

# The long-term health implications of poor childhood health: Evidence of regional variation from SHARE

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# Introduction

- Most studies of SE inequalities in adult health have focused on the role of adult characteristics.
- Conditions early in life have long-term effects on health at older ages. Early life conditions have been widely describe as good predictors of adult health.
- Poor childhood health is associated with poor health in adulthood. Likely that health in childhood would differ across countries due to historical contextual conditions and specific environment exposures.
- Studies on multiple determinants of health across the life course do not include cross-national/regional comparisons.

# Introduction

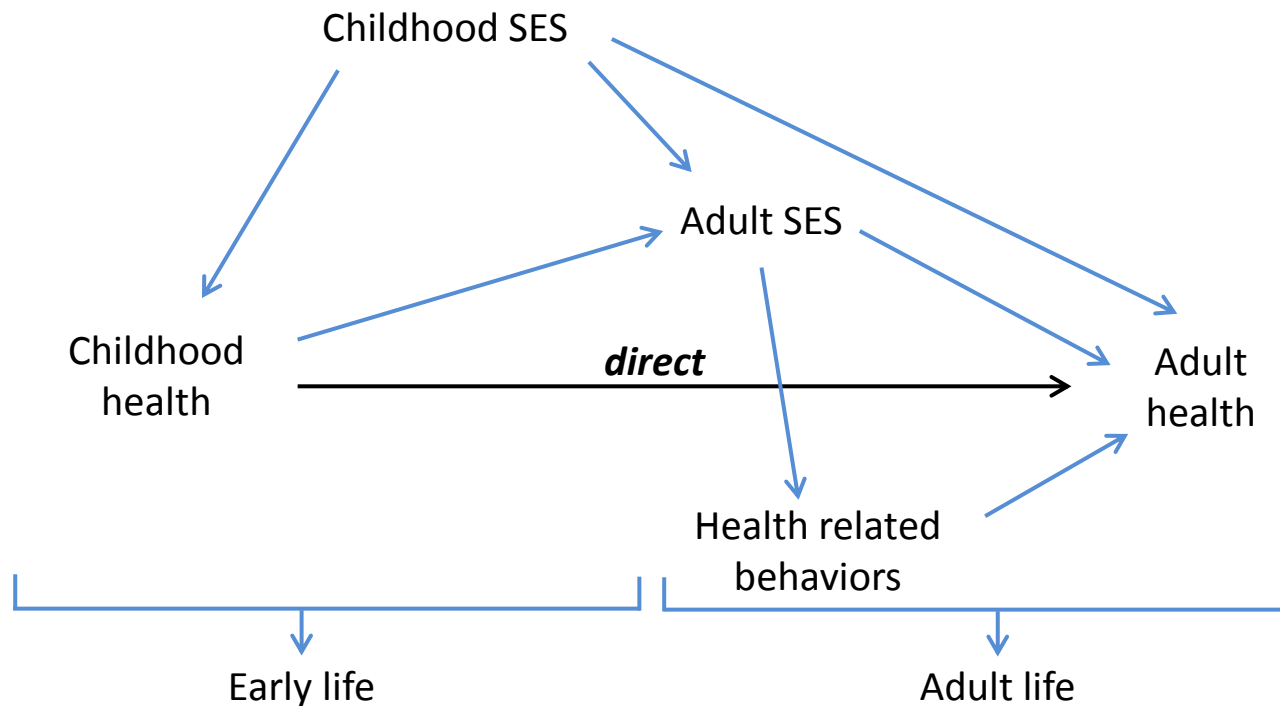


Figure: Potential mechanisms linking childhood and adult health.

- Identify the responsible underlying mechanism may help developing interventions leading to improve later-life health.

# Objectives

- i) evaluate the long-term associations of childhood health with different adult health outcomes and trajectories;
  - ii) detect whether the consequences of growing under poor health differs among different European regions;
  - iii) assess the mediating role of both the exposure to different SE situations over the life course and adult health-related risk behaviors on the childhood-adult health association.
- We extend the actual evidence by exploring how childhood health is associated with later life health using a longitudinal approach and by including cross-national/regional comparisons within Europe.
  - Relevance: long-term health associations and how growing up under poor health might affect adult health differently across Europe.

# Methods: Design and participants

- Design: 6.6 year longitudinal study: W1 (2004/05), SHARELIFE (2008/09) and W4 (2010/11).
- 7,118 participants aged +50 (mean age: 63.4 years) with complete data from ten European countries.
- Country groups: *Northern* (SE, DK), *Western* (AU, GE, NE, SW, FR, BE) and *Southern* (IT, ES) (Avendano et al. 2009).

