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Centre for Causal
Analyses in Translational
Epidemiology

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The emergence of socioeconomic inequalities across childhood and adolescence

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Socioeconomic inequalities in childhood and adolescence

- Lower income:
 - worse child health
 - more social/behavioural difficulties
- Inequality changes across childhood?

Our study

- ALSPAC: wide range of outcomes, multiple measures on a single cohort
- ? Do inequalities and changes in them differ according to outcome?
- Health, social and behavioural

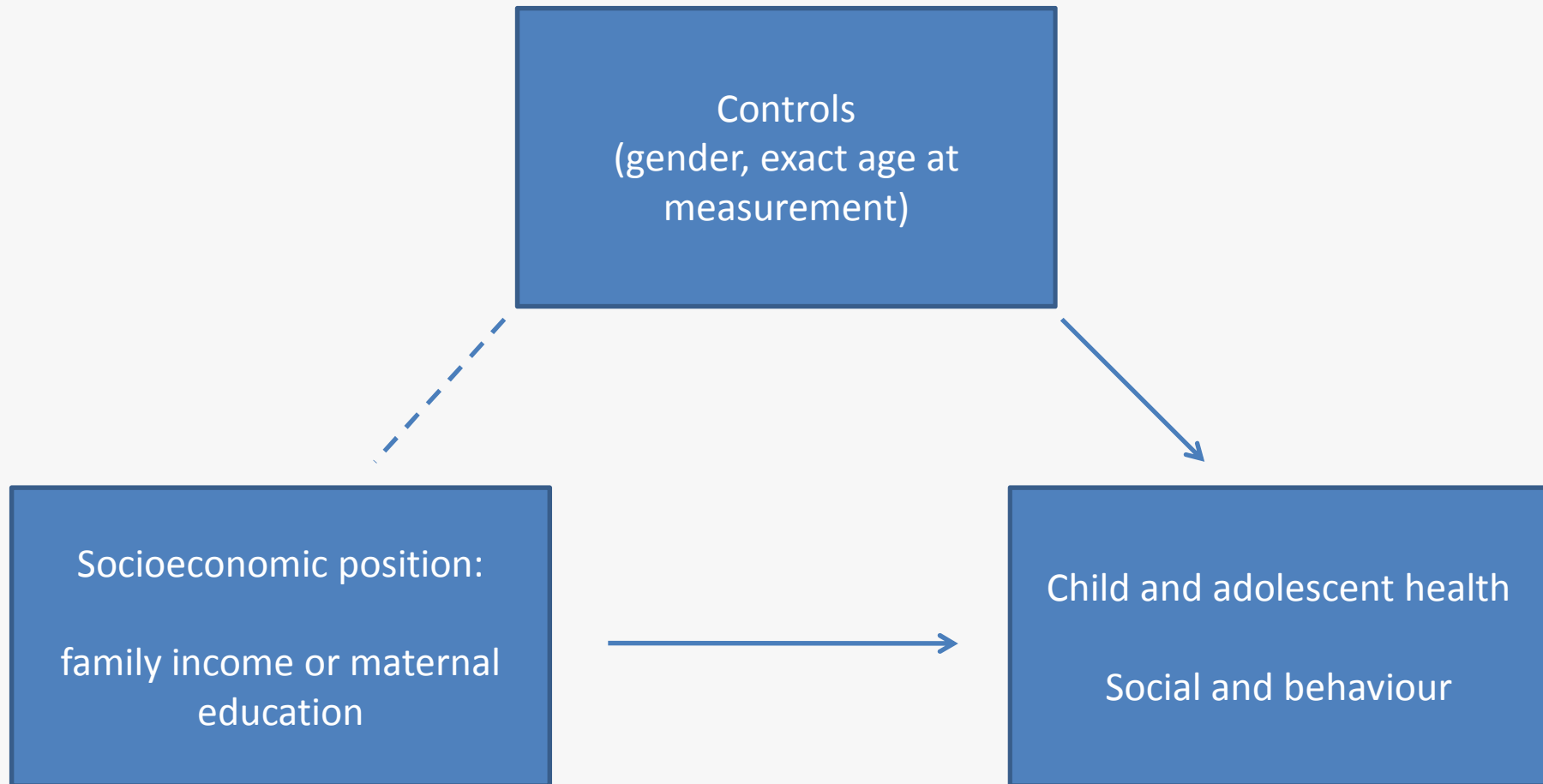
Study population

Avon Longitudinal Study of Parents and Children (ALSPAC)



- Former county of Avon (Bristol SW England)
- 14,541 pregnant women recruited 1991/2
- Questionnaires, clinics, links to routine data

