

Educational field and fertility in western Germany: an analysis of women born between 1955 and 1959

*Anja Oppermann**

Abstract

The existing research on education and fertility has been enriched by studies that take into account educational field in addition to educational level. The present paper adds western Germany, which has exceptionally high levels of childlessness, to the list of cases for which comparable research has been conducted. The association between educational attainment, childlessness, and ultimate fertility among women born between 1955 and 1959 is examined using data from the 2008 German Microcensus. Despite the strong association with the level of education, childlessness also varies by educational field in western Germany. Consistent with findings from other countries, the results show that women educated in teaching and health care have the lowest rates of childlessness at each educational level, while women educated in administration, economics or social sciences have the highest levels of childlessness. Educational field and level account equally for variation in ultimate fertility.

1 Introduction

In recent years, the existing research on education and fertility has been enriched by studies that take into account the educational field in addition to the educational level (Lappegård and Rønsen 2005; Hoem et al. 2006a; Hoem et al. 2006b; Martín-García and Baizán 2006; Neyer and Hoem 2008; Rønsen and Skrede 2010; Van Bavel 2010; Begall and Mills 2012; Michelmore and Musick 2014; Oppermann 2014). All of the above studies have found an impact of the field that is independent of the level. The operationalisation of educational attainment varies considerably between these studies, particularly with regard to the number of educational categories used in the analysis. Nevertheless, three studies analysing childlessness in three different countries – namely, Sweden, Austria, and Greece – applied a comparable

* Anja Oppermann, WZB Berlin Social Science Center, Reichpietschufer 50, 10785 Berlin, Germany
Email: anja.oppermann@wzb.eu

setup (Hoem et al. 2006a; Neyer and Hoem 2008; Bagavos 2010). Each study used national register or census data to examine childlessness among women born between 1955 and 1959. The operationalisation approaches were very similar, as each used approximately 60 categories of educational attainment (around 50 in the case of Greece). These categories were based on combinations of educational levels and fields. For Sweden, a companion paper also looked at ultimate fertility (i.e. the average number of children) (Hoem et al. 2006b).

The present paper adds to this existing knowledge by applying a comparable setup to western Germany. While German family policy is somehow similar to that of Austria, fertility is very low in western Germany, and the region has one of the highest rates of childlessness worldwide (Dorbritz 2008). For this reason, the case of western Germany is of particular interest to demographers. The present paper adds to the existing research which has repeatedly shown a strong association between educational level and fertility (e.g. Blossfeld and Huinink 1991; Kreyenfeld 2002; Kreyenfeld and Konietzka 2008). Given this crucial role of the educational level, it is of interest to examine the strength of the impact of the field of education in western Germany, and to compare the impact with that in Sweden, Austria and Greece. So far, relatively little attention has been paid to the possible impact of the field of education on fertility in the western German context. Using data from the German Socio-Economic Panel (SOEP) study, it has been shown that educational field matters for the transition to parenthood for women, but not for men (Oppermann 2014).

In the present paper, data from the 2008 German Microcensus¹ on educational attainment and childlessness are treated in a manner comparable to that of the approaches used in previous studies. Additionally, ultimate fertility is examined in accordance with the methodology applied in a study for Sweden by Hoem et al. (2006b). The association between educational field and ultimate fertility in western Germany is explored for the first time. Consequently, the paper also provides reference data for researchers examining the association between education and fertility in the German context.

The focus of this paper is on western Germany rather than Germany as a whole for several reasons: the cohort under examination (women born between 1955 and 1959) were brought up and experienced the majority of their fertile years while Germany was separated into two different countries (the Federal Republic of Germany and the German Democratic Republic). The institutional settings differed considerably – for example, with regard to career opportunities as well as the compatibility of employment and childcare – as did fertility behaviour in the two parts of Germany (Kreyenfeld 2004; Dorbritz 2008; Henz 2008). Moreover, because

¹ The full sample of the 2008 German Microcensus was used for the analysis. This was possible because the author was granted on-site access as a guest researcher. The author is very grateful for the kind support of the team at the Research Data Centre of the Federal Statistical Office and the statistical offices of the *Länder* in Berlin-Mitte.

fertility behaviour has continued to differ between the two parts of the country since reunification, it is still common to study fertility patterns in eastern and western Germany separately (e.g. Goldstein and Kreyenfeld 2011). While it would be interesting to examine how these different institutional settings are associated with the relationship between educational field and fertility, the number of eastern German cases in the Microcensus do not allow for such a comparison. Although the present paper focuses on western Germany, in Section 6.1.2 some comparisons are drawn for educational lines where the sample for eastern Germany consists of a sufficient number of cases to do so.

In the next section, I discuss the key features of the western German educational system and family policy framework, along with selected research findings. In the subsequent section, I summarise the main arguments for why the educational field is of relevance for fertility behaviour, and relate them to the western German context. In the section on data and methods, I describe the data from the 2008 German Microcensus, and how the analysis is conducted. The analysis focuses on western German women born between 1955 and 1959. I present the main results, and compare the findings for western Germany with those for eastern Germany, and with previous findings from other countries. I conclude with some reflections on these findings, and discuss their implications for further research.

2 The western German context

In this section, I introduce patterns observed in the western German context that are assumed to be of relevance for the association between education and fertility decisions: namely, the dominant characteristics of the German educational system, family policy, and value orientations. I also describe overall fertility trends and important findings.

One main characteristic of the German educational system is the early tracking of pupils (Shavit and Müller 2000; Jacob and Tieben 2009) after four years of primary school. In general, the flexibility of the educational system is rather low (Kerckhoff 2001). While the proportions of women participating in secondary and tertiary education have been increasing, choices of educational fields are still strongly gender-segregated (Wirth and Dümmler 2004; BMBF 1997; BMBF 2007; Charles and Bradley 2009). For example, women are overrepresented in health care and men are overrepresented in engineering (Charles and Bradley 2009). There is a strong link between the educational system and labour market opportunities (Schneider 2008; Shavit and Müller 2000). It is very common in Germany to earn a qualification that is closely related to a specific occupation, and to remain in this occupation throughout one's working life (Kerckhoff 2001). Numerous occupations are tied to formal educational qualifications (Buchmann and Charles 1995, 85).

In addition to the educational system, family policy measures and dominant value orientations within a country have an impact on fertility behaviour (Henz 2008; Dorbritz 2008; Kravdal and Rindfuss 2008; Blossfeld and Huinink 1991; Hoem

et al. 2006a; Hoem et al. 2006b; Kreyenfeld 2002; Gauthier 2007; Brewster and Rindfuss 2000). The most recent developments are not discussed here, since these (for example, the introduction of *Elterngeld* in 2007) occurred after women born between 1955 and 1959 had reached the end of their fertile years. Throughout the fertile years of the cohort under consideration, traditional family attitudes and gender roles prevailed in western Germany (Pfau-Effinger and Smidt 2011; Pfau-Effinger 2012). There was a strong link between marriage and childbearing. In 1990, only 10.05 per cent of children were born to unmarried mothers in the western part of Germany (Dorbritz 2008, 573). Pregnancy was an occasion for marriage (Dorbritz 2008, 573 and 579; Sobotka 2008; Blossfeld and Rohwer 1995; Federkeil 1997).

A traditional division of labour was supported by many features of German family policy at that time. The tax system supported marriage, with or without children. Marriages with one main earner (usually a male breadwinner) benefited the most from a tax policy known as *Ehegattensplitting* (Federkeil 1997, 87; Steiner and Wrohlich 2006; Daly 2000, 91). The lack of full-time day care has hindered compatibility of family and employment, which only recently became a political goal in Germany. Long parental leave, on the other hand, has always been supported financially – with a guaranteed return to the previous job after up to three years² of a child's life. Traditionally, day care has mainly been provided by the *Kindergarten*, which is a preschool for children between the ages of three and six that usually offers instruction for four hours a day (Federkeil 1997, 90; Daly 2000, 81; Henz 2008, 1456; Dustmann and Schönberg 2012). Until very recently, day care for children under the age of three or of school age was in short supply³ (Federkeil 1997, 90), which means that the cohort under examination was unable to benefit from developments of the last few years.

Fertility rates in Germany have been below replacement rate since the end of the “Golden Age of Marriage” in the 1960s (Dorbritz 2008, 562; Federkeil 1997, 82). A polarisation between childless women and women who have opted to have more than one child can be observed. Women seem to choose between these two lifestyles as compatibility between family life and employment is low (Dorbritz 2008, 560). The strong impact of education on fertility – particularly on the timing of childbirth, but also on childlessness or ultimate fertility – has attracted considerable attention in light of the low fertility rates in western Germany. Research on this topic has generally shown that women tend to postpone having children until after graduation (e.g. Blossfeld and Huinink 1991; Kreyenfeld and Konietzka 2008; Kreyenfeld 2010). While highly educated women (for whom the opportunity costs

² Parental leave with job protection was expanded from two to six months in 1979. This protected period was increased to 10 months in 1986, to 18 months in 1990, and to 36 months in 1992 (Dustmann and Schönberg 2012).

