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Comparing the gender gap in educational attainment: the impact of emancipatory contexts in 33 cohorts across 33 countries

Margriet van Hek, Gerbert Kraaykamp and Maarten H. J. Wolbers

Department of Sociology, Radboud University, Nijmegen, The Netherlands

ABSTRACT

Nowadays, women outperform men in educational attainment in many countries. Still, large variation between countries remains. Emancipatory contexts in which individuals are raised might explain these differences in male–female educational attainment, both over time and across countries. This study examines individual and contextual factors that affect educational attainment of men and women for cohorts born between 1950 and 1982 across 33 countries. Possible explanations for differentiation over time and across countries relate to women’s labour market participation and an emancipatory normative climate, indicated by degree of religiosity. We employ multilevel models on data ($N = 138,498$) from 6 waves of the European Social Survey and the US General Social Survey (2002–2012) to test our hypotheses. Results show that a higher level of female labour market participation in early adolescence improves women’s performance in education, whereas high levels of religiosity during that phase negatively affect women’s educational attainment.

ARTICLE HISTORY


Received 18 April 2016
Accepted 28 October 2016

KEYWORDS

Educational gender gap;
educational inequality;
gender inequality;
comparative research;
emancipatory contexts

Introduction

Women have improved their educational attainment considerably compared to men since the 1960s. A large number of studies show that women nowadays have surpassed men in educational attainment in most Western societies (Buchmann & DiPrete, 2006; Buchmann, DiPrete, & McDaniel, 2008; Organisation of Economic Co-operation and Development [OECD], 2012). Research on gender inequality, however, highlights that women still have a disadvantage on the labour market. In most countries, women continue to lag behind in, for example, wages and career development (Charles, 2011; Schwab et al., 2015). Since educational credentials are generally considered a primary source of human capital and a highly relevant criterion in determining labour productivity, gains in women’s educational attainment may affect their position on the labour market in the near future (Becker, 2009; Breen, Luijkx, Müller, & Pollak, 2010). A reported shift from a male to a female advantage in education, therefore, may have significant implications for gender-related labour market inequality in the next decades.

CONTACT Margriet van Hek  m.vanhek@maw.ru.nl

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Gender differences in educational attainment have received abundant attention in prior research. Initially, most studies concentrated on a presumed disadvantaged position of women, especially in higher education (Aisenberg & Harrington, 1988; Finn, Dulberg, & Reis, 1979). Since these early studies, however, women's educational outlook has changed considerably. A variety of studies has established that in many Western countries, women have caught up with men in education (Buchmann et al., 2008; OECD, 2012; Snyder & Dillow, 2011). Moreover, trends in almost all Western countries even point to growing advantages for women in education, though the size and speed of these developments varies. For instance, for the United States, Snyder and Dillow (2011) showed that since 1982 women's educational attainment has surpassed that of men. Figures on educational gender gaps in single European countries proved rather similar to those for the United States (Helbig, 2012; Van Langen & Driessen, 2006).

Nevertheless, cross-national comparative research on *trends* in male–female educational inequality is still scarce. Obviously, this is partly due to a limited comparability of educational systems across countries. Research by Eurostat (2016) has shown, however, that regarding the completion of tertiary education, the gender gap in European countries is widening (in the advantage of women). For instance in 2012, 31% of European men and 40% of European women (aged 25 to 34) completed tertiary education, up from 22% and 26%, respectively, in 2002 (Eurostat, 2016). Although most studies point to an increasingly advantageous educational position of women, large differences between countries remain (Baker & Jones, 1993; Marks, 2008; McDaniel, 2010). For instance, data from the OECD (2012) show that in Austria, Ireland, Switzerland, and Turkey men are still more likely to attain higher tertiary education. In Turkey and Japan, this male advantage also holds for lower tracks of tertiary education.

Although prior research on educational gender differences has described short-term developments over time and differences between countries, to our knowledge no comparative study has simultaneously examined changes over a longer time period for different countries. Cross-national research mostly has been constrained by data limitations to one point in time, while studies of long-term trends in male–female educational differences tend to focus on a single country (Buchmann & DiPrete, 2006; Charles & Bradley, 2002; Marks, 2008; Van Hek, Kraaykamp, & Wolbers, 2015). A comparison of people from different birth cohorts living in various countries, however, could provide an excellent opportunity to study how men's and women's educational attainment is affected by contextual factors. As genetic biological features and cognitive talents likely are very similar between Western countries and are unlikely to change markedly over (relatively few) birth cohorts, they seem implausible as an explanation of trends and country differences in the male–female educational gap (Penner, 2008; Yazilias, Svensson, De Vries, & Saharso, 2013).¹ Social circumstances, on the other hand, do change over time and do vary between countries. Consequently, we consider such aspects to be more plausible explanations for the rising educational attainment of women over time in various countries. Accordingly, both Penner (2008) and Marks (2008) suggest that emancipatory contextual circumstances probably account for most of the cross-country and over-time variation in the educational gender gap. As societal circumstances change over time within one country, but also differ between countries at the same point in time, it is vital to look at contextual factors that are both country and time specific (Yazilias et al., 2013).

First, in our research we will examine over-time and between-country variance in the relationship between gender and educational attainment. Our first research question therefore reads: *To what extent have the male-female differences in educational attainment changed over cohorts born between 1950 and 1982 in 33 Western countries?* The second part of our study deals with contextual factors that might explain this over-time and between-country variance of men's and women's educational attainment. We will address contextual factors related to a country's situation in a respondent's adolescence, since important educational decisions (on tracking, continuation, and field of study) predominantly are taken between the ages of 10 and 20 years. According to McDaniel (2016): "Adolescence is crucial time in the life course when individuals develop career expectations, and these expectations influence later educational and occupational attainment in adulthood" (p. 123). We therefore will deal with emancipatory structural and cultural conditions in a person's adolescence that may influence educational opportunities for women compared to men. More specifically, we study the rate of female labour market participation and the degree of religiosity during the upbringing of respondents in 33 Western countries in 33 years. With respect to female labour participation, it is argued that economically active women may function as role models who especially encourage young girls to pursue an educational and professional career. A high level of religiosity in a country, on the other hand, might indicate support for more traditional roles for women in society. Hence, our second research question reads: *To what extent do female labour participation and the degree of religiosity in a person's adolescence affect the educational attainment of men and women in cohorts born between 1950 and 1982 in 33 Western countries?*

With this study, we improve upon previous research in at least three ways. First, by combining six waves (2002–2012) of the European Social Survey (ESS) and the US General Social Survey (GSS), we employ data on more than 138,000 respondents living in 33 countries. This allows for a rigorous testing of our hypotheses and to make meaningful comparisons of people from a wide range of birth cohorts living in a large set of countries. Second, we construct a cross-national comparable measure of educational attainment, which allows us to assess contextual effects on outcomes of completed educational trajectories of (adult) respondents. This focus on completed education makes that both cognitive and behavioural components of educational performance are (implicitly) dealt with in our study. In contrast, prior studies looking at test scores, mostly focused on cognitive aspects of educational performance (Baker & Jones, 1993; Marks, 2008; Van Langen, Bosker, & Dekkers, 2006). Third, by testing explanatory hypotheses on the impact of emancipatory circumstances in a person's youth, we contribute to a further understanding of the existence of gender differences in educational attainment.