# Methods: Key variables

- Dependent variables**

- Self-reported health (SRHS) (1=Exc. ; 5=Poor)
- Number of chronic conditions (0-10)
- Handgrip strength (kg)

Wave 4

- $\Delta = \text{Outcomes}_{W4} - \text{Outcomes}_{W1}$

- Key independent variable: Self-reports of childhood health status ( $H_{ch}$ )**

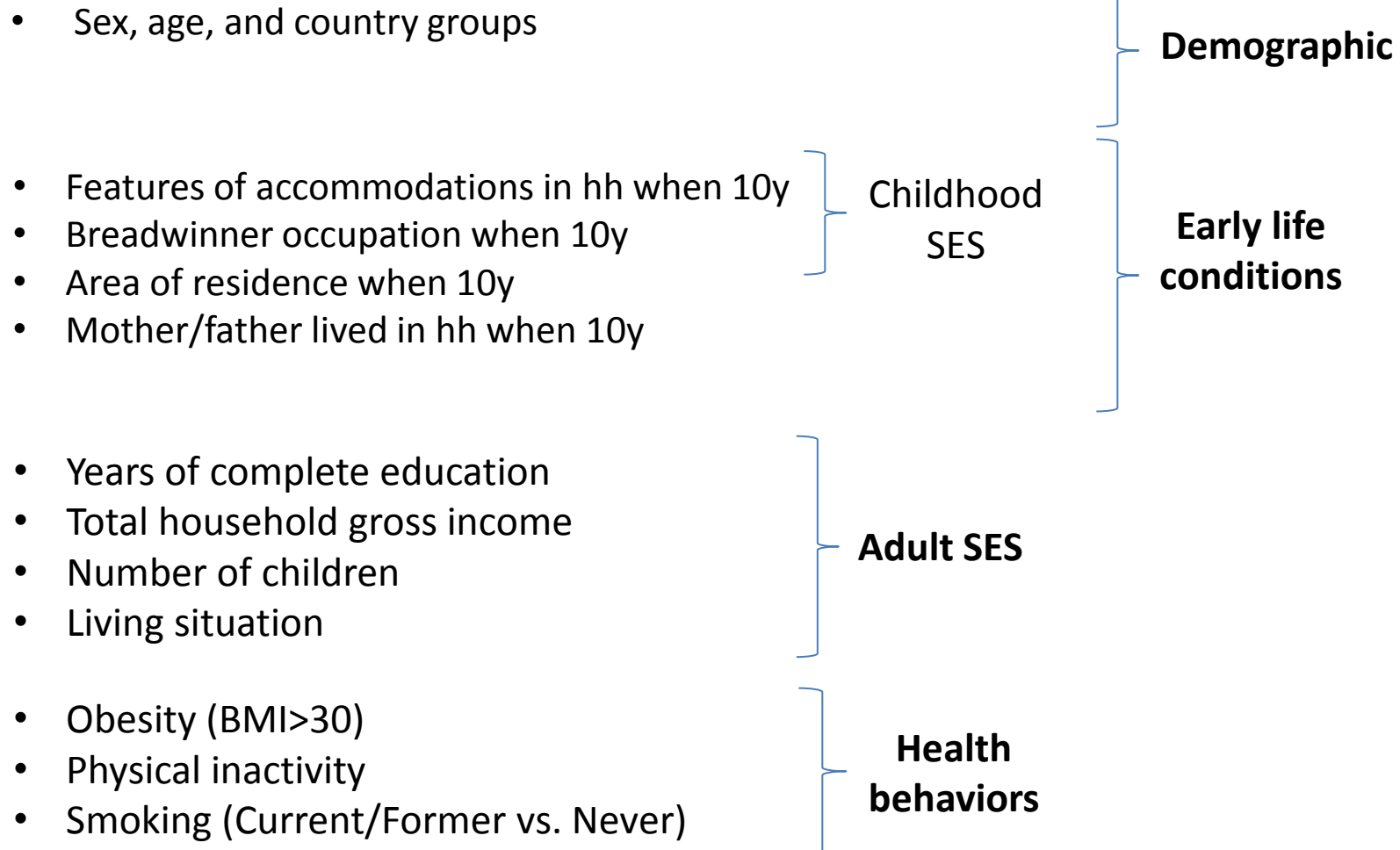
- Excellent
- Very good
- Good
- Fair
- Poor