³ The school hours in western Germany are normally in the morning, and only occasionally in the afternoon. Moreover, the start and the end of the school day varies during the week.

of having children are especially high) are more likely to remain childless than less well educated women, highly educated women who ultimately enter motherhood (despite the opportunity costs) tend to have a second child (bifurcation). This pattern is partly attributable to the self-selection of particularly family-prone women into motherhood (Kreyenfeld 2002).

3 A brief argument: why the field is of relevance

The reasons for including the educational field in the analysis of the association between education and fertility are discussed in detail by Hoem et al. (2006a). Here, I highlight the main arguments, and relate them to the western German context. A close link between education and labour market opportunities is assumed. As described above, this link is a particular characteristic of many occupations in western Germany. Educational fields differ in terms of the degree to which the labour market opportunities associated with those fields make reconciling family and career easier or more difficult: flexible working hours and part-time work and high job security are assumed to have a positive effect on compatibility. In western Germany, high compatibility is expected in fields with a high proportion of women, for reasons of both self-selection and a self-reinforcing dynamic: it is assumed that women choose fields with high compatibility of family and employment; and that, at the same time, a high proportion of women in a field will enforce a higher level of compatibility. Educational fields vary with regard to skill depreciation and occupational specificity. Skill depreciation refers to the loss of knowledge due to a temporary break, such as parental leave (Martín-García and Baizán 2006). This risk might be particularly high in technical fields when important developments are missed during a break (Hoem et al. 2006a). Occupational specificity refers to the fact that some educational fields are more likely to lead to a certain occupation than others (Oppermann 2014). Despite the close link between education and occupation in western Germany, fields such as the arts, humanities, or social sciences do not normally prepare people for specific occupations, unlike, for instance, medicine or law.

The above-mentioned characteristics of educational fields are assumed to have an impact on the individual's choice of field. Preferences regarding future lifestyle, particularly in terms of work content and family life, as well as the anticipation of working conditions and compatibility of employment and parenthood, are of relevance for this choice. Especially for women educated in care-related fields, such as teaching and health care, it is assumed that preferences and personality traits simultaneously have an impact on the choice of educational field and fertility behaviour (*ibid.*). Indeed, this association seems to be independent from country context, as low levels of childlessness have been found repeatedly among women educated in care-related fields across different countries. Thus, this pattern is likely to be observed in western Germany as well. Socialisation is also assumed to play a role in the association between educational field and fertility. The selection of an

educational field affects the social environment during the years spent in education and later in adult life, and this in turn shapes an individual's preferences with regard to childbearing (Martín-García and Baizán 2006; Van Bavel 2010).

4 Hypotheses

Against the background of the theoretical considerations and the western German context, I expect to find the following:

Given the strong association between educational level and fertility that has been repeatedly shown, I expect to find that the level of education is strongly associated with childlessness. In light of the close link between educational qualifications and occupational opportunities in western Germany, I also expect to observe that the field of education is of relevance for childlessness, but to a lesser extent than the level of education.

For western Germany, I expect women who choose motherhood and are educated in fields with high levels of childlessness to be particularly family-prone. Therefore, I expect to find that mothers in fields with high levels of childlessness have similarly high or even higher numbers of children than mothers in fields with lower levels of childlessness (bifurcation).

Very much in line with findings for other countries, I expect to observe that women educated in care-related fields (teaching and health care) in western Germany have low levels of childlessness, as this association tends to be linked to individual preferences and personality traits, rather than to country context.

In addition, I expect to find that women educated in fields with a high risk of skill depreciation (technology) or with uncertain occupational prospects (humanities, social sciences), as well as in fields with long educational enrolment, have high levels of childlessness.

5 Data and methods

The data source for the present analysis is the 2008 German Microcensus. The Microcensus consists of one per cent of households in Germany.⁴ Respondents are not normally asked about children, and one can only infer the existence of children from the household composition. In the wave conducted in 2008, female respondents aged 15–75 were asked to respond (voluntarily) to questions about whether they had given birth to a child, and their number of children. The German

⁴ While the previous studies on Sweden, Austria, and Greece used register or census data – and, therefore, information on the whole cohort of women born between 1955 and 1959 – this type of data is not available for Germany. The census carried out in 2011 does not include the information required for this analysis.

Microcensus includes information on each respondent's highest level of education, as well as on his or her educational field; identified through the use of approximately 90 categories. The aim of the present analysis is to provide figures that are comparable to those reported in previous findings. The studies by Hoem et al. (2006a and 2006b) were the first to use such detailed educational categories. The approach to data management Hoem et al. applied to the Swedish data is used as a guide for data management here. Information on the ISCED (International Standard Classification of Education) level of the highest educational degree and on the field of education is used to produce categories that are as similar as possible to those used by Hoem et al. (2006a and 2006b).

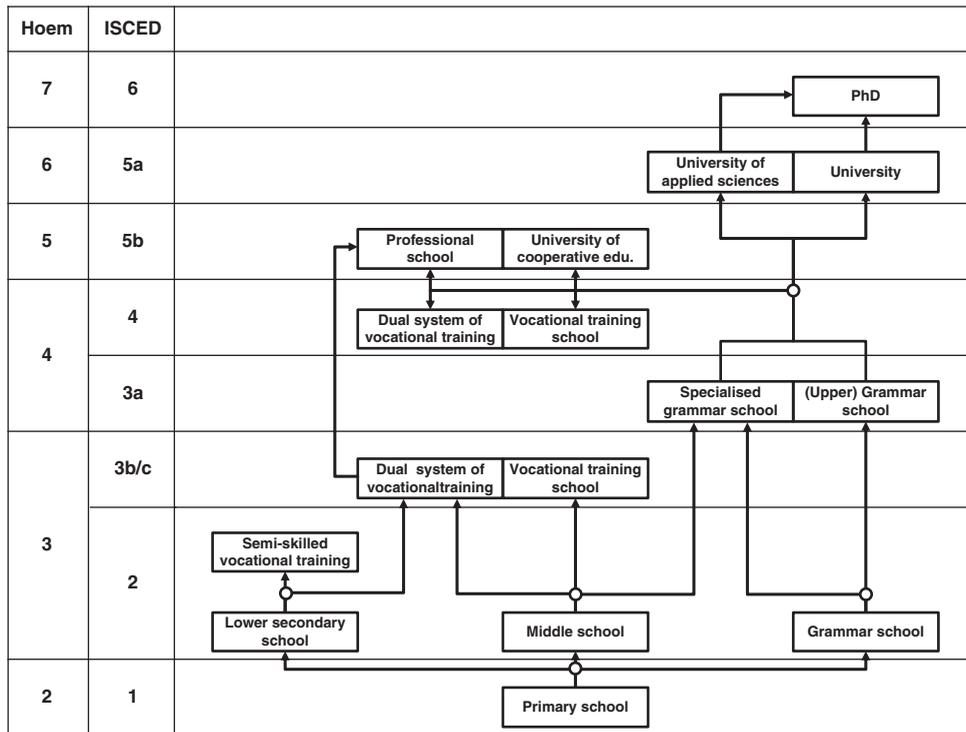
Figure 1 shows how the German educational system fits into the ISCED framework, and how the ISCED levels were combined to match the levels used in the analysis by Hoem et al. 2006a and 2006b.⁵ For the present analysis, 50 categories of educational attainment are used. The analysis is conducted for women born between 1955 and 1959; i.e. for the cohort examined in the studies on Sweden, Austria, and Greece. The sample is restricted to women living in western Germany in the survey year of 2008. Women in eastern and western Germany differ with regard to their fertility behaviour (Kreyenfeld 2004; Henz 2008; Dorbritz 2008). Thus, ideally, the sample would have been restricted by residence prior to German reunification in 1990.