Measures



	Birth/ infancy	7 years	9 years	11 years	15 years	Total N
Parent-assessed global health	X	X	X	X		9 361
Height	X	X	X	X	X	9 130
Fat mass			X	X	X	6 784
Cardio-vascular risk factors Cholesterol HDLc Triglycerides CRP			X		X	4 978
Blood pressure		X	X	X	X	7 446
Bone Mineral Density			X	X	X	6 784
SDQ		X	X	X		7 906

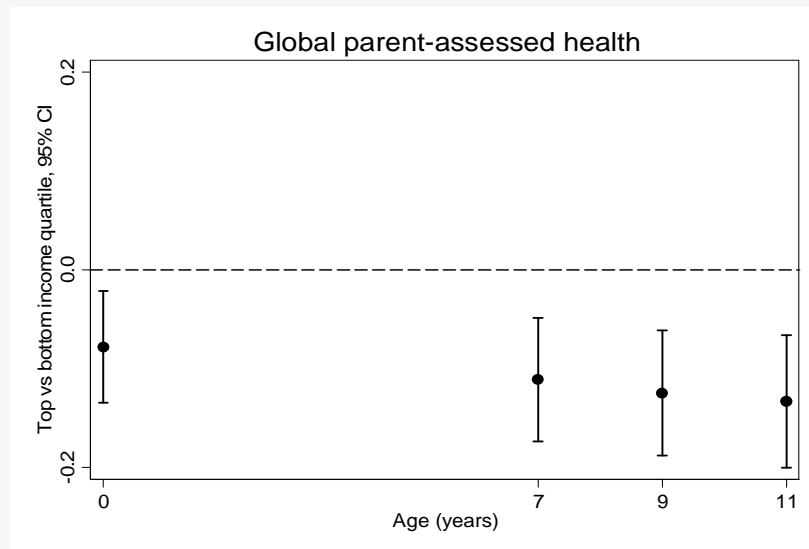
Statistical analysis

- Natural log: fat mass, triglycerides, CRP
- SDQ and global health: top-coded
- All outcomes standardised

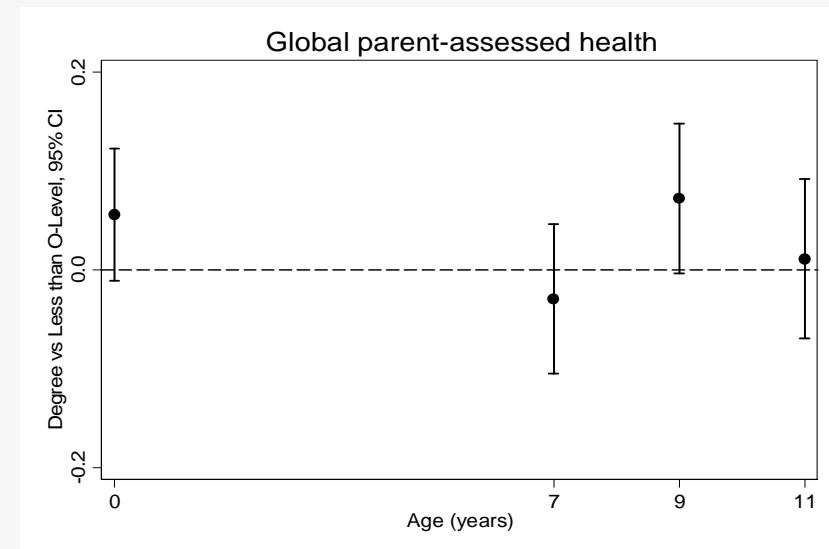
Statistical analysis

- Linear regression
 - income/maternal education
 - time
 - income*time
 - individual-level random effects; robust SE
 - + controls (gender, exact age)

