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*Descriptive Finding*

# Parental education and the gender gap in university completion in Europe

**Anne McDaniel**

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*Demographic Research*: Volume 29, Article 3
*Descriptive Finding*

# Parental education and the gender gap in university completion in Europe

**Anne McDaniel**[1]

## Abstract

**BACKGROUND**
A female-favorable gender gap in university completion has emerged in the majority of industrialized countries in recent decades. Research in the United States demonstrates that the female advantage in college completion is the largest among individuals with low-educated parents, but it is not known whether this pattern also exists in European countries.

**OBJECTIVE**
This article has three main objectives: 1) to illustrate the growing female advantage in university completion across European countries, 2) to provide evidence on whether gender differences in university completion differ by parents' level of education in those countries, and 3) to investigate whether these patterns changed across cohorts.

**METHODS**
Using pooled data from the 2002 to 2010 European Social Survey, this article investigates gender differences in university completion by levels of parental education across three birth cohorts (1955-1964, 1965-1974, 1975-1984) in 16 European countries.

**RESULTS**
A female-favorable gender gap in university completion has emerged over time in the majority of European countries but, unlike in the United States, parental education has similar effects on university completion for males and females in a majority of countries and birth cohorts.

**CONCLUSIONS**
The analyses demonstrate that parental education has similar effects on males' and females' university completion across the majority of European countries studied, and is not an important predictor of the female-favorable gender gap in university completion in Europe, in contrast to the United States.

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## 1. Introduction

Thirty years ago men completed more college degrees than women in most countries throughout the world (Bradley and Ramirez 1996). In the 1980s women began to surpass men in degree attainment. Currently, women complete more university degrees than men in most European countries (UNESCO 2012). The female advantage in higher education is well documented in the United States (Buchmann, DiPrete and McDaniel 2008), but less is known about the causes of gender gap in higher education in Europe. Research in the United States finds that the female-favorable gender gap in educational outcomes is larger among working class families (King 2000; Bozick and DeLuca 2005). Buchmann and DiPrete (2006) found that the female-favorable gender gap in college completion in the U.S. is the largest among the lowest-educated families (fathers with a high school education or less). Legewie and DiPrete (2009) attempted to replicate this research using data from Germany. In the German cohort born between 1960 and 1982 females lag behind males in rates of university completion, and the male-favorable gap is larger among low-educated parents (in contrast to U.S. findings). However, among this cohort, females overtook males in secondary education completion in families with low-educated parents. Legewie and DiPrete (2009) argue that the gender gap in university completion remains male-favorable; however trends in secondary education completion among individuals with low-educated parents suggest Germany may be moving in a similar direction as the United States. It is not known whether gender gaps in university completion vary by parental education across other European countries, or to what extent these trends have changed among recent cohorts.

The aims of this article are threefold: 1) to illustrate the changing gender gaps in university completion across European countries, 2) to provide evidence on whether gender differences in university completion differ by parents' level of education in those countries, and 3) to investigate whether these patterns changed over time by examining three recent birth cohorts (1955-1964, 1965-1974, 1975-1984). Using pooled data from the European Social Survey from 2002 to 2010, I describe gender-specific trends in university completion for three recent cohorts.

## 2. Data and methods

This study utilizes pooled data from the 2002 to 2010 European Social Survey (ESS), a cross-sectional, cross-national biennial survey of attitudes and opinions that contain demographic data. The ESS contains nationally representative surveys of individuals aged 15 or older in 30 countries. Large efforts were taken to guarantee comparability of the ESS across countries, especially in terms of translating questionnaires and

harmonizing data. ESS data are appropriate for this study because they provide information on both parental and respondent educational attainment for many European countries and over an extended period of time.

Sixteen European countries were selected on the basis of availability of at least two waves of data on respondent education and the reported education of their parents. Because I am interested in how the relationship between gender, parental education, and university completion changes over time, I select individuals born in the 1955-1964, 1965-1974, and 1975-1984 birth cohorts in the pooled ESS data. I further restrict the sample to individuals aged 24 or older at the time of the survey to capture individuals who have had an opportunity to complete university education. The ESS questionnaires were fielded over the course of two years (2002/2003, 2004/2005, 2006/2007, 2008/2009, and 2010/2011) depending on the country. Because I am using pooled ESS data from 2002 to 2010, and relying on birth cohorts based on the year the respondent was born, the age range of each cohort varies from 38 to 56 in the 1955-1965 cohort, 28 to 46 in the 1965-1974 cohort, and 24 to 36 in the 1975-1984 cohort. For example, in 2002 (/2003 survey) the 1955-1964 cohort ranged in age from 38 to 48. By 2010 (/2011 survey), the 1955-1964 cohort ranged in age from 46 to 56. Pooled data are used to provide appropriate sample sizes for analysis across countries and by gender and parental education level. Below I describe the main variables of interest in this study: university completion and parental education. Regression models also include controls for respondent's age and are weighted using the appropriate survey weights (Ganninger 2007).