Unfortunately, however, the German Microcensus does not include information that allows us to identify a respondent's place of residence prior to 1990. Using the current residence is the next-best option; and this approach has been applied in previous studies of Germany (e.g. Wirth 2007; Huinink et al. 2012). The analysis sample consists of 19,879 women. As can be seen in Table A.1 in the appendix, group sizes of educational lines vary, and the results for small groups have to be interpreted with caution. The weights provided by the Microcensus were applied to ensure that the figures presented here are of the highest possible quality. The analysis mainly consists of descriptive and graphical methods (scatterplots). The relationship between educational level and educational field and fertility – i.e. childlessness and ultimate fertility – is explored using two-way analyses of variance.⁶

⁵ Due to the structure of the German educational system, some groups are not completely identical. For example, teachers in Germany have a university degree (level 6), while some teachers (such as preschool teachers) in Sweden have educational level 5. Also, the information on the field of education does not allow for some of the distinctions made by Hoem et al. For instance, a midwife and a nurse cannot be differentiated, and are both classified as health care specialists. A detailed table on how the educational categories used in the present analysis correspond to those used in Hoem et al. (2006a) is available upon request, as is a Stata do-file on the conditioning of the Microcensus data on educational attainment.

⁶ The two-way analyses of variance are conducted with six categories of educational level and eight categories of educational fields. The results are available upon request.

Figure 1:
German educational system



Source: Own diagram.

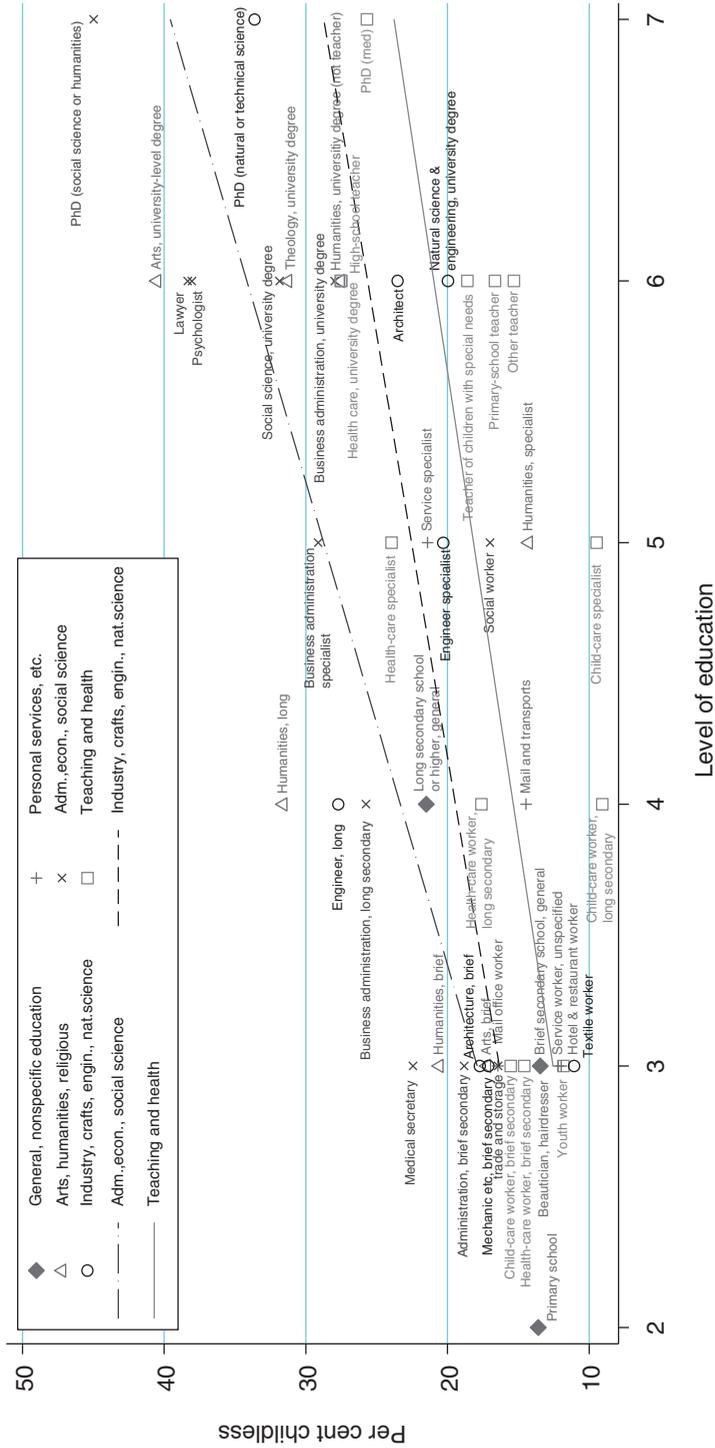
6 Results

The following figures and discussions are mainly based on Table A.1 in the appendix.

6.1 Childlessness

As was mentioned above, the level of childlessness is high in western Germany, varying from nine per cent among child care workers to 45 per cent among women with a PhD in the social sciences or the humanities. The overall share of childlessness in the sample is 17.8 per cent. Figure 2 shows the main findings on the relationship between educational level, educational field, and childlessness

Figure 2: Per cent permanently childless, by education group; western German women born in 1955–59



Source: Research Data Centre of the Federal Statistical Office and the statistical offices of the *Länder*, 2008 German Microcensus, own calculations.

among western German women born between 1955 and 1959.⁷ Figure 2 clearly shows an association between the field of education and childlessness. It also shows an association between the educational level and childlessness; the trend lines are relatively steep. The margin between the groups with the highest and the lowest rates of childlessness at each educational level increases with a rising level of education. Women educated in teaching and health care are the group with the lowest rates of childlessness at each educational level; while women educated in administration, economics, or the social sciences are the groups with the highest levels of childlessness. Social workers seem to be an exception within this group: their low levels of childlessness are more closely aligned with the group of women educated in teaching and health care. The results for women educated in the arts or the humanities do not show a clear pattern. The rate of childlessness for women with a PhD in medicine is around 26 per cent, while the corresponding figure for women with a PhD in the natural or the technical sciences is approximately 34 per cent. Women with a PhD in the social sciences or the humanities are the group with the highest level of childlessness within the analysis sample.⁸ A two-way analysis of variance shows that the level of education accounts for more of the variation in childlessness than the field of education. Table A.2 in the appendix shows the association between educational level and childlessness in the analysis sample.

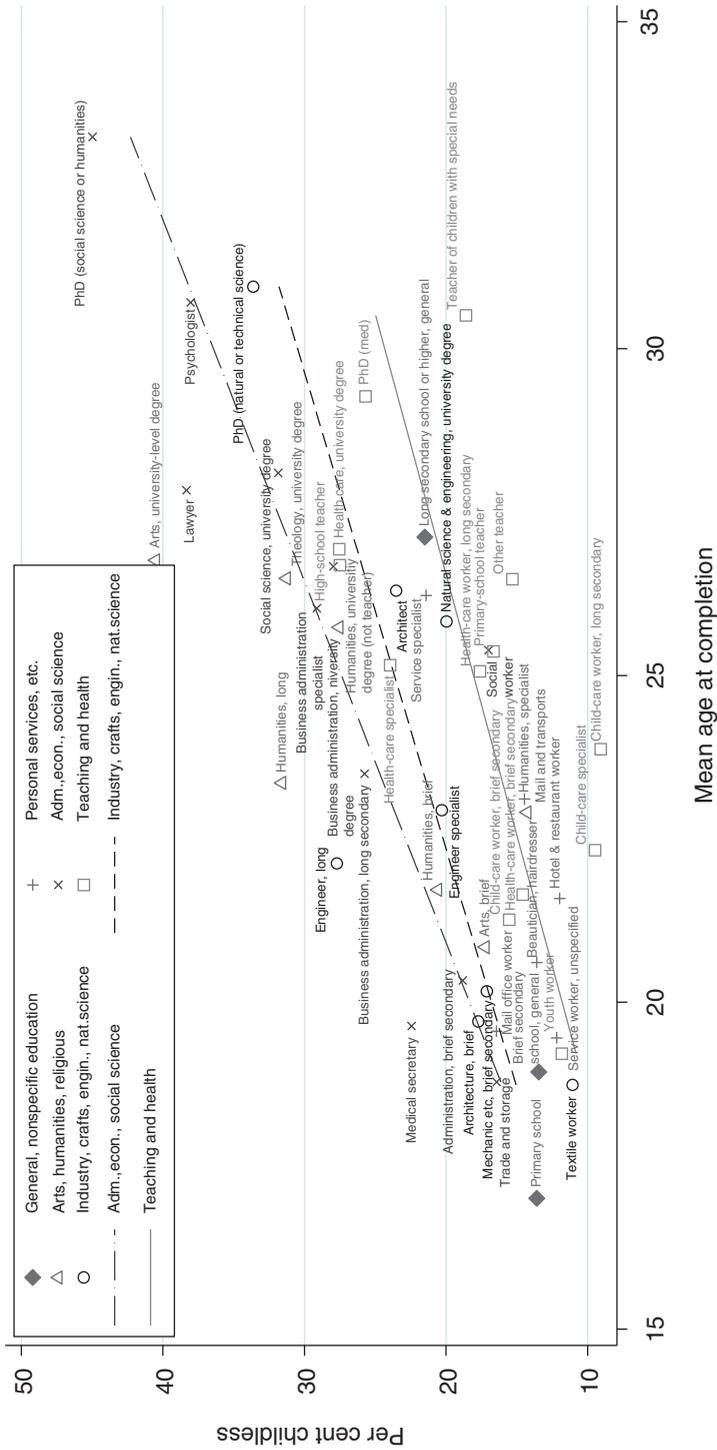
6.1.1 Childlessness and the mean age at completion of education