Results: global health measure

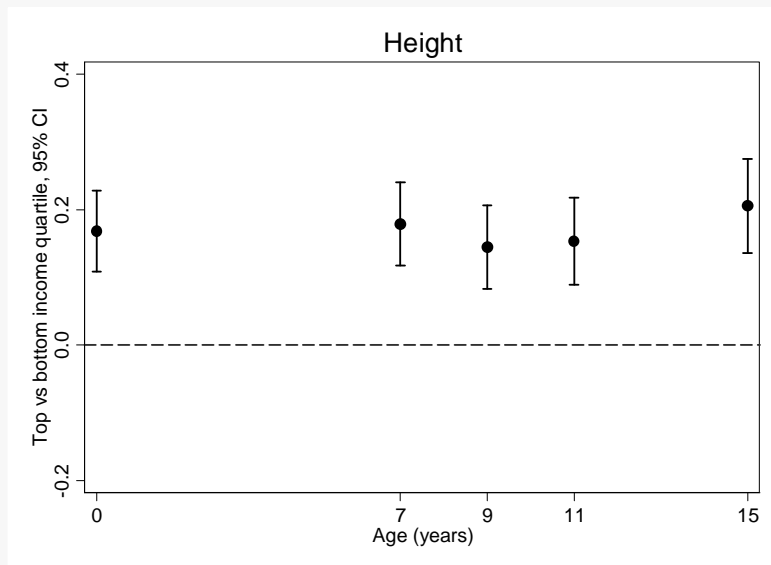


P for change over time: 0.13

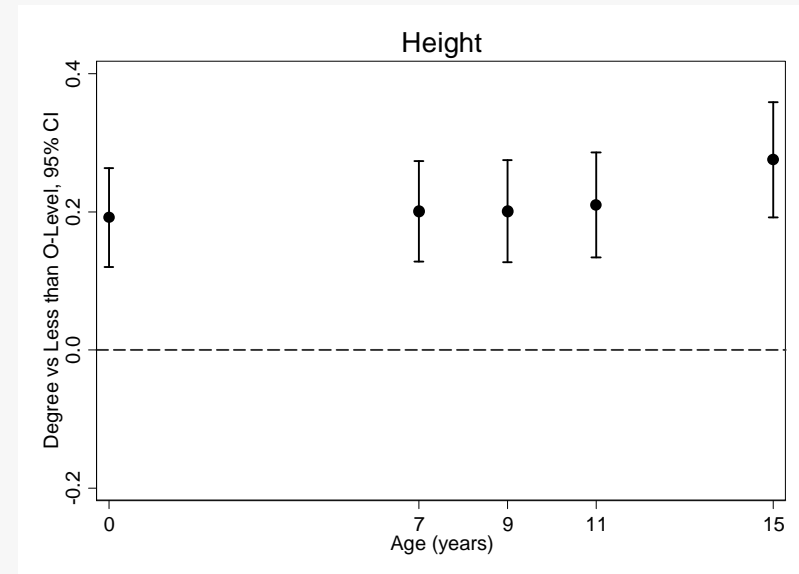


P for change over time: 0.13

Results: height



P for change over time: 0.78

