# The influence of mother's and father's education on educational attainment

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# Questions

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   - the father and/or the mother,

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    - ▶ the highest and/or lowest educated parent,
    - ▶ the same-sex and/or different sex parent, or

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    - ▶ any combination of the three?

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3. Is there a difference between men and women in the effect of parental education?

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3. Is there a difference between men and women in the effect of parental education?
4. Is there a (non-linear) trend in the effect of parental education?

## Main results

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# Main results

- ► Educational attainment is influenced by:
    - ► the highest and lowest educated parent, and
    - ► the same-sex and different sex parent.
- ► These roles have *not* changed.
- ► There is *no* difference between men and women in the effect of parental education.
- ► The effect of parental education has decreased, but this decrease has slowed down.

# Data

- ▶ International Stratification and Mobility File (ISMF) on the Netherlands.
- ▶ 25 surveys held between 1958 and 2003 with information on cohorts 1930-1988.
- ▶ 40,000 respondents aged between 24 and 65 have complete information on child's, father's and mother's education and father's occupation.
- ▶ Number of cases are unequally distributed over cohorts.

## The model

$$ed = coh * fem + coh * fem * fisei + coh * fem * par\_ed$$

$$
\begin{aligned}
par\_ed \;=\; & fed + med + \\
& fed * hi\_fed + med * hi\_med + \\
& fed * male + med * female
\end{aligned}
$$

# Full model

$$
\begin{aligned}
par\_ed \;=\; & fed + med + \\
& fed * hi\_fed + med * hi\_med + \\
& fed * male + med * female
\end{aligned}
$$

|        |               |         | estimate |
|--------|---------------|---------|----------|
| father | same sex      | highest | fed + fed*hi_fed + fed*male |
|        |               | lowest  | fed + fed*male |
|        | different sex | highest | fed + fed*hi_fed |
|        |               | lowest  | fed |
| mother | same sex      | highest | med + med*hi_med + med*female |
|        |               | lowest  | med + med*female |
|        | different sex | highest | med + med*hi_med |
|        |               | lowest  | med |

# Constraints on the roles of father and mother

effect father = effect mother

$$
\begin{aligned}
par\_ed \;=\; & \underbrace{fed + med} + \\
& \underbrace{fed * hi\_fed + med * hi\_med} + \\
& \underbrace{fed * male + med * female}
\end{aligned}
$$

$\chi^2(3) = 7.20$, p = 0.06

## Constraints on the roles of father and mother

effect father = effect mother
no effect highest and lowest educated parent

$$par\_ed = \underbrace{fed + med}_{} +$$
$$\underbrace{fed * hi\_fed + med * hi\_med}_{=0} +$$
$$\underbrace{fed * male + med * female}_{}$$

$\chi^2(4) = 107.86$, p = 0.00

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# Constraints on the roles of father and mother

effect father = effect mother
no effect same-sex and different-sex parent

$$
\begin{aligned}
par\_ed \;=\; & \underbrace{fed + med}_{} + \\
& \underbrace{fed * hi\_fed + med * hi\_med}_{} + \\
& \underbrace{fed * male + med * female}_{=0}
\end{aligned}
$$

$\chi^2(4) = 14.39$, p = 0.01

## Constraints on the roles of father and mother

effect father = effect mother
no effect lowest educated and different sex parent

$$par\_ed = \underbrace{fed + med}_{=0} + \\ \underbrace{fed * hi\_fed + med * hi\_med}_{} + \\ \underbrace{fed * male + med * female}_{}$$

$\chi^2(4) = 320.96$, p = 0.00

# Constraint on changes in the roles of fathers and mothers

if changing roles

$$ed = \cdots + \gamma_{1tg} joined\_ed + \gamma_{2tg} hi\_ed + \gamma_{3tg} ssex\_ed$$

if constant roles

$$
\begin{aligned}
ed &= \cdots + \lambda_{tg}(\gamma_1 joined\_ed + \gamma_2 hi\_ed + \gamma_3 ssex\_ed) \\
&= \cdots + \lambda_{tg} par\_ed
\end{aligned}
$$

This is a proportionality constraint.
$\chi^2(115) = 126.86$, p = 0.21

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## Relative importance of roles

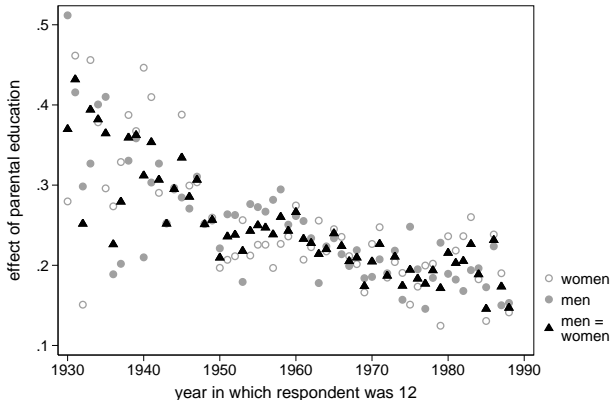|               |         | relative importance | confidence interval |
|---------------|---------|---------------------|---------------------|
| same sex      | highest | 1                   |                     |
|               | lowest  | .88                 | .85 – .90           |
| different sex | highest | .88                 | .79 – .96           |
|               | lowest  | .76                 | .67 – .84           |