It is very common in western Germany to postpone the birth of a first child until after graduation. Nevertheless, Figure 3 also shows an association with the field of education. Again, women educated in teaching and health care are among those with the lowest levels of childlessness. While the mean age at completion for women educated as teachers of children with special needs or as psychologists is about the same (30.5 and 30.7, respectively), their rates of childlessness differ considerably. While special needs teachers have a childlessness rate of about 19 per cent, psychologists have a childlessness rate of 38 per cent. Therefore, a higher age

⁷ In order to make the comparison easier, the layout of Figure 2 resembles the layouts of Hoem et al. (2006a and 2006b) through the use of similar markers. Coloured figures are available upon request. In Figure 2, all of the markers are labelled; while in some of the following graphs, only selected markers are labelled.

⁸ In order to examine whether the relationship between educational level, educational field, and childlessness is persistent over time, the two neighbouring cohorts (1950 to 1954 and 1960 to 1964) are examined. The results of this analysis show that the overall level of childlessness has risen from cohort to cohort: 16.3 per cent of the women born between 1950 and 1954, 17.8 per cent of those born between 1955 and 1959, and around 20 per cent of those born between 1960 and 1964 remained childless. Educational level and childlessness are strongly related in each cohort. The pattern of the association between educational attainment (level and field) and childlessness is remarkably similar between the 1955 to 1959 cohort and the 1960 to 1964 cohort. Only the level of childlessness is higher in the latter cohort.

Figure 3: Per cent permanently childless, by mean age at completion of education; western German women born in 1955–59



Source: Research Data Centre of the Federal Statistical Office and the statistical offices of the *Länder*, 2008 German Microcensus, own calculations.

at completion of education does not necessarily lead to higher levels of childlessness in western Germany. In some educational fields, it might be easier for women to combine childbearing with educational enrolment than it is in others. Some of the women educated as teachers for children with special needs might have had their first child prior to graduation, whereas women training to become a psychologist may have found it more difficult to have a child before completing their education.⁹

6.1.2 Childlessness in eastern Germany

During the years prior to reunification, the patterns of fertility behaviour developed quite differently in East and West Germany. On average, women in the German Democratic Republic (GDR) had their children at an earlier age and were more likely to be unmarried at the time of the first birth than women in West Germany. The overall level of childlessness was also lower in East than in West Germany (Kreyenfeld 2004; Dorbritz 2008).

These fertility trends in the GDR are often explained by the pronatalist policy measures introduced from the 1970s onwards, which provided child allowance and maternity leave. Having a child improved the chances of getting a home, while day care was available and affordable (Dorbritz 2008, 563). Under the political regime of the GDR, women were expected to participate in the labour market as well as to become mothers (Kreyenfeld 2004; Henz 2008). Thus, the institutional settings in the two parts of Germany were very different during the fertile years of the cohort under examination. As Dorbritz put it, the choice to have children was easier in the GDR because of the combination of limited life choices and a higher level of social security (Dorbritz 2008, 563). I therefore expect to find that the association between educational level, educational field, and childlessness is less pronounced in eastern than in western Germany. However, like for western Germany, I expect to observe that eastern German women educated in care-related fields (teaching and health care) have especially low levels of childlessness.

The number of cases in the 2008 Microcensus for eastern German women born between 1955 and 1959 are too small to allow for a comparison of the full range of educational lines. Consequently, Table A.3 in the appendix provides a comparison of childlessness levels in eastern and western Germany for those educational lines for which data on at least 50 women in eastern Germany are available.

⁹ While the Microcensus contains information on the year in which the highest educational degree was received, it does not include information on the age at or the year of the birth of the first child. Given the German educational system described above, and the strong tendency of women to postpone childbirth until after graduation, I would not expect to find that many women had their first child prior to graduation in western Germany. However, this assumption cannot be examined using these data. It cannot be ruled out that educational lines differ with regard to compatibility with having children while in educational enrolment, as findings from Norway and Sweden imply (Lappegård Rønsen 2005; Hoem et al. 2006a).

The overall rate of childlessness is 7.4 per cent in eastern Germany; and no real association between the level of education and childlessness can be detected. The rate of childlessness is about average for each educational level. Higher childlessness rates can be observed among women who completed primary school only or who hold a PhD; but the sample sizes for both groups are very small (37 and 29, respectively).

In both eastern and western Germany, below-average childlessness rates are observed among women educated in teaching or child care. Childlessness is low among women educated in health care only among those with a low educational level in western Germany, while no clear pattern can be seen in eastern Germany. Women educated in personal services (e.g. hotel or restaurant workers, beauticians, or hairdressers – all educational level 3) have below-average childlessness rates in both parts of Germany. Unlike in western Germany, childlessness among women educated in administration or social sciences is not clearly above-average in eastern Germany. It may be assumed that the high levels of childlessness found among western German women are caused by the low degree of occupational specificity of these educational lines, and the insecurities that derive from this. Apparently, these insecurities were minimised in East Germany.

6.1.3 The findings in an international perspective

The findings of the present analysis add to a set of comparable studies on Sweden, Austria, and Greece (Hoem, et al. 2006; Neyer and Hoem 2008; Bagavos 2010). All of these countries are industrialised, but they differ in terms of their welfare states and family policy regimes. Sweden is known for its social democratic welfare state, generous family policies, and strong emphasis on gender equality (Gauthier 2002). Greece is among the group of countries with a southern European family policy framework, which is characterised by low benefit levels and a range of private and public incentive schemes (ibid.). The geographical neighbours western Germany and Austria are known for their conservative family policies oriented towards a traditional division of labour between men and women (ibid.). The two countries also have quite similar educational systems, especially in terms of the early tracking of students and the “dual system of vocational training” (Schneider 2008; Neyer and Hoem 2008). The findings for western Germany should therefore be more similar to those for Austria than for Sweden or Greece.

However, there are some important differences between western Germany and Austria. Whereas western Germany is more urbanised, the agricultural sector is more important in Austria than in western Germany (United Nations 2013; STATISTICS AUSTRIA 2013). Tourism and related occupations also play a greater role in Austria than in Germany (STATISTICS AUSTRIA 2013). On the other hand, the degree of gender segregation among educational fields is higher in Germany than in Austria (Charles and Bradley 2009).

In both Sweden and Austria, the overall childlessness rate among women born between 1955 and 1959 is about 15.7 per cent. Across the four countries, the

childlessness rate is lowest among this cohort in Greece, at 12.3 per cent; while the childlessness rate is highest in western Germany, at 17.8 per cent.

A strong correlation between educational level and childlessness is observed in western Germany, Austria, and Greece. In Austria and western Germany, the level of education accounts for more variance in childlessness than the field of education. In Greece, both are equally important; while in Sweden, the field is even more important than the level.

When comparing the patterns of childlessness across the four countries, the similarities are more striking than the differences. A correlation between the field of education and childlessness can be seen in all four countries, with low rates of childlessness in the fields of teaching and child care. High rates of childlessness are found among women educated in administration and the social sciences. Women educated in health care have low rates of childlessness in Sweden and western Germany, but high rates in Austria and Greece. A clear pattern of high childlessness among women educated in engineering and the natural sciences can be seen in Greece, but not in Sweden, Austria, or western Germany.

Furthermore, I expected to find that levels of childlessness are high among western German women educated in the arts, the humanities, and religion. However, the results do not show a clear pattern. Childlessness among this group varies between 14 per cent (for those specialising in the humanities) to 41 per cent (for those with a university degree in the arts). The latter result is in line with findings from Sweden, but the generally high childlessness rate among this group in Sweden as well as in Austria is not found in western Germany. Uncertain career prospects are assumed to be behind the high rates of childlessness in this group in Sweden. In western Germany, dropping out of the labour market and becoming a mother and a housewife might have been an attractive option for women in these fields. In other words, these women might have opted for the latter choice to avoid the difficulties associated with the former choice. In all of the countries analysed, women educated in the fields of administration, economics, or the social sciences have medium to high rates of childlessness.