### 2.1 University completion

The dependent variable is whether an individual has completed university education. In each country individuals were asked about the highest level of education they had completed. Responses were coded using the EISCED variable, which is a harmonized, seven-category education variable based on the International Standard Classification of Education 1997. The EISCED variable, developed by Schneider (2009) and implemented by the ESS (2009), is recommended for any analysis using cross-country comparisons with the ESS data. Individuals who completed a lower or higher tertiary degree, equivalent to an academic bachelor's degree or higher (known as ISCED 5A/6), are coded as having completed a university degree. Descriptive statistics for the dependent variable, parental education, sample sizes, and missing data are presented in Table 1 for each country and birth cohort.

## Table 1: Descriptive statistics by country and birth cohort

| | | | Education | | Parental Education | | | |
|---|---|---|---|---|---|---|---|---|
| | N | % Female | % Completed University | % Missing Data | % Primary | % Secondary | % Post-Secondary | % Missing Data |
| **1955-1964 Cohort** | | | | | | | | |
| Belgium | 1,656 | 51.9 | 33.3 | 0.2 | 56.7 | 24.4 | 18.9 | 4.9 |
| Czech Rep. | 1,340 | 49.9 | 13.2 | 0.6 | 11.8 | 74.7 | 13.5 | 1.7 |
| Denmark | 1,402 | 50.9 | 30.6 | 0.4 | 37.5 | 36.3 | 26.2 | 1.4 |
| Estonia | 1,142 | 56.8 | 25.2 | 0.1 | 43.1 | 28.7 | 28.2 | 2.6 |
| France | 1,009 | 51.4 | 14.3 | 0.4 | 63.3 | 26.8 | 9.9 | 5.9 |
| Germany | 2,972 | 51.5 | 22.1 | 0.1 | 10.7 | 63.6 | 25.6 | 2.6 |
| Hungary | 1,261 | 54.7 | 16.4 | 0.5 | 59.3 | 29.1 | 11.7 | 1.6 |
| Ireland | 736 | 59.8 | 30.1 | 0.6 | 55.0 | 18.3 | 26.7 | 6.6 |
| Netherlands | 1,880 | 56.3 | 25.8 | 0.0 | 70.1 | 15.4 | 14.6 | 3.4 |
| Norway | 1,649 | 48.2 | 38.7 | 0.6 | 37.4 | 32.5 | 30.2 | 0.7 |
| Poland | 1,582 | 49.5 | 13.2 | 0.3 | 62.3 | 31.0 | 6.7 | 1.4 |
| Russian Fed. | 1,237 | 58.9 | 28.6 | 0.0 | 47.2 | 18.1 | 34.7 | 3.0 |
| Slovakia | 869 | 52.6 | 15.7 | 2.4 | --- | --- | --- | --- |
| Slovenia | 1,219 | 55.4 | 15.1 | 0.1 | 46.0 | 44.8 | 9.3 | 1.6 |
| Spain | 1,617 | 52.0 | 21.1 | 0.3 | --- | --- | --- | --- |
| Switzerland | 1,753 | 53.0 | 15.6 | 0.4 | 33.1 | 46.2 | 20.7 | 1.8 |
| **1965-1974 Cohort** | | | | | | | | |
| Belgium | 1,519 | 48.7 | 42.5 | 0.6 | 41.6 | 31.5 | 26.9 | 4.9 |
| Czech Rep. | 1,447 | 54.3 | 9.9 | 0.3 | 10.0 | 74.1 | 15.9 | 1.1 |
| Denmark | 1,346 | 51.0 | 37.2 | 0.7 | 23.5 | 37.8 | 38.7 | 1.0 |
| Estonia | 1,048 | 55.8 | 26.3 | 0.0 | 22.6 | 34.3 | 43.1 | 1.9 |
| France | 1,056 | 54.6 | 21.3 | 0.1 | 50.8 | 32.7 | 16.5 | 6.4 |
| Germany | 2,378 | 51.6 | 22.3 | 0.2 | --- | --- | --- | --- |
| Hungary | 1,255 | 55.0 | 19.3 | 0.8 | 45.3 | 35.9 | 18.8 | 1.5 |
| Ireland | 791 | 58.2 | 37.6 | 1.0 | 41.3 | 22.3 | 36.4 | 4.0 |
| Netherlands | 1,906 | 57.6 | 29.8 | 0.1 | 60.0 | 18.0 | 22.0 | 2.6 |
| Norway | 1,686 | 47.7 | 47.0 | 0.9 | 23.0 | 31.3 | 45.7 | 1.6 |
| Poland | 1,304 | 50.6 | 21.1 | 0.6 | 36.3 | 51.1 | 12.7 | 1.2 |
| Russian Fed. | 1,187 | 56.7 | 30.4 | 0.0 | 24.4 | 22.7 | 53.0 | 3.7 |
| Slovakia | 867 | 51.9 | 17.3 | 2.3 | 19.9 | 67.0 | 13.1 | 2.8 |
| Slovenia | 1,120 | 52.3 | 19.8 | 0.4 | 32.9 | 52.2 | 14.8 | 0.5 |
| Spain | 1,874 | 50.5 | 28.1 | 0.6 | 80.3 | 5.7 | 14.1 | 2.5 |
| Switzerland | 1,848 | 53.0 | 18.0 | 0.4 | 27.2 | 48.5 | 24.3 | 1.6 |

