

Does intelligence shield children from the effects of parental unemployment?

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Research question

Parental job loss reduces children's

- education
- labour-market outcomes
- well-being, beliefs

New evidence

How does intelligence change these effects?

Analysis

Difference-in-differences framework

Understanding Society (UK) data

- wave 3 (2011-13)
- parent unemp at age 14 (UP)
- intelligence score (IQ)

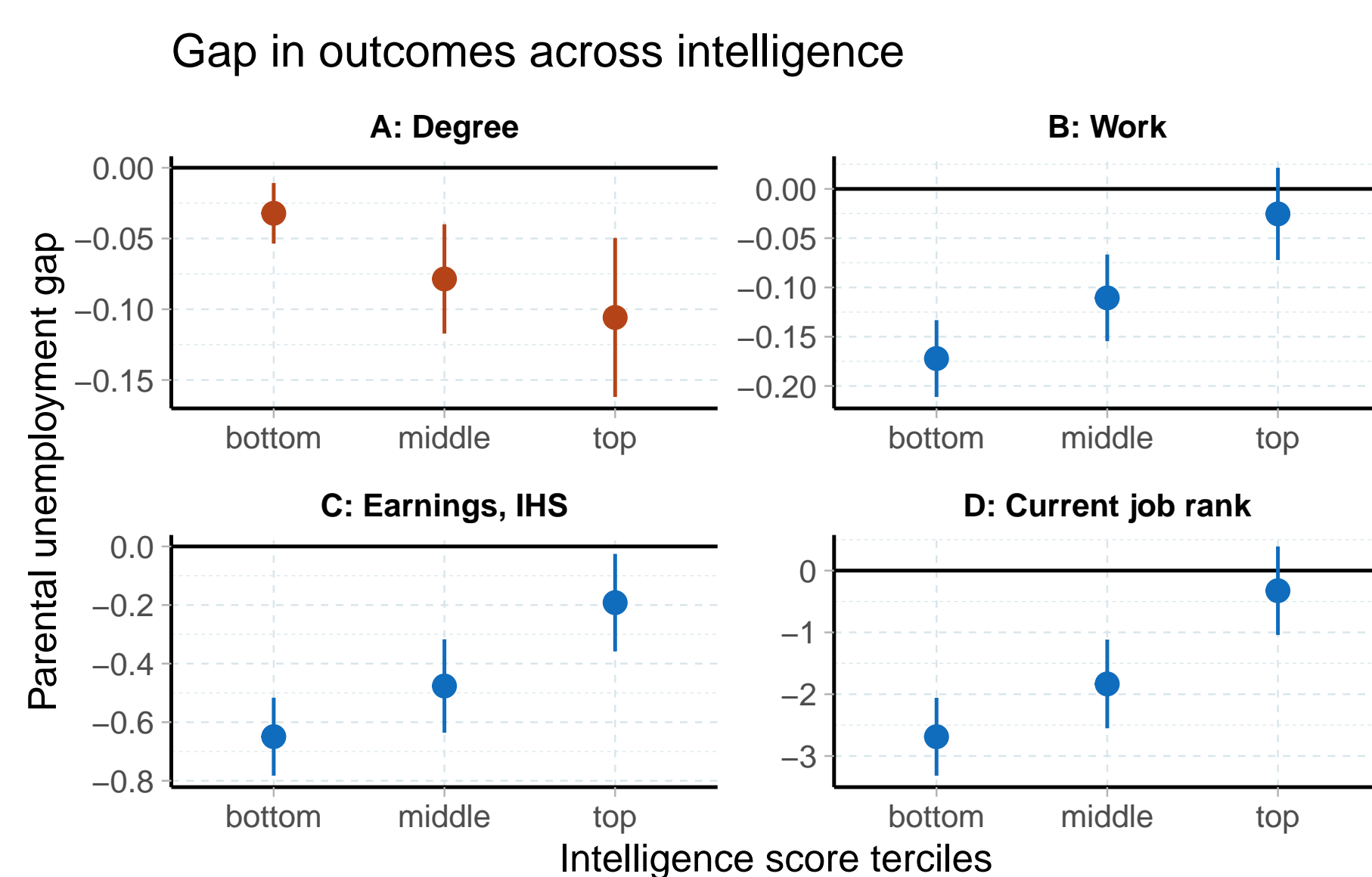
Results

- Parent unemp is more harmful for education at high IQ
- Children start at lower-paying jobs
- Switch to stable and better-paying jobs later
- Wages continue to suffer from foregone education
- Channels: income or psychological distress

