



SENTER FOR  
FRUKTBARHET OG HELSE

# Sosial bakgrunn og psykisk helse over generasjoner

Fartein Ask Torvik

21 oktober 2023

NIPH -



Senter for  
fremragende  
forskning

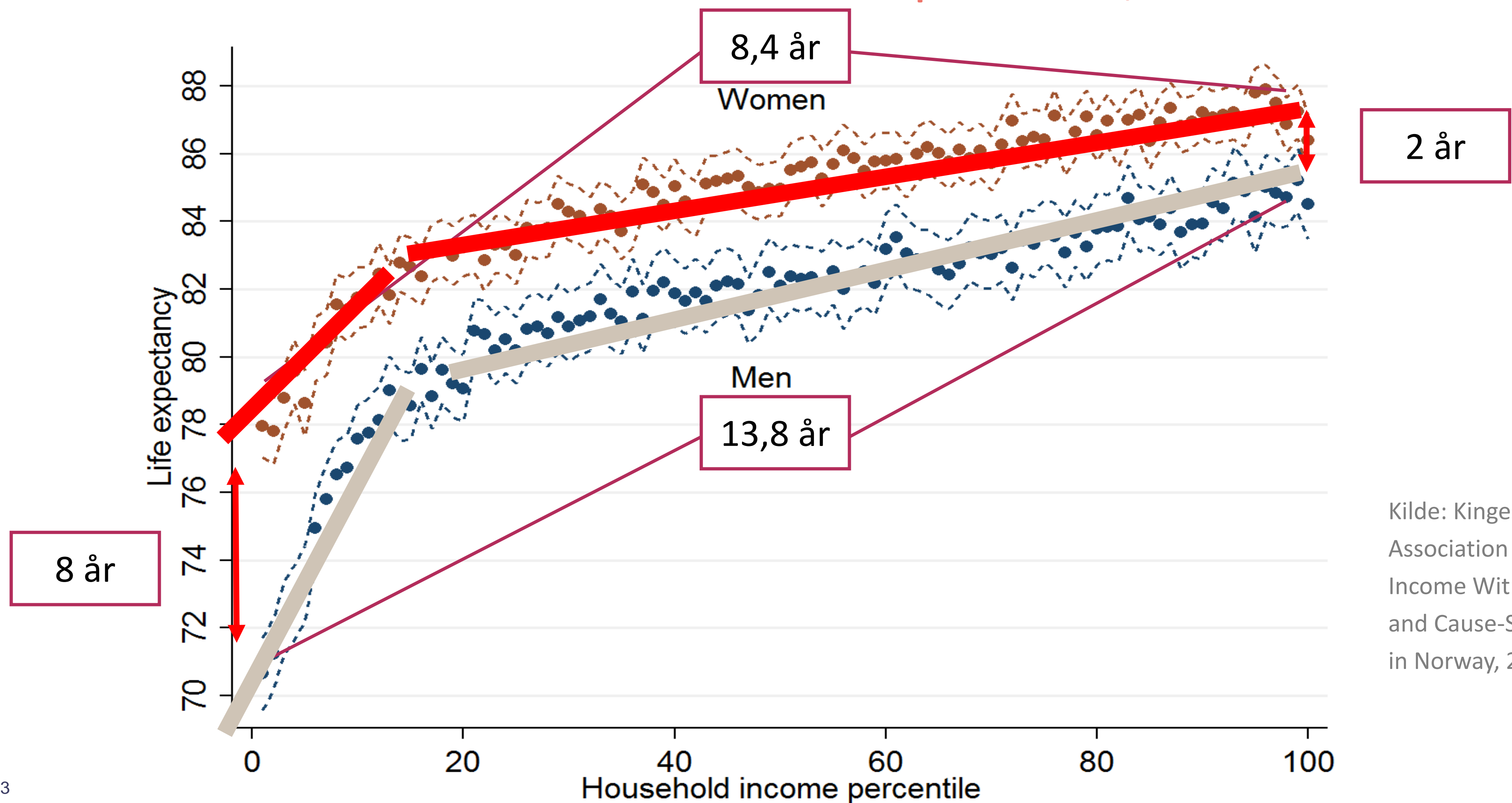


**FHI**

Folkehelseinstituttet

# Norge har store sosiale forskjeller i helse

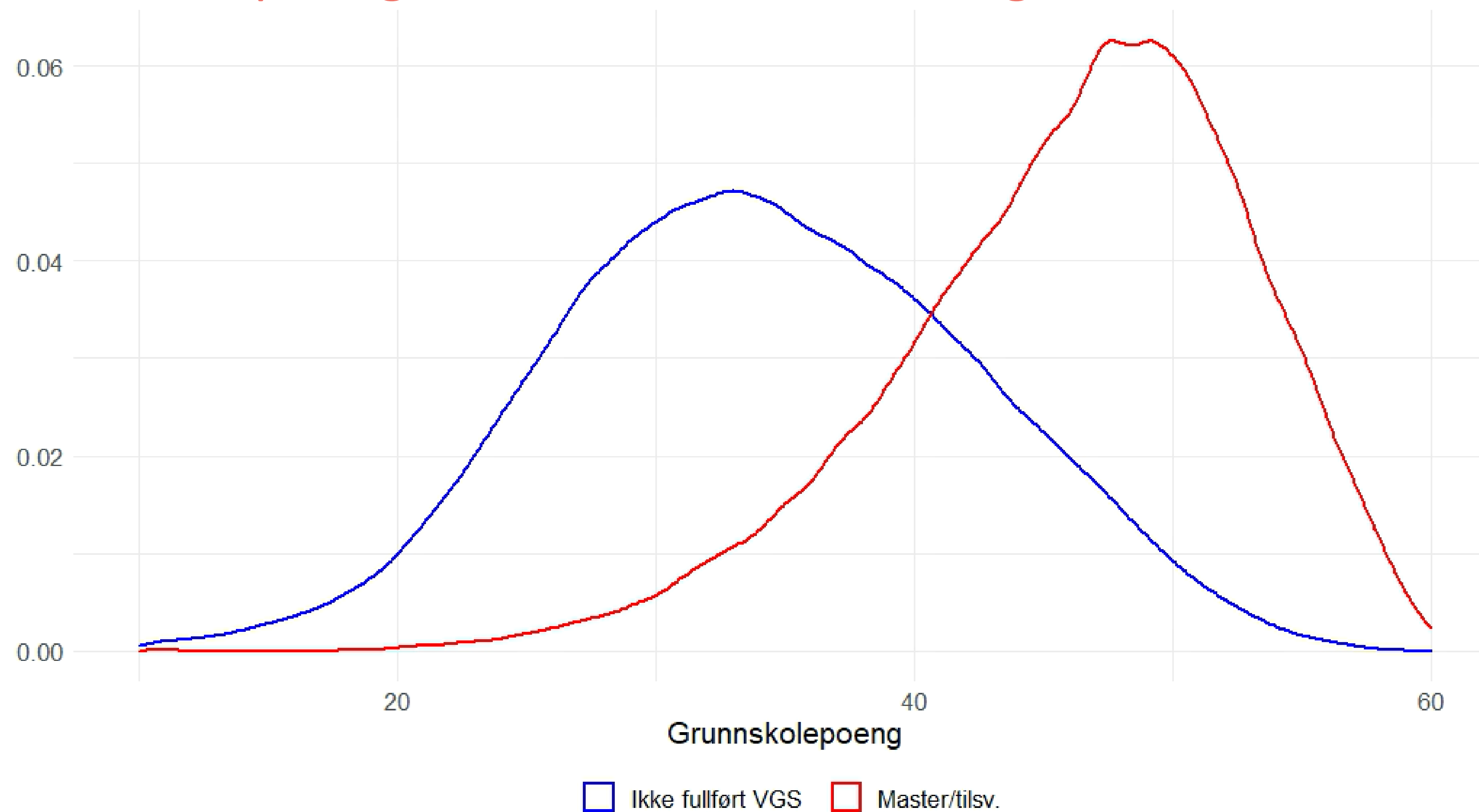
Forventet levealder ved 40 år etter inntektspersentil, 2011-2015



Kilde: Kinge et al. (2019), Association of Household Income With Life Expectancy and Cause-Specific Mortality in Norway, 2005-2015, *JAMA*

# Sosial reproduksjon

## Grunnskolepoeng etter foreldres utdanning

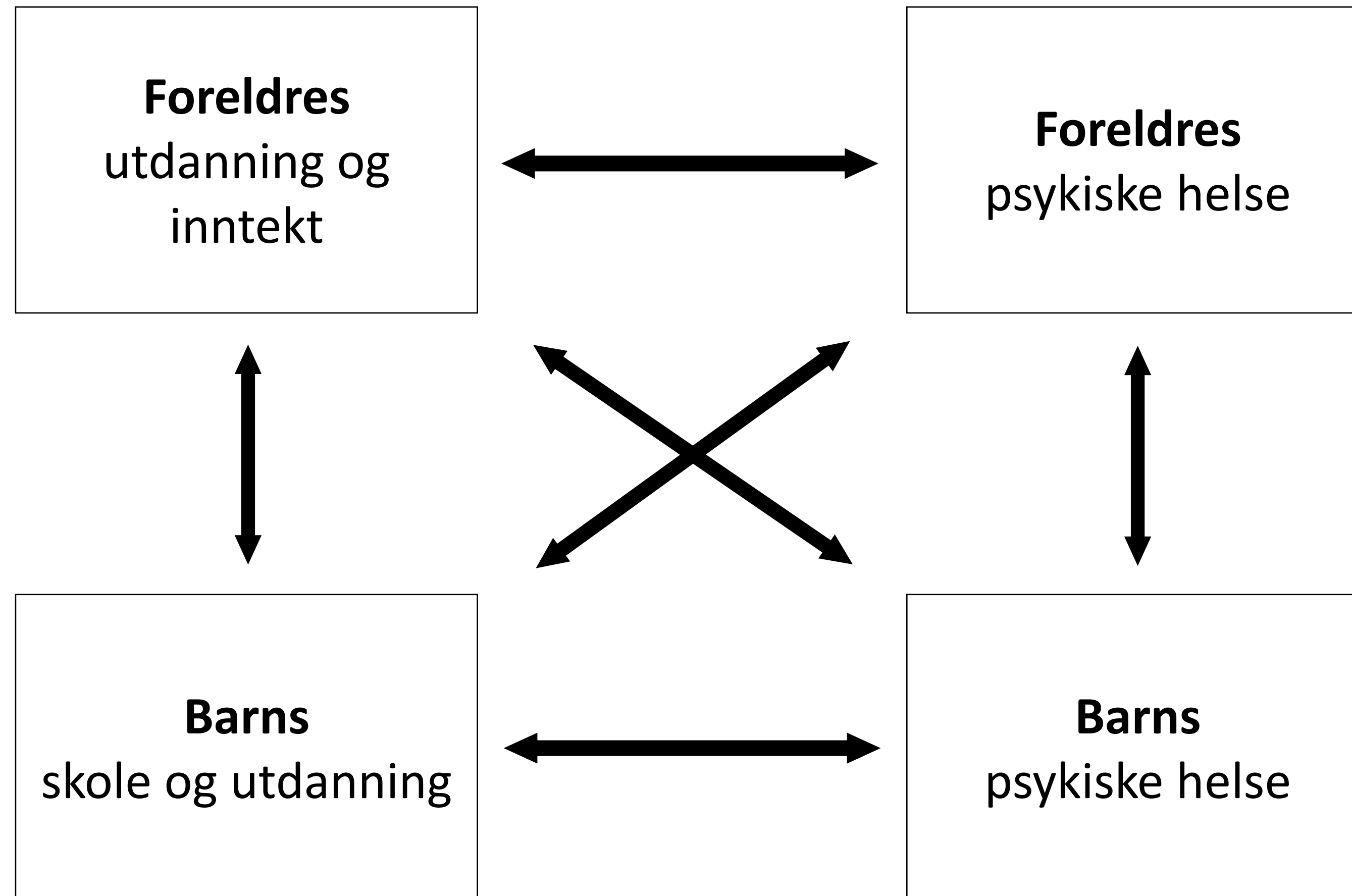


# Sosial reproduksjon

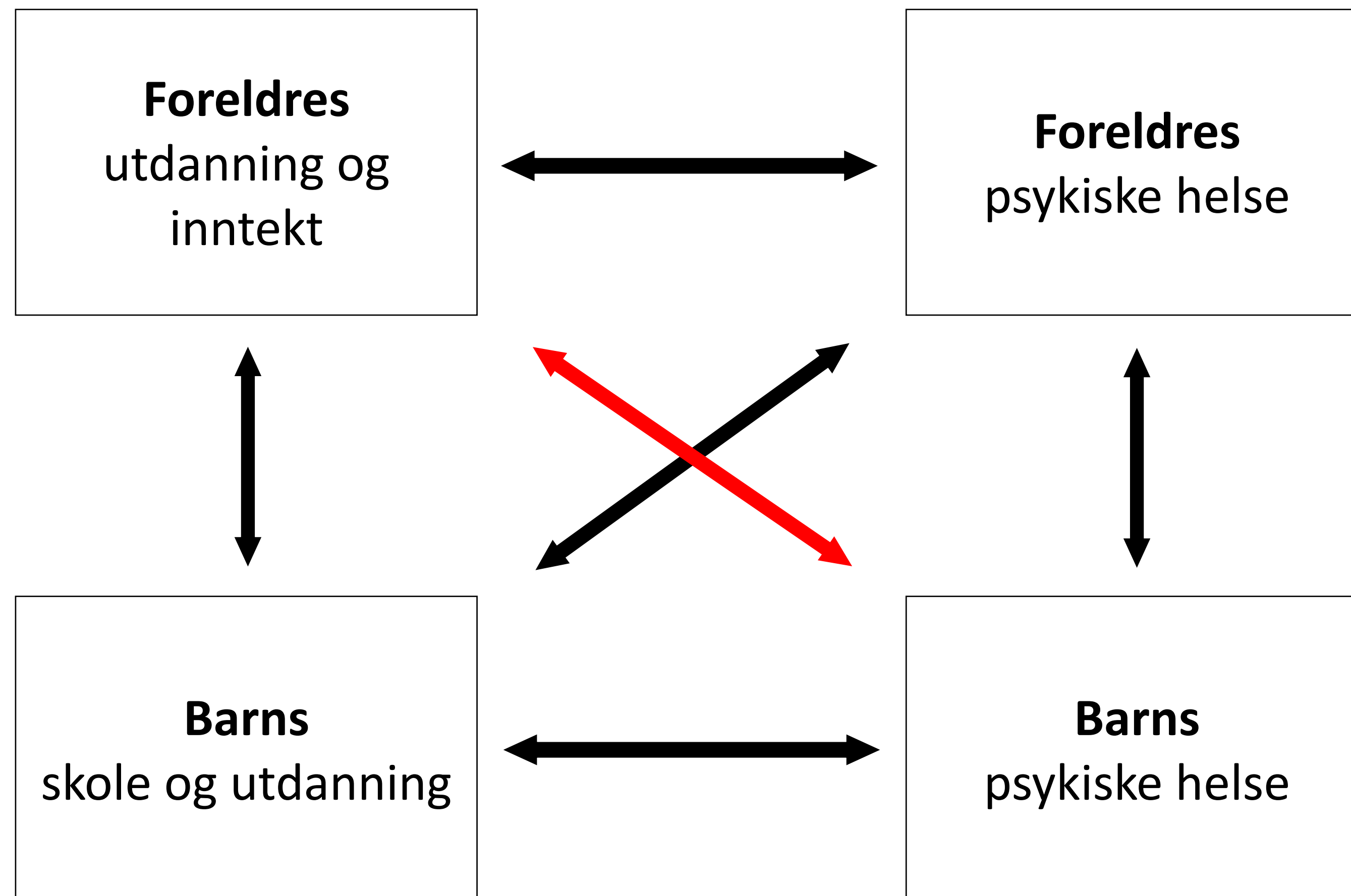
Høyere utdanning ved alder 30 år etter kjønn og foreldrenes inntekt