Theoretical framework

The influence of time and country context

Whereas most scholars who assessed the influence of contextual factors on educational performance included boys' and girls' test scores (as in the Progress in International Reading Literacy Study [PIRLS], the Programme for International Student Assessment [PISA], or the Trends in International Mathematics and Science Study [TIMSS]), we focus on educational attainment (Baker & Jones, 1993; Marks, 2008). Our first, and most

important, reason to do so is that studying educational attainment enables us to study men and women from a wide range of cohorts, whereas test scores are (almost) always collected with students who are in primary or secondary school. This would seriously limit the range of cohorts available for our study and consequently the time period to reflect upon. Second, educational credentials are, compared to test scores, not dependent on cognitive skills alone (Shavit & Blossfeld, 1993). Even though diplomas are regarded as a general indicator of cognitive competency, obtaining a degree requires a combination of both cognitive and behavioural qualities (Lleras, 2008). Including non-cognitive behavioural factors is essential when studying male–female educational differentiation, but seems even more important in comparative research. Social contexts seem, after all, more likely to affect non-cognitive behavioural factors of student’s performance than they are to affect initial cognitive abilities (Yazilintas et al., 2013). A more comprehensive indicator of both cognitive and non-cognitive aspects of educational success, like educational attainment, therefore seems indispensable in comparative research.

As stated before, the gap between men’s and women’s educational attainment has developed over time and differs between countries. This indicates that, besides individual factors, contextual circumstances in a person’s upbringing might be relevant for an individual’s educational attainment. According to rational choice notions, people balance costs and benefits when making decisions affecting educational progress (Breen & Goldthorpe, 1997; Van de Werfhorst & Hofstede, 2007). Also human capital theory states that people consider both the costs and returns when investing in their education (Becker, 2009). With respect to a child’s education, parents, and their offspring, weigh costs like college fees and purchasing textbooks, and being unable to help around the house, against (possible) benefits like higher future wages and a higher status occupation. According to Coleman’s social theory (1990), such choices are inextricably linked to the social opportunity structure in which they are made. This implies that (perceived) costs and benefits, and accordingly educational choices, may differ for men and women, depending on the time and country context they grew up in. For instance, for women growing up in a country (or time) in which they are likely to become a homemaker after marriage, the financial costs of getting a college degree might well outweigh the benefits. But, when women commonly participate in paid labour, women’s returns to education may be regarded similar to those of men.

We will formulate hypotheses on structural and cultural conditions in a person’s adolescence related to the emancipatory conditions in a country and cohort, as we expect these conditions will affect women’s educational attainment. As educational opportunities have expanded for both men and women in recent decades, we focus on conditions that are particularly advantageous for women (Dorius, 2012). In doing so, our aim is to explain why educational attainment of women has been rising faster than that of men (OECD, 2012). As the transition from traditional to modern societal structures evoked both economic and cultural changes that altered women’s role in society (Inglehart & Norris, 2003), we basically focus on two emancipatory aspects of modernization that we expect to work in favour of women’s educational attainment: rising levels of female labour market participation and decreasing religiosity (i.e., secularization) in a person’s youth. Unlike modernization processes that likely affect men and women equally, such as educational expansion and growing wealth, specifically these conditions might explain why women’s educational attainment has risen compared to men’s in many countries and cohorts.

Hypotheses

Societies may exhibit distinct structural and economical features that stimulate male and female students to pursue an academic career, or to refrain from doing so. It is likely that students use a rational cost-benefit evaluation to assess if and how investments in their human capital (i.e., a certain educational degree) will pay off for them (Becker, 2009; Breen & Goldthorpe, 1997). Contextual conditions (opportunity structure) for girls and boys in a specific country and a particular cohort likely affect an individual's perception of possible returns to higher education (Breen & Goldthorpe, 1997). So, different circumstances for men and women in their adolescence are expected to result in gender differences in educational attainment. Hence, a reported increase of women's performance in education may be understood by developments in the structural and economic conditions in a country during adolescence, affecting women's educational perceptions over the years. Various economic features may affect the opportunity structure for women, but likely anticipated labour market returns are among the most important ones.

Employment opportunities for women in a particular country and period may have affected women's expectations of labour market returns (Buchmann, 2009). From differential reference group theory (Mickelson, 1989), it is assumed that female students use other women as their reference. When girls in their adolescence observe that women's positions in the labour market have improved, this might augment girls' motivation to perform well in school. Indeed, Western labour markets have progressively opened up to women, providing girls with more incentives to perform well in academics (Sikora & Saha, 2009). Also according to rational choice and neo-institutionalist arguments, women's willingness to invest in their educational career is presumed to be greater when their qualifications and credentials pay off in the labour market. Accordingly, female economic activity during a person's adolescence indicates the likelihood of women gaining returns from achieving a higher education. Indeed, prior research indicates that educational gender differences are smaller in countries where more women work in paid employment (Baker & Jones, 1993). Thus, our first hypothesis reads: *Women's educational attainment is positively affected by a high level of female labour market participation in their youth, and men's educational attainment is unaffected by a high level of female labour market participation in their youth (Hypothesis 1).*

A major aspect of modernization in the Western world, in particular in Western European countries, is the diminishing significance of religion and its religious institutions (Bruce, 2002; Inglehart & Norris, 2003). These processes of secularization have had implications for gender role attitudes prevalent in societies. Bolzendahl and Myers (2004) found that religious attendance was consistently negatively related to several indicators of feminist attitudes between 1974 and 1998, and conclude that "greater religiosity produces greater attachment to traditional outlooks on gender roles" (p. 777). Indeed, various other studies have also found religiosity to be associated with less support for emancipated gender roles (Guiso, Sapienza, & Zingales, 2003; Thornton, Alwin, & Camburn, 1983). It is not surprising that along with secularization, considerable changes have been registered in attitudes towards women's roles in the last 3 decades (Fortin, 2005; McDaniel, 2010). Although Inglehart and Norris (2003) identify important differences between religions, they conclude that "A process of secularization has gradually accompanied societal modernization, weakening the strength of religious values among

the younger generation in postindustrial societies and fueling the rising tide of gender equality” (p. 71).

In this respect, a society’s support of religious institutions and values in a person’s youth might be indicative for cultural conditions that influence female students’ individual motivation to enrol in college and to pursue an educational career. A more traditional religious social context could thus embody mechanisms by which gender inequalities in school performance are reinforced. These include sociocultural shifts in gender roles, but also changing expectations about the life courses of women (in education, in work, and in the home) and reduced acceptance of gender discrimination in the labour market (Buchmann, 2009). Prior studies have linked more general indicators of the normative climate regarding gender roles to gender differences in educational performance (Charles & Bradley, 2002; Nosek et al., 2009). Hence, our hypothesis reads: *Women’s educational attainment is negatively affected by a high level of religiosity in their youth, and men’s educational attainment is unaffected by a high level of religiosity in their youth (Hypothesis 2).*

Data and measurements

Data

To test our hypotheses, we employed the 2002, 2004, 2006, 2008, 2010, and 2012 waves of the European Social Survey (ESS) and the US General Social Survey (GSS). The GSS concerns respondents living in the United States, the ESS contains respondents from 32 European countries. Each wave of the ESS samples a somewhat different set of countries, which means that not all countries are available in all six waves.² Together, the ESS and GSS datasets contain information on 139,414 respondents born between 1950 and 1982. We restricted our analysis to cohorts born after 1950, because contextual information on female labour market participation in a person’s adolescence was unavailable (or too limited) for earlier years. We selected individuals aged 30 years and older to ensure that for all respondents their educational career was finished. This means that members of the youngest cohort in our data were born in 1982 (30 years of age in 2012). Table 1 presents descriptive statistics for all contextual and individual variables.

Measurements

Educational attainment

The ESS contains several indicators of educational attainment. A measure that is highly comparable over countries refers to the number of completed years of full-time education. This variable, however, has some drawbacks, as it may be invalid for respondents who repeated a grade or, the opposite, skipped a grade. Moreover, on average, boys take longer routes to obtain a degree (Freeman, 2004), meaning that unrealistically high scores may be assigned to mainly male respondents when using completed years of full-time education without further adaptation. We therefore decided to combine the variable “years of full-time education” in the ESS with information on a respondent’s highest obtained educational level (International Standard Classification of Education [ISCED]). Nowadays, ISCED scores constitute a measure of a respondent’s educational qualification

Table 1. Descriptive statistics, individual and contextual variables.