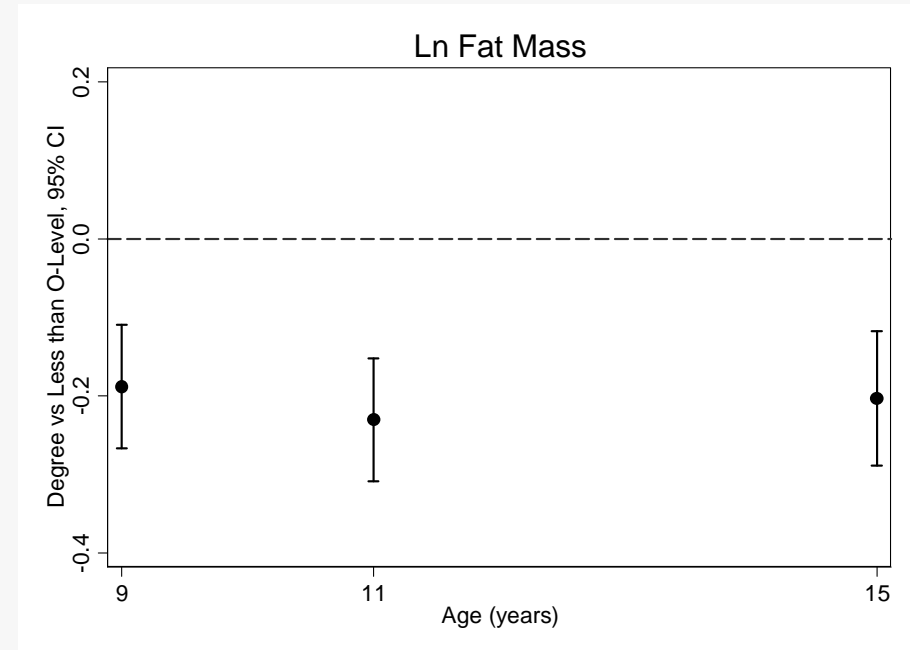


P for change over time: 0.04

Results: fat mass

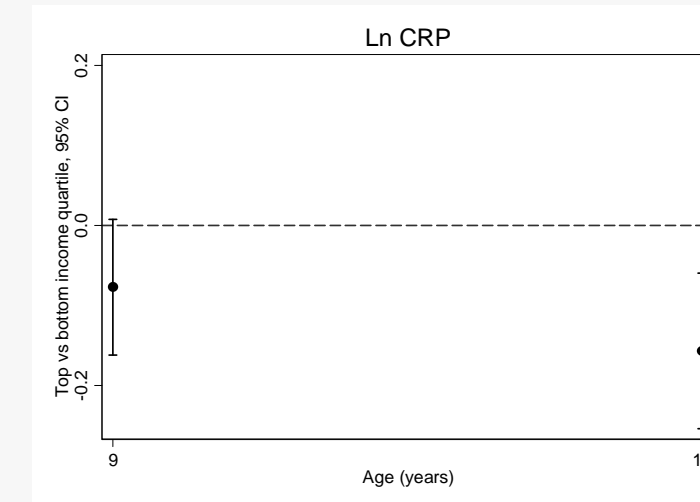
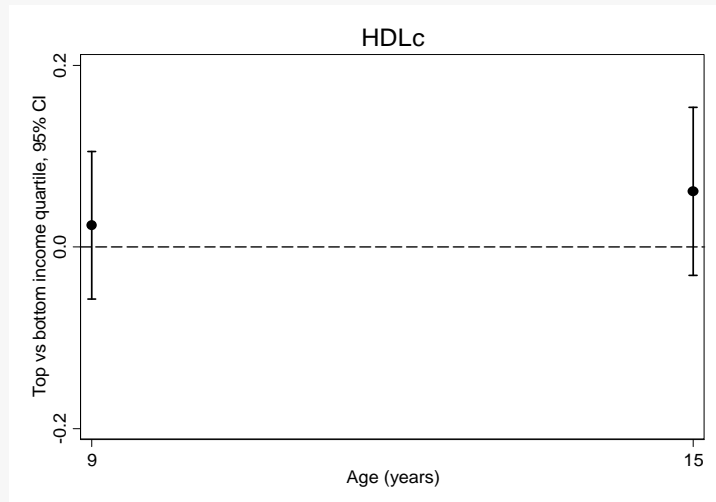
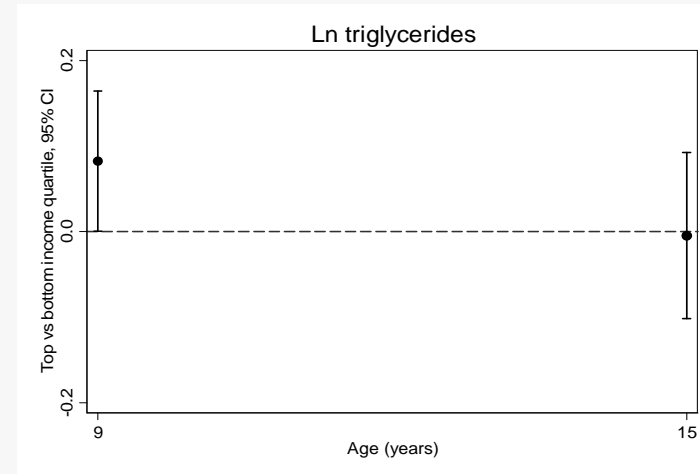