# Constraint on the effect of parental education
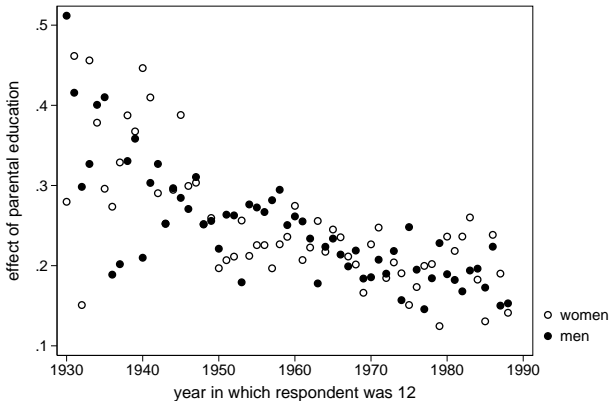
# Constraint on the effect of parental education
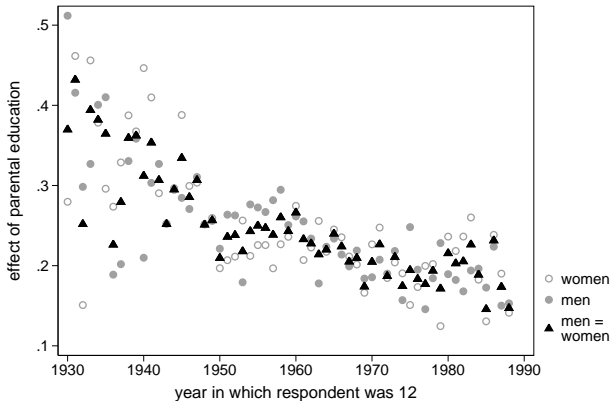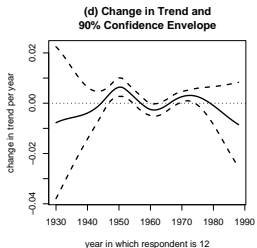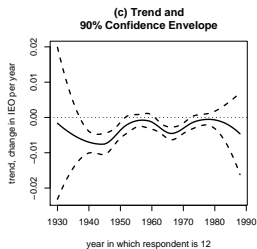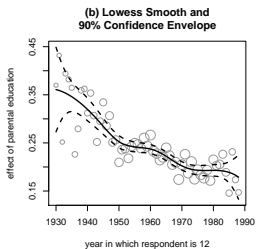
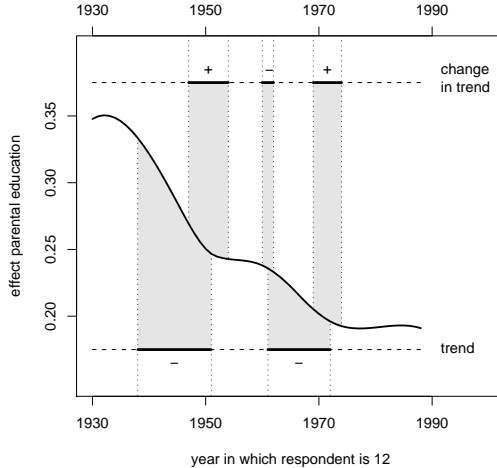# Constraint on the effect of parental education



$\chi^2(59) = 77.21$, p = 0.06

# Loess curve in 1949
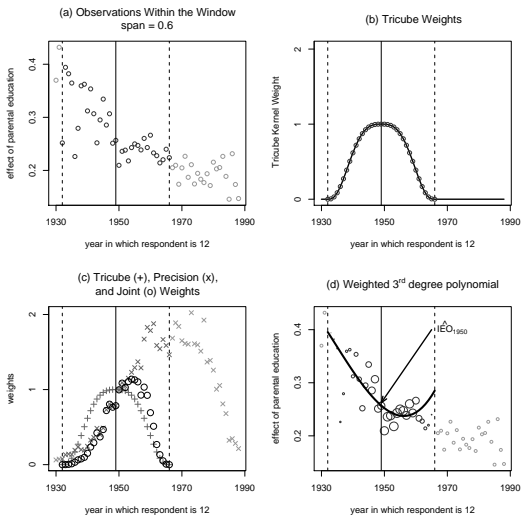
# Non-linear trend

# Summary trend

## Conclusions

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4. Is there a (non-linear) trend in the effect of parental education?

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3. Is there a difference between men and women in the effect of parental education? No difference

4. Is there a (non-linear) trend in the effect of parental education? Mostly declining,

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3. Is there a difference between men and women in the effect of parental education? No difference

4. Is there a (non-linear) trend in the effect of parental education? Mostly declining, but the trend slowed down around 1950, speeded up around 1960 and slowed down again around 1970, and

# Conclusions

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3. Is there a difference between men and women in the effect of parental education? No difference

4. Is there a (non-linear) trend in the effect of parental education? Mostly declining, but the trend slowed down around 1950, speeded up around 1960 and slowed down again around 1970, and the effect of parental education has not changed since 1972.