Y - outcome, UP - parental unemployment indicator; IQ - intelligence score

Descriptive evidence

Gap = $\mathbb{E}(Y|UP = 1) - \mathbb{E}(Y|UP = 0)$



Results

- Parent unemp is more harmful for education of children with higher IQ

Dynamic complementarity of human capital investments (Cunha and Heckman 2007)

	Dependent variables		
	Post-16 school	Degree	Uni degree
Parent unemp	-0.085*** (0.013)	-0.039*** (0.012)	-0.028** (0.012)
IQ	0.137*** (0.004)	0.131*** (0.003)	0.095*** (0.006)
Parent unemp \times IQ	-0.041††† (0.011)	-0.036††† (0.010)	-0.033††† (0.010)
Obs.	20,202	20,202	20,202

† $q < 0.1$; †† $q < 0.05$; ††† $q < 0.01$ based on FDR q-values

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$ based on conventional p-values

Difference-in-differences

$Y = \beta_0 + \beta_1 UP + \beta_2 IQ + \beta_3 UP \times IQ + \beta_4 X + \varepsilon$

Parallel trends assumption

Selection bias constant across intelligence

Y^0 potential outcome when parents stay employed

Y^1 potential outcome when parents are unemployed

$$\frac{Cov(Y^0, IQ|UP = 1)}{Var(IQ|UP = 1)} = \frac{Cov(Y^0, IQ|UP = 0)}{Var(IQ|UP = 0)}$$

Causal interpretation

Change in causal effect of UP as IQ increases

$$\beta_3 = \frac{\partial \mathbb{E}(Y^1 - Y^0|IQ, UP = 1)}{\partial IQ}$$

Validity

- Support parallel trends using observed Y^0
- Causal interpretation if IQ is outcome

$$\beta_3 = \frac{\partial \mathbb{E}(Y^1 - Y^0|IQ^1, UP = 1)}{\partial IQ^1}$$

- Attenuation bias due to measurement error in IQ
- Robustness checks:
 - cohorts born before 1981 (less recall bias)
 - only white British
 - separate by UK country
 - replication in the BCS70

- Later, higher IQ mitigates the effect on labour supply and earnings
- Wages continue to suffer from foregone earnings

Employer-learning theory (Farber and Gibbons 1996)
Productivity-enhancing role of education (Aryal, Bhuller, and Lange 2022)

	Dependent variables					
	Work	% Δ earnings	% Δ hourly wage	Hours	First job rank	Current job rank
Parent unemp	-0.063*** (0.012)	-24.978*** (3.890)	-12.333*** (1.010)	-2.787*** (0.489)	-0.041*** (0.012)	-1.049*** (0.204)
IQ	0.053*** (0.004)	30.032*** (1.302)	18.392*** (0.357)	1.896*** (0.143)	0.030*** (0.003)	0.888*** (0.060)
Parent unemp \times IQ	0.047††† (0.012)	13.258††† (4.085)	-5.371††† (1.061)	1.560††† (0.439)	0.004 (0.011)	0.881††† (0.196)
Obs.	20,202	20,202	15,589	20,202	16,374	20,201

† $q < 0.1$; †† $q < 0.05$; ††† $q < 0.01$ based on FDR q-values

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$ based on conventional p-values

Mechanisms

- No difference between boys and girls
- Most of the effects observed through father's unemployment

Conclusions

- Higher IQ mitigates the effects of parental unemployment on labour supply and earnings
- Higher IQ exacerbates the losses in education and wages due to parental unemployment
- The initial loss in education and sustained penalty on wages suggests room for policy

References

- Aryal, Gaurab, Manudeep Bhuller, and Fabian Lange. 2022. "Signaling and Employer Learning with Instruments." *American Economic Review* 112 (5): 1669–1702. <https://doi.org/10.1257/aer.20200146>.
- Cunha, Flavio, and James Heckman. 2007. "The Technology of Skill Formation." *American Economic Review* 97 (2): 31–47.
- Farber, Henry S., and Robert Gibbons. 1996. "Learning and Wage Dynamics." *The Quarterly Journal of Economics* 111 (4): 1007–47. <https://doi.org/10.2307/2946706>.