Childlessness among women educated for a service job in a hotel or restaurant is low in Austria and western Germany, but is high in Sweden. While the finding for Sweden is explained by working conditions, such as unusual working hours that are difficult to combine with family life; these working conditions might have prompted German women to leave the labour market to become mothers and housewives. It has also been pointed out that in Austria, women educated for jobs in hotels or restaurants might be working in family businesses offering enough flexibility to combine parenthood and employment (Neyer and Hoem 2008). Among women educated in agriculture, the childlessness rate is low in Austria, while Sweden and western Germany are more or less on a par. As was mentioned above, both sectors are more important in Austria than in western Germany, and therefore contribute to the overall level of childlessness to a greater extent.

The relationship between educational attainment and childlessness observed in western Germany is most similar to the relationship observed in Sweden, although

in western Germany the impact of the level of education is greater and the overall level of childlessness is higher than in Sweden. Differences in the patterns of childlessness observed in Austria and in western Germany are probably mainly attributable to the larger roles played by tourism and agriculture in Austria. Greece is unique in many ways, but the high childlessness rate among women holding a PhD is very similar to that in western Germany.

6.2 Ultimate fertility

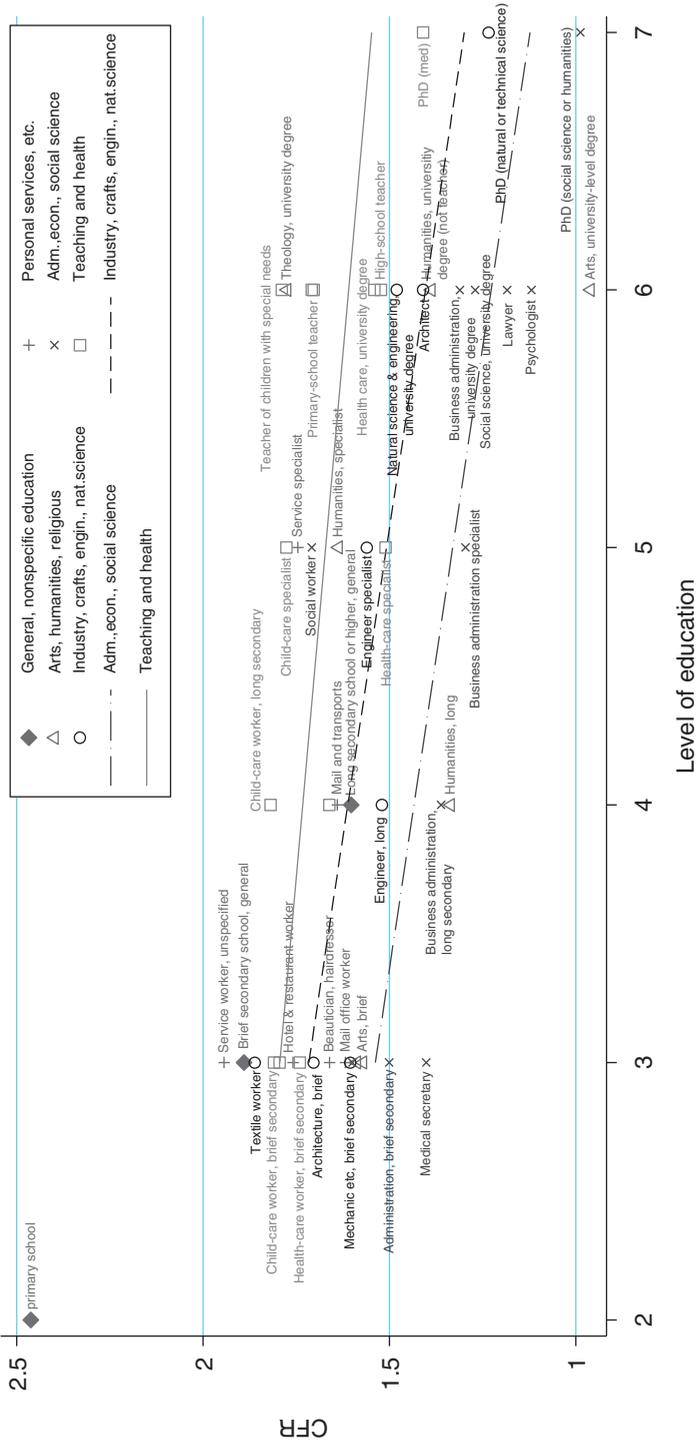
Figure 4 shows the relationship between educational level, educational field, and ultimate fertility for western German women born between 1955 and 1959.¹⁰ The most striking feature of this relationship is that women with low educational levels (primary school, level 2) have high levels of ultimate fertility. On average, women educated only to primary school level have about 2.5 children; 71 per cent have two or more children, and among those who enter motherhood the average number of children is 2.9. Childlessness in this group is low (14 per cent), but not exceptionally so; many groups with higher levels of education have lower rates of childlessness. However, no other group has an ultimate fertility rate that is even close to that of this group. Education at this level includes little or no specific labour market qualifications. It might be the case that the low labour market potential of these women encouraged them to opt for a traditional division of labour, and to focus on housework and child care while their partner provided for the financial needs of the household as male breadwinners.

Figure 4 shows, as expected, that ultimate fertility decreases with an increasing level of education. It also shows an association with the field of education in the expected order, but this association seems to be less pronounced than it is for childlessness. Again, social workers are exceptions in their group, and are more comparable to teachers and health care workers. Although this is the group with the highest ultimate fertility; with the exception of educational level 2, ultimate fertility for the other educational lines is at the same level. The ultimate fertility levels of women in teaching and health care do not deviate from general trends as much as expected, given the low levels of childlessness found for this group in western Germany. In Sweden, this group has the highest ultimate fertility at each level of education. The ultimate fertility levels of women in the arts and humanities do not display a clear pattern. Members of this group have relatively high levels of childlessness, but women educated in theology are among the women at educational level 6 with the highest ultimate fertility.

A two-way analysis of variance shows that educational level and educational field account equally for variation in ultimate fertility. When childlessness and ultimate fertility are compared, it becomes clear how strongly these two factors are

¹⁰ The association between educational attainment and ultimate fertility does not change between the three cohorts: 1950 to 1954, 1955 to 1959, and 1960 to 1964.

Figure 4: Ultimate fertility (CFR) by educational group; western German women born in 1955–59



Source: Research Data Centre of the Federal Statistical Office and the statistical offices of the *Länder*, 2008 German Microcensus, own calculation.

related. The first group is again women with primary school education only. These women are notable for their low rates of childlessness, and particularly for their exceptionally high levels of ultimate fertility. The second group consists of women educated in theology. Given their rather high rates of childlessness, their relatively high levels of ultimate fertility come as a surprise. This becomes even more obvious when comparing ultimate fertility levels and the number of children born to those women who become mothers.

The average number of children born to women educated in theology is 1.8, but the average number of children born to those who became mothers is 2.6 (while the childlessness rate is about 31 per cent). This result resembles the finding for Sweden of a bifurcation between women who are childless and women who go on to have a relatively large number of children after entering motherhood. Contrary to expectations, this is the only group among whom such a polarisation pattern is found. I had expected to find that a low compatibility of childbearing and rearing within an educational line would lead to high childlessness among women educated in these lines. I had also expected to observe that women who chose to become mothers despite this lack of flexibility are particularly family-prone (as Kreyenfeld (2002) puts it). This family proneness should have increased the probability of these women having a second child. The findings of the present analysis imply that family proneness and the choice of educational field are closely related.

7 Discussion and conclusion

The main finding of this analysis is that despite the strong association between educational level and childlessness in western Germany, the educational field is also of importance. The field and the level of education account equally for variation in ultimate fertility. The strong impact of the educational level on childlessness was expected, but the strength of the effect of the field is more pronounced than anticipated.

The present analysis shows that at all educational levels, women educated in teaching and child care have exceptionally low rates of childlessness in western Germany. Low rates of childlessness among these women have also been observed in Sweden, Austria, and Greece. These findings are in line with the assumption that, in this group, the choice of an educational field is an expression of preferences or even of personality traits that are independent of the institutional context. This assumption is further supported by similar findings from eastern Germany.

I had expected to find a high level of childlessness among graduates in industry crafts, engineering, and the natural sciences, due to the high risk of skill depreciation associated with breaks in employment in these fields. This cannot be confirmed, as childlessness among these graduates was found to be at a medium level, and this pattern was only observed in Greece, but not in Sweden or Austria. I had also expected to observe a high level of childlessness among western German women educated in the humanities or social sciences. While no clear pattern was found for

the first group, a high rate of childlessness was found for the second group. This observation for women educated in the social sciences is consistent with the results for Sweden, Austria, and Greece. The findings for Sweden, Austria, and Greece are based on register or census data; while the findings for Germany are from a representative sample of one per cent of households in Germany. Despite the large sample size, these findings are less reliable than the results for the whole cohort, particularly for educational lines consisting of a small number of respondents.