Good

Poor

SHARELIFE

# Variables: Independent variables



# Methods: Models

- Linear and Generalized Linear Regression (negative binomial distribution)

Model 1 DEM	Model 2 ELC	Model 3 ASES	Model 4 HB
Sex	Childhood SES	Years of education	Obesity
Age at W1	Area of residence 10y	Total hh gross income	Physical inactivity
Country groups	Mother lived when 10y	Number of children	Smoke
	Father lived when 10y	Living situation	

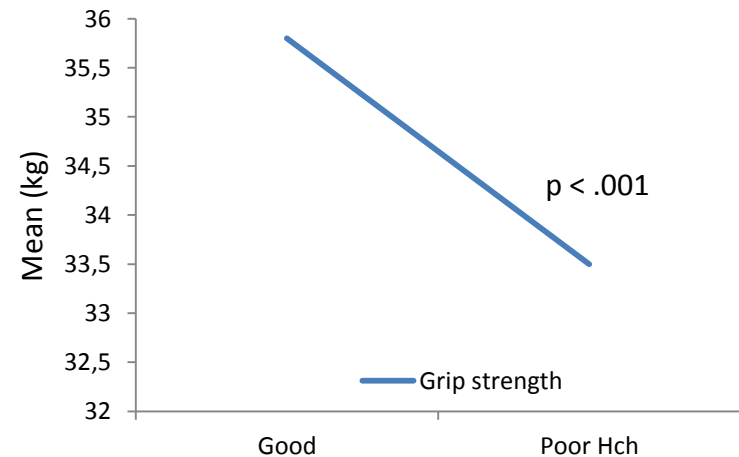
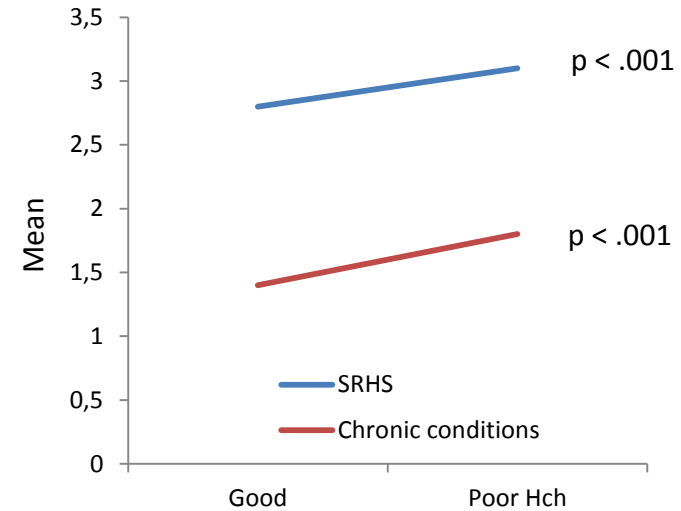
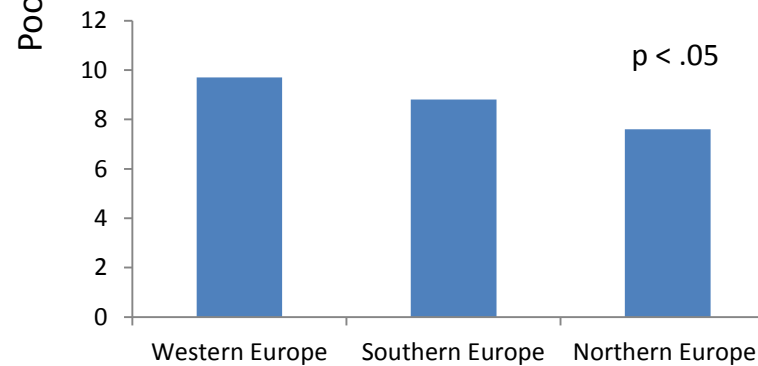
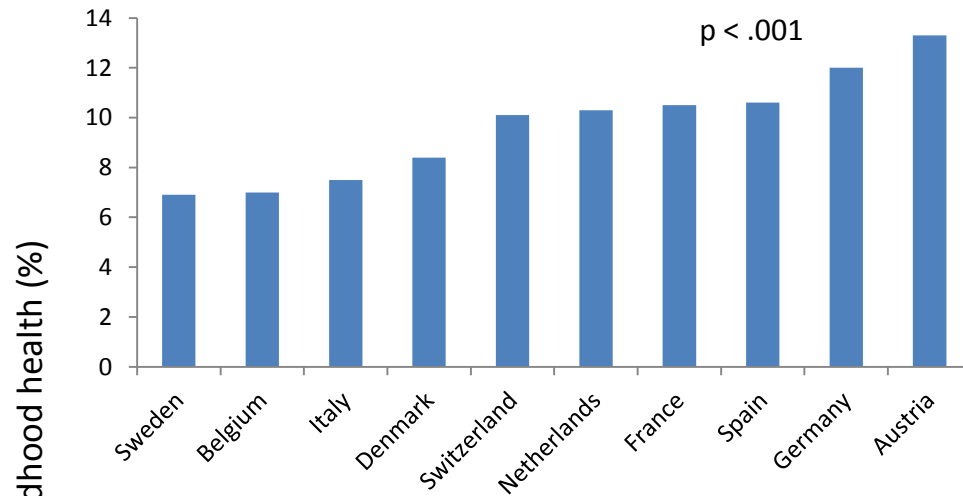
$$g(Y) = \alpha_1 H_{ch} + \vec{\alpha}_2 DEM + \vec{\alpha}_3 ELC + \vec{\alpha}_4 ASES + \vec{\alpha}_5 HB + \epsilon$$