	Min.	Max.	Mean.	SD
Individual characteristics (N Level 1 = 138.498)				
Educational attainment	0	21	12.924	3.119
Female	0	1	.539	.498
Birth cohort	0	32	13.809	8.425
Cohort squared	0	1024	261.679	251.740
Parental educational level: low	0	1	.197	.398
Parental educational level: middle	0	1	.583	.493
Parental educational level: high	0	1	.220	.414
Religiosity	0	1	.252	.433
Working mother	0	1	.602	.489
Stay at home mother	0	1	.398	.489
Absent mother	0	1	.017	.129
Native	0	1	.890	.313
Western Immigrant	0	1	.059	.236
Non-Western Immigrant	0	1	.045	.207
Immigrant Missing	0	1	.006	.079
Contextual characteristics during adolescence (N Level 2 = 1062)				
Female Labour Market Participation (FLMP)/100	.197	.696	.420	.098
Religiosity	.018	.744	.220	.155
Communism	.000	1.000	.358	.480
GDP/1000	2.039	24.205	9.727	4.757

Source: European Social Survey 2002–2012 and General Social Survey 2002–2012.

that is highly comparable over countries (OECD, 2004; Schneider, 2013). To create a cross-nationally comparable measurement of educational attainment, we aggregated per country the average years of full-time education (with a maximum of 25) that individuals attained per ISCED level. This means that ESS respondents were assigned the average number of years of education needed to obtain a certain ISCED level in their country. We removed 576 respondents for whom we could not aggregate educational information due to missing information on their ISCED level. Some combinations of ESS rounds and countries lacked information on ISCED levels for all respondents. In those cases, we employed the same aggregation technique as described above, but we used available country-specific educational levels (instead of ISCED levels) to aggregate to average years of full-time education for respondents. In the GSS, information on respondents' number of years of schooling (each grade means an additional year of education) was available, and we used it without further modification. The final variable, *educational attainment*, thus refers to a respondent's average years of education needed to achieve their highest obtained grade or ISCED level. As recommended by Schneider (2010), we performed several robustness checks with alternative cross-national indicators of educational attainment to validate our measurement.³

Individual variables

Respondent's sex is captured in the variable *female*, which is coded 0 for males and 1 for females. As control variables, we included the educational level of a respondent's parents, the employment status of a respondent's mother, a respondent's religiosity, and his or her immigrant status. The score of the highest educated parent was taken as *parental educational level*. Due to a modification of this measurement since the 2010 ESS round, we were restricted to a categorization of parental educational attainment into low, middle, and high education. We coded the *employment status of a respondent's mother* in two

categories: working and not working (when the respondent was 14 or 16 years of age).⁴ Respondent's *religiosity* refers to the current frequency they attend church. Both the ESS and the GSS asked respondents, "How often do you attend religious services (only in the ESS: apart from special occasions)?" Those who answered that they went to church once a month or more often were considered religious (1), others were considered non-religious (0). Although this measurement does not perfectly reflect a person's church attendance during his or her socialization period, we consider it a valid approximation of a respondent's religiosity also in earlier years, assuming that religiosity is relatively stable over the life course (Crockett & Voas, 2006; Te Grotenhuis, De Graaf, & Peters, 1997; Voas, 2009; Voas & Crockett, 2005; Wolf, 2008).⁵ Finally, to determine *immigrant status*, it was only possible to check whether a respondent was born in the country in which the survey was held. Those who were born in this country were regarded as *natives*. Respondents born in another Western country were coded as *Western immigrants*, and those born in non-Western countries were regarded as *non-Western immigrants*.⁶

Some 9,386 respondents had missing scores on one or more of the individual-level variables. We omitted 55 respondents with a missing observation on female. Missing values on parental educational level, religiosity, and mother's employment status were imputed using Rubin's method (Rubin, 1996). We estimated 20 datasets substituting missing observations with estimates based on observed scores. Our final analyses were performed on all datasets separately, after which results were merged. Finally, 872 respondents had missing observations on immigrant status. We included them as a separate category (immigrants status missing) in the analysis. We do not present results for this dummy, since it proved not significant in any of the models. After selecting respondents with valid scores on all variables, our dataset contained 138,498 respondents nested in 1,062 country-cohort combinations.⁷

Contextual variables

We added four contextual aspects to the data; all values apply to a specific combination of a country and a cohort. For each birth cohort, we calculated mean values of these contextual characteristics referring to the timeframe when a respondent was between 10 and 15 years of age. In all Western countries, in early adolescence important decisions about future educational trajectories are made by respondents and their parents. We therefore expect a society's circumstances predominantly in that timeframe to affect boys' and girls' final educational attainment.

First, we calculated the degree of religiosity for all country-cohort combinations. We aggregated from our individual religiosity variable the proportion of respondents that attended church at least once a month in a country-cohort combination. As all these respondents most likely received a religious upbringing, this variable thus nicely illustrates the religiosity of a country context in a respondent's adolescence. We calculated 5-year averages (when respondents were between 10 and 15 years of age) to create our final *religiosity* variable.⁸ Second, we collected contextual data on the level of *female labour market participation (FLMP)* per country-cohort combination. We derived this information from the International Labour Organization, the World Bank, and the United States Bureau of Labour Statistics.⁹ Our data refer to the share of the total female population that was economically active in a respondent's adolescence. Unfortunately, data on women's participation in the labour force is not available for all country-cohort combinations. We replaced missing values (within countries) with estimates from linear regression.¹⁰

As controls at the contextual level, we included gross domestic product (GDP) and the presence of a communist regime during a respondent's youth. We control for both main effects and their interaction with sex. GDP, as an indicator of a country's wealth, is closely related to factors shaping educational opportunities (governmental investments in education, grants) and may for that reason affect educational attainment. GDP was derived from the Historical Statistics of the World Economy: 1-2006 AD dataset. Data for Iceland and Luxembourg were retrieved from Maddison (2001) and data for Cyprus from Apostolides (2010). To create our *GDP* variable, we calculated the average GDP of the 5-year period coinciding with respondents' early adolescence (between 10 and 15 years of age). We include GDP merely as a control variable because we expect it to influence women's educational attainment mainly through the levels of female labour market participation and prevalent gender norms in society.

Finally, we included information on whether respondents grew up in a communist (or state-socialist) regime. Communist regimes may have influenced gender inequality in educational attainment because they reinforced gender equality in some ways (Frieze et al., 2003). If a country had a communist regime in a respondent's youth (for at least three years in the period a respondent was 10 to 15 years), it scored 1 on the *communist* variable; otherwise, it scored 0. Communism is only included as a control variable because we expect it to affect women's educational attainment through female labour market participation; studies have indeed showed that communist regimes targeted at women's labour market participation instead of promoting gender equality in general (Ashwin & Bowers, 1997). Correlations between the contextual variables are presented in [Appendix 1](#).

Empirical analysis

Models

To test our hypotheses, we estimated multilevel regression models (Snijders & Bosker, 1999). Multilevel regression models account for the fact that individuals are nested in countries and cohorts and therefore provide more accurate estimates. We regard respondents (Level 1 units) as being nested in country-cohort combinations (Level 2 units), which we consider nested in countries (Level 3 units). In all models, we randomize the effect of female, which means that we allow the gender gap in educational attainment to vary over both country-cohort combinations and countries. According to recent work from Schmidt-Catran and Fairbrother (2016), nesting country-year combinations in countries and randomizing effects over both levels is required for conservative estimates because otherwise too much independence between contexts is assumed. In [Table 2](#), Model A is our baseline or null model. In Model B, we included female and individual control variables. We add the four defined contextual characteristics in Model C to determine their main effect on educational attainment. In Model D, we test our hypotheses by including cross-level interactions of our contextual characteristics with female.

