed for time? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • feel down and gloomy? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • feel calm and relaxed? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • feel energetic? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • have severe physical pain? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • feel that due to <u>physical health problems</u> | | | | | |
| – you achieved less than you wanted to at work or in everyday activities? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| – you were limited in some way at work or in everyday activities? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • feel that due to <u>mental health or emotional problems</u> | | | | | |
| – you achieved less than you wanted to at work or in everyday activities? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| – you carried out your work or everyday tasks less thoroughly than usual? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • feel that due to physical or mental health problems you were limited socially, that is, in contact with friends, acquaintances, or relatives? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Reform exposure did not alter track choice

Table 8: Parents' reform exposure and school track choice

	Mothers	Fathers
Reform Exposure	0.001 (0.00)	-0.003 (0.00)
N	3246	3139
Observations	20676	18804

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Thank you for your attention!



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