where  $Y$  can be any of the outcomes or their trajectories,  $H_{ch}$  stands for childhood health status and  $DEM$ ,  $ELC$ ,  $ASES$  and  $HB$  are the vectors for demographic characteristics, early life conditions, adults SES and health behaviors, respectively. The coefficients  $\vec{\alpha}_i$  for  $i=2, \dots, 5$  are vectors of coefficients for the corresponding vectors of independent variables, while  $\alpha_1$  is the coefficient for the health status in childhood.

- All models account for the households clustering in the standard error estimation.



# Results: Descriptive



# Results: Self-reported health

Estimates for SRHS  
(1 Exc.; 5 Poor)  
(linear model)

<sup>†</sup> p < .1; \*p < .05; \*\*p < .01;  
\*\*\* p < .001

SRHS (1 Excellent; 5 Poor)	Model 1	Model 2	Model 3	Model 4	
<i>Childhood health</i>					
Health status when 10y (ref. = Good) Poor	0.518***	0.518***	0.505***	0.474***	
Sex (ref. = Men) Women	0.068**	0.066**	0.016	0.027	
Health status when 10y * Sex (ref. = Good/Men)					
Poor * Women	0.176*	0.175*	0.162*	0.164*	
Age at first interview	0.024***	0.023***	0.016***	0.017***	DEM
Countries (ref. = Northern)					
Western	0.378***	0.468***	0.444***	0.431***	
Southern	0.725***	0.720***	0.728***	0.644***	
Childhood SES (ref.= Other) Low		0.175*	0.128 <sup>†</sup>	0.121 <sup>†</sup>	ELC
Living situation (ref. = Living with spouse/partner)					
Living as single			0.057*	0.044	
Education (ref. = 5 <sup>th</sup> quintile)					
4 <sup>th</sup> quintile			-0.011	-0.011	
3 <sup>rd</sup> quintile			0.091*	0.063	
2 <sup>nd</sup> quintile			0.184***	0.156**	
1 <sup>st</sup> quintile			0.240***	0.206***	ASES
Income (ref. = 5 <sup>th</sup> quintile)					
4 <sup>th</sup> quintile			0.094**	0.093**	
3 <sup>rd</sup> quintile			0.153***	0.149***	
2 <sup>nd</sup> quintile			0.211***	0.207***	
1 <sup>st</sup> quintile			0.263***	0.250***	
Obesity (BMI>30) (ref. = Other) Yes				0.275***	HB
Physical inactivity (ref. = Other) Yes				0.447***	
Smoke (ref. Other) Yes				0.087***	

# Results: Chronic conditions

Estimates for  
chronic conditions  
(negative  
binomial)