As expected, I found that a higher mean age at completion of education is associated with higher rates of childlessness. Very interestingly, an association with the field is also observed: a higher age at completion does not necessarily lead to higher levels of childlessness in western Germany. One can only speculate about the possible causes for this finding, as the data do not allow for further examination. It is possible that it is easier in some educational fields than in others to have children while enrolled in education. It is also possible that women educated in fields such as teaching and health care (the field with the weakest association between mean age at completion and childlessness) 'catch up' with having children soon after graduation. If this is the case, differences in the school-to-work transition and aspects of job security may play an important role.

The associations between educational level, educational field, and ultimate fertility resemble those observed for childlessness. The number of children decreases as the level of education increases, but differences between fields are also observed. The number of children is highest among women educated in teaching or health care. However, this group does not stand out as prominently as might be expected due to the low levels of childlessness among its members.

The only educational line for which a bifurcation between childlessness and the number of children born to those women who do become mothers can be observed is theology (university degree). I had expected to find that women educated in fields with high rates of childlessness who opted for motherhood are very family-prone, and that this family proneness would have a positive impact on the probability of having further children. However, this was not confirmed in the present analysis. For western Germany, it has repeatedly been shown that women with high educational levels are less likely than less well educated women to enter motherhood. However, highly educated women who become mothers have a tendency to have more than one child (Blossfeld and Huinink 1991; Kreyenfeld 2002). This pattern is partly attributable to the previously discussed family proneness of these women (Kreyenfeld 2002). The findings of the present analysis imply that the educational field also plays a major role in the association between educational attainment and fertility behaviour. The choice of an educational field such as teaching or health care might be an expression of family proneness. Therefore, including the educational field in the analysis of the association between education and fertility should increase our understanding of this relationship.

The main finding of the present analysis is that there is an association between the field of educational attainment and fertility in western Germany. Across countries, similarities and differences in this pattern can be observed. The differences are

attributable to variation in institutional settings, and match these settings. Given the differences in the institutional settings, the similarities between the countries are much more remarkable.

Acknowledgements

The author is grateful for helpful comments from Karsten Hank, two anonymous reviewers and the editors, as well as for a scholarship from the Research Training Group SOCLIFE at the University of Cologne, funded by the German Research Foundation (DFG) (GRK 1461).

References

- Bagavos, C. 2010. Education and childlessness: The relationship between educational field, educational level, employment and childlessness among Greek women born in 1955–1959. *Vienna Yearbook of Population Research* 8: 51–75. DOI: 10.1553/populationyearbook2010s51.
- Begall, K. and M. C. Mills 2012. The influence of educational field, occupation, and occupational sex segregation on fertility in the Netherlands. *European Sociological Review*. DOI: 10.1093/esr/jcs051.
- Blossfeld, H. and J. Huinink 1991. Human capital investments or norms of role transition? how women's schooling and career affect the process of family formation. *American Journal of Sociology* 97(1): 143–68.
- Blossfeld, H. and G. Rohwer 1995. West Germany. In *The new role of women. Family formation in modern societies*, ed. H. Blossfeld, 56–76. Boulder: Westview Press.
- BMBF 1997. Berufsbildungsbericht 1997. Berlin: Bundesministerium für Bildung und Forschung. http://www.bmbf.de/pub/bbb_97.pdf.
- BMBF 2007. Berufsbildungsbericht 2007. Berlin: Bundesministerium für Bildung und Forschung. http://www.bmbf.de/pub/bbb_07.pdf.
- Brewster, K. L. and R. R. Rindfuss 2000. Fertility and women's employment in industrialized nations. *Annual Review of Sociology* 26: 271–96. DOI: 10.1146/annurev.soc.26.1.271.
- Buchmann, M. and M. Charles 1995. Organizational and institutional factors in the process of gender stratification: comparing social arrangements in six European countries. *International Journal of Sociology* 25(2): 66.
- Charles, M. and K. Bradley 2009. Indulging our gendered selves? Sex segregation by field of study in 44 countries. *American Journal of Sociology* 114(4): 924–76.
- Daly, M. 2000. *The gender division of welfare: the impact of the British and German welfare states*. Cambridge: Cambridge University Press.
- Dorbritz, J. 2008. Germany: family diversity with low actual and desired fertility. *Demographic Research* 19: 557–97.

- Dustmann, C. and U. Schönberg 2012. Expansions in maternity leave coverage and children's long-term outcomes. *American Economic Journal: Applied Economics* 4(3): 190–224. DOI: 10.1257/app.4.3.190.
- Federkeil, G. 1997. The federal republic of Germany: polarization of family structure. In *Family life and family policies in Europe, Volume 1, Structures and trends in the 1980s*, eds F.X. Kaufmann, A. Kuijsten, H.-J. Schulze and K. P. Strohmeier, 77–113. Oxford, UK: Clarendon Press.
- Gauthier, A. H. 2002. Family policies in industrialized countries: is there convergence? *Population (English Edition)* Vol. 57 (3): 447–74. DOI: 10.3917/pope.203.0447.
- Gauthier, A. H. 2007. The impact of family policies on fertility in industrialized countries: a review of the literature. *Population Research and Policy Review* 26(3): 323–46. DOI: <http://www.springerlink.com/link.asp?id=102983>.
- Henz, U. 2008. Gender roles and values of children: childless couples in East and West Germany. *Demographic Research* 19: 1451–500. DOI: 10.4054/DemRes.2008.19.39.
- Hoem, J. M., G. Neyer, and G. Andersson 2006a. Education and childlessness – the relationship between educational field, educational level, and childlessness among Swedish women born in 1955–59. *Demographic Research* 14: 331–80.
- Hoem, J. M., G. Neyer, and G. Andersson 2006b. Educational attainment and ultimate fertility among Swedish women born in 1955–59. *Demographic Research* 14: 381–403.
- Huinink, J., M. Kreyenfeld, and H. Trappe 2012. Familie und Partnerschaft in Ost- und Westdeutschland. Eine Bilanz. In *Familie Und Partnerschaft in Ost- Und Westdeutschland. Ähnlich Und Doch Immer Noch Anders*, eds J. Huinink, M. Kreyenfeld and H. Trappe, 9th ed., 9–28. Journal of Family Research – Sonderheft. Opladen, Berlin, Toronto: Verlag Barbara Budrich.
- Jacob, M. and N. Tieben 2009. Social selectivity of track mobility in secondary schools. *European Societies* 11(5): 747–73. DOI: 10.1080/14616690802588066.
- Kerckhoff, A. C. 2001. Education and social stratification processes in comparative perspective. *Sociology of Education* 74(January): 3–18. DOI: 10.2307/2673250.
- Kraval, Ø. and R. R. Rindfuss 2008. Changing relationships between education and fertility: a study of women and men born 1940 to 1964. *American Sociological Review* 73(5): 854–73.
- Kreyenfeld, M. 2002. Time squeeze, partner effect or self-selection? *Demographic Research* 7(July): 15–48. DOI: 10.4054/DemRes.2002.7.2.
- Kreyenfeld, M. 2004. Fertility decisions in the FRG and GDR: an analysis with data from the German fertility and family survey. *Demographic Research Special* 3(April): 275–318. DOI: 10.4054/DemRes.2004.S3.11.
- Kreyenfeld, M. 2010. Uncertainties in female employment careers and the postponement of parenthood in Germany. *European Sociological Review* 26(3): 351–66. DOI: 10.1093/esr/jcp026.
- Kreyenfeld, M. and D. Konietzka 2008. Education and fertility in Germany. In *Demographic change in Germany: the economic and fiscal consequences*, eds I. Hamm, H. Seitz and M. Werdning, 165–87. Berlin: Springer.