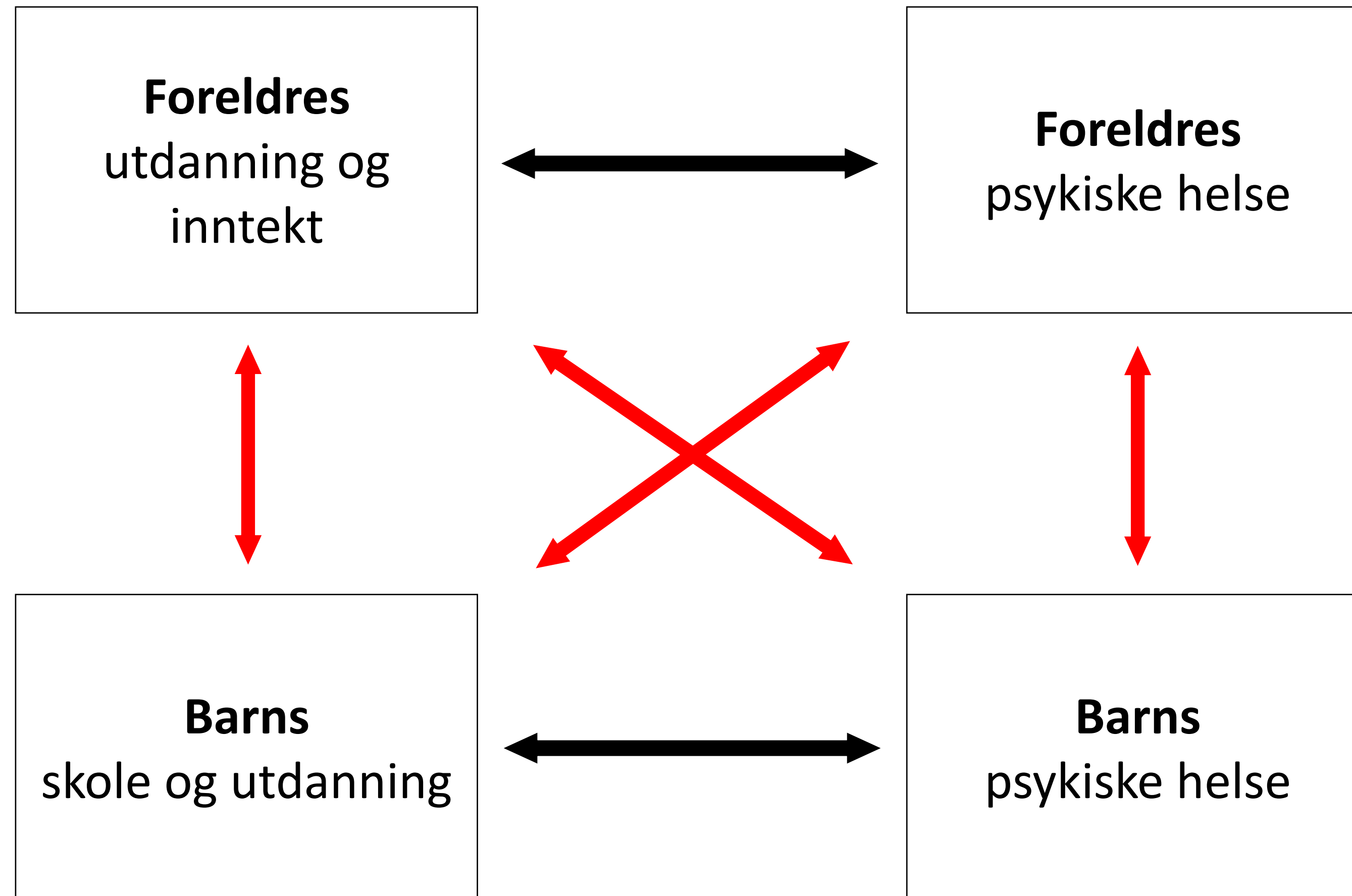
# Reproduksjon av psykisk helse og sosial ulikhet over generasjoner (**REMENTA**)



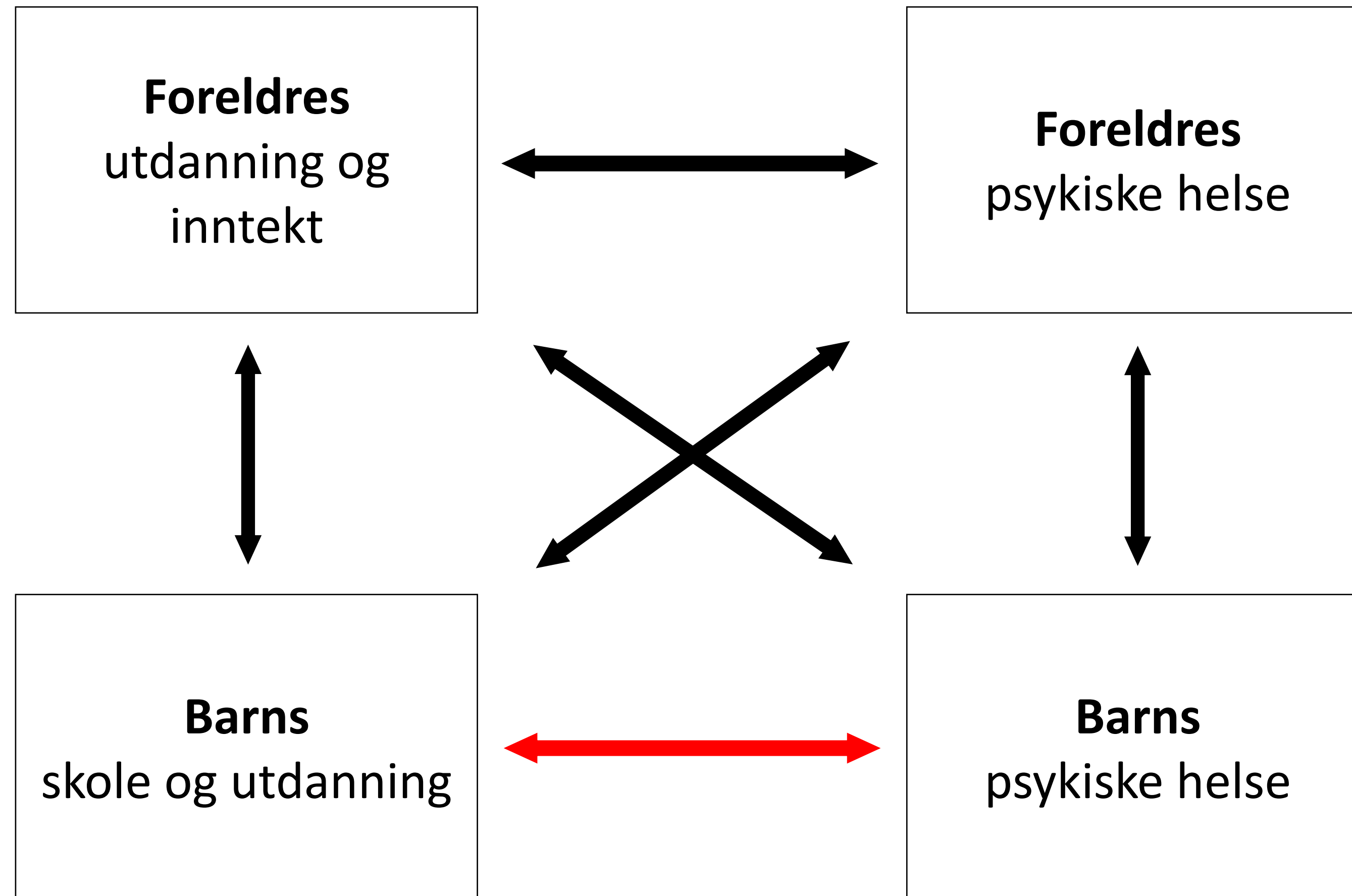
Mål 1: **Situasjonsbeskrivelse.** Hvor store er de sosiale ulikhetene i psykisk helse?



## Mål 2: **Mekanismer.** Hvordan oppstår forskjellene?



### Mål 3: **Konsekvenser.** Hvilken betydning har dette?





Situasjonsbeskrivelse

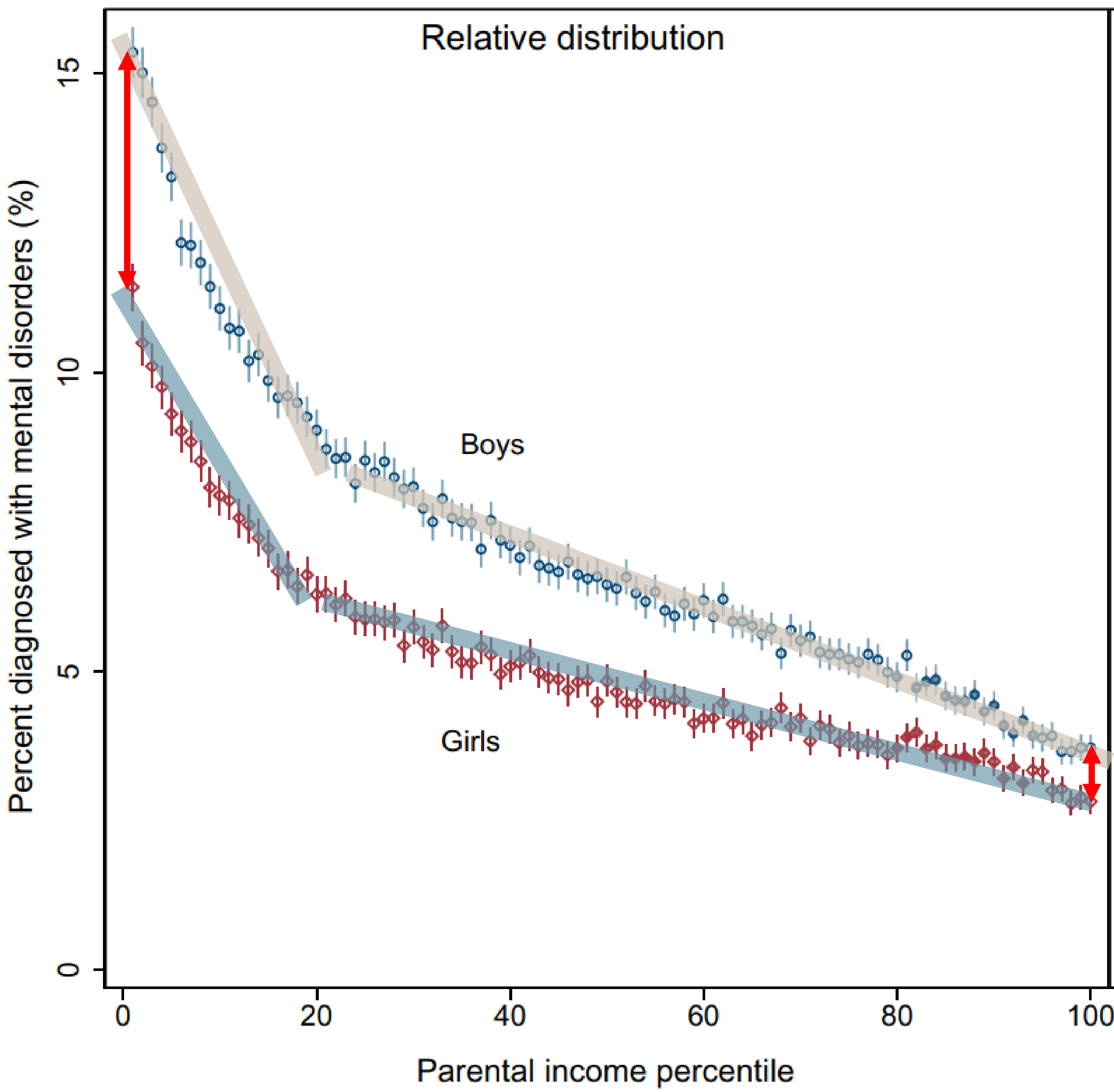
# Metoder

## Norske registerdata

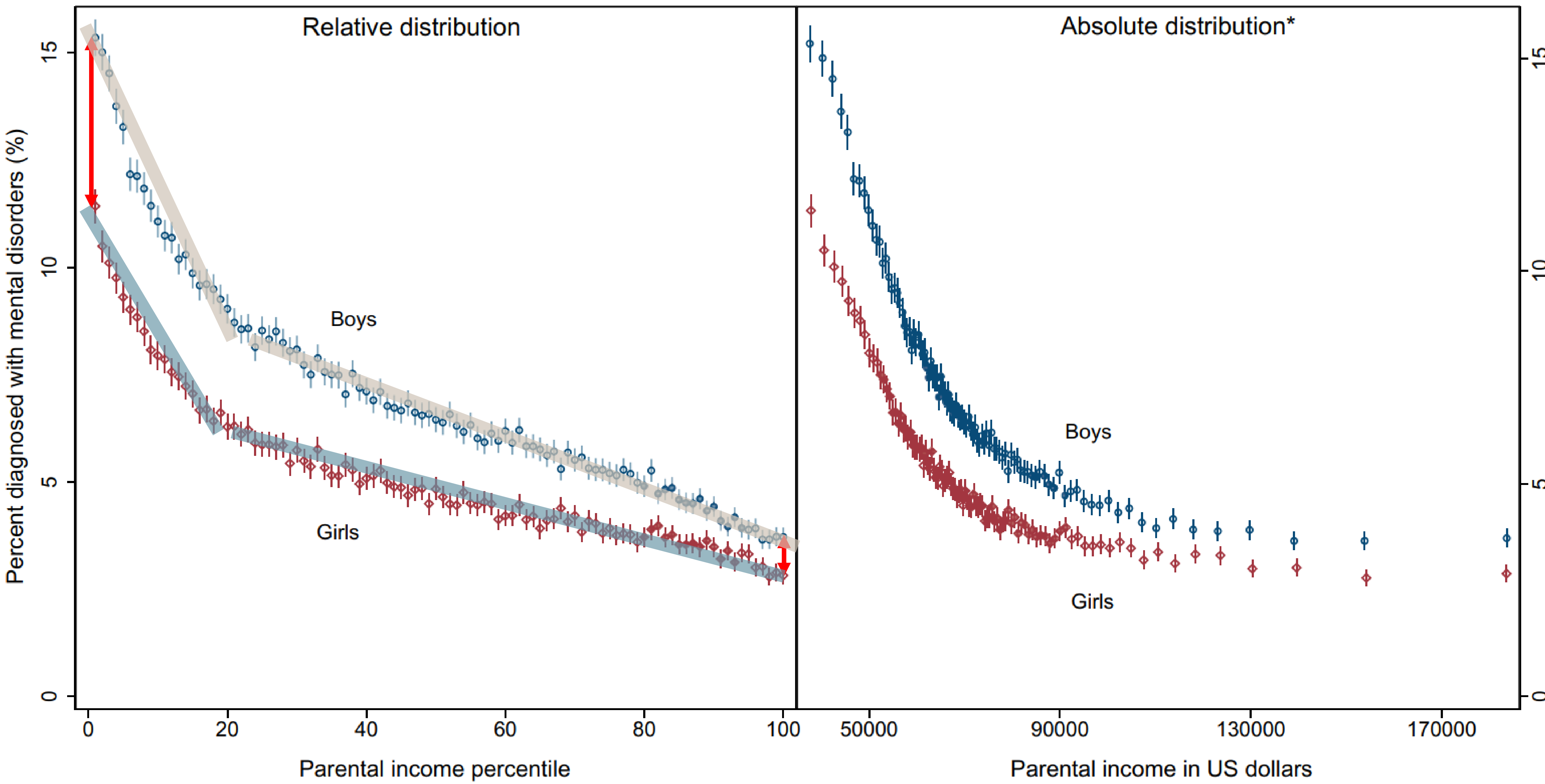
- Hele befolkningen, dekker alle grupper
- Helse gjennom hele inntektsfordelingen
- Informasjon om slektskap
- Informasjon om psykiske lidelser – som man har søkt hjelp for

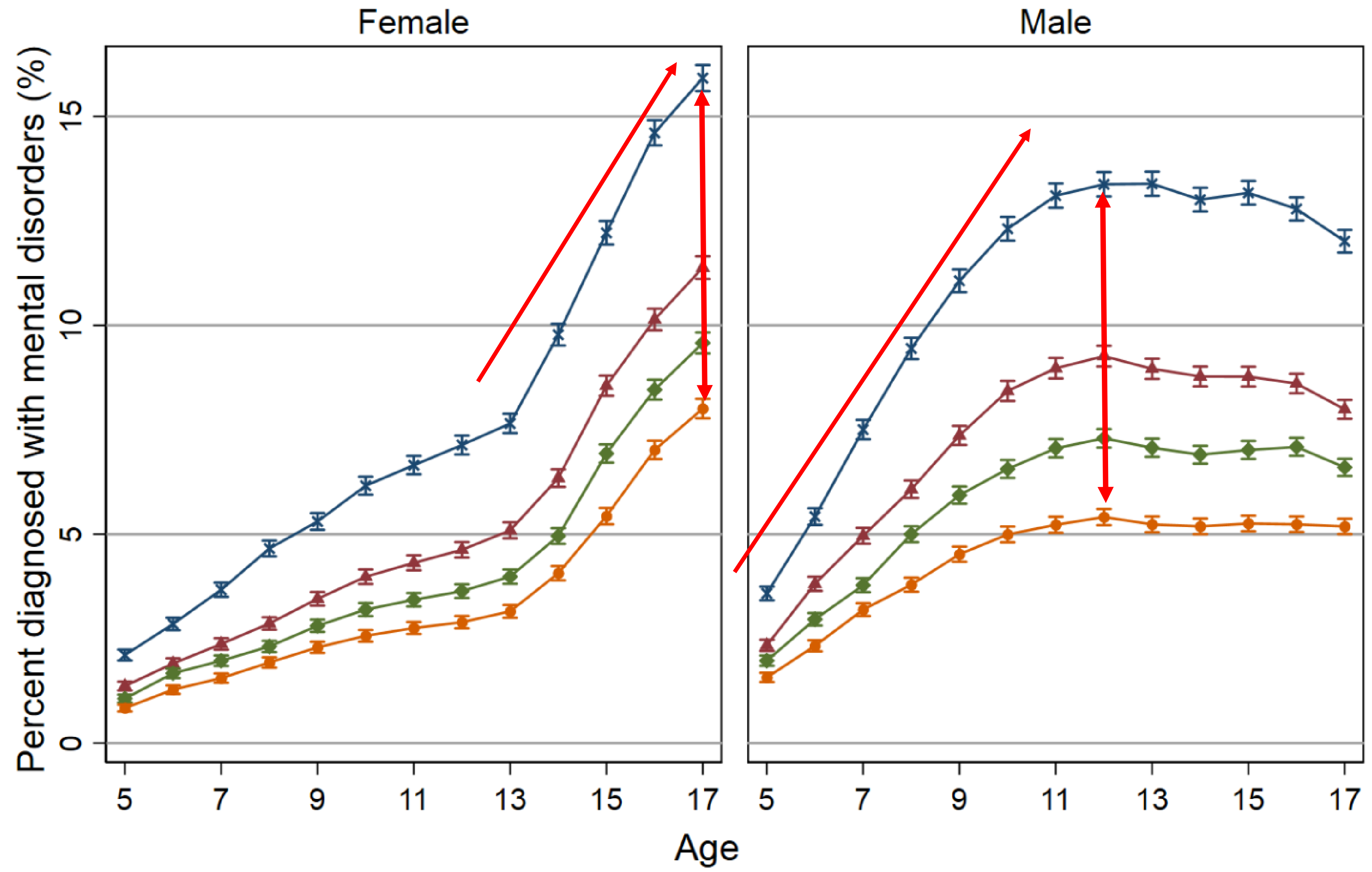
## Den norske mor, far og barn-undersøkelsen (MoBa)

