

Firstborns are overrepresented among biology students:

The influence of family constellation on education considering the age-gap of siblings

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Introduction

Birth order was shown to affect various psychological characteristics, ranging from personality to sexual behavior. Several previous studies also suggested firstborn advantage in educational achievements. However, others did not find such effect. This might be due to neglecting possibly modulating factors such as the age-gap among siblings. Thus in our study, while taking these modulating factors into account, we focused on the effect of birth order on educational achievements.

Methods

Subjects: biology students of Charles University in Prague

- 1st sample: 1990-1995 (N=271)
- 2nd sample: 2011-2015 (N=1355)

Measures: a questionnaire concerning birth order data

Comparison to population:

- data from the Czech Statistical Office

Analysis of age-gaps:

- two-child families only (expected proportion of firstborns/secondborns – 50/50%)
- analysis of concrete age gaps (e. g., "3-4 years")

Results

In both cohorts, we found significantly ($p < 0.001$) higher proportions of firstborns compared to the population (Figure 1). We also observed a decrease in representation of firstborns in the second cohort set. Further, closer age-gap between siblings increased the proportion of firstborns (Figure 2; Spearman's $r = -0.62$, $p = 0.04$). However, without controlling for the age-gap, the proportion of firstborns is only 51.6%.

Figure 2: The age-gap influence between siblings in two-child families on firstborns proportion among subjects (both sexes).

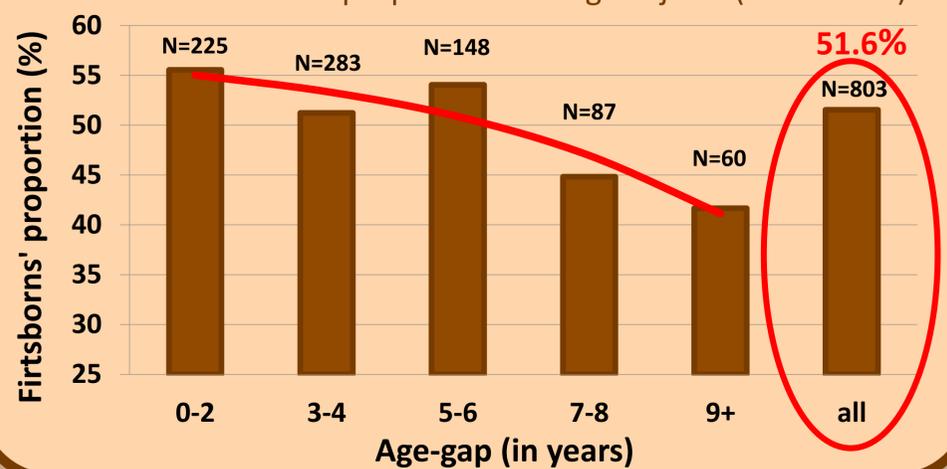
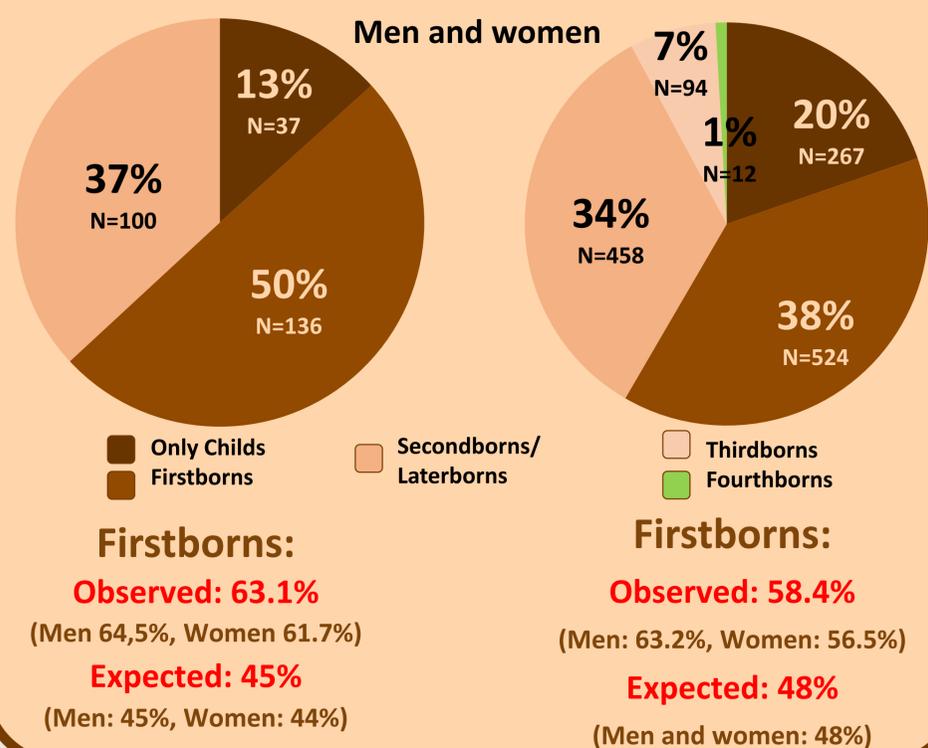


Figure 1: Subjects by birth order

1st sample (1990-1995) 2nd sample (2010-2015)



Conclusions

- Firstborns are overrepresented among biology students regardless of the family size. The proportion of firstborns decreased since 1990 from 63.1% to 58.4%. As the age-gap increases, the proportion of firstborns decreases.
- Our results support previous findings on the firstborn advantage in educational achievements. They also highlight the importance to control for the age-gap between siblings. If not controlled, using average of proportions of firstborns of all the age-gap groups may lead to misleading results because averaging data from different age-gap groups, which may manifest different effect directions, may make it seem as if there is no effect of birth order at all.



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