- Lappegård, T. and M. Rønsen 2005. The multifaceted impact of education on entry into motherhood. *European Journal of Population-Revue Européenne De Demographie* 21(1): 31–49. DOI: 10.1007/s10680-004-6756-9.
- Martín-García, T. and P. Baizán 2006. The impact of the type of education and of educational enrolment on first births. *European Sociological Review* 22(3): 259–75.
- Michelmores, K. and K. Musick 2014. Fertility patterns of college graduates by field of study, US Women Born 1960–79. *Population Studies* 68(3): 359–74. DOI: 10.1080/00324728.2013.847971.
- Neyer, G. and J. M. Hoem 2008. Education and permanent childlessness: Austria vs. Sweden; a Research Note. In *Demographic challenges for the 21st century: a state of the art in demography; conference organized as a tribute to the continuing endeavours of Prof. Dr. Em. Ron Lesthaeghe in the Field of Demography.*, eds Surkyn, J., Deboosere, P. and Van Bavel, J. Brussels: VUBPRESS.
- Oppermann, A. 2014. Exploring the relationship between educational field and transition to parenthood—an analysis of women and men in western Germany. *European Sociological Review* 30(6): 728–49. DOI: 10.1093/esr/jcu070.
- Pfau-Effinger, B. 2012. Women’s employment in the institutional and cultural context. *The International Journal of Sociology and Social Policy* 32(9/10): 530–43. DOI: 10.1108/01443331211257634.
- Pfau-Effinger, B. and M. Smidt 2011. Differences in women’s employment patterns and family policies: Eastern and Western Germany. *Community, Work & Family* 14(2): 217–32. DOI: 10.1080/13668803.2011.571401.
- Rønsen, M. and K. Skrede 2010. Can public policies sustain fertility in the nordic countries? Lessons from the past and questions for the future. *Demographic Research* 22: 321–46.
- Schneider, S. L. 2008. Applying the ISCED-97 to the German Educational Qualifications. In *The international standard classification of education: an evaluation of content and criterion validity for 15 European countries*, ed. S. L. Schneider, 76–102. Mannheim: Mannheimer Zentrum für Europäische Sozialforschung.
- Shavit, Y. and W. Müller 2000. Vocational secondary education. *European Societies* 2(1): 29–50. DOI: 10.1080/146166900360710.
- Sobotka, T. 2008. The rising importance of migrants for childbearing in Europe. *Demographic Research* 19: 225–47.
- STATISTICS AUSTRIA 2013. *Statistisches Jahrbuch Österreichs*. http://www.statistik.at/web_en/publications_services/statistisches_jahrbuch/index.html.
- Steiner, V. and K. Wrohlich 2006. Familienpolitische Reformen und ihre Wirkungen auf die Erwerbsbeteiligung von Eltern. *Zeitschrift Für Sozialreform* 52(4): 421–38.
- United Nations, Department of Economic and Social Affairs, ed. 2013. World urbanization prospects, the 2011 revision: urban population, 1950–2050. http://esa.un.org/unup/CD-ROM/WUP2011-F03-Urban_Population.xls.
- Van Bavel, J. 2010. Choice of study discipline and the postponement of motherhood in Europe: the impact of expected earnings, gender composition, and family attitudes. *Demography* 47(2): 439–58.

- Wirth, H. 2007. Kinderlosigkeit von hoch qualifizierten Frauen und Männern im Paarkontext – Eine Folge von Bildungshomogamie? In *Ein Leben ohne Kinder: Kinderlosigkeit in Deutschland*, eds D. Konietzka and M. Kreyenfeld, 167–97. Wiesbaden: VS Verlag für Sozialwissenschaften.
- Wirth, H. and K. Dümmler 2004. Zunehmende Tendenz zu späteren Geburt und Kinderlosigkeit bei Akademikerinnen. Eine Kohortenanalyse auf der Basis von Mikrozensusdaten. *Informationsdienst Soziale Indikatoren (ISI)* 32: 1–6.

Appendix tables are on the following pages.

Appendix

Table A.1:
Basic childbearing statistics for western German women born in 1955–59

	Edu level	All	% Childless	% With 2 or more children	Mean number of children	% Never married
<i>General education, non-specific</i>						
Primary school	2	770	13.6	70.8	2.46	11.0
Brief secondary school, general	3	3,105	13.4	63.1	1.89	7.7
Long secondary school or higher, general	4	336	21.5	52.3	1.60	13.7
<i>Arts, humanities, religious</i>						
Theology, university degree	6	38	31.3	56.6	1.77	15.4
Arts, brief	3	276	17.2	53.4	1.57	11.6
Arts, university-level degree	6	138	40.5	30.7	0.96	26.2
Humanities, brief	3	56	20.6	55.6	1.59	17.4
Humanities, long	4	48	31.6	47.5	1.34	11.2
Humanities, specialist	5	24	14.3	57.9	1.64	12.5
Humanities, university degree (not teacher)	6	177	27.6	47.4	1.39	17.9
<i>Personal services, etc.</i>						
Hotel and restaurant worker	3	232	12.0	61.9	1.76	6.9
Service worker, unspecified	3	426	12.2	70.0	1.94	5.6
Service specialist	5	109	21.4	60.0	1.75	9.7
Beautician, hairdresser	3	588	13.6	60.0	1.66	4.7
Mail office worker	3	112	16.4	55.7	1.62	10.8
Mail and transport	4	19	14.5	49.4	1.64	10.2
<i>Administration, economics, social sciences</i>						
Administration, brief secondary	3	2,583	18.8	53.9	1.50	8.0
Business administration, long secondary	3	431	25.8	46.5	1.36	15.5
Business administration specialist	4	179	29.1	42.8	1.30	14.1
Business administration, university degree	5	273	28.0	45.2	1.31	14.6
Medical secretary	6	730	22.4	47.2	1.40	8.4
Trade and storage	3	2,523	16.4	55.0	1.60	7.1
Social worker	5	54	17.0	63.7	1.71	7.0
Psychologist	6	44	28.0	40.4	1.12	29.1
Lawyer	6	100	38.3	41.4	1.18	15.3
Social science, university degree	6	457	31.9	44.3	1.27	23.0

Continued

Table A.1:
Continued

	Edu level	All	Mean number of children (never married)	Mean number of children (ever married)	Mean number of children (mothers)	Mean age at completion of education
<i>General education, non-specific</i>						
Primary school	2	770	0.52	2.72	2.92	17.00
Brief secondary school, general	3	3,105	0.51	2.01	2.22	18.94
Long secondary school or higher, general	4	336	0.20	1.88	2.13	27.12
<i>Art, humanities, religious</i>						
Theology, university degree	6	38	0.00	2.12	2.64	26.48
Arts, brief	3	276	0.59	1.71	1.92	20.84
Arts, university-level degree	6	138	0.15	1.29	1.67	26.76
Humanities, brief	3	56	0.52	1.77	2.01	21.72
Humanities, long	4	48	0.17	1.49	1.97	23.36
Humanities, specialist	5	24	0.52	1.83	1.96	22.91
Humanities, university degree (not teacher)	6	177	0.36	1.65	1.97	25.74
<i>Personal services, etc.</i>						
Hotel and restaurant worker	3	232	0.26	1.88	2.02	21.59
Service worker, unspecified	3	426	0.39	2.04	2.23	19.46
Service specialist	5	109	0.00	1.95	2.26	26.22
Beautician, hairdresser	3	588	0.50	1.72	1.93	20.61
Mail office worker	3	112	0.68*	1.73*	1.95	19.56
Mail and transport	4	19			1.94	23.11
<i>Administration, economics, social sciences</i>						
Administration, brief secondary	3	2,583	0.26	1.62	1.87	20.33
Business administration, long secondary	3	431	0.23	1.57	1.88	23.50
Business administration specialist	4	179	0.23	1.50	1.88	26.03
Business administration, university degree	5	273	0.13	1.54	1.86	26.67
Medical secretary	6	730	0.18	1.52	1.85	19.64
Trade and storage	3	2,523	0.32	1.70	1.93	18.78
Social worker	5	54	0.00	1.85	2.08	25.39
Psychologist	6	44	0.42	1.43	1.81	30.71
Lawyer	6	100	0.13	1.39	1.98	27.83
Social science, university degree	6	457	0.40	1.56	1.92	28.10

*Due to a small number of cases, the lines of mail office worker and mail and transport had to be combined.