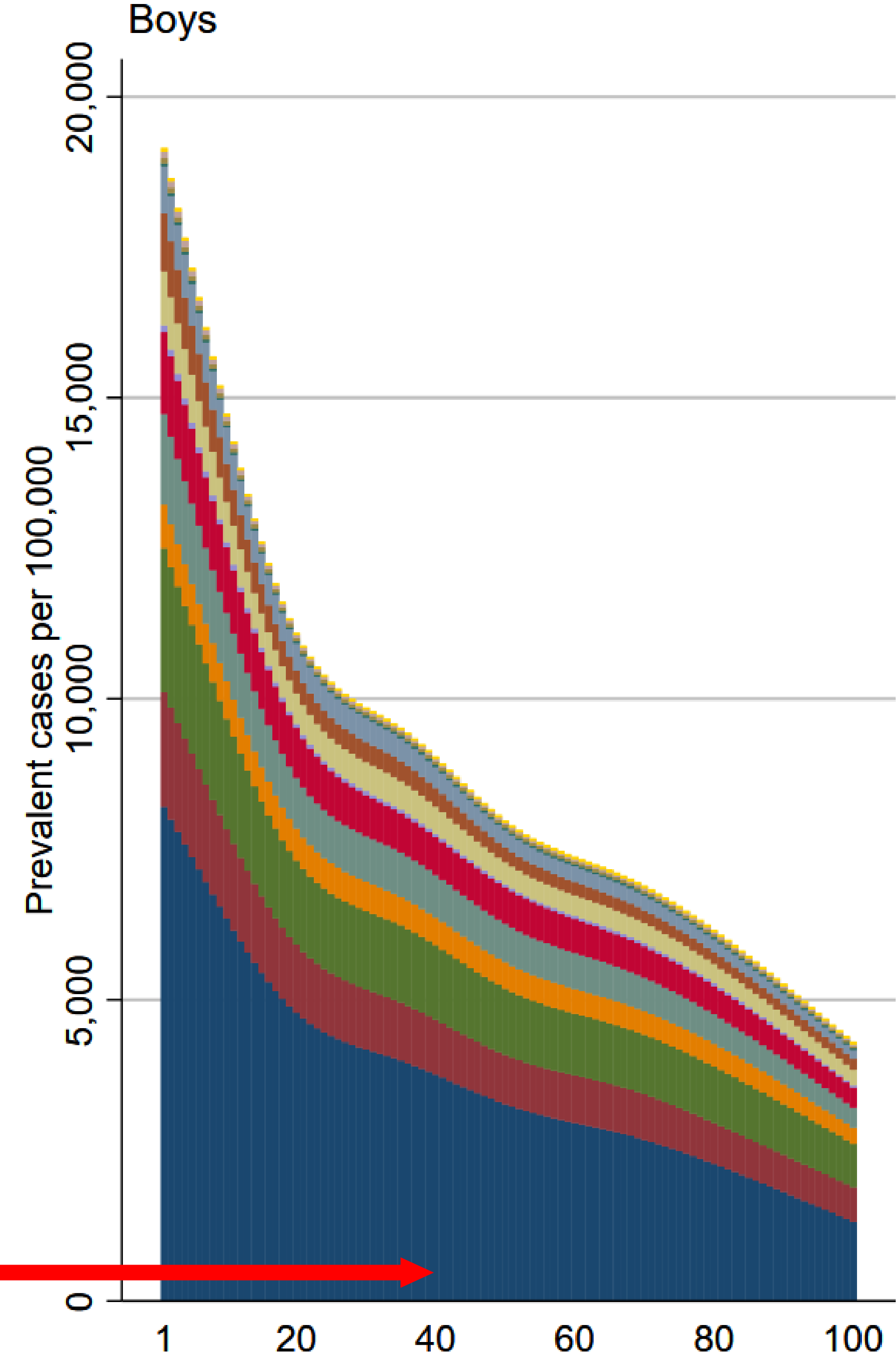
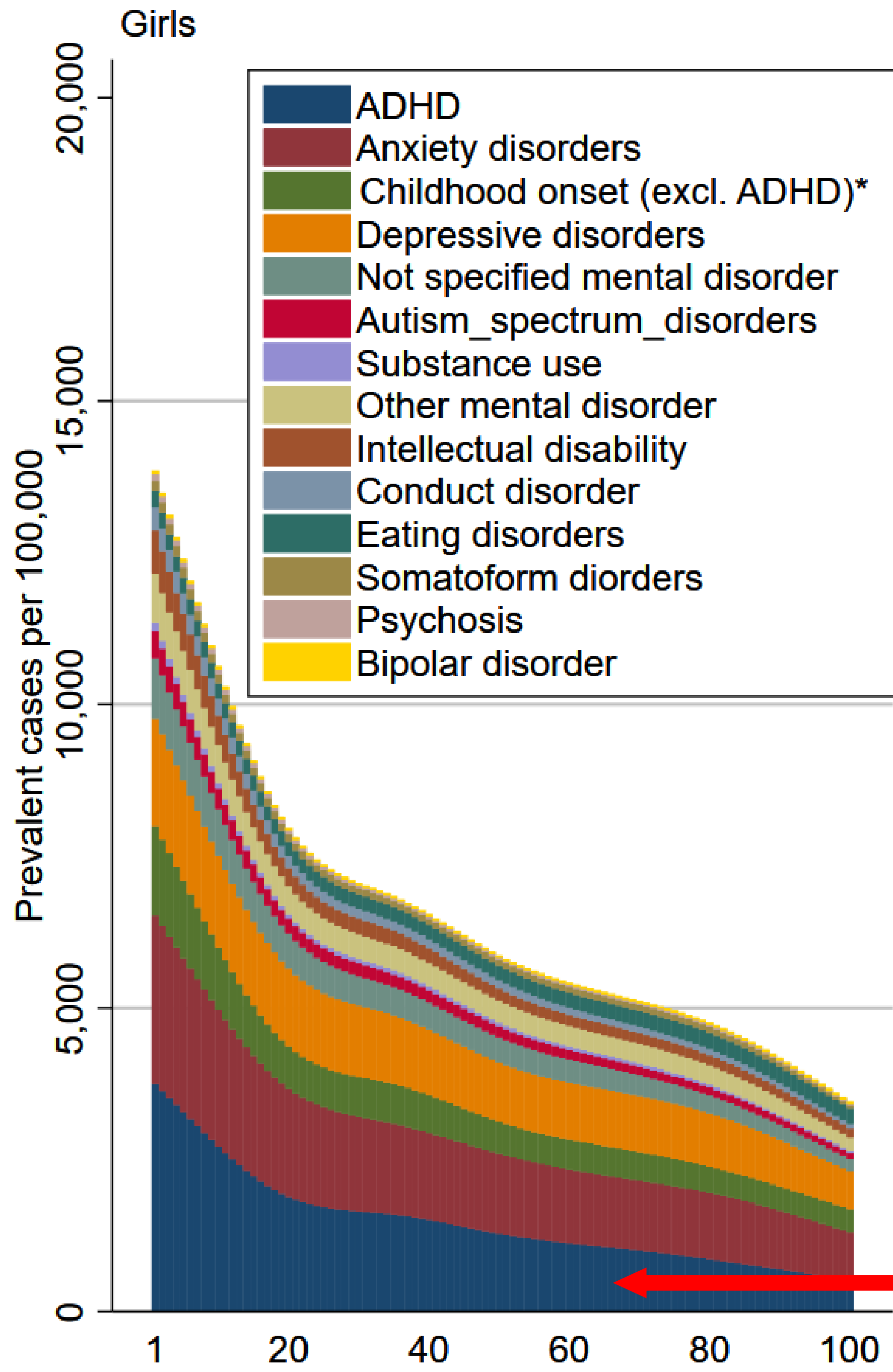
- Cirka 114 000 barn med foreldre
- Spørreskjema
- Biologiske prøver og genetikk

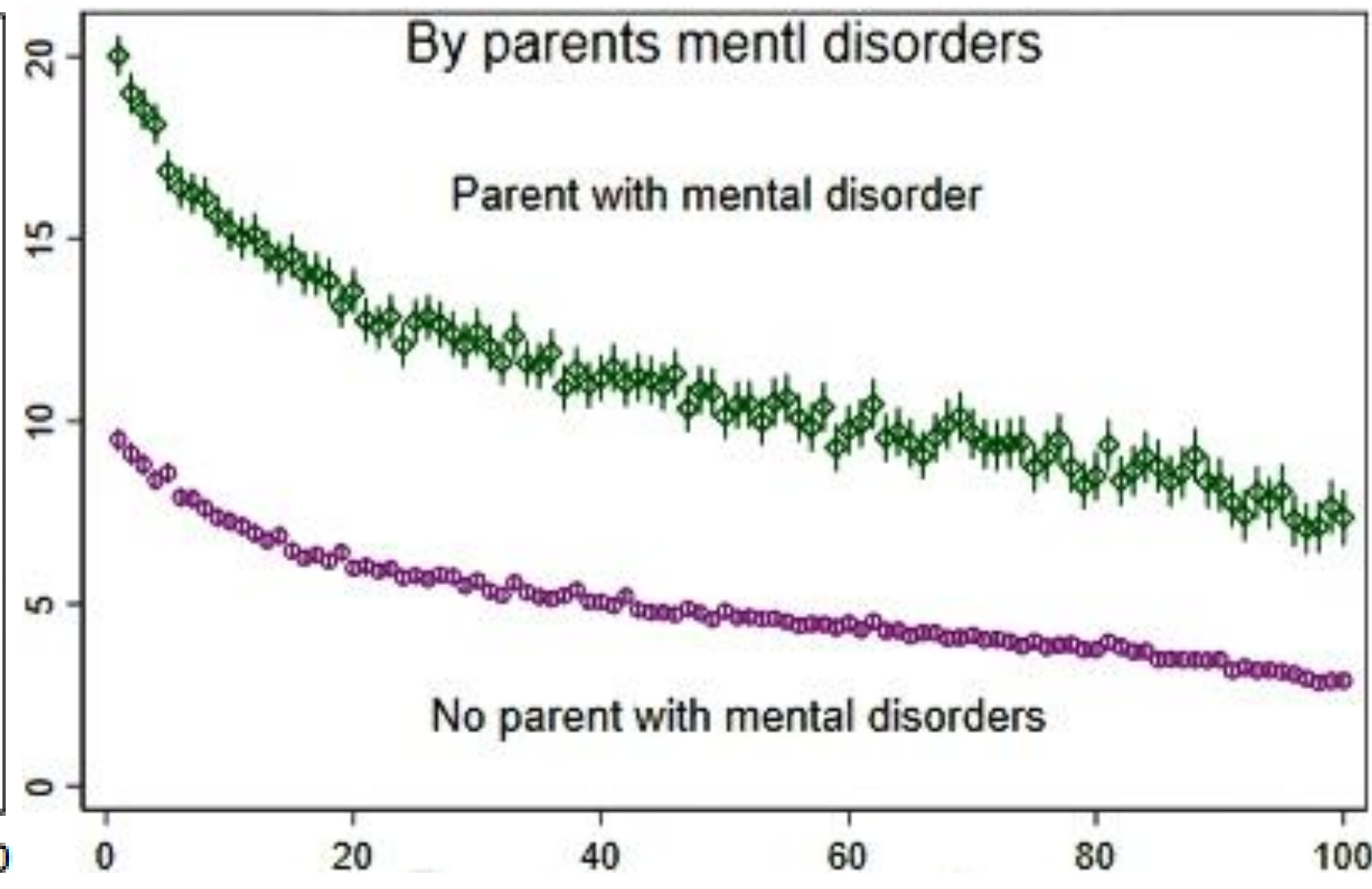
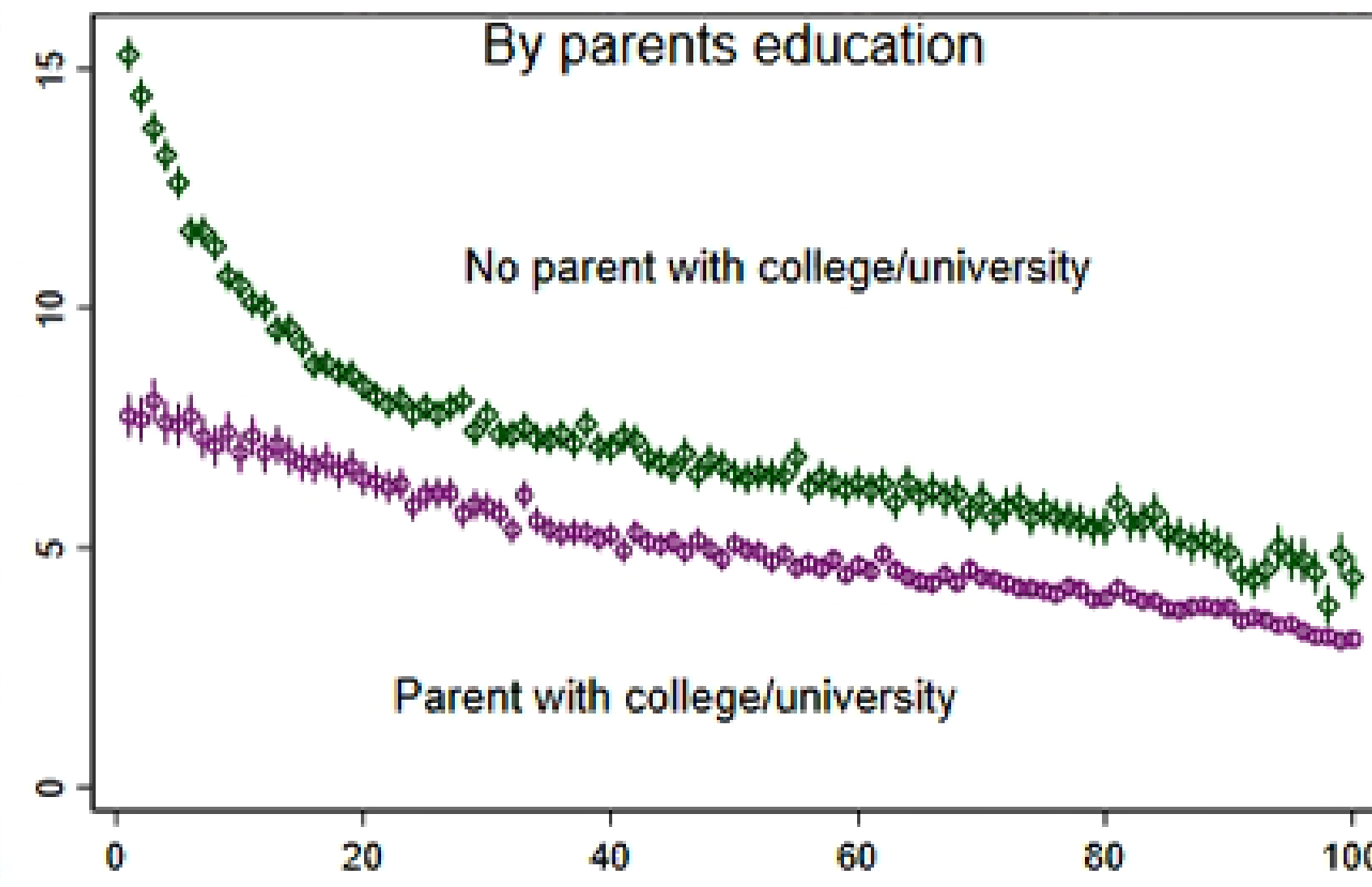
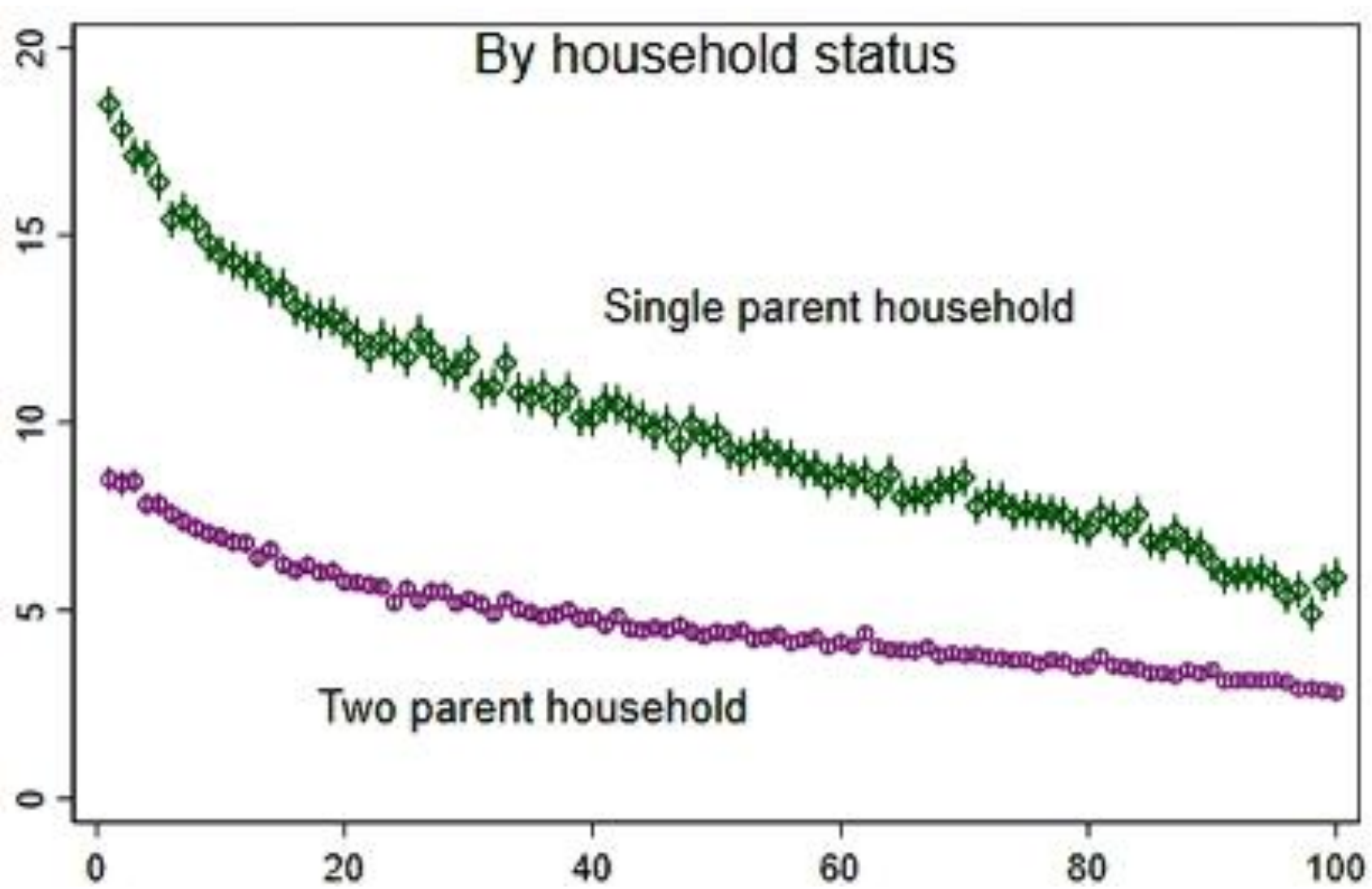