**Table 1: (Continued)**

| | | | Education | | Parental Education | | | |
|---|---|---|---|---|---|---|---|---|
| | N | % Female | % Completed University | % Missing Data | % Primary | % Secondary | % Post-Secondary | % Missing Data |
| **1975-1984 Cohort** | | | | | | | | |
| Belgium | 970 | 50.0 | 48.9 | 0.3 | 25.1 | 34.9 | 40.0 | 3.8 |
| Czech Rep. | 1,109 | 47.9 | 12.5 | 0.0 | 3.5 | 75.4 | 21.1 | 1.1 |
| Denmark | 709 | 51.3 | 40.8 | 0.8 | 14.1 | 32.6 | 53.3 | 1.3 |
| Estonia | 823 | 52.9 | 29.9 | 0.1 | --- | --- | --- | --- |
| France | 799 | 57.3 | 27.9 | 0.1 | 36.5 | 40.0 | 23.5 | 3.7 |
| Germany | 1,333 | 50.6 | 19.7 | 0.5 | 9.5 | 60.2 | 30.3 | 2.8 |
| Hungary | 971 | 54.0 | 21.7 | 0.9 | 26.5 | 48.9 | 24.6 | 0.8 |
| Ireland | 649 | 44.9 | 39.8 | 0.3 | 24.0 | 26.2 | 49.9 | 4.2 |
| Netherlands | 937 | 53.4 | 33.7 | 0.0 | 47.1 | 20.3 | 32.6 | 2.4 |
| Norway | 943 | 47.4 | 50.0 | 0.5 | 13.5 | 28.4 | 58.1 | 1.0 |
| Poland | 1,181 | 50.4 | 33.6 | 0.0 | 20.2 | 61.1 | 18.7 | 1.5 |
| Russian Fed. | 1,142 | 52.2 | 36.2 | 0.0 | 10.0 | 21.1 | 68.9 | 3.8 |
| Slovakia | 691 | 52.9 | 22.1 | 1.9 | 12.6 | 70.8 | 16.6 | 1.1 |
| Slovenia | 864 | 50.5 | 26.4 | 0.3 | 19.9 | 58.8 | 21.4 | 1.5 |
| Spain | 1,414 | 51.0 | 31.6 | 0.2 | 70.9 | 11.1 | 18.0 | 1.6 |
| Switzerland | 921 | 51.4 | 18.6 | 0.0 | 22.8 | 46.9 | 30.4 | 1.9 |

*Note*: Data are weighted. The age range for individuals in the pooled 2002-2010 ESS data in each cohort is: 1955-1965 cohort, ages 38-56; 1965-1974 cohort, ages, ages 28-46; 1975-1984 cohort, ages 24-36.