Results

Descriptive results

[Figure 1](#) presents the historical development of gender differences for cohorts born between 1950 and 1982 for all countries together. [Figure 2](#) displays individual trends

Table 2. Results of multilevel linear regression modelling on educational attainment, unstandardized coefficients, individual variables, contextual variables, and cross-level interactions.

	Model A		Model B		Model C		Model D	
	B	SE	B	SE	B	SE	B	SE
Intercept	12.936***	.177	10.982***	.144	11.080***	.220	11.518***	.221
Individual characteristics								
Female			.161*	.067	.153*	.066	-.861***	.188
Religiosity			-.040*	.018	-.036*	.018	-.033~	.018
Working mother			.237***	.016	.226***	.016	.227***	.016
<i>Parental educational level</i>								
Low (ref.)								
Middle			1.588***	.021	1.571***	.021	1.570***	.021
High			3.614***	.025	3.582***	.025	3.580***	.025
<i>Immigrant status</i>								
Native (ref.)								
Western Immigrants			.195***	.031	.194***	.031	.193***	.031
Non-Western Immigrants			-.061~	.035	-.075*	.035	-.076*	.035
Contextual characteristics during adolescence								
FLMP/100					.007	.430	-.841~	.451
Religiosity					-2.758***	.376	-2.440***	.382
Communism					-.369***	.084	-.411***	.093
GDP/1000					.070***	.010	.054***	.010
Cross-level interactions								
FLMP/100*Female							1.857***	.447
Religiosity*Female							-1.052**	.350
Communism*Female							.060	.104
GDP/1000*Female							.049***	.010
Variance components								
Level 1 variance (individuals)	8.256		7.029		7.029		7.028	
Level 2 variance (countries and cohorts)	1.013		.099		.081		.074	
Level 3 variance (countries)	.384		.660		.665		.611	
Random slope female Level 2			.059		.054		.014	
Random slope female Level 3			.135		.134		.184	

Source: European Social Survey 2002–2012 and General Social Survey 2002–2012.

N Level 1 = 138,498. N Level 2 = 1062. N Level 3 = 33.

~ $p < 0.1$. * $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$ (two-tailed test).

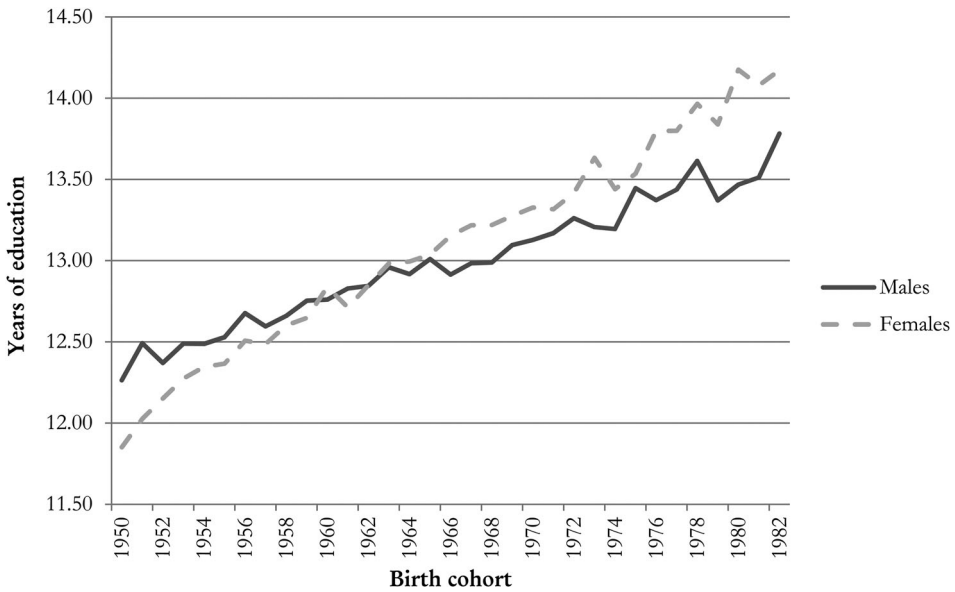


Figure 1. Over-time development of the gender gap in educational attainment for cohorts 1950–1982. Source: European Social Survey 2002–2012 and General Social Survey 2002–2012. *N* Level 1 = 138,498.

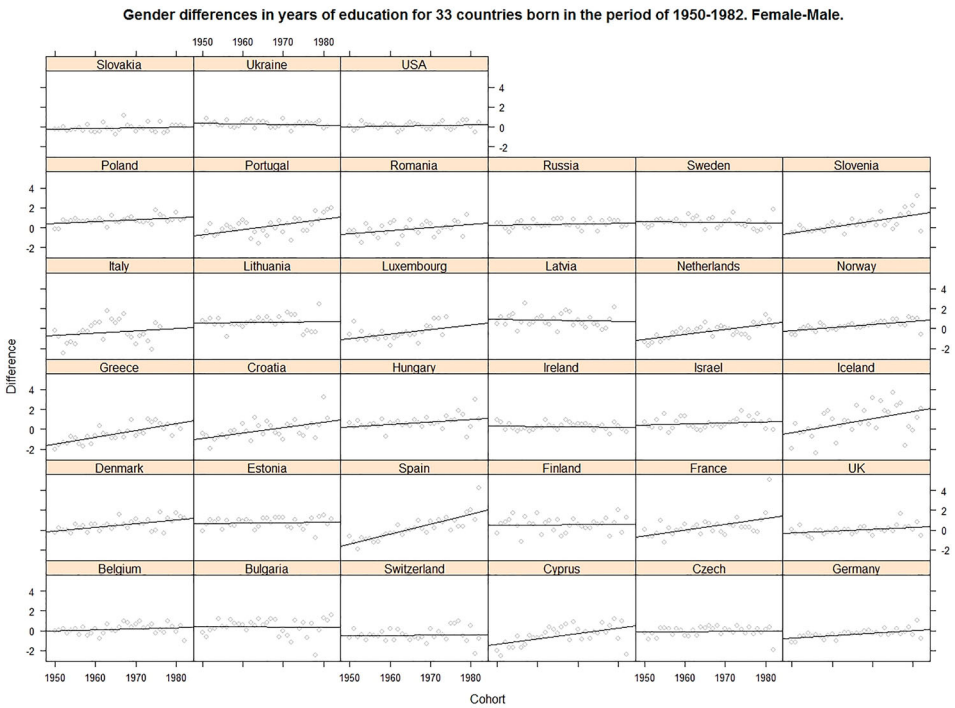


Figure 2. Gender differences in years of education for cohorts born between 1950–1982 in 33 countries. Source: European Social Survey 2002–2012 and General Social Survey 2002–2012. *N* Level 1 = 138,498.

for the 33 countries separately. Exact figures of gender differences per country-cohort combination can also be found in [Appendix 2](#).

[Figure 1](#), combining all 33 countries, shows the overall development of men's and women's educational attainment over time. In line with previous research, men initially in 1950 outperformed women in their educational attainment. This situation, however, reversed for cohorts born in the 1960s. Starting with cohorts born in 1965, women increasingly exceed men in education. This reversed male–female gap even seems to widen for cohorts from the late 1970s onwards, as found in other studies (OECD, 2012). Interestingly, the observed growing educational advantage of women is not attributable to a decline of attainment among men. Educational attainment of both men and women has risen over the cohorts, but women's educational attainment grew considerably faster than that of men.¹¹

Although [Figure 1](#) shows a clear trend, it does not reveal country-specific developments in the educational attainment of men and women. [Figure 2](#), therefore, displays male–female differences in educational attainment separately for each of the 33 countries and 33 cohorts. Each dot resembles the difference between the average years men and women spent in education in a particular country and cohort. As men's scores are subtracted from women's, negative values indicate a male advantage in education and vice versa. In [Figure 2](#), large variation becomes apparent between countries. In Spain, Norway, Slovenia, and The Netherlands women's educational disadvantage has been transformed into a situation in which women from more recent cohorts clearly outperform men in educational attainment. In Hungary, Poland, and Belgium women started off performing better than men in 1950, and their advantage expanded even more during the study period. In only four countries did the educational attainment of women (compared to men) worsen somewhat during this period: Ukraine, Latvia, Ireland, and Bulgaria. In all those countries, however, changes were minor, and women retained their educational advantage. Only in Switzerland, women still lag behind men in their educational attainment.