P for change over time: 0.58



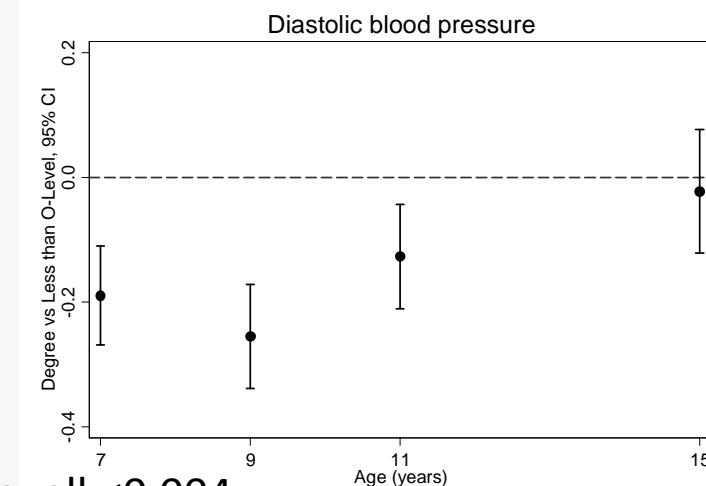
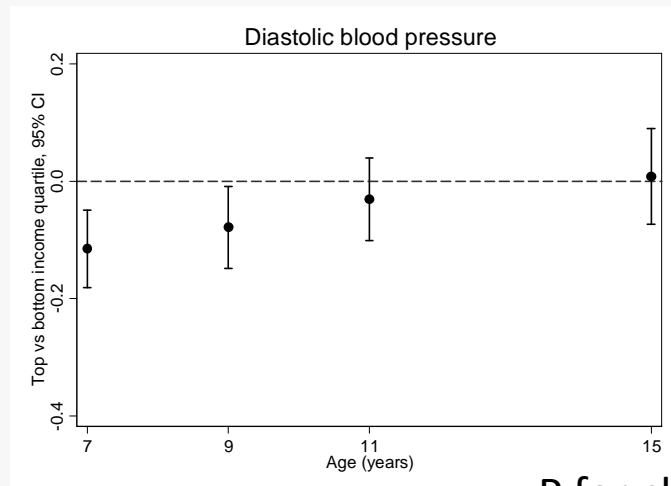
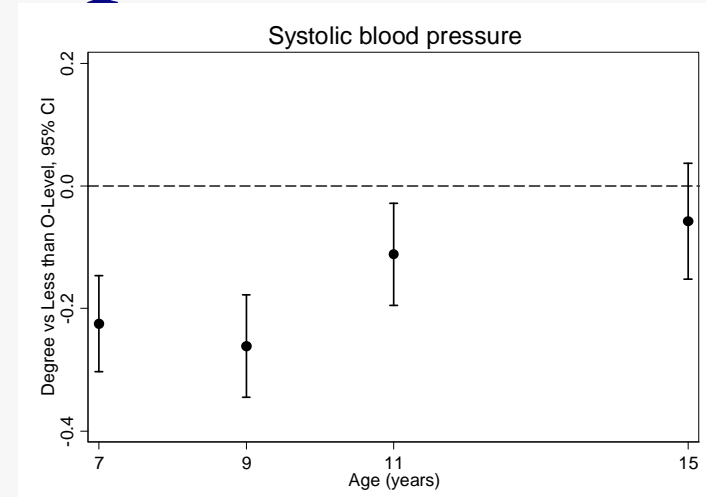
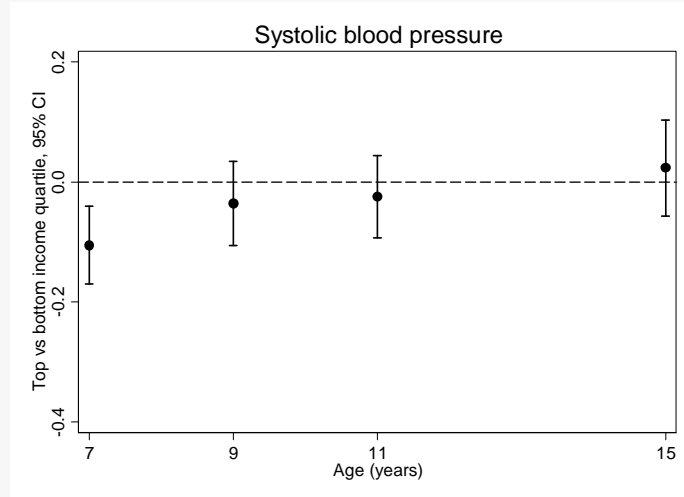
P for change over time: 0.29