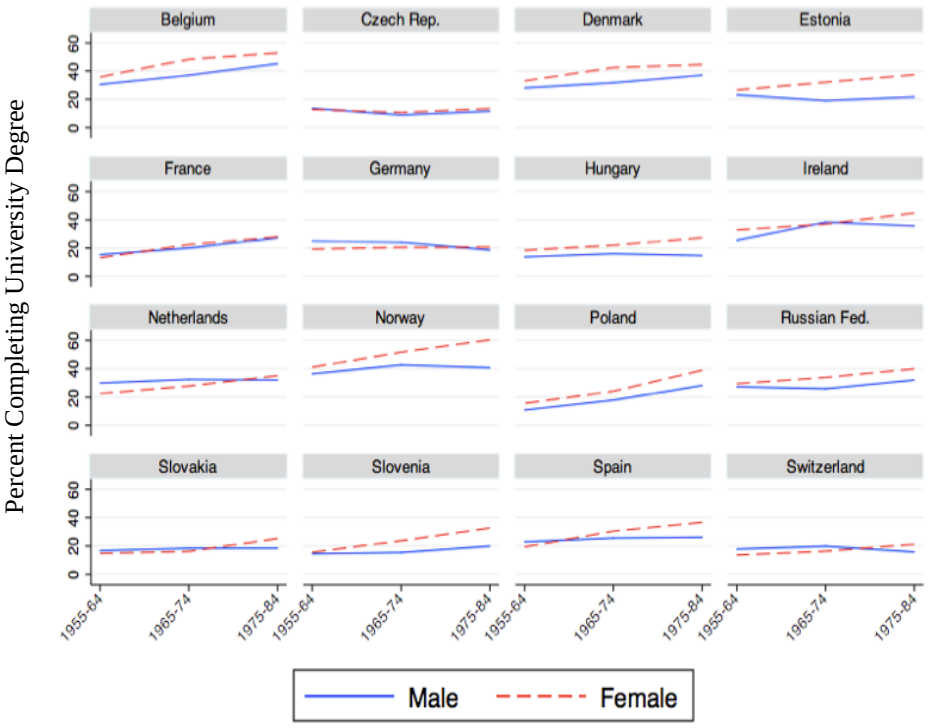
## 2.2 Parental education

Parental education is measured from respondent reports of their mother's and father's highest level of education completed. The highest education level completed by either the mother or father is used to create the parental education variable. Parental education includes three categories: primary education, secondary education, and post-secondary education. Post-secondary education represents any level of education beyond secondary education, including vocational or academic tertiary education as well as non-tertiary post-secondary education. The parental education data available in the ESS do not distinguish between university completion and other post-secondary completion. In a few cohorts and a few countries sample sizes are too small (N<30) to allow for analyses by the three-category parental education variable and gender, so results are omitted (see Tables 1 and 3). Additional analyses examined mother's and father's education separately when permitted by sample sizes, but results did not differ from the those presented. Results for combined parental education are presented for ease of presentation and interpretation.

## 3. Results

Figure 1 presents gender-specific trends in university completion by birth cohort for each country. Among the earliest cohort, 1955-1964, a similar percentage of males and females completed university education in most countries. Over time, in the majority of countries, a greater percentage of females completed university degrees than males. The largest gains by females were made in Norway, Estonia, and Slovenia. In the Czech Republic, France, the Netherlands, and Germany, completion rates for males and females are similar in the most recent (1975-1984) birth cohort.

**Figure 1: Trends in university completion, by country, gender, and birth cohort**




*Source*: European Social Survey, 2002-2010. The age range for individuals in the pooled 2002-2010 ESS data in each cohort is: 1955-1965 cohort, ages 38-56; 1965-1974 cohort, ages 28-46; 1975-1984 cohort, ages 24-36.

### 3.1 Gender gaps in university completion

Table 2 presents female odds ratios from logistic regressions of university completion for each country and birth cohort (controlling for age). In the earliest birth cohort, 1955-1964, females are significantly more likely to complete a university degree than males in 6 countries: Belgium, Denmark, Ireland, Hungary, Norway, and Poland. Males are significantly more likely to complete a university degree in 4 countries: Germany, Netherlands, Spain, and Switzerland. Males and females have similar odds of completing a university degree in the remaining 6 countries: Czech Republic, Estonia, France, Russia, Slovenia, and Slovakia.

**Table 2: Female/male odds ratio from logistic regression of university completion, by birth cohort and country**

| | 1955-1964 | 1965-1974 | 1975-1984 |
|---|---|---|---|
| Belgium | 1.27 * | 1.59 ** | 1.36 * |
| | (.13) | (.17) | (.18) |
| Czech Rep. | 0.90 | 1.22 | 1.18 |
| | (.17) | (.24) | (.23) |
| Denmark | 1.25 * | 1.60 ** | 1.39 * |
| | (.15) | (.18) | (.23) |
| Estonia | 1.20 | 2.01 ** | 2.12 ** |
| | (.17) | (.30) | (.34) |
| France | 0.83 | 1.15 | 1.05 |
| | (.17) | (.19) | (.18) |
| Germany | 0.71 ** | 0.81 * | 1.13 |
| | (.07) | (.08) | (.17) |
| Hungary | 1.42 + | 1.47 * | 2.19 ** |
| | (.26) | (.26) | (.42) |
| Ireland | 1.46 * | 0.95 | 1.42 + |
| | (.28) | (.17) | (.27) |
| Netherlands | 0.68 ** | 0.80 * | 1.14 |
| | (.08) | (.08) | (.17) |
| Norway | 1.21 + | 1.43 ** | 2.18 ** |
| | (.12) | (.14) | (.30) |
| Poland | 1.50 * | 1.47 ** | 1.62 ** |
| | (.22) | (.20) | (.20) |
| Russian Fed. | 1.15 | 1.46 ** | 1.41 * |
| | (.16) | (.21) | (.19) |
| Spain | 0.81 + | 1.27 * | 1.63 ** |
| | (.10) | (.14) | (.20) |
| Slovenia | 1.07 | 1.71 ** | 1.94 ** |
| | (.17) | (.26) | (.31) |
| Slovakia | 0.86 | 0.87 | 1.51 + |
| | (.20) | (.20) | (.37) |
| Switzerland | 0.73 * | 0.78 | 1.38 + |
| | (.10) | (.10) | (.25) |

*Note*: Models include control for age. Standard errors in parentheses. +p<0.10, *p<0.05, **p<0.01.