Multilevel analyses

Our baseline model in [Table 2](#) (Model A) shows how much of the variance in educational attainment is attributable to differences between individuals, and how much is due to their nesting in country-cohort combinations. The intra-class correlation of 10.494% (countries and cohorts) indicates that the context in which people live (or, actually, grew up) matters for their educational attainment, which warrants multilevel modelling. In Model B, all individual variables are added. First, we see a positive effect of female ($b = 0.161$). This however represents an average effect of female over all countries and cohorts and, as we saw in [Figures 1](#) and [2](#), this effect varies considerably over contexts; this is also indicated by the variance parameter of the effect of female ($b = 0.059$). Parental educational level is highly relevant in explaining a person's educational attainment; higher educated parents cause a child to attain 3.6 years of education more, compared to those with lower educated parents. Also, having a working mother during adolescence ($b = 0.237$) to some extent seems to work in favour of a person's educational attainment. Church attendance slightly decreases the years a person spends in education. Furthermore, immigrants from Western countries tend to have a slightly higher educational attainment than natives ($b = 0.195$), and non-Western immigrants perform somewhat

worse ($b = -0.061$). Next, in Model C, four contextual aspects are included. First, we see that the Level 2 variance drops with 18%; this indicates that these aspects explain about a fifth of the country-cohort variation in educational attainment. Second, Model C shows that people's educational attainment is negatively linked to a country's level of religiosity during their adolescence ($b = -2.758$). Also, for people who grew up in a (former) communist country, educational attainment is significantly lower ($b = -0.396$). As expected, the effect of GDP is positive and significant ($b = 0.070$); in more affluent times and countries, people attain higher levels of education. The general effect of female labour market participation in a country cohort is positive, but remains insignificant as a main effect.

With Model D, we address the issue why in some country-cohort combinations women do relatively better in terms of educational attainment than in others.¹² We therefore added cross-level interactions of female with female labour market participation, religiosity in a respondent's adolescence, and control for the cross-level interaction of female with communism. We also present models separately for women and men in [Appendix 3](#). The cross-level interactions effects of female labour market participation and religiosity are also visualized in [Figures 3 and 4](#). Model D shows that these characteristics explain almost 74% (0.014/0.054) of the variance in the effect of female over country-cohort combinations. We see that both structural and cultural constraints of a country-cohort combination are important to explain the different developments in women's and men's educational attainment. Although in model C, a high female labour market participation seemed insignificant for the general population ($b = 0.007$), in Model D we see that for women it increases their educational attainment significantly ($b = 1.016$), whereas for men the effect is slightly negative ($b = -0.841$). Also in [Figure 3](#), we see clearly that female labour market participation affects men and women differently. In terms of education, it means that women growing up in a country with the highest level of female labour market participation have about half a year advantage over women growing up

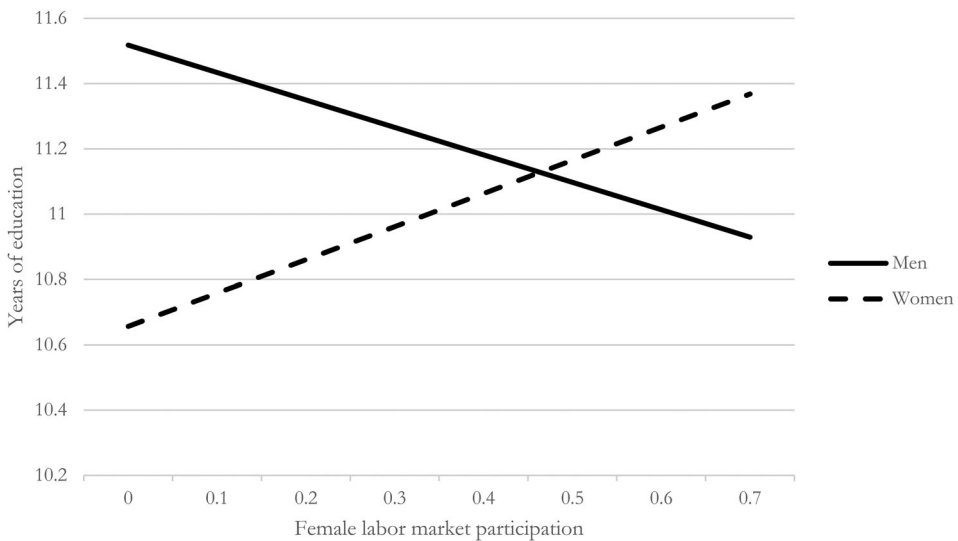


Figure 3. Interaction effect female labour market participation, visualized. Source: European Social Survey 2002–2012 and General Social Survey 2002–2012. N Level 1 = 138.498. N Level 2 = 1062.

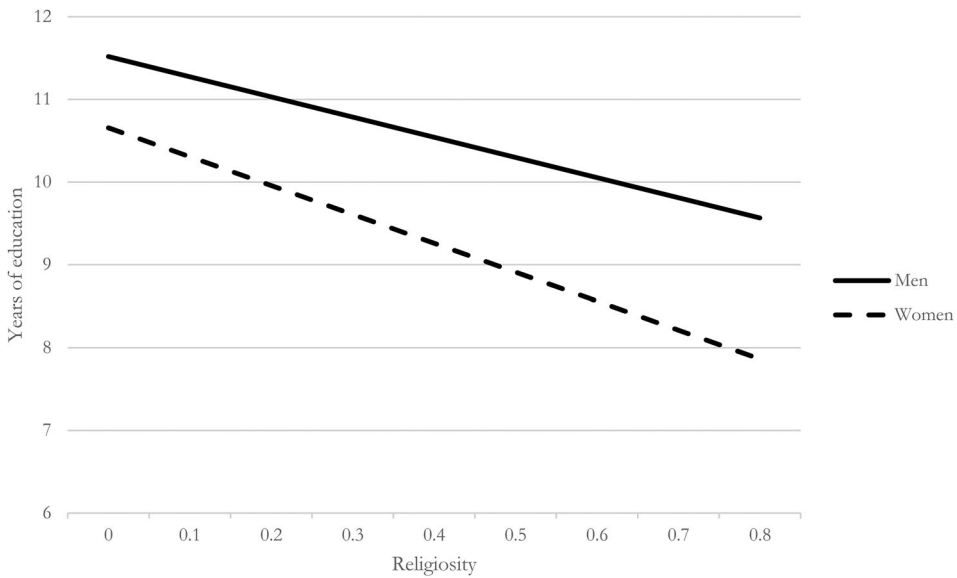


Figure 4. Interaction effect religiosity, visualized. Source: European Social Survey 2002–2012 and General Social Survey 2002–2012. N Level 1 = 138,498. N Level 2 = 1062.

in a country with the lowest level of active women on the labour market. This finding is partly in line with our first hypothesis because we did not expect to find a negative effect of female labour market participation for men. We also see that growing up in a religious context is differently related to the educational attainment of women and men ($b = -1.052$). Both women and men are negatively affected by growing up in a highly religious country, but the effect is more negative for women ($b = -3.492$) than for men ($b = 2.440$); this effect is also clearly apparent in Figure 4. So, in line with our expectations, a high level of religiosity in a country during adolescence negatively affects women's educational attainment. We did, however, not anticipate on the negative effect of growing up in a religious country for men in Hypothesis 2. Lastly, GDP seems to exert a larger positive effect on women's educational attainment than men's, whereas growing up in a communist regime does not seem to differently affect women's and men's educational attainment.