Continued

Table A.1:
Continued

	Edu level	All	% Childless	% With 2 or more children	Mean number of children	% Never married
<i>Industry, crafts, engineering, natural sciences</i>						
Mechanic, etc., brief secondary	3	406	17.1	55.0	1.61	7.0
Engineer, long	4	68	27.7	58.8	1.52	15.1
Engineer specialist	5	85	20.3	58.0	1.56	9.1
Textile worker	3	496	11.1	64.6	1.86	6.1
Natural sciences and engineering, university degree	6	312	20.0	54.8	1.48	10.6
Architecture, brief	3	66	17.7	65.8	1.70	9.6
Architect	6	65	23.5	50.8	1.41	13.0
<i>Agriculture</i>						
Farm worker, brief secondary	3	98	23.0	59.1	1.75	10.6
Agronomist, veterinarian	6	40	30.0	51.8	1.40	23.0
<i>Health professions</i>						
Health care worker, brief secondary	3	1,889	14.6	62.4	1.74	8.1
Health care worker, long secondary	4	278	17.6	61.4	1.66	10.2
Health care specialist	5	410	23.9	56.3	1.51	16.9
Health care, university degree	6	192	27.5	52.5	1.54	14.6
Child care worker, brief secondary	3	313	15.5	66.0	1.81	7.7
Child care worker, long secondary	4	91	9.1	62.5	1.82	12.0
Child care specialist	5	141	9.5	64.2	1.78	7.4
PhD (medicine)	7	77	25.7	51.3	1.41	22.1
<i>Teaching</i>						
Youth worker	3	165	11.8	64.7	1.80	7.9
Primary school teacher	6	208	16.7	63.2	1.70	10.3
Teacher of children with special needs	6	71	18.6	65.4	1.79	15.0
High school teacher	6	197	27.5	55.3	1.52	18.9
Other teacher	6	301	15.3	60.7	1.71	9.2
<i>Non-medical research</i>						
PhD (social sciences or humanities)	7	45	45.0	38.3	0.99	25.8
PhD (natural or technical sciences)	7	37	33.6	46.7	1.23	18.2
Total		19,879	17.8	57.6	1.67	9.64

Table A.1:
Continued

	Edu level	All	Mean number of children (never married)	Mean number of children (ever married)	Mean number of children (mothers)	Mean age at completion of education
<i>Industry, crafts, engineering, natural sciences</i>						
Mechanic, etc., brief secondary	3	406	0.40	1.70	1.96	20.17
Engineer, long	4	68	0.26	1.77	2.16	22.13
Engineer specialist	5	85	0.09	1.75	2.00	22.94
Textile worker	3	496	0.66	1.94	2.10	18.74
Natural sciences and engineering, university degree	6	312	0.26	1.66	1.90	25.83
Architecture, brief	3	66	0.55	1.82	2.10	19.71
Architect	6	65	0.00	1.66	1.88	26.30
<i>Agriculture</i>						
Farm worker, brief secondary	3	98	0.37	1.92	2.29	21.55
Agronomist, veterinarian	6	40	0.25	1.76	2.02	26.29
<i>Health professions</i>						
Health care worker, brief secondary	3	1,889	0.40	1.87	2.06	21.65
Health care worker, long secondary	4	278	0.49	1.81	2.04	25.06
Health care specialist	5	410	0.14	1.86	2.05	25.16
Health care, university degree	6	192	0.26	1.80	2.20	26.93
Child care worker, brief secondary	3	313	0.20	1.94	2.16	21.26
Child care worker, long secondary	4	91	0.46	2.01	2.02	23.87
Child care specialist	5	141	0.35	1.89	1.98	22.33
PhD (medicine)	7	77	0.20	1.84	1.98	29.27
<i>Teaching</i>						
Youth worker	3	165	0.85	1.88	2.05	19.21
Primary school teacher	6	208	0.34	1.88	2.07	25.37
Teacher of children with special needs	6	71	0.46	2.05	2.22	30.51
High school teacher	6	197	0.28	1.85	2.16	26.69
Other teacher	6	301	0.24	1.89	2.06	26.47
<i>Non-medical research</i>						
PhD (social sciences or humanities)	7	45	0.00	1.36	1.82	33.24
PhD (natural or technical sciences)	7	37	0.00	1.56	1.94	30.95
Total		19,879	0.34	1.82	2.06	21.90

Source: Research Data Centre of the Federal Statistical Office and the statistical offices of the *Länder*, 2008 German Microcensus, own calculations.

Table A.2:
Childlessness by level of education, western German women born in 1955–59

Educational level	% Childless	N (Childless)
2	13.6	770
3	15.8	14,064
4	21.8	1,271
5	21.7	1,002
6	26.1	2,613
7	32.9	159

Source: Research Data Centre of the Federal Statistical Office and the statistical offices of the *Länder*, 2008 German Microcensus, own calculations.

Table A.3:
Educational attainment and childlessness in western and eastern Germany, women born in 1955–59

Field of education	Level	Western Germany		Eastern Germany	
		N	% Childless	N	% Childless
<i>General education, non-specific</i>					
Brief secondary school, general	3	3,105	13.4	176	9.0
<i>Art, humanities, religion</i>					
Arts, brief	3	276	17.2	66	10.3
Humanities, brief	3	56	20.6	50	14.3
<i>Personal services etc.</i>					
Hotel and restaurant worker	3	232	12.0	157	5.8
Service worker, unspecified	3	426	12.2	87	4.7
Beautician, hairdresser	3	588	13.6	58	3.6
Mail office worker	3	112	16.4	93	5.0
<i>Administration, economics, social sciences</i>					
Administration, brief secondary	3	2,583	18.8	402	6.5
Business administration specialist	5	179	29.1	123	6.0
Business administration, university	6	273	28.0	124	8.1
Medical secretary	3	730	22.4	143	5.8
Trade and storage	3	2,523	16.4	377	7.6
Social sciences, university degree	6	457	31.9	70	8.8

Continued

Table A.3:
Continued

Field of education	Level	Western Germany		Eastern Germany	
		N	% Childless	N	% Childless
<i>Industry, crafts, engineering, natural sciences</i>					
Mechanic etc, brief secondary	3	406	17.1	434	8.3
Engineer specialist	5	85	20.3	74	7.2
Textile worker	3	496	11.1	325	6.5
Natural science & engineering, university	6	312	20.0	149	9.4
<i>Agriculture</i>					
Farm worker, brief secondary	3	98	23.0	174	6.1
<i>Health professions</i>					
Health care worker, brief secondary	3	1,889	14.6	187	8.1
Health care specialist	5	410	23.9	266	6.7
Health care, university degree	6	192	27.5	56	3.0
Child care specialist	5	141	9.5	179	6.3
<i>Teaching</i>					
Other teacher	6	301	15.3	78	1.3
Total		19,879	17.8	4,276	7.4

Source: Research Data Centre of the Federal Statistical Office and the statistical offices of the *Länder*, 2008 German Microcensus, own calculations.

Note: Selected educational lines with at least 50 observations in eastern Germany.

Table A.4:
Educational attainment and childlessness in western Germany, Sweden, Austria, and Greece, women born in 1955–59

Field of education	Level	% Childless			
		W-Germany	Sweden	Austria	Greece
<i>General education, non-specific</i>					
Primary school	2	13.6	14.7	13.0	10.0
<i>Personal services, etc.</i>					
Hotel & restaurant worker	3	12.0	22.4	11.7	20.0
<i>Administration, economy, social sciences</i>					
Administration, brief secondary	3	18.8	14.7	18.0	n.a.
Business administration, long secondary	4	25.8	16.5	22.0	14.4
Business administration specialist	5	29.1	21.1	24.0	n.a.
Social worker	5	17.0	16.5	24.0	18.7
Social science, university degree	6	31.9	22.1	37.0	15.1
PhD (social sciences)	7	45.0	31.9	n.a.	37.0
<i>Industry, crafts, engineering, natural sciences</i>					
Textile worker	3	11.1	13.9	9.0	n.a.
Engineer, long	4	27.7	18.4	15.0	15.3
Engineer specialist	5	20.3	17.0	27.0	n.a.
Natural science & engineering, university	6	20.0	20.2	27.0	22.8
PhD (natural sciences)	7	33.6	25.1	n.a.	28.0
<i>Agriculture</i>					
Farm worker	3	23.0	15.5	7.0	11.3
Agronomist	6	30.0	22.0	14.0	17.3
<i>Health professions</i>					
Health care worker, brief secondary	3	14.6	10.2	17.0	n.a.
Health care worker, long secondary	4	17.6	10.4	n.a.	15.3
Health care specialist	5	23.9	13.0	14.5	n.a.
PhD (medicine)	7	25.7	18.9	n.a.	32.0
<i>Teaching</i>					
Child care worker, brief secondary	3	15.5	8.6	n.a.	n.a.
Child care worker, long secondary	4	9.1	8.6	n.a.	14.9
Child care specialist	5	9.5	8.6	n.a.	n.a.
Primary school teacher	6	16.7	10.3	16.5	11.9
High school teacher	6	27.5	17.3	28.0	12.4
Total		17.8	15.7	15.7	12.3

Source: Research Data Centre of the Federal Statistical Office and the statistical offices of the *Länder*, 2008 German Microcensus, own calculations; (Hoem, Neyer, and Andersson 2006a; Neyer and Hoem 2008; Bagavos 2010), values that are not available in tables or mentioned in the paper were extracted from graphs.