In the 1965-1974 birth cohort the female advantage in university completion spreads to Estonia, Russia, Spain, and Slovenia. The male advantage disappears, and there is no longer a significant gender difference in university completion in Switzerland. In Ireland the female advantage also disappears. In the 1975-1984 birth cohort, females are more likely to complete a university degree than males in 12 out of 16 countries (Belgium, Denmark, Estonia, Hungary, Ireland, Norway, Poland, Russia, Spain, Slovenia, Slovakia, and Switzerland). In four countries, Czech Republic, France, Germany, and the Netherlands, there is no gender difference in university completion. Among the most recent birth cohort males are not more likely than females to complete a degree in any country. Results for Germany likely differ from Legewie and DiPrete's (2009) findings of a male advantage in university completion because the birth cohorts in this study are smaller (1975 to 1984 compared to 1960 to 1982).

Additional analyses (not shown) that include interactions between gender and birth cohort find that the female-favorable gender gap grows significantly over time in Estonia, Hungary, Norway, Spain, Slovenia, Slovakia, and Switzerland. Changes over time in Germany and the Netherlands (from a male advantage to neither a male nor female advantage in completion) are also significant. In Belgium, the Czech Republic, Denmark, France, Ireland, Poland, and Russia the gender gap in university completion does not significantly change.

### 3.2 Gender gaps in university completion by parental education

Table 3 presents coefficients from logistic regressions of university completion on gender and parental education for each country and birth cohort. Results are presented for cases where there were sufficient data on parents' education, gender, and university completion within each cohort. In almost every cohort in every country, having a parent with post-secondary or secondary education increases university completion compared to having a parent with primary education (the reference category). Interactions of gender and parental education indicate that in the majority of countries the effect of parental education on completion does not differ by gender. In contrast to prior findings in the U.S. and Germany, parents' education similarly impacts male and female university completion in most countries: Belgium, the Czech Republic, Estonia, France, Ireland, the Netherlands, Poland, Russia, Slovakia, Slovenia, Spain, and Switzerland.

**Table 3: Logistic regression of university completion on gender and parental education, by country and cohort**

| Belgium | 1955-1964 | 1965-1974 | 1975-1984 | Czech Republic | 1955-1964 | 1965-1974 | 1975-1984 |
|---|---|---|---|---|---|---|---|
| Female | 0.23 | 0.50** | 0.16 | Female | 0.14 | 1.19 | -0.02 |
| | (.18) | (.19) | (.32) | | (.82) | (1.25) | (.65) |
| Parent, Post-Sec. Ed. | 2.37** | 2.28** | 2.34** | Parent, Post-Sec. Ed. | 3.03** | 3.20** | 16.46** |
| | (.22) | (.22) | (.29) | | (.60) | (1.04) | (.84) |
| Parent, Sec. Ed. | 1.23** | 0.93** | 0.92** | Parent, Sec. Ed. | 1.21** | 1.80** | 15.04** |
| | (.20) | (.19) | (.28) | | (.57) | (1.03) | (.81) |
| Female x Parent, Post-Sec. | 0.05 | -0.08 | 0.07 | Female x Parent, Post-Sec. | -0.08 | -0.72 | 0.03 |
| | (.31) | (.31) | (.40) | | (.88) | (1.29) | (.79) |
| Female x Parent, Sec. Ed. | -0.05 | -0.13 | 0.39 | Female x Parent, Sec. Ed. | -0.44 | -1.14 | 0.23 |
| | (.27) | (.27) | (.39) | | (.85) | (1.28) | (.72) |
| Constant | -1.70* | -1.37* | -0.91 | Constant | -2.43* | -4.31** | -16.53** |
| | (.67) | (.54) | (.69) | | (1.20) | (1.29) | (1.25) |
| N | 1572 | 1435 | 928 | N | 1298 | 1413 | 1094 |