Results: CVD risk factors



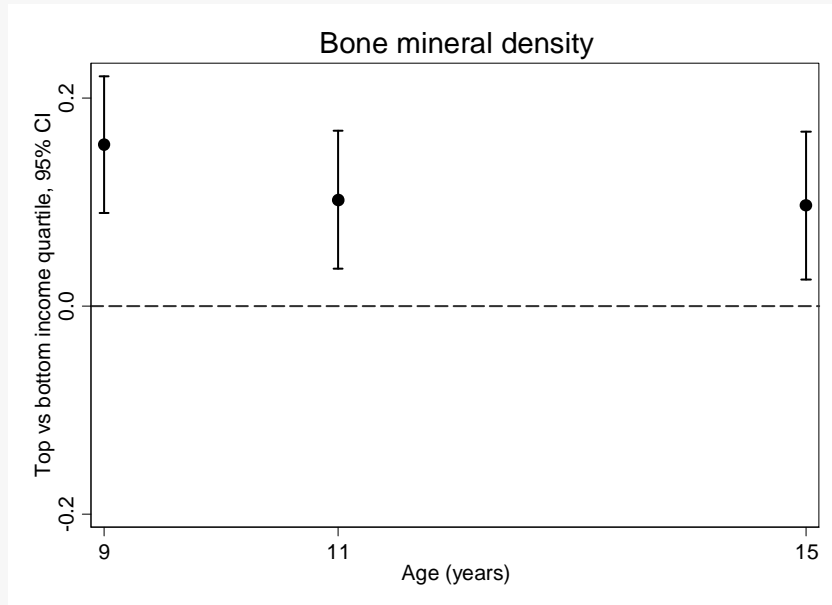
P for change over time: all >0.15

Results: Blood pressure

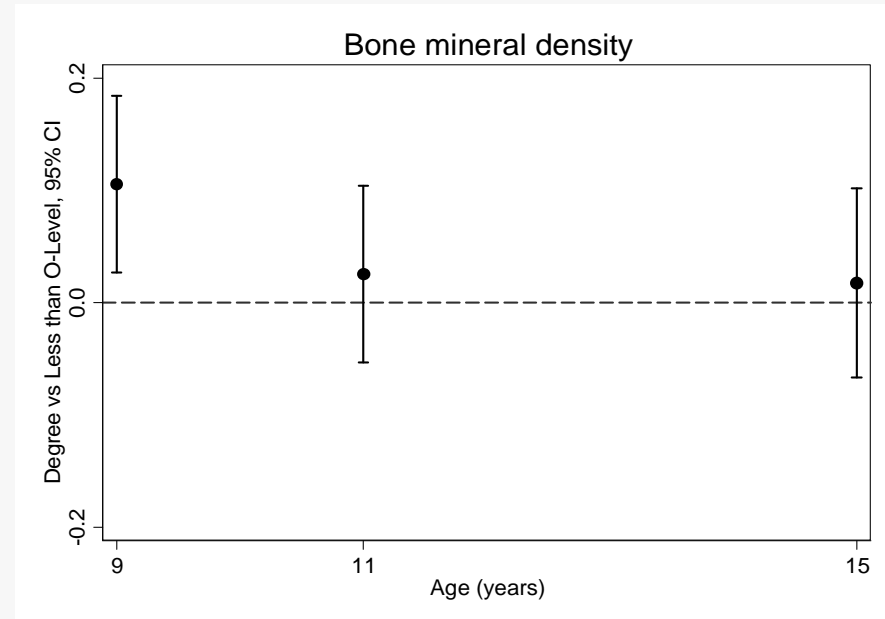


P for change over time: all <0.004

Results: Bone mineral density



P for change over time: 0.02



P for change over time: 0.04

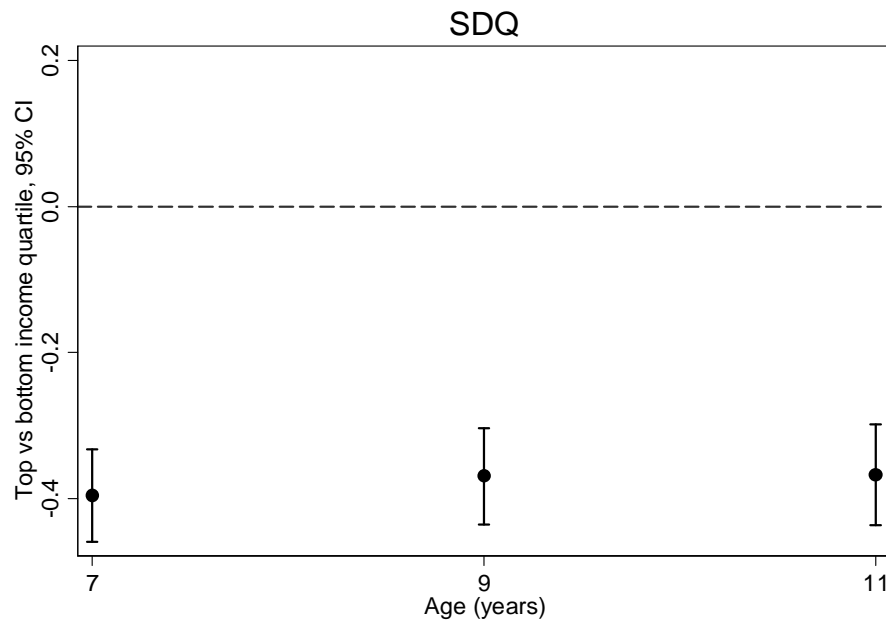
Summary: physical health

- **Lower SEP associated with:**
- Worse overall health (income only)
- Shorter height
- Greater adiposity (education > income)
- Higher BP (education > income)
- Lower BMD (income > education)