Conclusion

In the past decades, women in most Western societies have surpassed men in their educational attainment. This reversal of the educational gender gap has been established by a considerable number of studies. Nevertheless, most of these prior studies examined educational gender differences in a single country or assessed it cross-nationally at one point in time. This study made the relevant contribution of comparing the educational attainment of men and women over a wide range of cohorts and countries simultaneously. Furthermore, combining data from several rounds of the ESS and GSS allowed us to test hypotheses on developments in the educational attainment of women and men using a combined cross-national and cross-cohort design. With this, we furthered the understanding and advanced the empirical testing of structural and normative contextual

factors that are likely to affect trends in the male–female differences in educational attainment.

To compare men and women in such a wide range of cohorts and countries, we constructed a cross-nationally comparable measure of educational attainment. Our first main finding is that growing feminization of education is a phenomenon noticeable in almost all Western societies. In practically all of the countries investigated, women born between 1950 and 1982 improved their educational attainment relative to men. Only in Ukraine, Latvia, Ireland, and Bulgaria did the female educational advantage somewhat diminish during the period under study (but in all countries, women still retained an advantage). In general, women originating from the mid-1960s started to gain an educational advantage over men, and more recent cohorts outperformed men in educational attainment in numerous countries. In fact, in most industrialized Western countries the female advantage in education has grown to such a degree that researchers and policymakers are increasingly worried about the large and growing number of boys underperforming in education (Diprete & Buchmann, 2013). These results support earlier findings on educational attainment in single European countries and in the United States (Buchmann & Diprete, 2006; Van Langen et al., 2006). Furthermore, they are in accordance with studies on test scores that have also established a growing female advantage (in reading and mathematics abilities) (Marks, 2008).

Although we found virtually similar trends in all 33 Western countries, our results also indicate considerable variation between countries over time. In some countries, the gender gap in educational attainment clearly reversed in the last 33 years (e.g., in Spain), while in one country, men still hold an advantage (e.g., in Switzerland). Elsewhere, differences are somewhat less prevalent (e.g., Czech republic). The most innovative part of our study therefore deals with a testing of theoretically derived explanations for over-time developments and between-country variations. First, the empirical analyses clearly demonstrate that high female labour market participation during adolescence improves women's educational attainment. It appears that in countries and time periods where a woman's role includes economic activity, the pursuit of an educational career is a rational choice: Girls (and their parents) anticipate a future in which they will fulfil a role outside the family home, and subsequently choose to invest in their education. Working women in a society thus function as role models, influencing girls' aspirations to perform well in school. The fact that Marks (2008) only found a moderate effect of female labour market participation seems to contribute to the argument that social contexts probably affect educational attainment more than test scores. In addition, this finding is in accordance with the finding of Marks, who established a positive correlation between women's share of employment and a female advantage in reading test scores. Men seemed to be slightly negatively affected by a high level of female labour market participation. As female labour market participation seems to be accompanied by female educational success, it could be that part of this negative association is explained by competition between women and men in education. As our aim was to explain women's rising educational attainment relative to men, our theoretical reasoning focused on how contextual characteristics affect women's educational attainment. More research is required to shed light on the mechanisms behind why men's educational outcomes are influenced by women's participation in higher education and/or on the labour market. Second, we found that women were negatively affected in terms of their educational attainment by a high degree of

religiosity during their adolescent phase. This finding was in line with our expectations; we theorized that in highly religious contexts, traditional gender norms limit women's educational opportunities and motivations. Future studies might further explore how variation in cultural norms is related to country and cohort differences in women's educational attainment. Although it is hard to include measures on cultural norms in early cohorts, we believe that future research could strive to include more direct contextual measures of gender role attitudes for more recent cohorts. This would contribute to a stricter test of how social norms influence girls' motivation and possibilities to be successful in their educational and professional careers. For all the country-cohort combinations in our study, there are no direct data on gender norms available. The finding that also men are negatively affected by a high degree of religiosity was unexpected, but is possibly related to the negative association between religiosity and modernization; or, in other words, the (partly) parallel development of secularization and modernization (Inglehart & Norris, 2003). As modernization is often associated with an increasing importance of educational credentials, this might explain the negative effect of religiosity for men, and perhaps also part of the negative effect for women.

We conclude that our study underscores the importance of structural and cultural conditions in women's decisions to pursue or prolong an educational career, resulting in higher educational attainment. In assessing the development of educational attainment of women and men over cohorts and countries simultaneously, we dealt with some limitations. First, looking at contextual information on countries back to the 1950s cohorts came with some limitations. With regard to the labour market participation of women, in various cases missing observations had to be replaced with regression estimates. Second, we acknowledge that the ISCED variable that we used to construct a cross-nationally comparable measure for educational attainment is not perfect (Schneider, 2009). Nonetheless, combining it with information on years of education, a more comparable cross-national measurement of educational attainment enabled us to utilize the data to the fullest extent possible. Third, we recognize that our findings are probably only generalizable to the American and European situation. The fact that we had to exclude Turkey from our analyses (its extreme values affected our results) indicates that in other parts of the world different mechanisms may apply. Finally, we obviously would have liked to include more direct measures of emancipatory policies in our models to capture more of the structural and cultural variations that may have contributed to differential developments of gender inequality in educational attainment. A country's emancipatory policies, for example, regarding representation of women in certain (high-status) positions may have influenced girls' motivation to perform well in school. Such indicators, however, were not available for the time period studied here. Future research could consider assessing more direct emancipatory measures, perhaps covering a shorter period of time.

This study presents a challenge for future research concerning the impact of country conditions on differences in educational attainment between men and women. Hopefully, more contextual data on countries and cohorts will become available, broadening the possibilities for comparative research on this topic. Research investigating other contextual levels, such as schools and families, could find a task in examining whether structural and cultural conditions at these levels work differently for men and women (Hanushek, 1997). In this respect, our findings may serve as a useful starting point. Role models for

young women (such as teachers and mothers), norms regarding female roles, and financial possibilities to invest in women's education may play an important role at the school and family level. Although data on these subjects were not available for all country-cohort combinations we studied, using a more limited set of countries and cohorts would enable scholars to test such hypotheses on the influences of school and family contexts. Finally, even though we find convincing evidence that women outperform men in their educational attainment in most of Western society (or are about to), scholars repeatedly found that women do not succeed in translating their educational advantage into a similar position on the labour market (Schwab et al., 2015). Apparently, a large challenge nowadays lies in investigating which factors encourage women to convert their educational credentials into matching labour market outcomes.

Notes

1. Biological sex differences might, however, interact with contextual factors, as suggested by Stoet and Geary (2013).
2. All ESS waves together consist of 36 countries. We excluded country-year combinations for which information on our dependent variable was unavailable (on both ISCED and country-specific educational levels). This resulted in the loss of 19,117 respondents, including all respondents from Austria. We also excluded Kosovo as we were not able to retrieve information on its contextual characteristics. Finally, we excluded Turkey as it proved to be a severe outlier. Turkey affected our results, as it showed very low levels of educational attainment in combination with high rates of female labour market participation and religiosity, and low rates of GDP.
3. We performed robustness checks in which our measure was correlated with two additional cross-nationally comparable variables we created. The first is based on OECD documentation on ISCED (OECD, 2004) and covers the number of years of education minimally required to obtain a certain ISCED level in each OECD country. The second is based on Schneider's work (2009) and refers to the hypothetical years of education required to obtain a certain educational level for each country separately. Both correlate highly with our dependent variable (0.94 and 0.92, respectively). Robustness analyses employing these variables (on a limited set of country-cohorts) revealed largely similar results.
4. A separate category was included for respondents who indicated their mother was absent. As these scores cannot be regarded as missing observations, we decided not impute them. We included this category in the analysis as a separate dummy variable, but without presenting its parameters.
5. Most studies point in the direction that cohort differences in religiosity are caused by cohort differences and not by age (see references in main text). Descriptive evidence in our dataset also points to a cohort effect rather than an age effect (figures available upon request).
6. We coded the following origin countries as Western: all European countries, Australia, Canada, United States, Israel, Japan, and New Zealand. All others were regarded as non-Western. For some respondents (0.5%), there was no information on country of birth available, only that they were non-native. As of all immigrants the scores of those respondents mostly resembled those of non-Western immigrants, we allocated them to the non-Western category.
7. We lost 27 country-cohort combinations due to the fact that not all European countries are available in all ESS waves and in some country cohort combinations all respondents were lost due to selections or deletion of respondents with missing values on the dependent variable(s).