| Denmark | 1955-1964 | 1965-1974 | 1975-1984 | Estonia | 1955-1964 | 1965-1974 | 1975-1984 |
|---|---|---|---|---|---|---|---|
| Female | 0.59* | 0.25 | 0.09 | Female | 0.13 | 1.06* | --- |
| | (.25) | (.28) | (.55) | | (.29) | (.53) | --- |
| Parent, Post-Sec. Ed. | 2.34** | 1.56** | 1.78** | Parent, Post-Sec. Ed. | 1.68** | 2.28** | --- |
| | (.25) | (.24) | (.45) | | (.28) | (.49) | --- |
| Parent, Sec. Ed. | 0.83** | 0.22 | 0.78 | Parent, Sec. Ed. | 1.39** | 0.84 | --- |
| | (.25) | (.26) | (.48) | | (.29) | (.53) | --- |
| Female x Parent, Post-Sec. | -0.68* | 0.29 | 0.21 | Female x Parent, Post-Sec. | 0.40 | -0.47 | --- |
| | (.33) | (.33) | (.59) | | (.38) | (.56) | --- |
| Female x Parent, Sec. Ed. | -0.19 | 0.38 | 0.33 | Female x Parent, Sec. Ed. | -0.35 | 0.08 | --- |
| | (.32) | (.35) | (.64) | | (.39) | (.61) | --- |
| Constant | -3.87** | -3.28** | -7.50** | Constant | -3.43** | -4.80** | --- |
| | (.81) | (.63) | (.98) | | (.98) | (.93) | --- |
| N | 1377 | 1328 | 695 | N | 1111 | 1028 | --- |

| France | 1955-1964 | 1965-1974 | 1975-1984 | Germany | 1955-1964 | 1965-1974 | 1975-1984 |
|---|---|---|---|---|---|---|---|
| Female | -0.38 | 0.54 | 0.03 | Female | -1.13 | --- | -2.00* |
| | -(.33) | (.35) | (.40) | | (.46) | --- | (.89) |
| Parent, Post-Sec. Ed. | 1.92** | 2.60** | 2.19** | Parent, Post-Sec. Ed. | 1.71** | --- | 0.71 |
| | -(.38) | (.39) | (.40) | | (.29) | --- | (.42) |
| Parent, Sec. Ed. | 0.66* | 1.26** | 0.51 | Parent, Sec. Ed. | 0.21 | --- | -0.37 |
| | -(.33) | (.36) | (.40) | | (.28) | --- | (.43) |
| Female x Parent, Post-Sec. | 1.05 | -0.47 | 0.03 | Female x Parent, Post-Sec. | 0.91 | --- | 2.37** |
| | -(.57) | (.48) | (.52) | | (.48) | --- | (.91) |
| Female x Parent, Sec. Ed. | 0.16 | -0.50 | 0.41 | Female x Parent, Sec. Ed. | 0.76 | --- | 1.91** |
| | -(.49) | (.45) | (.50) | | (.48) | --- | (.92) |
| Constant | -0.97 | -3.22* | -2.06* | Constant | -1.25 | --- | -4.47** |
| | -(1.72) | (1.10) | (.99) | | (.65) | --- | (.81) |
| N | 940 | 990 | 768 | N | 2879 | --- | 1296 |

**Table 3: (Continued)**

| Hungary | 1955-1964 | 1965-1974 | 1975-1984 | Ireland | 1955-1964 | 1965-1974 | 1975-1984 |
|---|---|---|---|---|---|---|---|
| Female | 1.12* | 0.12 | 0.77 | Female | 0.06 | -0.21 | 0.48 |
| | (.37) | (.38) | (.84) | | (.30) | (.34) | (.56) |
| Parent, Post-Sec. Ed. | 3.10** | 2.83** | 3.21** | Parent, Post-Sec. Ed. | 1.96** | 2.15** | 1.56** |
| | (.42) | (.37) | (.64) | | (.37) | (.33) | (.50) |
| Parent, Sec. Ed. | 1.85** | 0.71 | 1.60* | Parent, Sec. Ed. | 0.55 | 0.81 | 0.87 |
| | (.40) | (.39) | (.65) | | (.45) | (.36) | (.53) |
| Female x Parent, Post-Sec. | -0.54 | 0.45 | -0.12 | Female x Parent, Post-Sec. | 0.20 | 0.12 | 0.02 |
| | (.54) | (.50) | (.90) | | (.48) | (.46) | (.63) |
| Female x Parent, Sec. Ed. | -1.23* | 0.81 | 0.29 | Female x Parent, Sec. Ed. | -0.01 | 0.04 | -0.53 |
| | (.50) | (.50) | (.89) | | (.57) | (.51) | (.68) |
| Constant | -0.58 | -3.53 | -3.97 | Constant | -1.91* | -1.93** | -4.02** |
| | (1.11) | (.94) | (1.05) | | (.92) | (.73) | (1.09) |
| N | 1235 | 1225 | 952 | N | 683 | 751 | 616 |