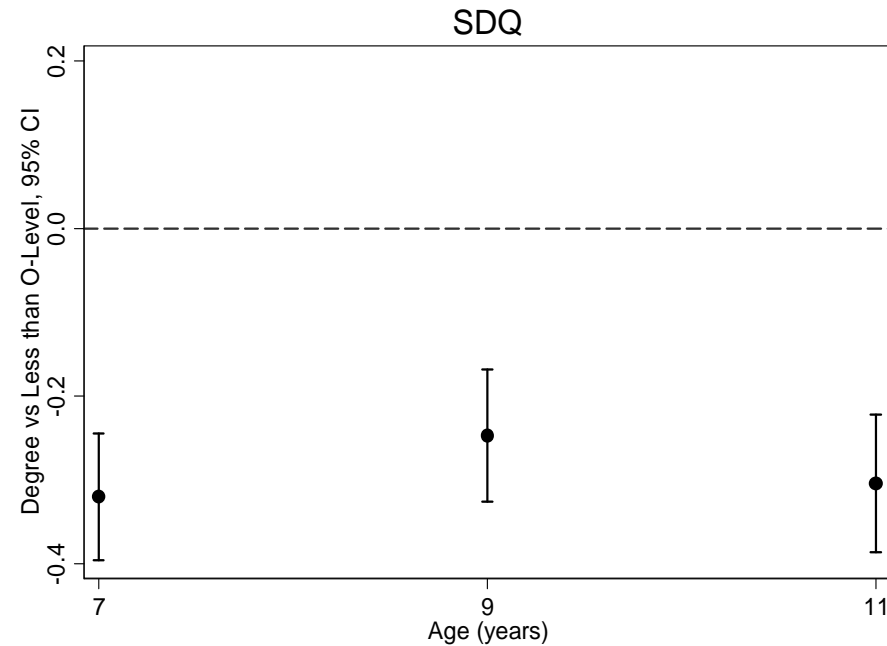
Summary: physical health

- **Lower SEP associated with:**
- Worse overall health (income only) ↑
- Shorter height ↑
- Greater adiposity (education > income) ↔
- Higher BP (education > income) ↓
- Lower BMD (income > education) ↓