Kinge et al. (2021), Parental income and mental disorders in children and adolescents: prospective register-based study. *International Journal of Epidemiology*







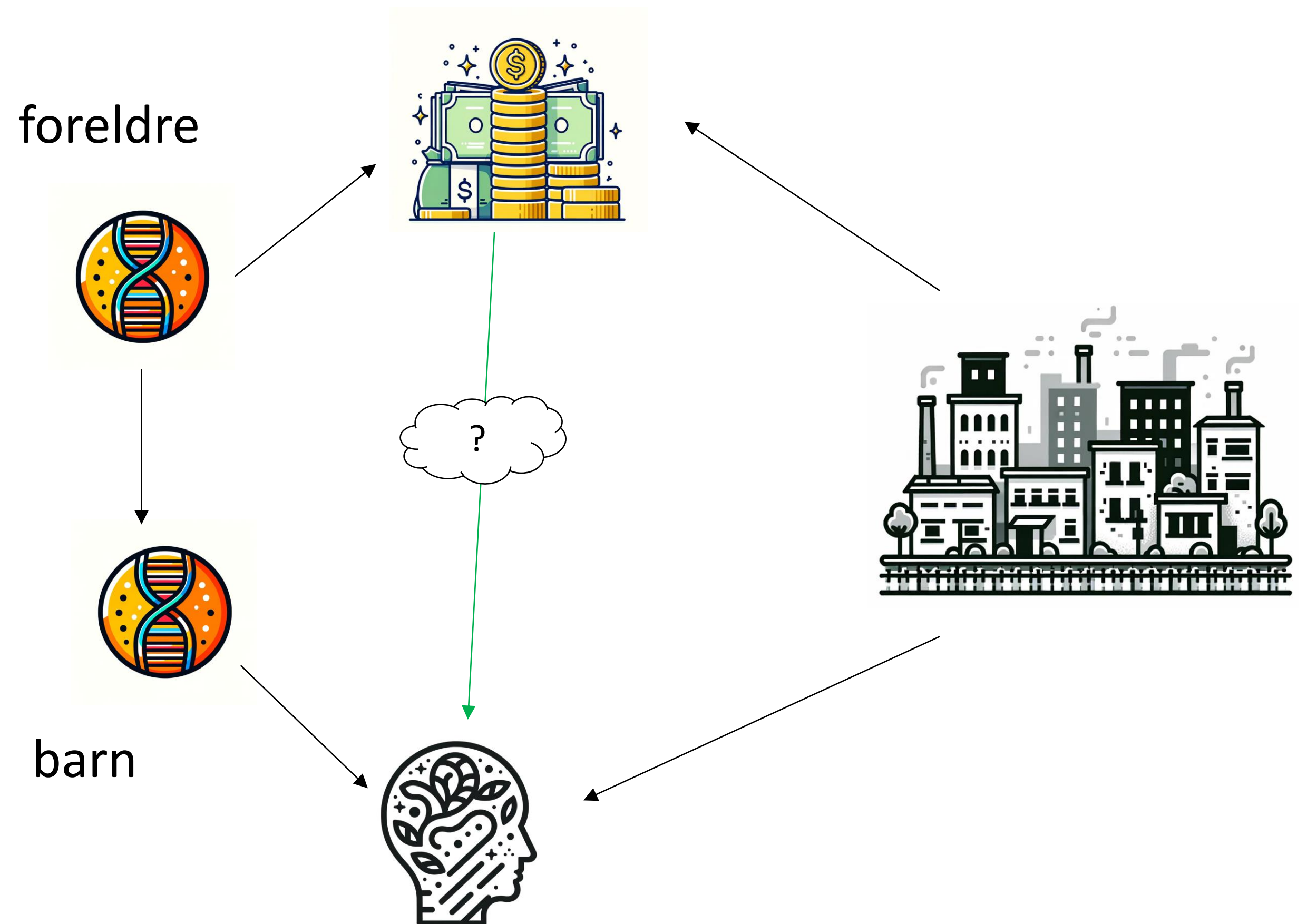


Mekanismer



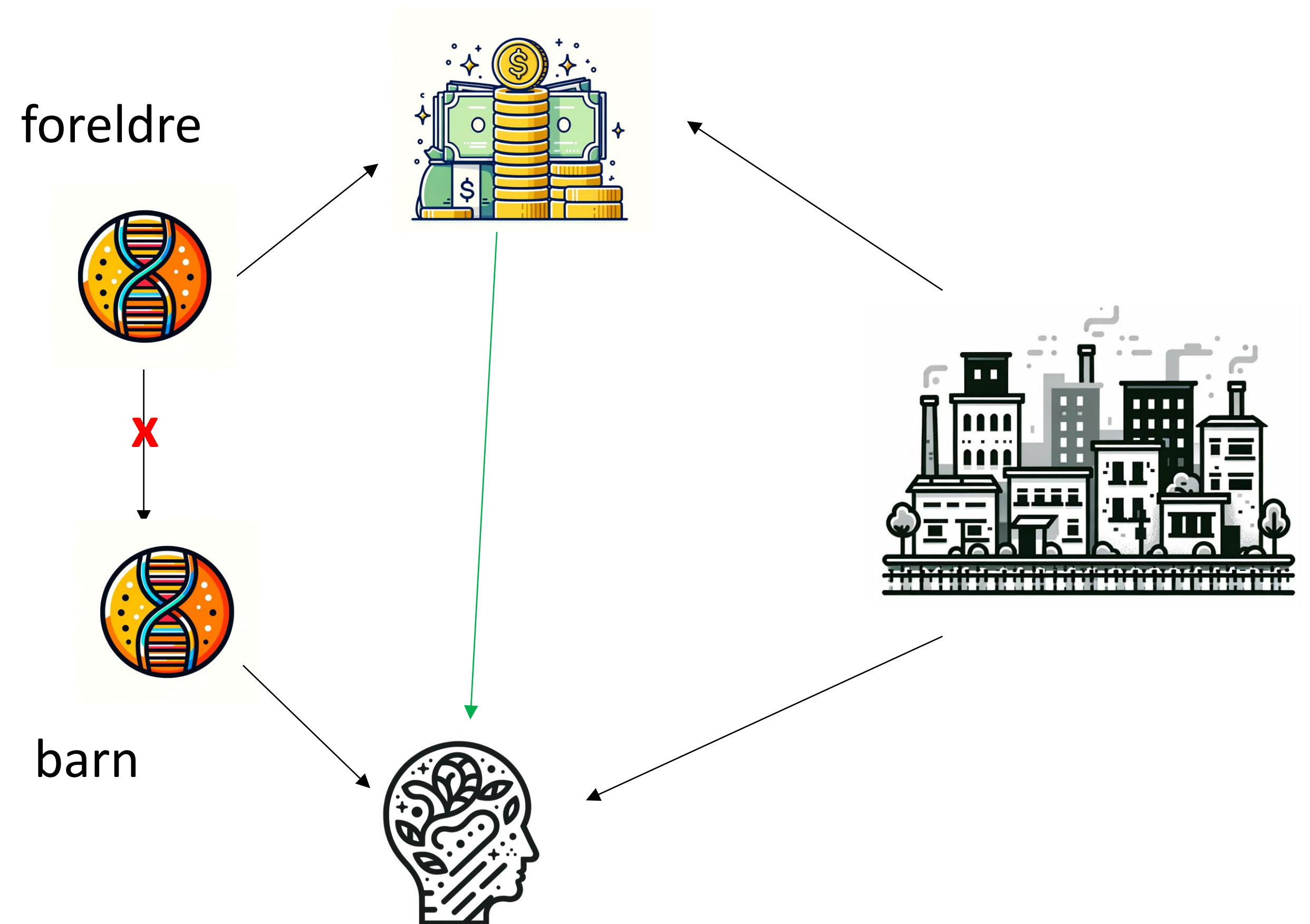
# Hvorfor likner foreldre og barn på hverandre?

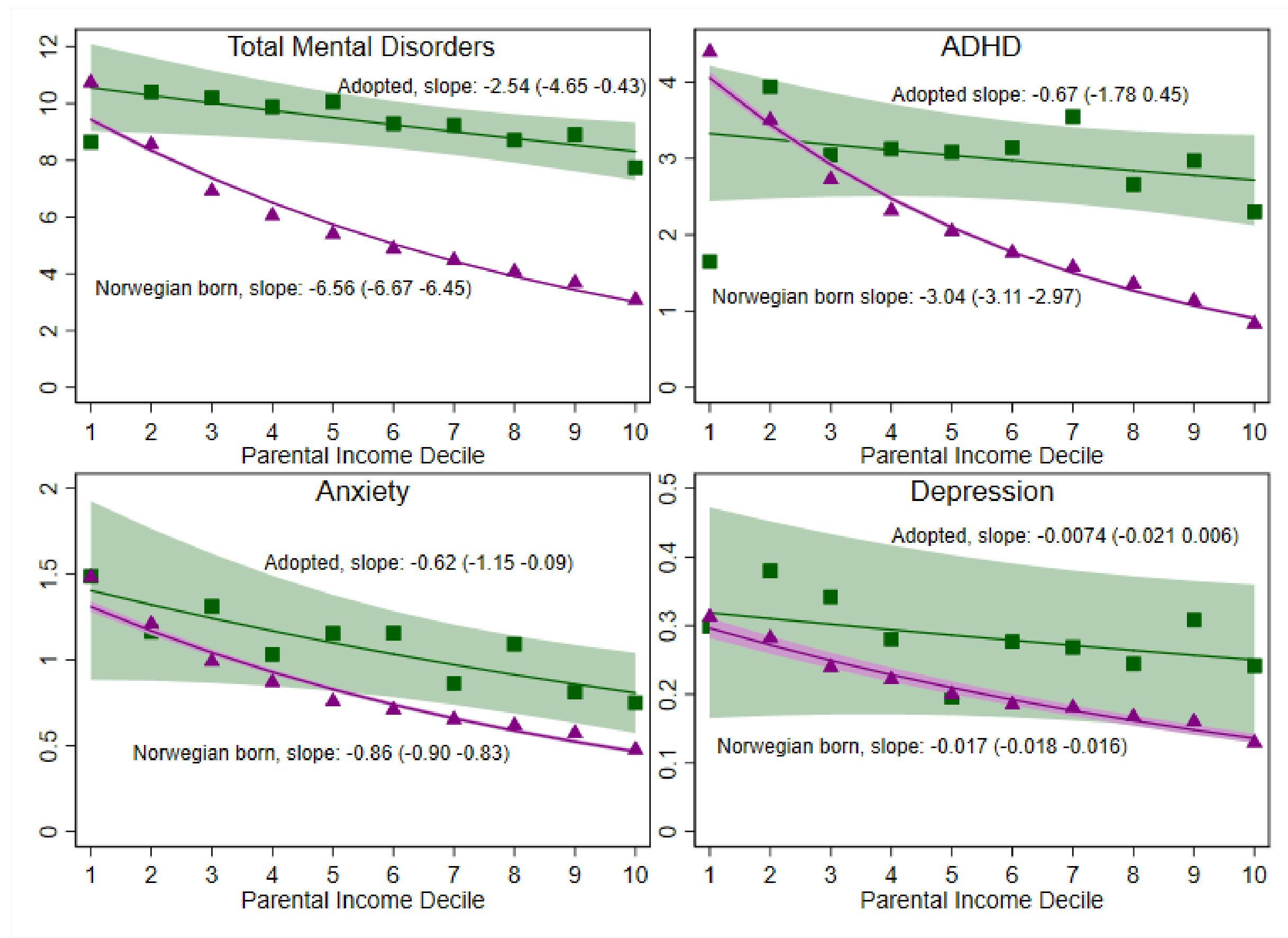
- Årsakssammenheng
- Felles genetisk risiko
- Felles miljø
- Samspill mellom genetikk og miljø
- Ujevn fordeling av risiko
  - Korrelasjon mellom genetikk og miljø
  - Partnerlikhet



# Adopsjonsstudier

- Ikke genetisk band mellom foreldre og barn







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Original Article

## **No causal associations between childhood family income and subsequent psychiatric disorders, substance misuse and violent crime arrests: a nationwide Finnish study of >650 000 individuals and their siblings**

**Amir Sariaslan** <sup>1,\*</sup> **Janne Mikkonen**,<sup>2</sup> **Mikko Aaltonen**,<sup>3</sup>  
**Heikki Hiilamo**,<sup>1,4</sup> **Pekka Martikainen** <sup>2,5,6</sup> and **Seena Fazel**<sup>7</sup>

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<sup>2</sup>Population Research Unit, Faculty of Social Sciences, University of Helsinki, Helsinki, Finland, <sup>3</sup>UEF

Law School, University of Eastern Finland, Joensuu, Finland, <sup>4</sup>Finnish Institute for Health and Welfare

(THL), Helsinki, Finland, <sup>5</sup>Centre for Health Equity Studies (CHESS), Stockholm University and

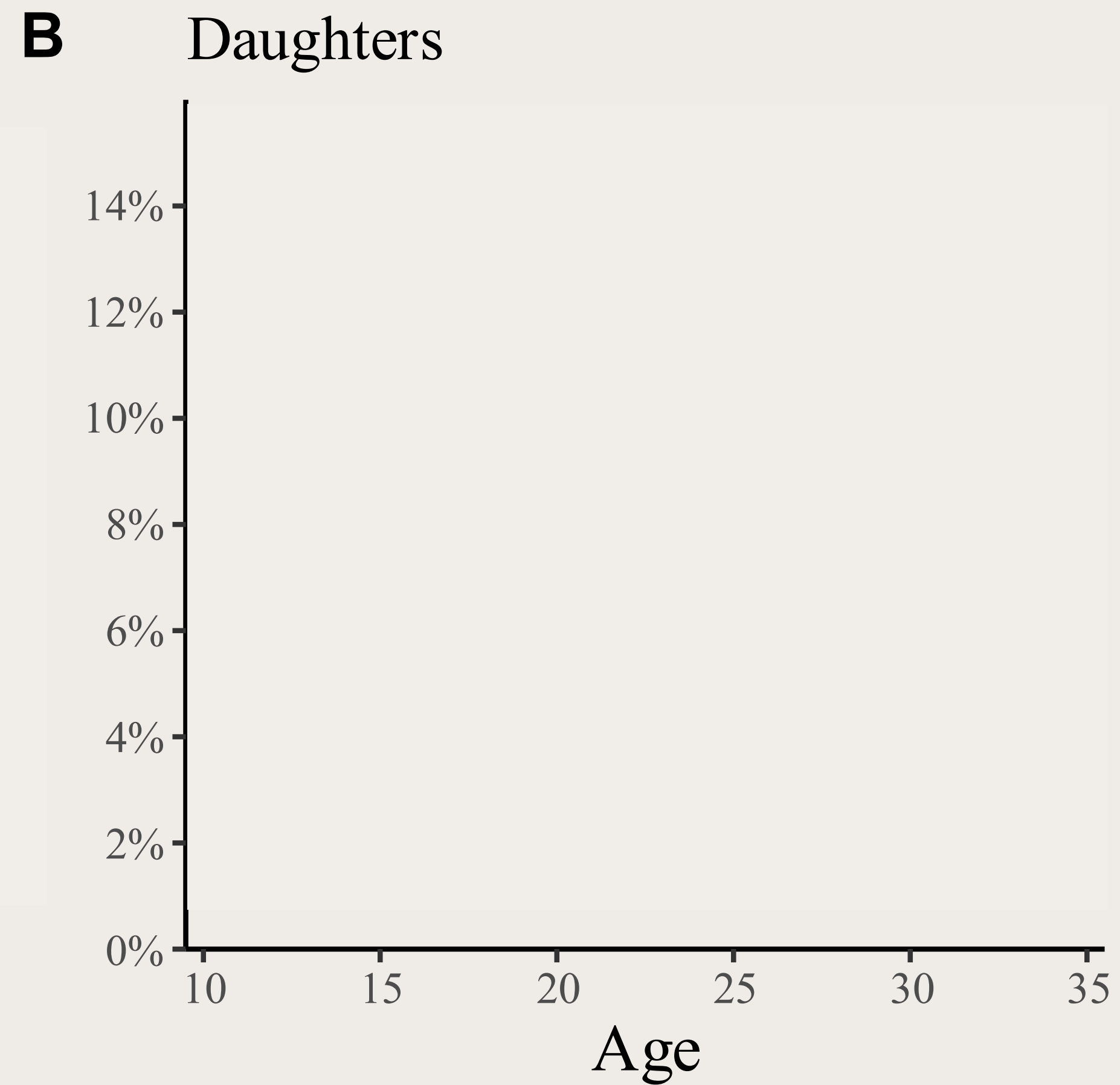
Karolinska Institutet, Stockholm, Sweden, <sup>6</sup>Max Planck Institute for Demographic Research, Rostock,