8. There is no contextual information on opinions with respect to actual gender roles for 33 countries going back several decades available, other than the contextual information we use; data with respect to religiosity per cohort is therefore the best approximation we have at hand. The data do not contain respondents born after 1991 from Italy or after 1989 from Luxembourg; this caused a problem for the calculation of the 5-year average share of churchgoers for the latest cohorts from those countries. Respondents born after 1979 (Italy) or 1977 (Luxembourg) therefore got assigned the last average value that was based on three cohorts in the data.
9. Data on female labour market participation had to be collected from various sources. Missing measurement years for the USSR, Estonia, Lithuania and Latvia were supplemented with data from *USA/USSR: Facts and Figures* (U.S. Bureau of the Census, 1991). For Estonia, Lithuania, and Latvia, we imputed numbers from the USSR for absent years (1970, 1975, 1980, 1985, 1987, 1988, and 1989). Information for Croatia was supplemented with data from former Yugoslavia. Missing information for Slovakia (before 1993) was replaced by data from former Czechoslovakia.
10. We imputed 36% of all country-cohort combinations with regression estimates from a regression model in which country and cohort were included as predictor variables. Our female labour market participation variable with regression imputations correlates 0.934 with solutions in which missing data points are inter- or extrapolated. Analyses in which we calculated 5-year averages on the base of only original values, and removed country-cohort combinations of which all 5 years were missing (157 cases), led to largely similar results; although the main effect of female labour market participation did not reach significance, the cross-level interaction with female stayed positive and highly significant.
11. A multilevel model in which we nested respondents in countries and included the effects of female, cohort, cohort squared, and the interaction between female and cohort confirms the statistical significance of this trend.
12. We also performed several robustness checks. Portugal, and to a lesser extent Cyprus, showed rather low levels of educational attainment (similar to data from Eurostat, 2016, and OECD, 2012) in combination with a low GDP and low female labour market participation and a high religiosity. Switzerland and Luxemburg showed extreme high levels of GDP. Removing these countries from the analysis did not lead to a substantial change of the results. We therefore kept them in our final modelling.

Notes on contributors

Margriet van Hek is a PhD candidate in the Department of Sociology/ICS, Radboud University Nijmegen, The Netherlands. She is currently working on her dissertation, which focuses on the male–female gap in educational success. Her research interests also include social inequality in cultural tastes and lifestyles.

Gerbert Kraaykamp is a full professor in Empirical Sociology in the Department of Sociology/ICS, Radboud University Nijmegen, The Netherlands. His major research interests include educational inequality, cultural differentiation, and health inequality. He has published on these subjects widely in international journals.

Maarten H.J. Wolbers is Professor in Educational Research in the Department of Sociology/ICS, Radboud University Nijmegen, The Netherlands. His research interests include the sociology of education, work, and labour markets.

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Appendix 1. Correlations between contextual variables

	FLMP	Religiosity	Communism	GDP
FLMP				
Religiosity	-.135***			
Communism	.375***	.129***		
GDP	.086	-.339***	-.630***	

Source: European Social Survey 2002–2012 and General Social Survey 2002–2012. *N* Level 2 = 1062.