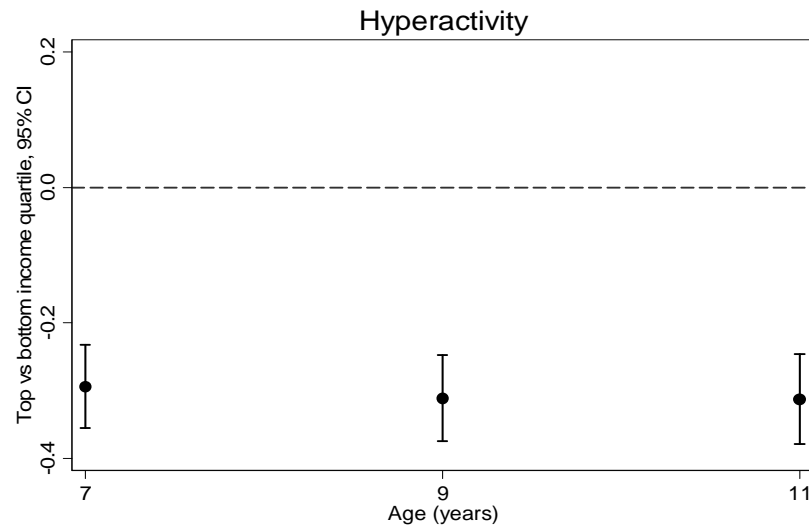
Results: Total difficulties score



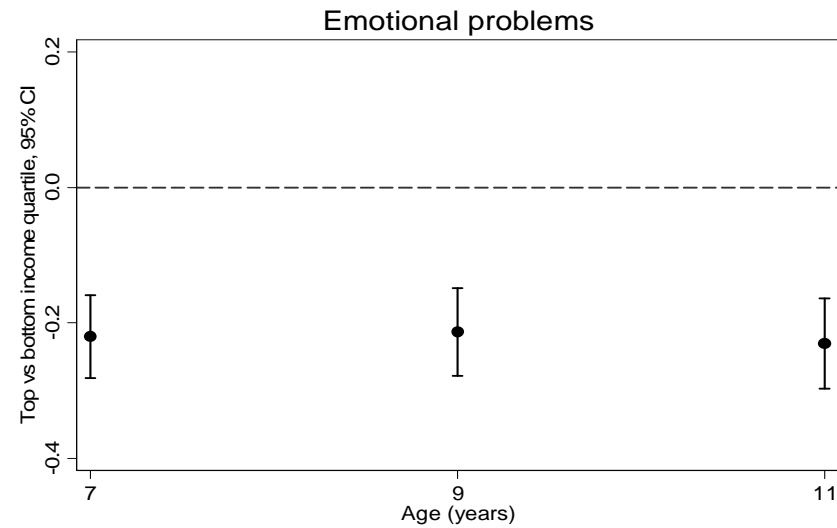
P for change over time: 0.19



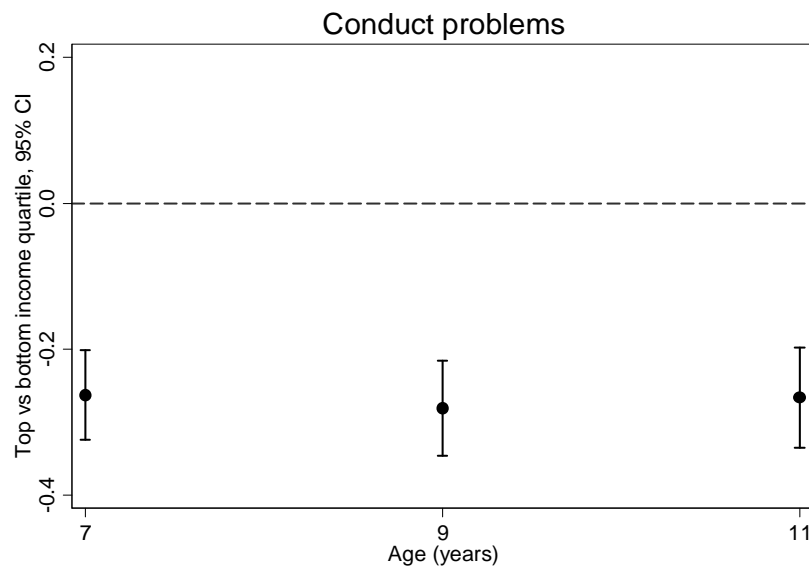
P for change over time: 0.91



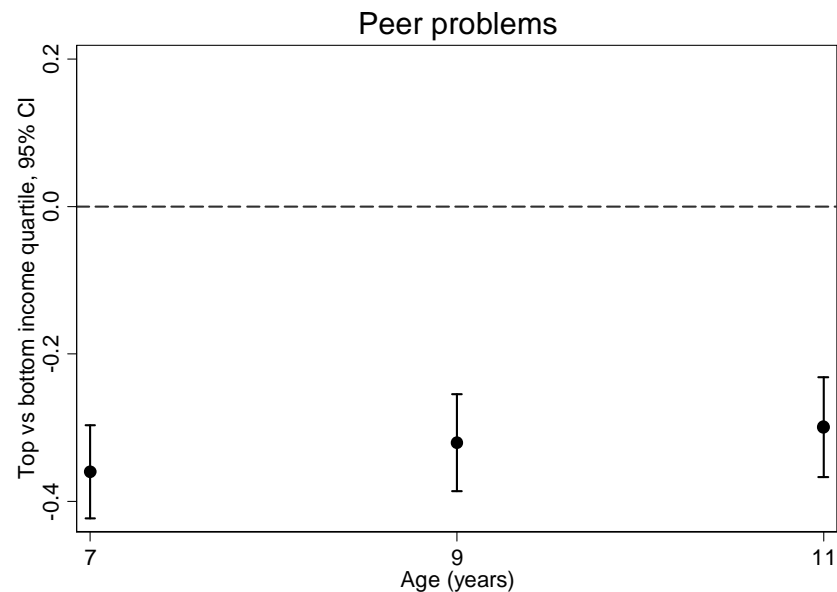
P for change over time: 0.79



P for change over time: 0.99



P for change over time: 0.97



P for change over time: 0.03

Summary: Social/behavioural

- **Lower SEP associated with:**
- More social/behavioural difficulties ↔
- Inequalities in social/behavioural difficulties much greater than for physical health

Inequalities in overall child health

- Parent-assessed overall child health
- Various studies from US show widening with age
- Previous UK study showed weak income inequality, stable over time
- ALSPAC: some inequality, with some widening

- But what is it capturing?

What predicts global parent-assessed health?

Health measure	Regression coefficient (SE)	P value	R ²
<i>Physical health measures</i>			
Height	-0.011 (0.011)	0.32	
Ln DXA-assessed fat mass	0.013 (0.012)	0.28	
Cholesterol	-0.022 (0.010)	0.04	
Ln Triglycerides	0.004 (0.011)	0.73	
HDLc	0.012 (0.011)	0.30	
Ln CRP	0.019 (0.010)	0.07	
SBP	-0.009 (0.012)	0.46	
DBP	-0.001 (0.012)	0.95	
BMD	-0.014 (0.010)	0.16	0.005

Health measure	Regression coefficient (SE)	P value	R ²
<i>Social/behavioural measures</i>			
Hyperactivity	0.005 (0.004)	0.22	
Emotional problems	0.036 (0.005)	<0.001	
Conduct difficulties	0.026 (0.006)	<0.001	
Peer difficulties	0.013 (0.006)	0.02	0.030

Conclusions

- Global parent-assessed health captures SDQ more than height, cardiovascular and bone health
- Inequalities in SDQ wider than for physical health measures
- Little evidence of most inequalities widening over childhood/adolescence
- Some differences between income and maternal education