Germany and <sup>7</sup>Department of Psychiatry, University of Oxford, Warneford Hospital, Oxford, UK

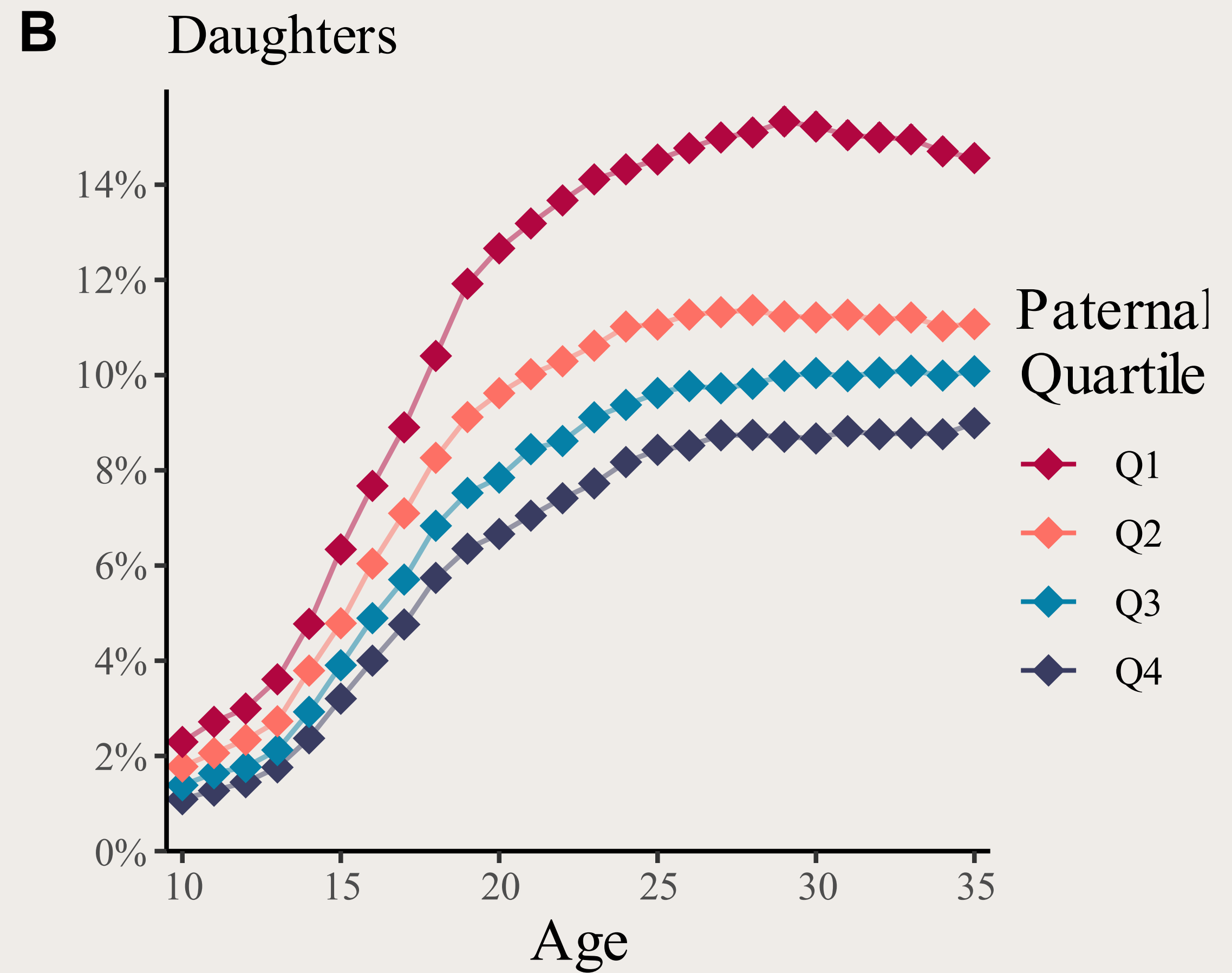
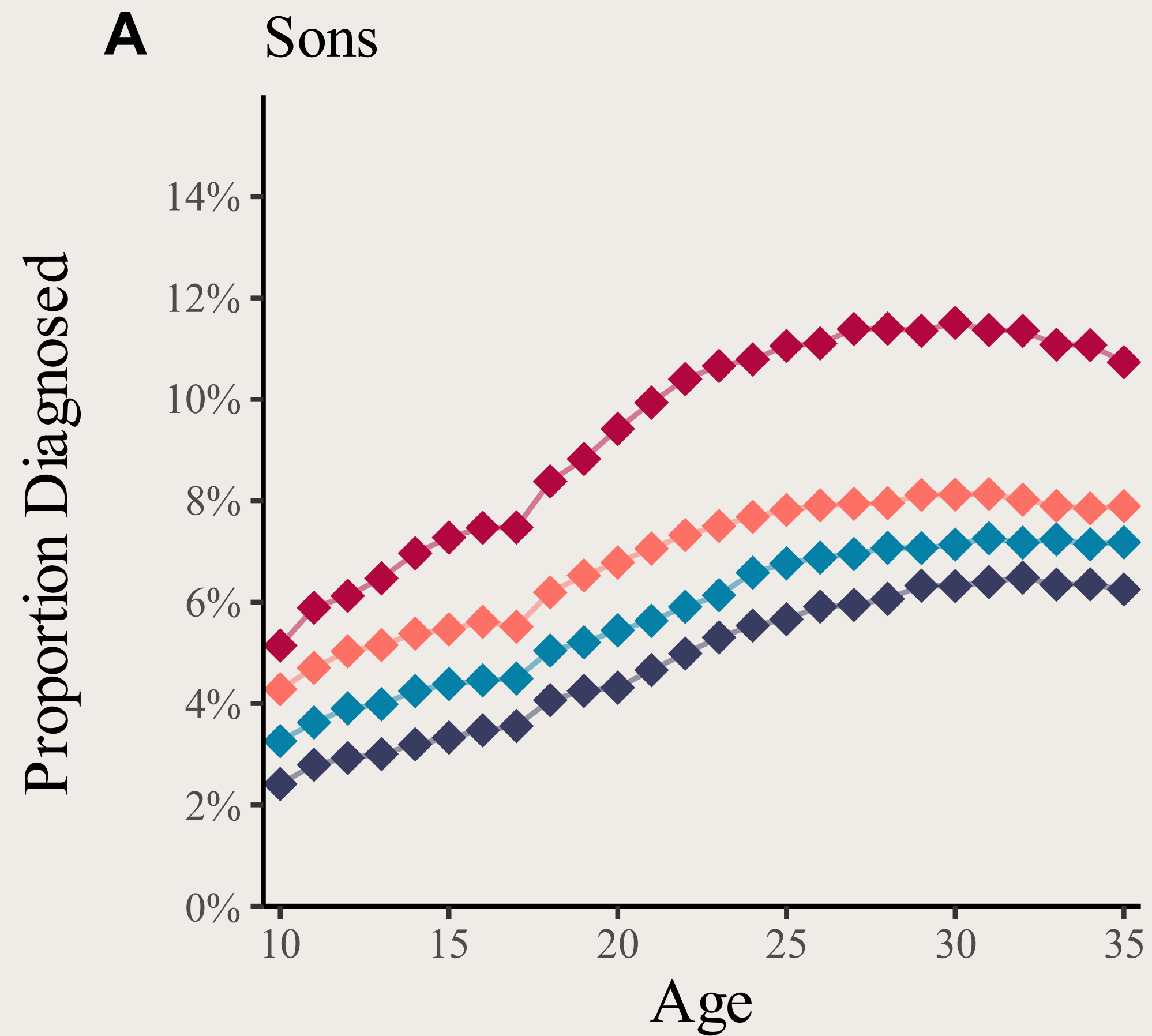
\*Corresponding author. Social and Public Policy Unit, Faculty of Social Sciences, University of Helsinki, Unioninkatu 37, FI-00014, Finland. E-mail: amir.sariaslan@gmail.com

Received 29 November 2020 Accepted 16 April 2021; editorial decision 6 April 2021

# Alle psykiske lidelser

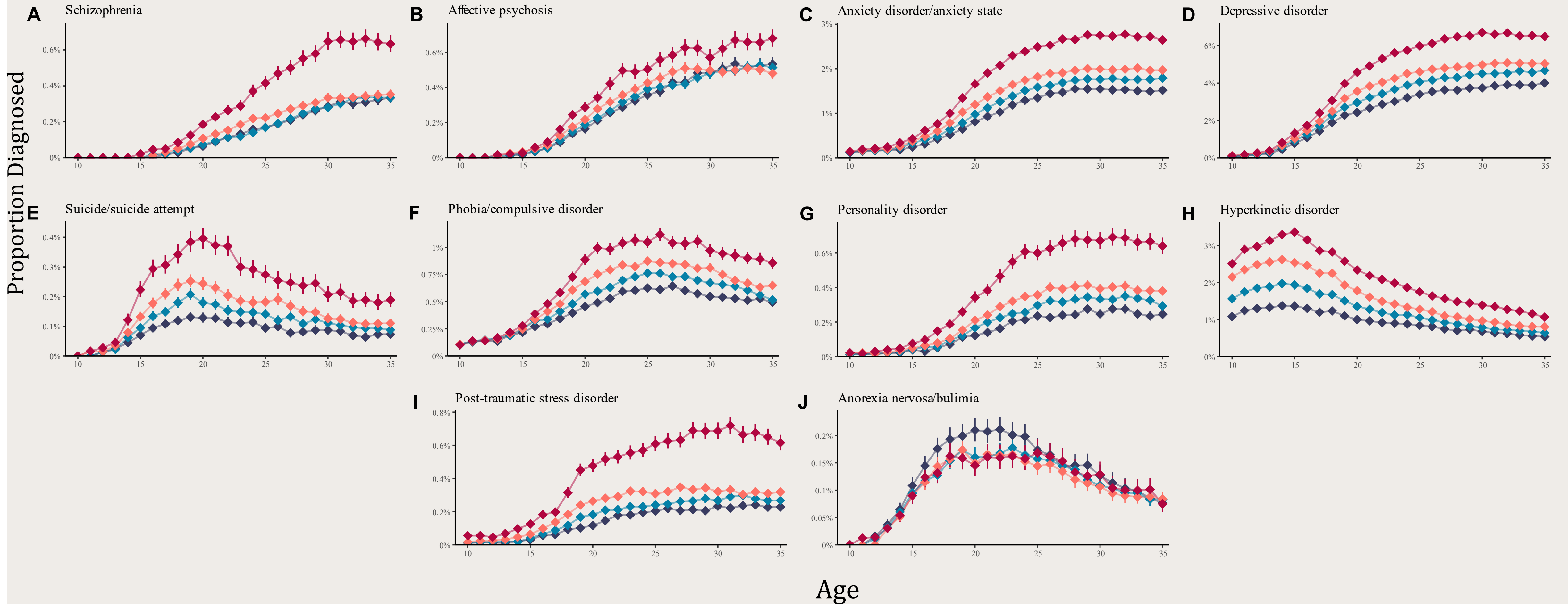


# Alle psykiske lidelser



# Spesifikke diagnosekoder

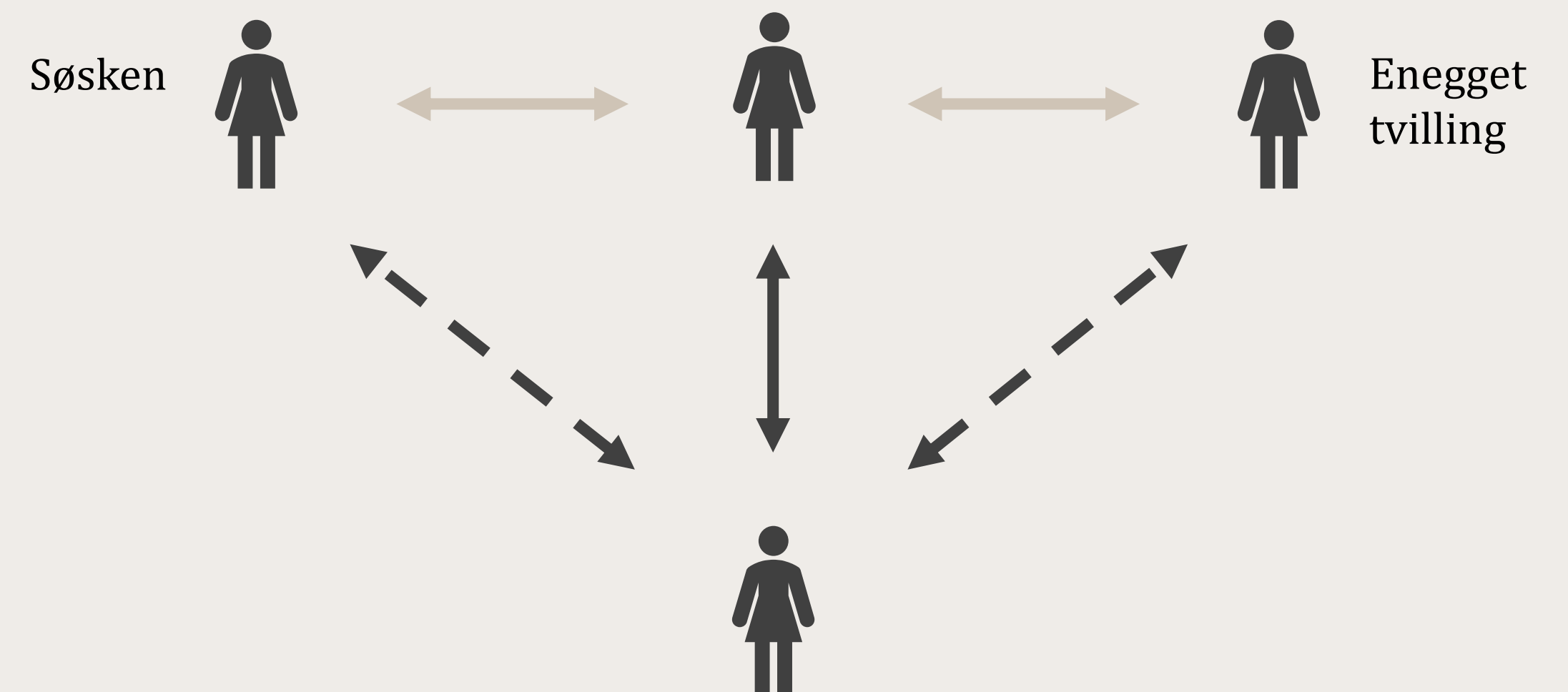
Paternal Quartile ◆ Q1 ◆ Q2 ◆ Q3 ◆ Q4



# Sosiale årsaker vs. seleksjon

## Utvidede søskenbarnmodeller

- Genetisk informativ strukturell likningsmodell
- Sammenlikner hvordan samvariasjon varierer på tvers av slektskap
  - Eneeggde tvillinger: Barnet har like sterkt genetisk slektskap til til onkel/tante som til forelder
  - Helsøsken: Barnet har halvparten så sterkt genetisk slektskap til onkel/tante som til forelder
  - OSV
- Deler foreldre-barn-sammenhenger inn i genetiske og miljømessige kilder





Decomposition: ■ Direct Environmental Transmission ■ Passive Genetic Transmission ■ Assortative Mating



Decomposition:



Direct Environmental Transmission



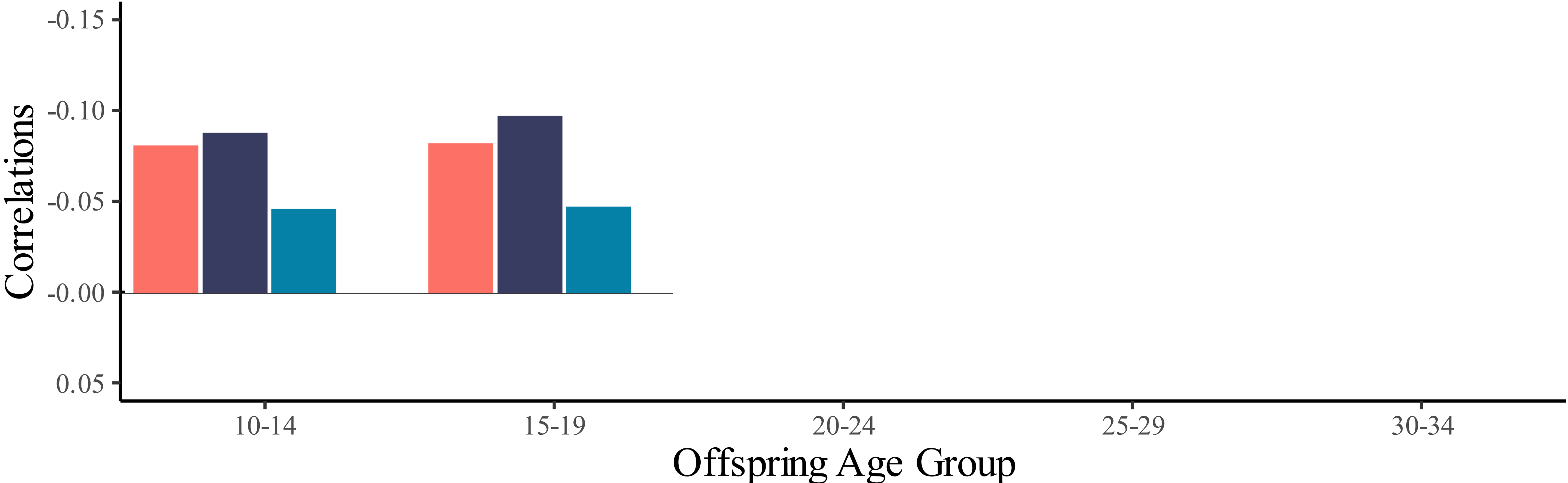
Passive Genetic Transmission



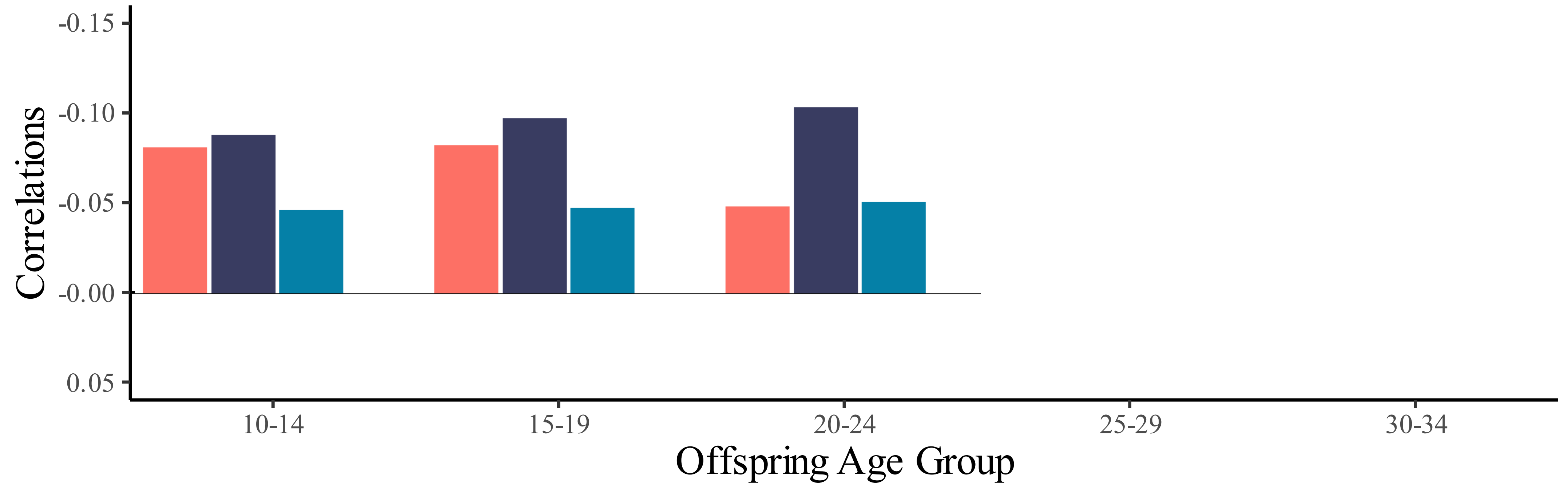
Assortative Mating



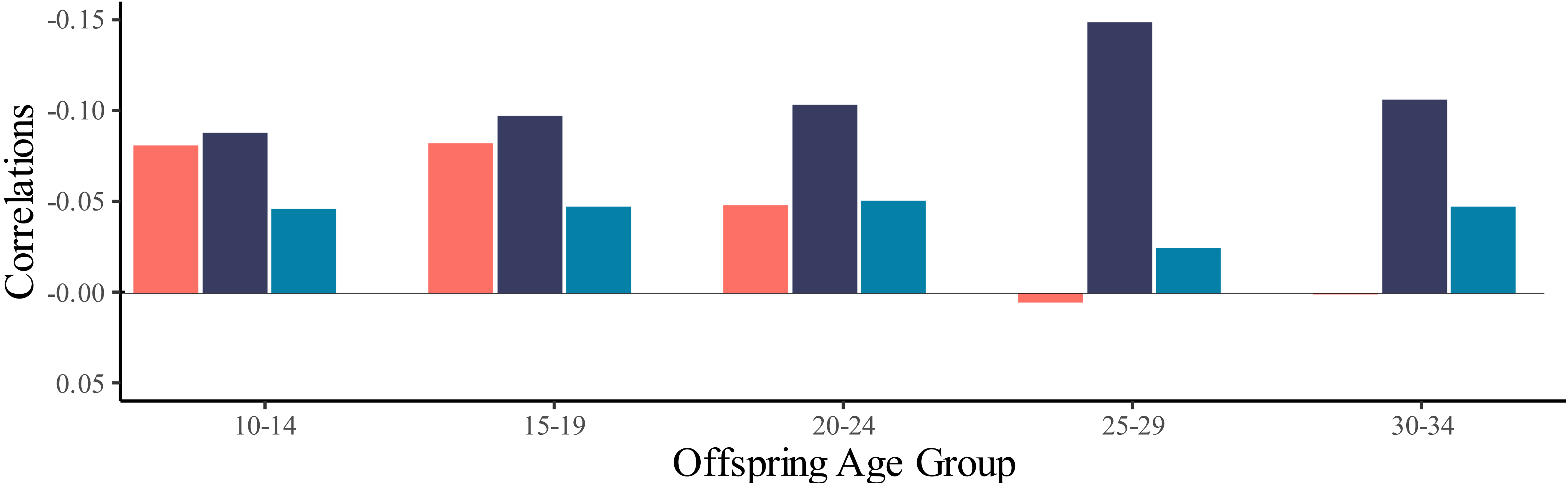
Decomposition: ■ Direct Environmental Transmission ■ Passive Genetic Transmission ■ Assortative Mating



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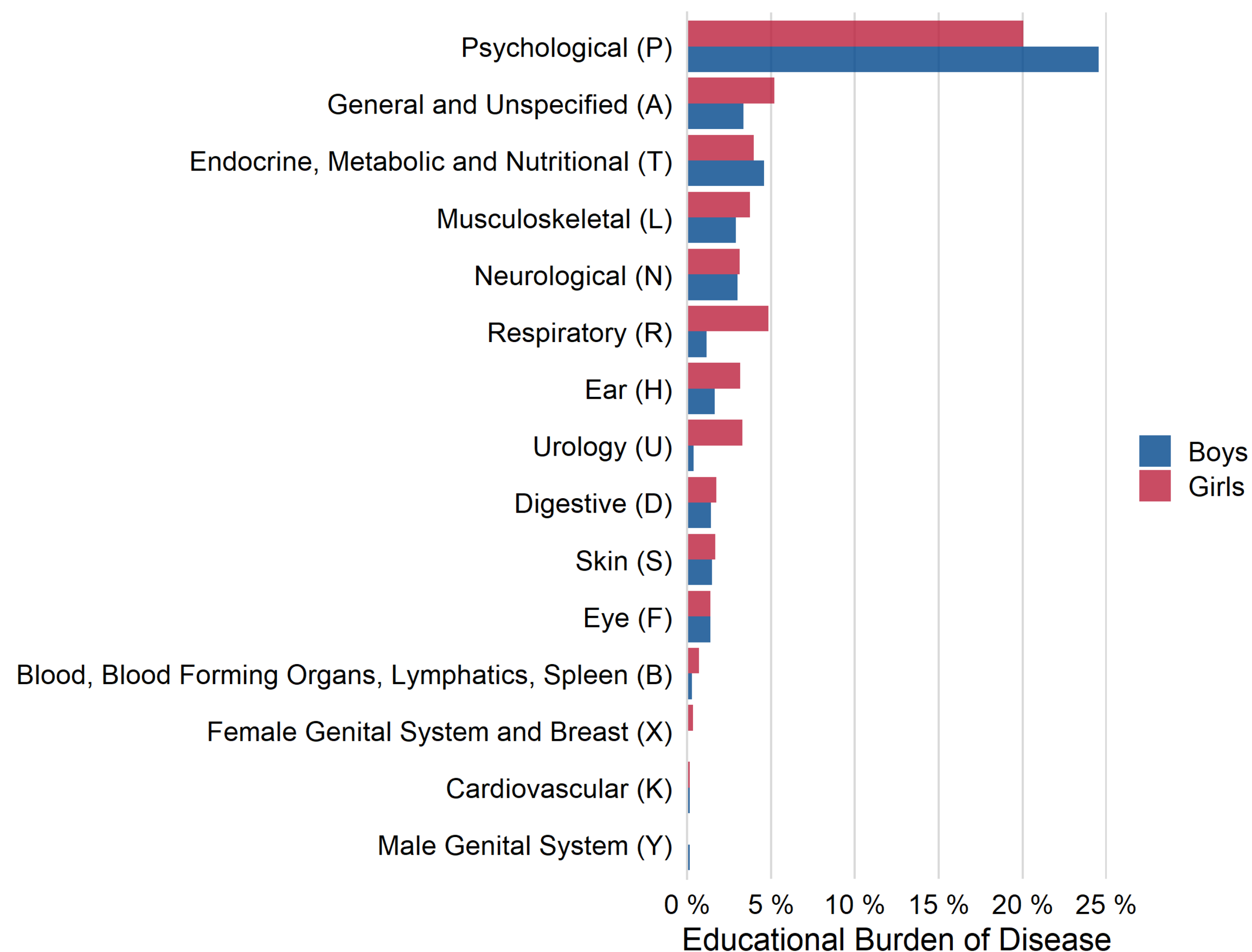
Decomposition: ■ Direct Environmental Transmission ■ Passive Genetic Transmission ■ Assortative Mating



Konsekvenser

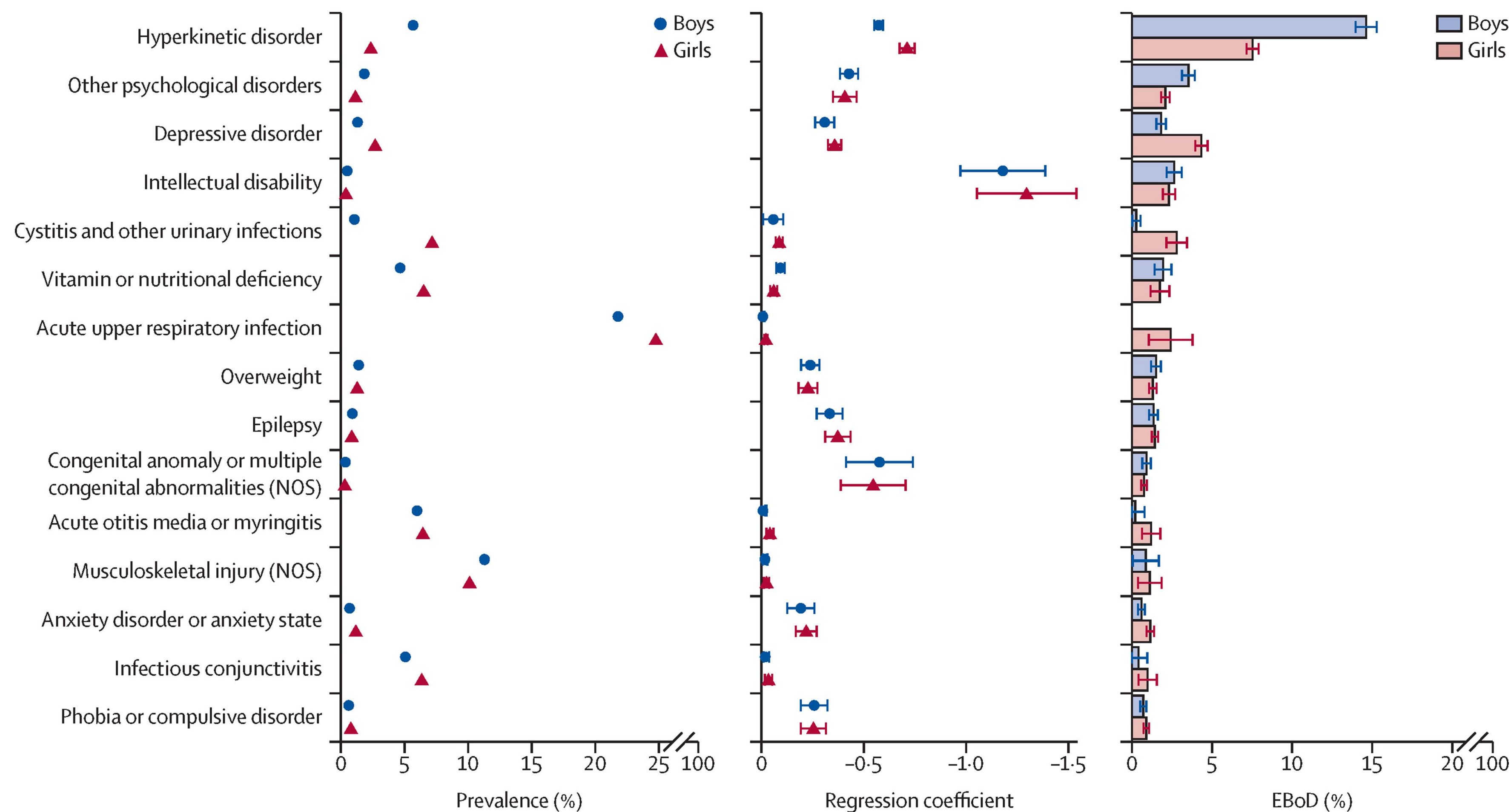
# Psykisk helse forklarer karakterforskjeller