Appendix 2. Gender gaps in educational attainment per country-cohort combination

Cohort	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82		
Belgium	.01	.05	.19	-.26	.08	.21	-.39	.32	-.49	-.26	.20	-.80	-.27	.65	.06	.01	.32	.96	.83	.33	.68	.98	.25	.34	.63	-.27	.11	-.21	.97	.46	-.09	.54	-1.00		
Bulgaria	-.19	-.66	.02	.17	1.21	.44	.38	1.11	.75	.68	.61	.03	.84	.51	1.21	.59	.80	1.21	1.14	-.66	-.01	-.45	-1.20	1.01	.23	.79	-.75	.72	-2.50	.02	1.25	1.06	1.60		
Switzerland	-.71	.22	-.60	-.44	-.93	-.44	-.51	-.58	-.08	-.99	.21	-.95	.14	-.33	-.48	-.95	-.64	-.80	-.66	-1.28	.20	-.61	-.12	-.39	-.87	.72	.74	.93	-.46	-.98	.48	-2.29	-.80		
Cyprus	-2.06	-2.57	-1.18	-1.75	-1.70	-.62	-1.75	-1.47	-.46	-.69	-.74	-.66	-.18	.36	.09	-.23	.35	.65	-.95	.87	.10	-.90	-.08	-.77	-.11	-.24	.79	-.21	.52	1.19	-.77	.94	-2.39		
Czech R.	-.17	-.86	-.27	-.82	.27	.28	.23	-.40	.22	.08	-.48	-.57	.03	-.52	.33	.28	.47	.17	.48	-.32	.18	.03	-.19	.48	.10	-.25	.35	-.37	.21	-.18	.11	.37	-1.94		
Germany	-1.17	-1.14	-.52	-.55	-.28	-.54	-.41	-.54	-.94	-.50	-.30	-1.01	-.44	-.16	-.21	-.33	-.23	-.37	-.05	.03	-.27	-.18	-.39	.24	-.39	-.16	.15	-.36	-.14	.32	-.43	.98	-.75		
Denmark	-.28	.17	-.03	-.03	-.29	.56	.17	.44	-.26	.56	.57	-.10	.31	.60	.13	.40	1.55	.60	.21	.81	1.07	.67	.67	1.00	-.16	-.03	1.74	-.36	1.17	.87	1.69	1.35	1.19		
Estonia	-.11	.60	1.02	.79	1.13	.04	.96	.49	.39	1.01	.84	1.01	.76	-.03	.36	1.17	1.17	.71	1.25	1.26	1.26	.31	.22	1.03	.48	.06	.62	1.20	-.78	1.35	1.51	.55	1.07		
Spain	-.64	-1.24	-1.90	-.77	-.93	-.80	-1.18	-1.09	-.64	-.40	-.38	-.37	.50	-.43	-.03	.06	.14	.91	.14	-.24	.84	.20	1.00	.77	1.21	-.02	.91	.33	.35	1.77	1.94	.96	4.16		
Finland	-.30	.66	.76	1.05	1.70	.42	-1.13	1.34	.62	.59	1.65	-.45	.69	.96	-.07	.99	-.59	-.27	.45	1.07	.58	.31	.21	.20	.82	.56	.60	1.19	-.59	.71	1.98	-.22	1.18		
France	.03	-.62	-.60	-.33	.95	-1.25	.21	-.40	-.06	.01	.54	-.14	.16	.50	-.41	.83	.61	-.12	.59	-.20	-.44	.57	.36	1.20	.28	.29	.29	-.09	-.21	1.00	1.64	4.87			
UK	.03	-.29	.49	-.35	-.66	-.83	.00	-.06	-.41	-.20	-.18	.07	-.25	.04	-.05	-.37	-.19	.27	.31	-.08	-.58	.11	.03	-.13	.16	-.12	.46	1.58	.28	.38	.01	.80	-.53		
Greece	-2.05	-1.53	-1.32	-1.38	-.75	-.92	-1.52	-1.69	-.77	-1.47	-.68	.34	-.46	-.55	-.88	-.89	-.26	-.85	-.16	.94	-.63	-.27	-.45	1.02	.70	.97	.60	.03	.52	-.66	.51	.04			
Croatia	-.43	-.63	-1.97	-1.01	-.76	-.58	-.82	-.19	-.13	-.52	.57	-.24	-1.18	1.14	.32	-.50	.75	.35	-.29	-.48	-1.02	.46	.36	.93	-.45	-.62	.19	.54	-.85	.39	3.21	1.07			
Hungary	.67	.22	.82	.33	.18	.46	.55	.31	1.03	-.73	.65	.49	.80	.44	.56	.32	.93	.61	.24	1.14	.55	.59	.69	.03	1.31	.83	.94	1.80	1.43	-.77	.29	2.93	1.04		
Ireland	.95	.73	-.02	.53	.11	-.23	.07	.10	-.21	-.07	.29	.21	1.01	.42	.29	-.05	.42	.91	.72	.39	.52	.52	.57	.36	-.14	.24	.41	.07	-.52	.71	.33	.02	-.25		
Israel	.74	.31	.21	.91	.08	1.58	-.37	.12	.79	1.31	1.35	.37	.22	-.07	-.15	.17	.67	.37	.46	.21	.49	.62	.81	1.00	1.84	.42	1.34	.86	1.54	.71	.05	.86	-.03		
Iceland	-1.92	.51	-.32	-.29	.03	-.78	-2.43	.24	1.53	1.84	1.03	-1.45	.32	.89	.78	-.04	2.37	.59	1.78	.45	3.11	.10	2.83	1.83	1.64	3.61	2.32	2.58	-1.65	.31	-.12	1.11	2.09		
Italy	-.23	-.79	-2.50	-1.53	-1.39	-1.57	-.50	-.22	-.27	.25	.55	.60	-1.13	1.73	.90	.50	.89	1.39	-.56	-.97	-1.59	-.71	-.59	-1.27	-2.05	.53	.16								
Lithuania	.82	.58	.99	.43	1.05	.30	-.80	.45	.37	.37	.14	.55	.73	.67	1.10	.72	1.18	.70	.43	1.16	.65	1.64	1.41	1.40	.61	-.65	-.17	-.34	-.34	2.49					
Luxembourg	-.60	.67	-1.08	-.29	-1.20	-.73	-.77	-1.00	-.25	-.93	-1.71	-.96	-.74	-.49	-.36	-.64	-.60	-1.46	-.36	.23	.14	1.01	1.03	-.69	1.16										
Latvia	.45	1.12	.41	1.23	1.42	-.28	.62	2.48	.44	.61	.95	1.21	.54	.42	.95	-.37	1.46	1.80	1.65	.31	.84	.47	.08	1.08	.50	.36	-.16	.03	.88	2.10					
Netherlands	-1.28	-1.69	-1.38	-.65	-1.34	-.93	-.90	-.41	-.36	.02	-.43	-.13	-.39	-.03	.13	.61	-.21	-.77	.09	.23	.14	-.07	-.64	-.31	-.60	-.56	-.92	.59	.28	.53	1.36	.82	.31		
Norway	-.60	-.63	-.12	.07	.23	-.02	-.36	.53	.21	-.10	.01	-.12	.19	.16	.35	.49	.11	.10	.27	.31	.43	.54	.70	.67	.25	.96	.89	.45	.30	1.12	1.04	1.02	-.56		
Poland	-.15	-.13	.75	.53	.68	.94	.65	.60	.73	.58	.73	.94	.66	.01	1.26	.61	.53	.74	.93	1.07	.73	.65	.55	.70	.30	1.75	1.29	1.11	.59	.75	1.55	.78	.95		
Portugal	-.89	-.39	.37	-.83	-.59	-.17	.24	-.02	-.25	.41	.76	.46	-1.16	-.46	-1.60	-.27	-.84	.44	-.03	.67	-.46	.43	-1.30	.96	.86	-.28	-.30	.31	1.66	.78	1.56	1.87	.95		
Romania	-.30	-.31	-.82	-1.52	.38	-.13	-.61	-1.01	.15	-.53	.48	.66	-1.67	-.81	-.01	.79	-.13	-.52	.21	.62	.38	-.96	-.46	.04	.08	-.05	.73	.54	-.89	1.30					
Russia	.47	.46	-.06	-.45	.01	.56	.73	.05	-.08	.82	.35	.19	.25	.23	.84	.90	.96	.29	.23	.87	.13	-.36	.39	.93	.37	-.34	.70	.30	.84	.68	.66	.11	.24		
Sweden	.40	.01	.27	.79	.85	.53	.64	.55	.83	.44	.28	1.37	.98	1.11	.55	-.23	.82	.97	-.08	.22	.58	.76	1.49	.43	.33	.17	.70	-.06	-.35	-.17	.49	.03	1.85		
Slovenia	-.53	-.47	.25	-.13	-.39	-.37	-.23	-.12	-.37	.15	.58	.08	.22	-.69	.23	.82	.21	.64	.24	.60	.76	.26	1.59	.26	.71	-.08	.28	1.28	2.10	1.41	2.21	3.17	-.37		
Slovak R.	-.25	-.20	-.01	-.37	-.27	-.20	-.05	-.35	.25	-.43	-.53	-.43	.42	-.15	-.24	-.78	-.31	1.16	.19	-.01	-.43	-.04	-.16	.52	-.40	-.50	.55	-.57	-.46	.18	.18	.15	.01		
Ukraine	.20	.83	.32	.48	.18	.19	.68	.01	-.09	.06	.44	.70	.75	-.13	.54	.51	.36	-.04	-.04	.08	.85	.16	-.44	.13	.44	.17	.42	.32	.32	.59	-.13	.07			
USA	.09	-.41	-.15	.58	.26	.16	.11	-.17	.03	.32	.24	.06	-.51	-.25	.17	.46	.33	.24	.10	-.21	-.20	.15	.23	.61	-.05	-.31	-.08	.32	.73	.72	.04	-.52	.49		
Mean	-.30	-.23	-.24	-.18	-.02	-.14	-.26	-.02	.07	.07	.26	.03	.07	.17	.21	.17	.41	.35	.30	.29	.29	.21	.29	.48	.30	.25	.50	.47	.16	.65	.81	.84	.40		

Source: European Social Survey 2002–2012 and General Social Survey 2002–2012. N = 138,498.

Appendix 3. Results of multilevel linear regression modelling on educational attainment, unstandardized coefficients, individual variables and contextual variables presented separately for women and men

	Model C (males)		Model C (females)	
	B	SE	B	SE
Intercept	11.298***	.228	10.707***	.276
Individual characteristics				
Religiosity	.114***	.028	-.140***	.024
Working mother	.173***	.024	.278***	.022
<i>Parental educational level</i>				
Low (ref.)				
Middle	1.575***	.031	1.575***	.029
High	3.592***	.036	3.568***	.034
<i>Immigrant status</i>				
Native (ref.)				
Western Immigrants	.123**	.047	.254***	.042
Non-Western Immigrants	-.018	.052	-.135	.048
Contextual characteristics during adolescence				
FLMP/100	-.154	.478	.954	.542
Religiosity	-2.363***	.408	-3.523***	.469
Communism	-.268**	.099	-.446***	.107
GDP/1000	.040***	.011	.105***	.012
Variance components				
Level 1 variance (individuals)	7.017	2.649	7.032	2.652
Level 2 variance (countries and cohorts)	.594	.771	.144	.379
Level 3 variance (countries)	.070	.264	1.020	1.010

Source: European Social Survey 2002–2012 and General Social Survey 2002–2012.
 N Level 1 = 138,498 (63,833 males; 74,665 females). N Level 2 = 1062. N Level3 = 33.
 ~ $p < 0.1$. * $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$ (two-tailed test).