<sup>†</sup> p < .1; \*p < .05; \*\*p < .01;  
\*\*\* p < .001

Chronic conditions (0 - 10)	Model 1	Model 2	Model 3	Model 4	
Health status when 10y (ref. = Good) Poor	0.247**	0.249**	0.248**	0.229**	DEM
Sex (ref. = Men) Women	0.100***	0.097***	0.075***	0.080***	
Health status when 10y * Sex (ref. = Good/Men) Poor * Women	0.067	0.072	0.065	0.067	
Age at first interview	0.025***	0.024***	0.021***	0.023***	
Country groups (ref. = Northern)					
Western	0.058*	0.026	0.022	0.013	ELC
Southern	0.247***	0.196*	0.188*	0.147 <sup>†</sup>	
Childhood SES (ref.= Other) Low		0.094 <sup>†</sup>	0.075	0.059	
Living situation (ref. = with spouse/partner) Living as single			0.052*	0.042 <sup>†</sup>	
Number of children			0.014*	0.011	
Education (ref. = 5 <sup>th</sup> quintile)					ASES
4 <sup>th</sup> quintile			-0.045	-0.047	
3 <sup>rd</sup> quintile			0.011	-0.017	
2 <sup>nd</sup> quintile			0.068	0.033	
1 <sup>st</sup> quintile			0.051	0.014	
Income (ref. = 5 <sup>th</sup> quintile)					HB
4 <sup>th</sup> quintile			0.085*	0.083*	
3 <sup>rd</sup> quintile			0.062 <sup>†</sup>	0.053	
2 <sup>nd</sup> quintile			0.158***	0.145***	
1 <sup>st</sup> quintile			0.127***	0.112**	
Obesity (BMI>30) (ref. = Other)Yes				0.334***	HB
Physical inactivity (ref. = Other) Yes				0.141***	
Smoke (ref. = Other) Yes				0.059**	

# Results: Grip strength

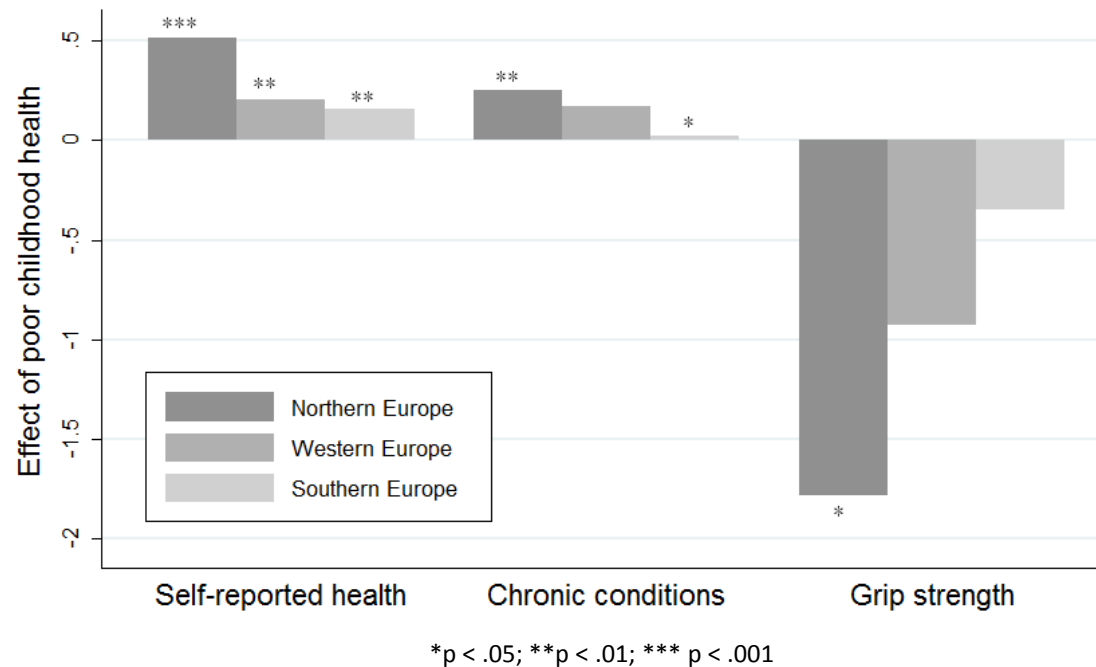
Estimates  
for grip  
strength  
(linear model)