Basert på 467 412 norske barn født 1995-2002



# Psykisk helse forklarer karakterforskjeller

Basert på 467 412 norske barn født 1995-2002

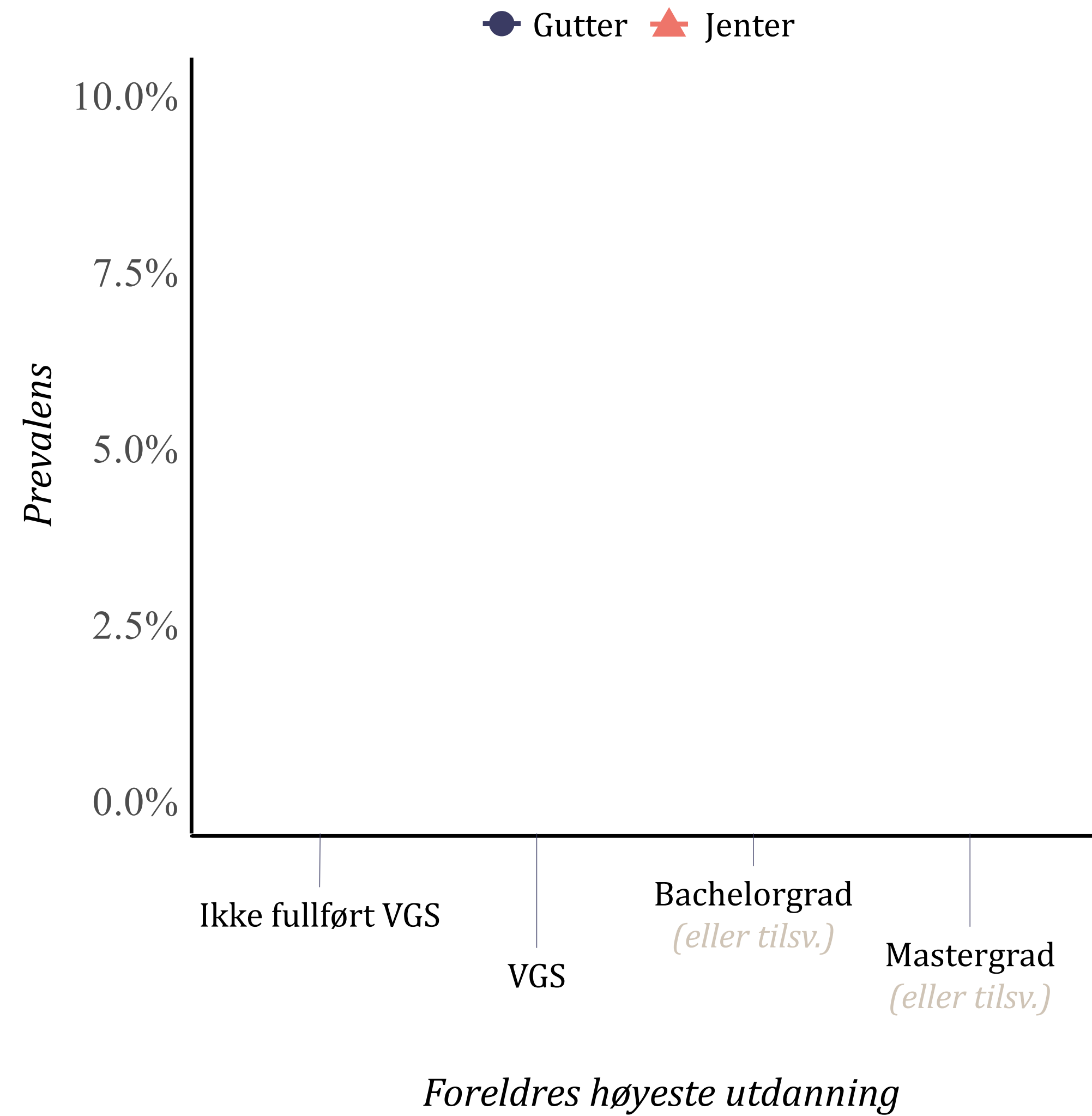


EBoD = Educational burden of disease

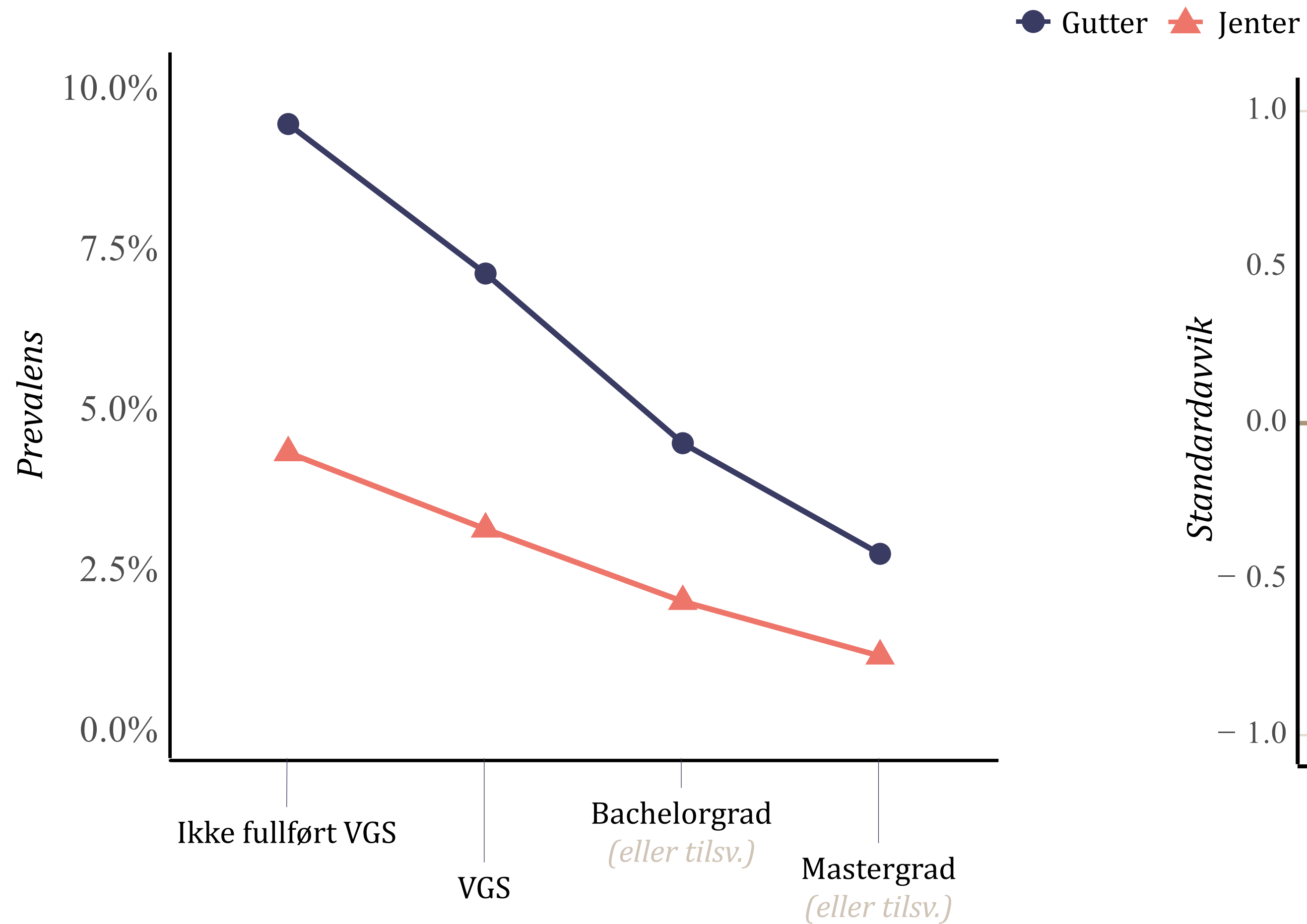
Kilde: Nordmo et al. (2022). Lancet Public Health, 7, e549-e556



# ADHD

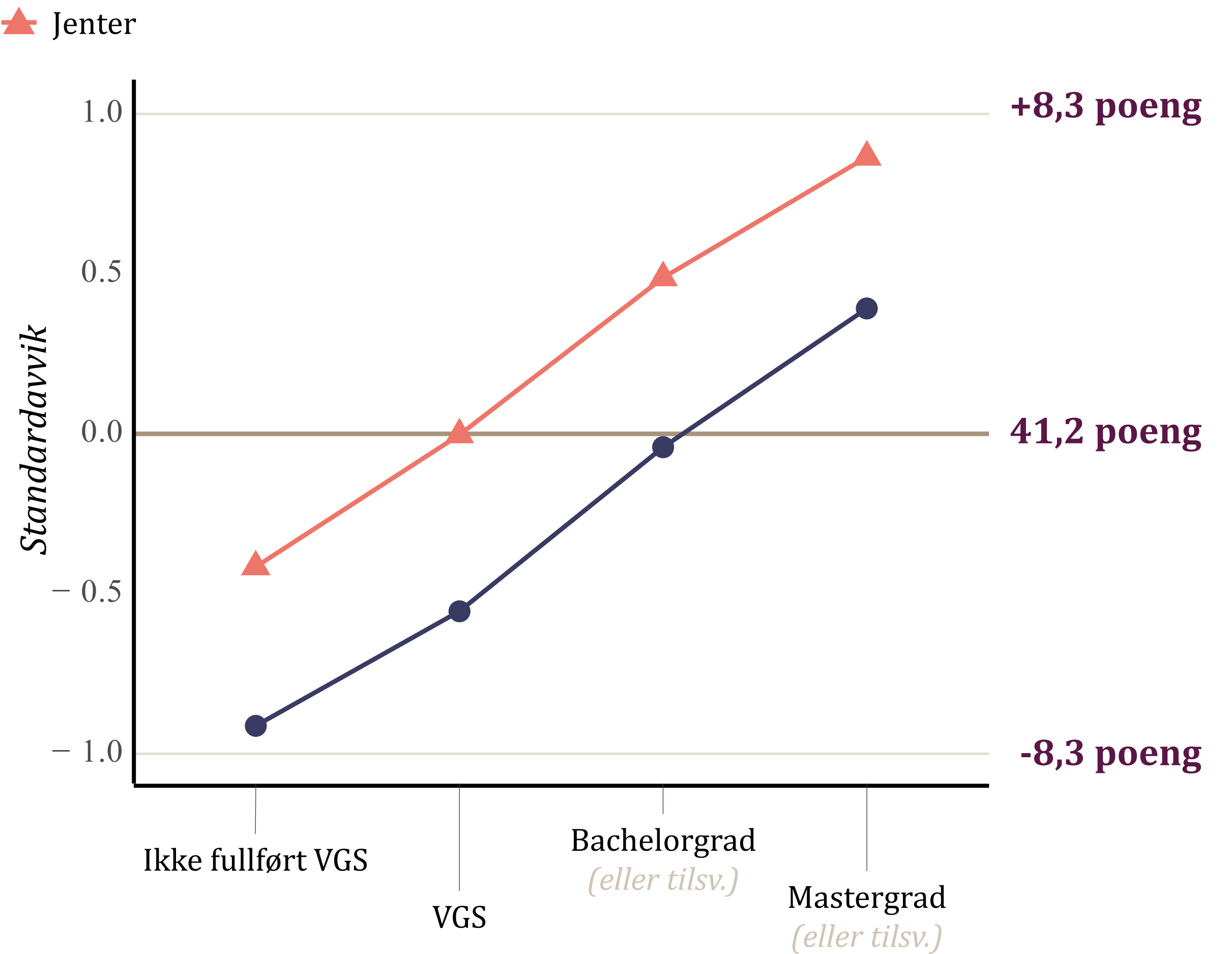


# ADHD



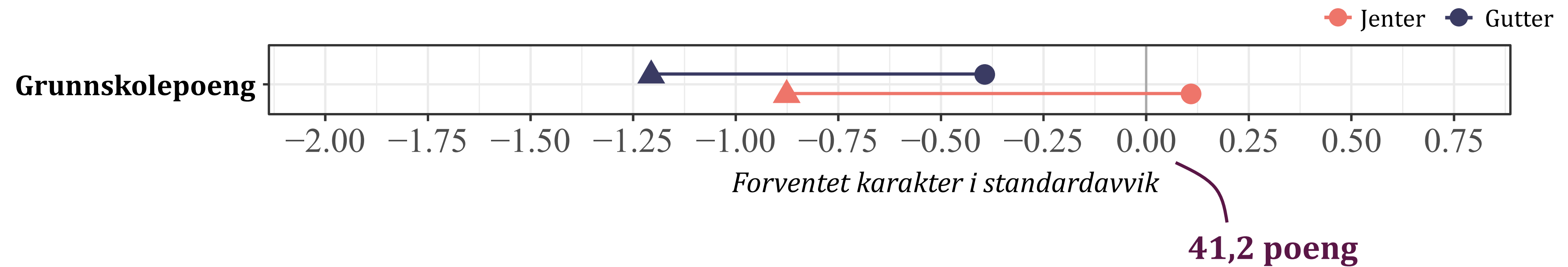
Foreldres høyeste utdanning

# Grunnskolepoeng



# Forventede karakterer

- ▲ Barn **med** ADHD
- Barn **uten** ADHD



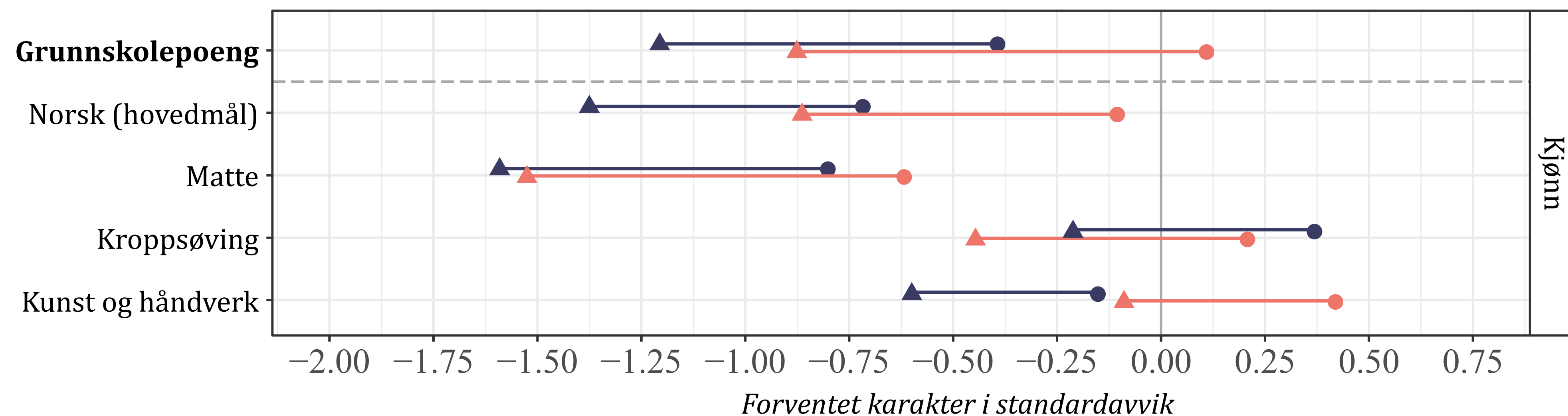
Større *relative* forskjeller for jenter