| Netherlands | 1955-1964 | 1965-1974 | 1975-1984 | Norway | 1955-1964 | 1965-1974 | 1975-1984 |
|---|---|---|---|---|---|---|---|
| Female | -0.58** | -0.39* | 0.47 | Female | 0.50** | 0.59* | 1.11** |
| | (.16) | (.17) | (.28)** | | (.19) | (.24) | (.40) |
| Parent, Post-Sec. Ed. | 1.47** | 1.54** | 1.73 | Parent, Post-Sec. Ed. | 1.61** | 1.71** | 1.37** |
| | (.22) | (.19) | (.29)** | | (.19) | (.20) | (.34) |
| Parent, Sec. Ed. | 0.72** | 1.00** | 1.00 | Parent, Sec. Ed. | 0.80** | 0.67** | -0.16 |
| | (.23) | (.21) | (.34) | | (.19) | (.22) | (.38) |
| Female x Parent, Post-Sec. | 0.26 | 0.44 | -0.13 | Female x Parent, Post-Sec. | -0.33 | -0.20 | -0.23 |
| | (.30) | (.27) | (.37) | | (.26) | (.28) | (.45) |
| Female x Parent, Sec. Ed. | 0.38 | 0.16 | -0.85 | Female x Parent, Sec. Ed. | -0.60* | -0.26 | -0.32 |
| | (.31) | (.29) | (.44) | | (.26) | (.30) | (.50) |
| Constant | -0.67 | -0.65 | -4.13** | Constant | -2.98** | -1.37** | -4.05** |
| | (.64) | (.55) | (.86) | | (.63) | (.52) | (.79) |
| N | 1815 | 1850 | 914 | N | 1629 | 1650 | 930 |

| Poland | 1955-1964 | 1965-1974 | 1975-1984 | Russian Fed. | 1955-1964 | 1965-1974 | 1975-1984 |
|---|---|---|---|---|---|---|---|
| Female | 0.37 | 0.98** | 0.71 | Female | 0.04 | 0.50 | 0.38 |
| | (.29) | (.34) | (.42) | | (.30) | (.45) | (.70) |
| Parent, Post-Sec. Ed. | 3.29** | 3.32** | 3.01** | Parent, Post-Sec. Ed. | 1.96** | 2.08** | 2.33** |
| | (.36) | (.35) | (.40) | | (.29) | (.38) | (.55) |
| Parent, Sec. Ed. | 1.38** | 1.02** | 1.16** | Parent, Sec. Ed. | 0.58 | 0.95* | 0.63 |
| | (.28) | (.32) | (.37) | | (.38) | (.45) | (.63) |
| Female x Parent, Post-Sec. | -0.06 | -0.67 | -0.32 | Female x Parent, Post-Sec. | 0.27 | -0.05 | 0.01 |
| | (.48) | (.47) | (.51) | | (.37) | (.49) | (.72) |
| Female x Parent, Sec. Ed. | 0.19 | -0.43 | 0.07 | Female x Parent, Sec. Ed. | -0.09 | -0.23 | 0.23 |
| | (.37) | (.39) | (.45) | | (.49) | (.59) | (.83) |
| Constant | -4.66** | -4.12** | -4.52** | Constant | -1.89 | -3.48** | -2.66** |
| | (1.01) | (.80) | (.80) | | (1.13) | (.97) | (.84) |
| N | 1554 | 1284 | 1164 | N | 1202 | 1139 | 1099 |

**Table 3: (Continued)**

| Slovakia | 1955-1964 | 1965-1974 | 1975-1984 | Slovenia | 1955-1964 | 1965-1974 | 1975-1984 |
|---|---|---|---|---|---|---|---|
| Female | --- | -0.68 | 0.00 | Female | -0.34 | 1.29* | 0.24 |
| | --- | (.60) | (.76) | | (.43) | (.51) | (.45) |
| Parent, Post-Sec. Ed. | --- | 2.46** | 2.34** | Parent, Post-Sec. Ed. | 2.95** | 3.32** | 1.58** |
| | --- | (.56) | (.68) | | (.41) | (.50) | (.41) |
| Parent, Sec. Ed. | --- | 0.53 | 0.82 | Parent, Sec. Ed. | 1.37** | 1.62** | 0.26 |
| | --- | (.47) | (.59) | | (.34) | (.49) | (.39) |
| Female x Parent, Post-Sec. | --- | 0.69 | 0.84 | Female x Parent, Post-Sec. | 0.75 | -0.47 | 0.16 |
| | --- | (.80) | (.94) | | (.58) | (.61) | (.54) |
| Female x Parent, Sec. Ed. | --- | 0.69 | 0.14 | Female x Parent, Sec. Ed. | 0.53 | -0.68 | 0.80 |
| | --- | (.67) | (.82) | | (.48) | (.56) | (.50) |
| Constant | --- | -3.79* | -5.23** | Constant | -2.86** | -3.55** | -5.25** |
| | --- | (1.59) | (1.47) | | (1.05) | (.83) | (.80) |
| N | --- | 823 | 669 | N | 1197 | 1109 | 848 |