<sup>†</sup> p < .1; \*p < .05; \*\*p < .01;  
\*\*\* p < .001

Grip strength (kg)	Model 1	Model 2	Model 3	Model 4	
Health status when 10y (ref. = Good) Poor	-1.783*	-1.783*	-1.678*	-1.542 <sup>†</sup>	
Sex (ref. = Men) Women	-16.110***	-16.108***	-15.868***	-15.811***	DEM
Health status when 10y * Sex (ref. = Good/Men) Poor * Women	-0.567	-0.546	-0.525	-0.573	
Age at first interview	-0.500***	-0.498***	-0.476***	-0.469***	
Country groups (ref. = Northern) Western	-1.311***	-1.942***	-1.977***	-1.901***	
Southern	-4.647***	-5.833***	-5.980***	-5.617***	ELC
Area of residence * Country groups (ref. = Big city-sub./Northern)					
Small/Large town * Western		1.079*	1.055 <sup>†</sup>	1.044 <sup>†</sup>	
Small/Large town * Southern		1.313 <sup>†</sup>	1.356 <sup>†</sup>	1.150	
Rural area/Village * Western		0.527	0.466	0.450	
Rural area/Village * Southern		2.413**	2.362**	2.126**	ASES
Living situation (ref. = Living with spouse/partner) Living as single			-0.541**	-0.519*	
Number of children			0.129*	0.127*	
Education (ref. = 5 <sup>th</sup> quintile)					
4 <sup>th</sup> quintile			-0.397	-0.379	
3 <sup>rd</sup> quintile			-0.165	-0.116	
2 <sup>nd</sup> quintile			-0.853*	-0.829*	
1 <sup>st</sup> quintile			-0.800*	-0.723*	
Income (ref. = 5 <sup>th</sup> quintile)					
4 <sup>th</sup> quintile			0.085	0.069	
3 <sup>rd</sup> quintile			-0.373	-0.394	HB
2 <sup>nd</sup> quintile			-0.598*	-0.620*	
1 <sup>st</sup> quintile			-0.771**	-0.745*	
Obesity (BMI>30) (ref. = Other)Yes				0.050	
Physical inactivity (ref. = Other) Yes				-2.473***	
Smoke (ref. = Other) Yes				0.047	

# Results: Regional variation

- Estimates for  $H_{ch}$  \* country groups (interaction) - (Models 2): adjusting for ELC



- The early exposure to poor health states may have more negative impact in Northern compared to Western and Southern European countries.

# Results: Health trajectories

Estimates for trajectories ( $\Delta_{W4-W1}$ )  
(Models 4)

+ values: declines in health for SRHS and chronic conditions;  
- values: decline for grip strength.

<sup>†</sup>  $p < .1$ ; \* $p < .05$ ; \*\* $p < .01$ ;  
\*\*\*  $p < .001$

( $\Delta = W4 - W1$ ) Health trajectories	SRHS	Chronic conditions	Grip strength
Health status when 10y (ref. = Good) Poor	0.249*	0.152	-0.336
Sex (ref. = Men) Women	-0.004	0.034	-5.715***
Age at first interview	0.012***	0.018***	-0.246***
Country groups (ref. = Northern) Western	0.247***	0.038	-1.606***
Southern	0.301**	0.150	-2.812***
Education (ref. = 5 <sup>th</sup> quintile)			
4 <sup>th</sup> quintile	0.038	-0.017	-0.598*
3 <sup>rd</sup> quintile	0.059	-0.012	-0.694**
2 <sup>nd</sup> quintile	0.110**	0.054	-0.822**
1 <sup>st</sup> quintile	0.116**	0.017	-0.822**
Income (ref. = 5 <sup>th</sup> quintile)			
4 <sup>th</sup> quintile	0.050	0.091*	-0.021
3 <sup>rd</sup> quintile	0.105**	0.045	-0.220
2 <sup>nd</sup> quintile	0.110**	0.165**	-0.400 <sup>†</sup>
1 <sup>st</sup> quintile	0.152***	0.110	-0.398 <sup>†</sup>
Obesity (BMI>30) (ref. = Other) Yes	0.155***	0.365***	-0.486**
Physical inactivity (ref. = Other) Yes	0.184***	0.076	-0.406
Smoke (ref. = Other) Yes	0.056*	0.015	-0.032

Adjusting for health indicators at baseline

- In addition to overall health, poor childhood health is also associated with negative health trajectories at follow-up.

# Conclusions

- These results support the hypothesis that poor childhood health increases morbidity in later life. Moreover, childhood health predicts 6.6-year health declines for SRHS.
- The associations were robust to controls for both life course SE conditions and health risk behaviors. This suggests that childhood health per se has long-term and direct consequences for adult health, whereas the impact of childhood SES is more indirect, operating through own SES.
- Our results support the notion that in order to improve old-age health, efficient interventions could be guided to first improve child health.
- The early exposure to poor health states may have more negative impact in Northern compared to Western and Southern European countries. To our knowledge, this is first regional-specific evidence of historical differences in the childhood-adult health association.
- Contributes to the understanding of the mechanisms underneath the health dynamics over the life course and may provide a useful tool for planning for interventions based on country specific evidence.

# Thank you for your attention.

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