# Forventede karakterer

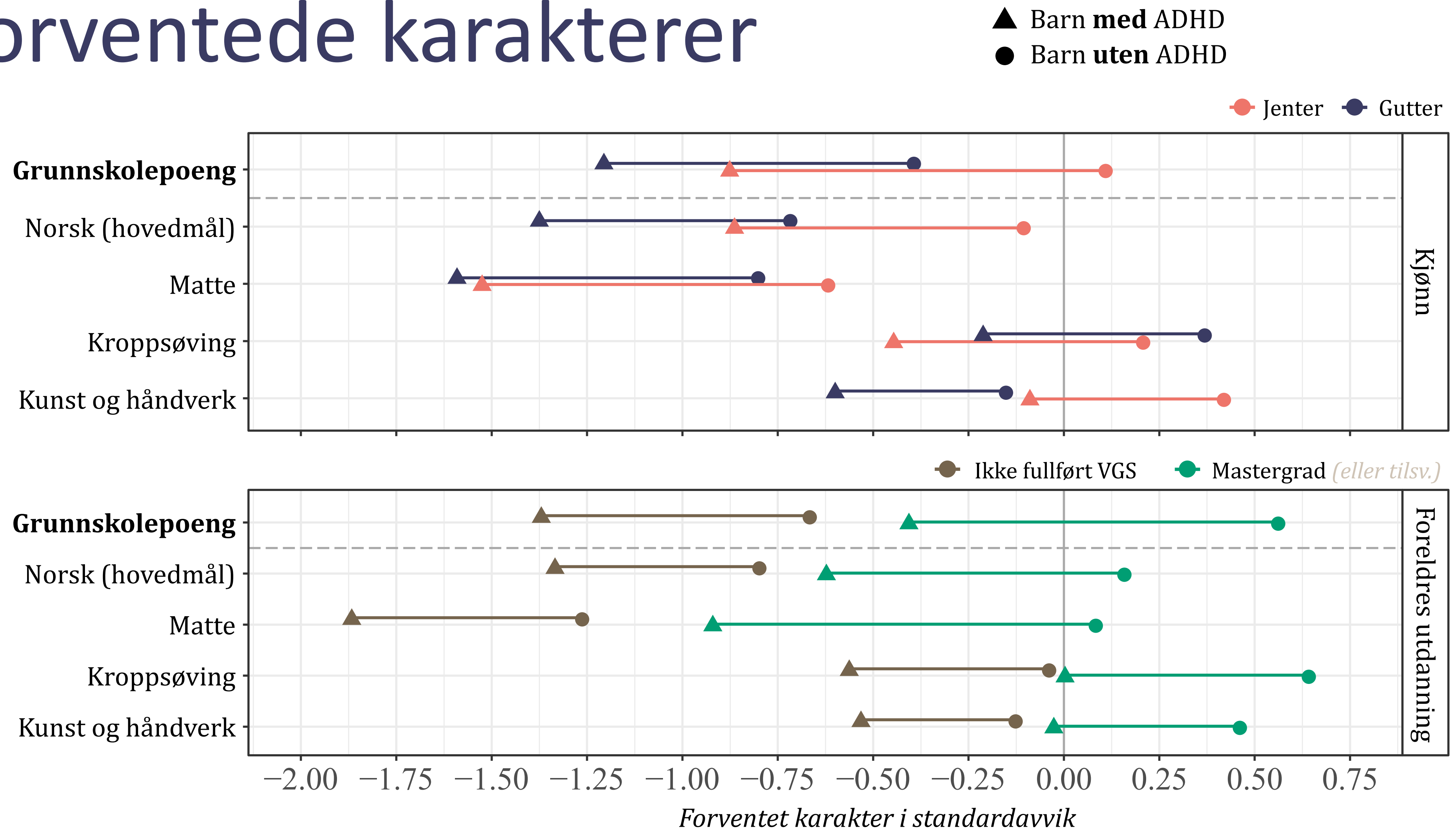
▲ Barn med ADHD

● Barn uten ADHD

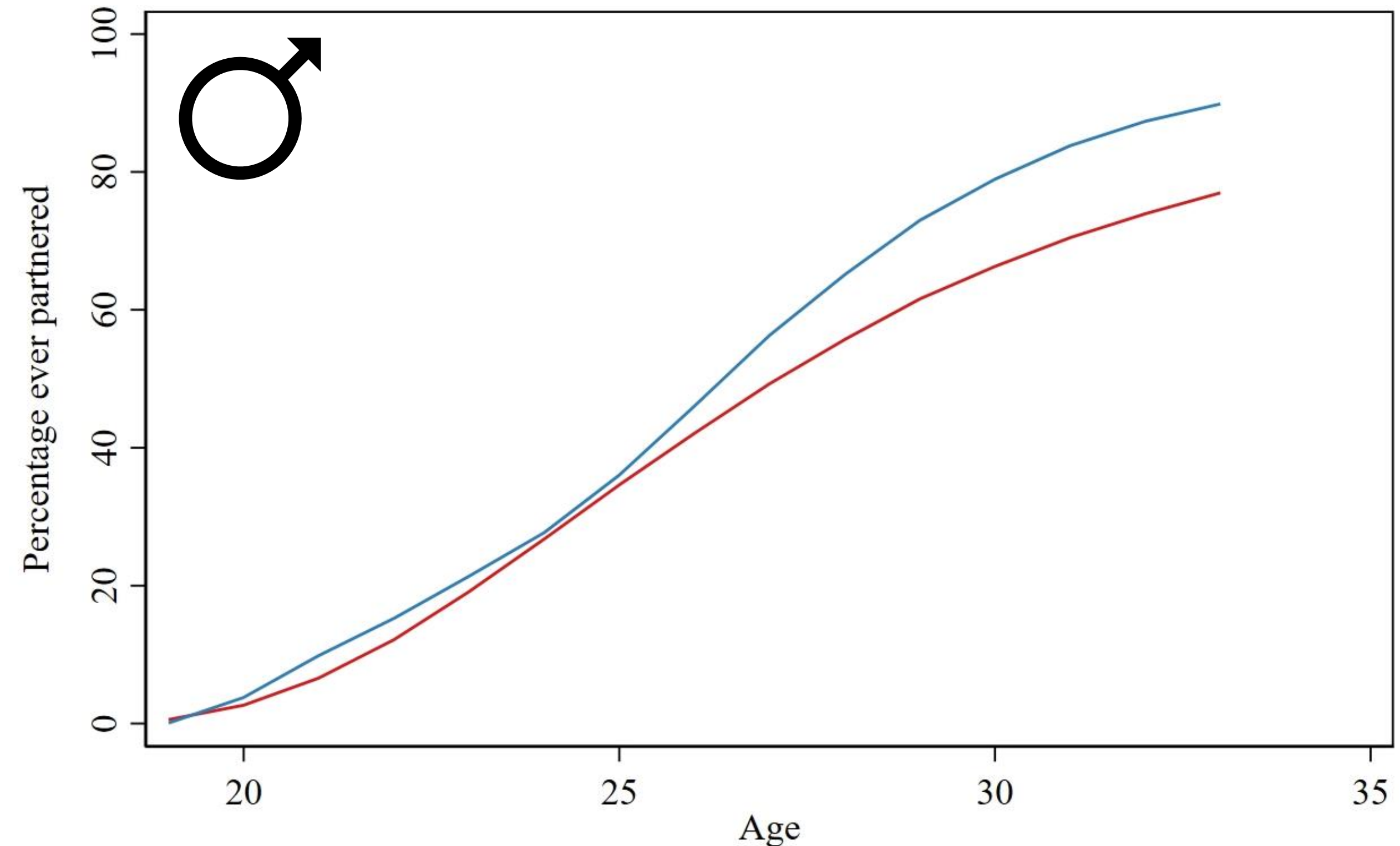
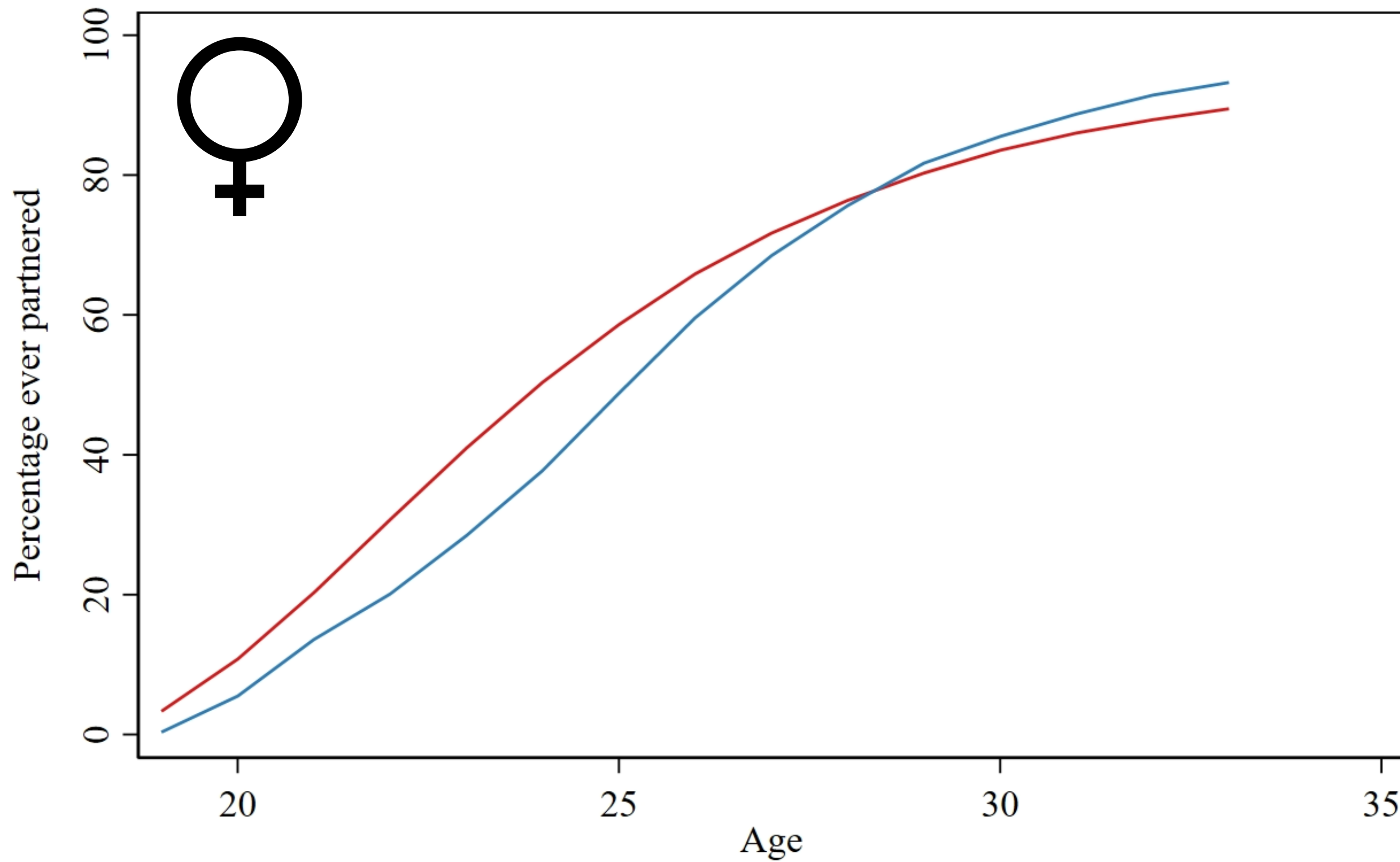
● Jenter ● Gutter



# Forventede karakterer

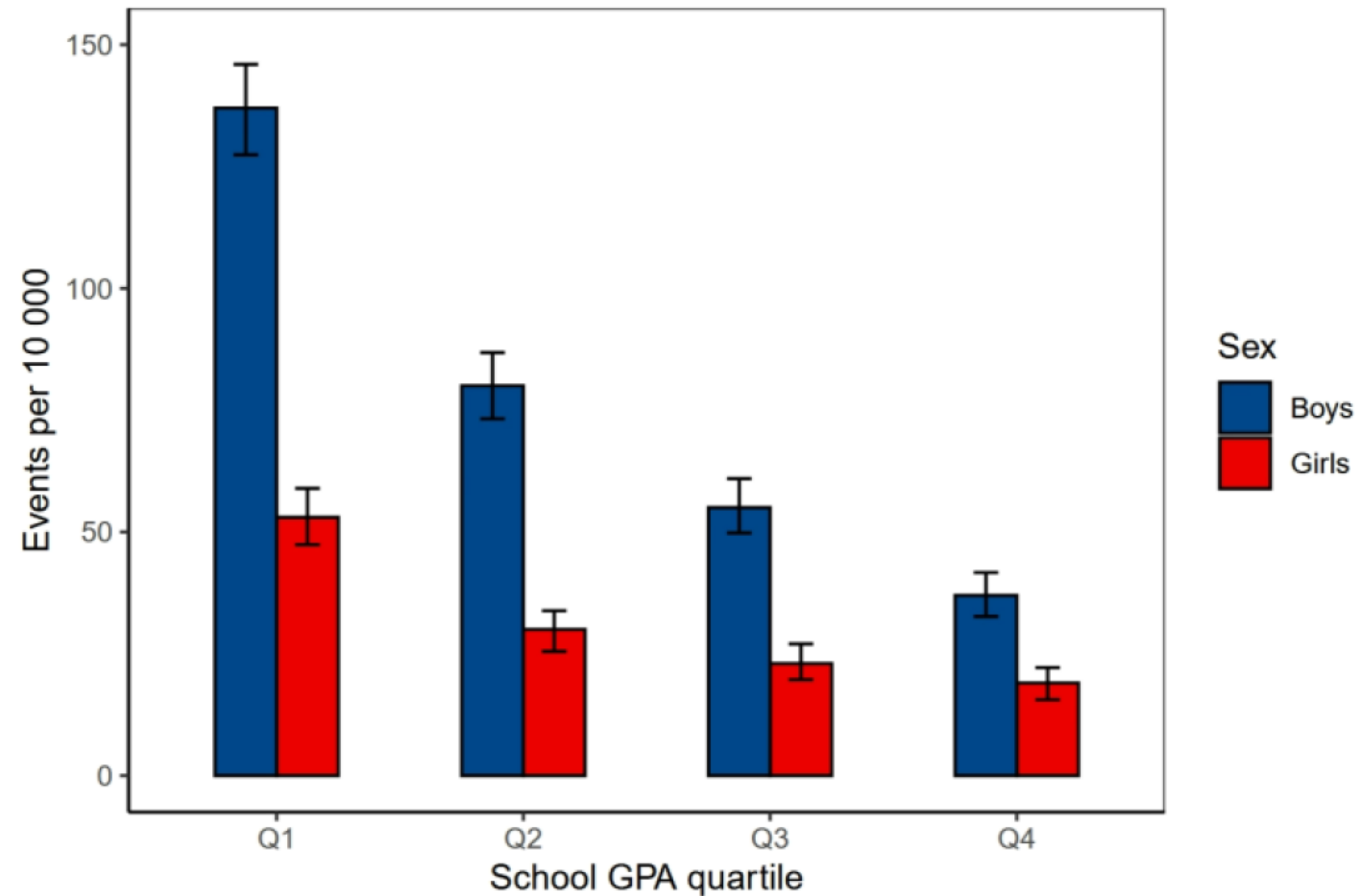


# Vært i parforhold, etter skoleprestasjon



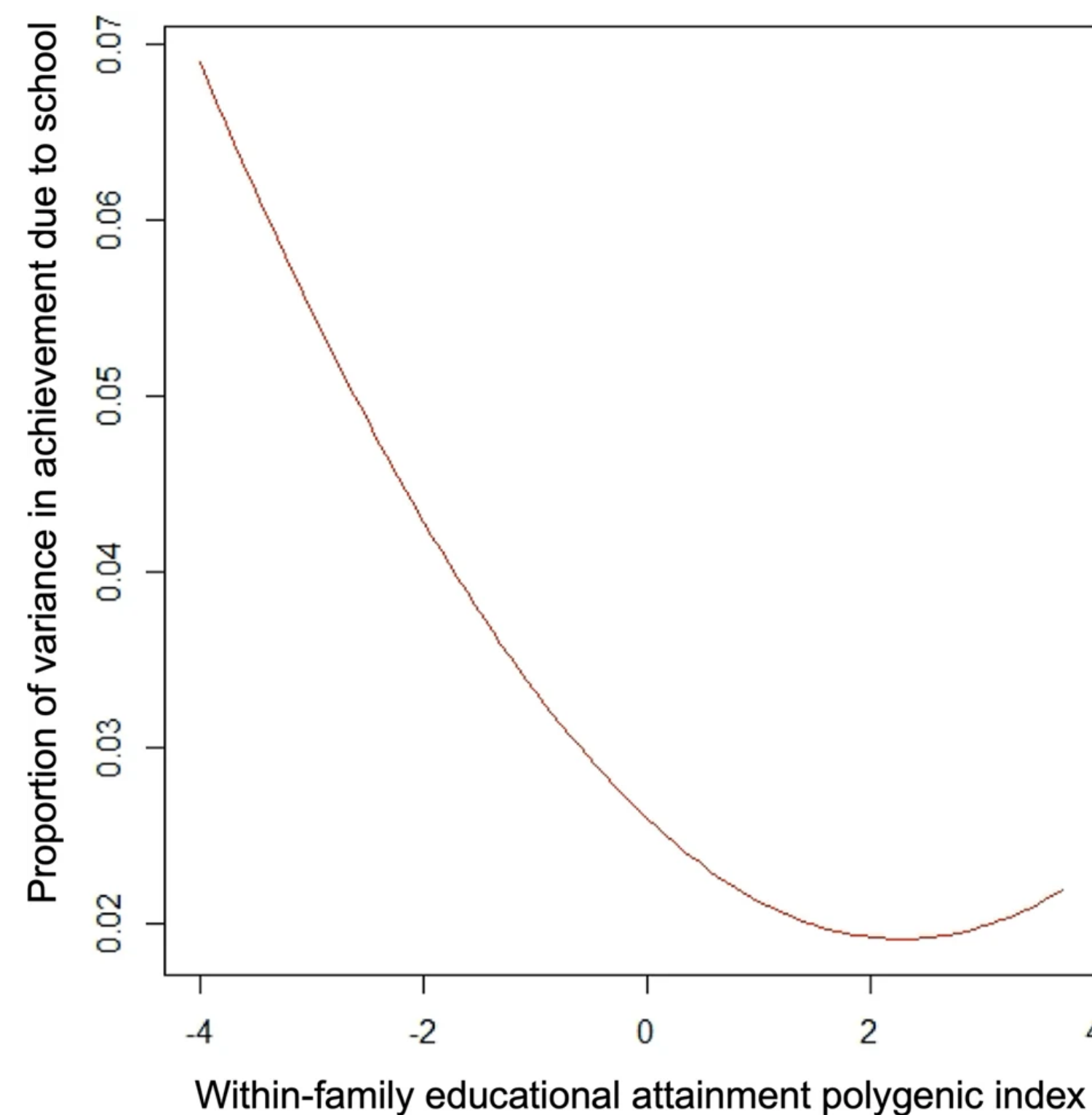
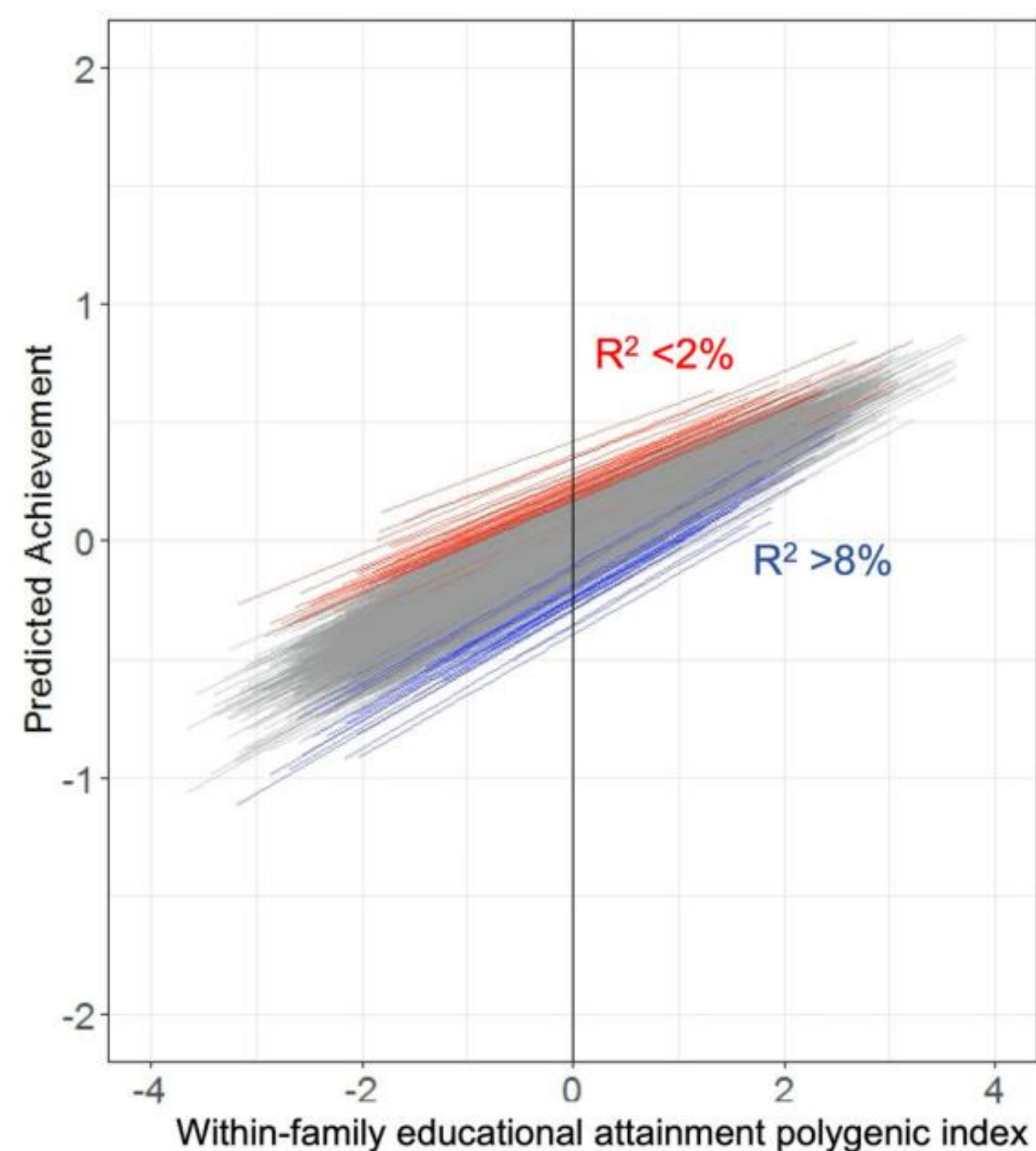
# Egne skoleprestasjoner avgjørende for helse

Risiko for tidlig død forklares av egne prestasjoner, ikke foreldrenes



# Samspill mellom genetikk og skolekvalitet

Gode skoler er viktigst for de med dårligst forutsetninger



For students with within-family EA-PGI that are 2 SD below the mean, schools explain  $\sim 4\%$  of the phenotypic variance, whereas for students with PGI 2 SD above the mean, schools explain  $\sim 2\%$ .

Kilde: Cheesman et al. (2022). A population-wide gene-environment interaction study on how genes, schools, and residential areas shape achievement. *npj Science of Learning*, 7, 29



# Takk for oppmerksomheten!

## Senter for fruktbarhet og helse

Hans Fredrik Sunde  
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Magnus Nordmo  
Bjørn-Atle Reme  
Jonathan Wörn  
Fartein Ask Torvik

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Alexandra Havdahl

## Norce

Camilla Stoltenberg

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Rosa Cheesman  
Espen Moen Eilertsen  
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## Duke University

Avshalom Caspi  
Terri Moffitt

## King's College London

Neil Davies

## University of Boulder Colorado

Matthew C. Keller



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