| Spain | 1955-1964 | 1965-1974 | 1975-1984 | Switzerland | 1955-1964 | 1965-1974 | 1975-1984 |
|---|---|---|---|---|---|---|---|
| Female | --- | 0.41* | 0.52** | Female | -0.15 | -0.28 | -0.20 |
| | --- | (.14) | (.17) | | (.39) | (.36) | (.60) |
| Parent, Post-Sec. Ed. | --- | 2.35** | 1.78** | Parent, Post-Sec. Ed. | 2.44** | 2.13** | 1.61** |
| | --- | (.21) | (.23) | | (.33) | (.28) | (.52) |
| Parent, Sec. Ed. | --- | 1.26** | 1.09** | Parent, Sec. Ed. | 1.46** | 0.88** | 0.44 |
| | --- | (.32) | (.28) | | (.31) | (.28) | (.52) |
| Female x Parent, Post-Sec. | --- | -0.06 | 0.11 | Female x Parent, Post-Sec. | 0.08 | 0.19 | 0.88 |
| | --- | (.33) | (.32) | | (.46) | (.41) | (.66) |
| Female x Parent, Sec. Ed. | --- | 0.02 | -0.01 | Female x Parent, Sec. Ed. | -0.50 | -0.13 | 0.15 |
| | --- | (.43) | (.38) | | (.45) | (.41) | (.67) |
| Constant | --- | -1.80** | -2.88** | Constant | -4.94** | -4.15** | -6.99** |
| | --- | (.59) | (.61) | | (.92) | (.67) | (1.19) |
| N | --- | 1824 | 1386 | N | 1714 | 1815 | 904 |

*Note*: Models include control for age. Standard errors in parentheses. Sec. ed. refers to secondary education. Post-sec. Ed. refers to post-secondary education. *p<0.05, **p<0.01.

The effect of parental education differs for males' and females' university completion in four countries: Denmark, Germany, Hungary, and Norway. In Hungary and Norway there is a significant interaction between gender and parents with secondary education in the earliest cohort (1955-1964). In Denmark there is a significant interaction between gender and parents with post-secondary education in the earliest cohort (1955-1964). The effect of parents having secondary (Hungary and Norway) or post-secondary (Denmark) education, compared to primary education, has a stronger, more positive effect on males than females. However, these differential effects disappear in Denmark, Hungary, and Norway in later birth cohorts. Germany is the only country in the analysis with a significant, positive interaction between female and parental education. In the most recent German cohort (1975-1984), having parents with secondary or post-secondary levels of education increases females' likelihood of university completion more than males'. Having parents with primary education has a more negative effect on females' than males' university completion (results not shown).

These findings suggest that coming from a home where parents have secondary or post-secondary education is more beneficial for females in Germany, while coming from a home with primary education is more beneficial for males. These results align with Legewie and DiPrete's (2009) findings.

## 4. Summary and discussion

This article documents gender gaps in university completion across 16 European countries, and considers if the gender gaps vary by parental education among three birth cohorts: 1955-1964, 1965-1974, and 1975-1984. Among the 1975-1984 cohort, females are more likely to complete a university degree than males in 12 out of the 16 European countries studied (Belgium, Denmark, Estonia, Hungary, Ireland, Norway, Poland, Russia, Spain, Slovenia, Slovakia, and Switzerland). The current female-favorable advantage emerged across cohorts in Estonia, Russia, Spain, Slovenia, Slovakia, and Switzerland. In Belgium, Denmark, Hungary, Ireland, Norway, and Poland the current female-favorable gender gap in university completion is not a recent phenomenon. Women held an advantage over men in university completion as early as the 1955-1965 birth cohort.

This article also documents gender gaps in university completion by various levels of parental education. Recent research in the United States demonstrates that the female-favorable gender gap in college completion is larger among low-educated families (Buchmann and DiPrete 2006). Research in Germany shows a similar finding for secondary education completion, but that the male-favorable gender gap in university completion is larger among low-educated families (Legewie and DiPrete 2009). This article replicates the findings for Germany. But, unlike prior research on Germany and the United States, parental education does not differently influence males' and females' university completion in most countries: Belgium, the Czech Republic, Estonia, France, Ireland, the Netherlands, Poland, Russia, Slovakia, Slovenia, Spain, and Switzerland. Denmark, Hungary, and Norway are exceptions. In these countries there is a significant interaction between gender and parents with secondary education (Hungary and Norway) or post-secondary education (Denmark) only in the earliest birth cohort (1955-1964), showing males benefited more from having highly educated parents. Across most European countries gender gaps in university completion do not vary across parental education backgrounds. Future research should aim to identify why the United States and Germany are exceptions to this pattern as well as reasons for the female advantage in university completion across the majority of European countries.

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