The relationship between educational homogamy and educational mobility in 29 European countries

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Abstract
This article deals with the relationship between educational homogamy and educational mobility in 29 European countries. It answers three interrelated questions: (1) Is there any relationship between educational mobility and educational homogamy? (2) Does educational homogamy diverge from educational mobility (negative relationship) or does educational heterogamy strengthen educational mobility (positive relationship)? (3) If there is any positive relationship, do educational mobility and educational heterogamy indicate the level of educational inequality to the same degree? To answer these questions the authors use data from three waves of the European Social Survey (2002, 2004 and 2006). The answers are given in absolute (percentages) as well as in relative measures (log-multiplicative effects). The results show that there is a positive relationship between educational mobility and educational heterogamy. For all countries analysed, relative educational heterogamy is a stronger indicator of educational inequalities than relative educational mobility. The systematic deviation of educational heterogamy from educational mobility is explained by a number of factors that the authors discuss in the last part of the article.

Keywords
Assortative mating, educational homogamy, educational mobility, European Social Survey, log-linear models, log-multiplicative models

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In social stratification research, the analysis of educational homogamy supplements the analysis of social or educational intergenerational mobility because educational homogamy is also considered to be an indicator of ‘societal openness’ (Smits et al., 1998a, 1998b, 2000; Ultee and Luijkx, 1990).

High social or educational mobility implies high social or educational motion. Representatives of social classes move within the class structure; barriers between them are low and easy to overcome. Solidarity and social ties are expected across the class structure. When social or educational mobility does not exist, social movement by members of society is negligible and people’s class status remains unchanged throughout the course of their lives. Descendants live and die within their parents’ class background; barriers between classes are too high to be overcome and there are no mobility channels between classes. Social ties and solidarity primarily exist within the respective classes. This class structure is defined as closed and tight.

Low educational homogamy (high educational heterogamy) implies that the coupling of people with different educational statuses is widespread. Differently educated people enter into marriage because societal distances between educational levels are not as large and significant as they assert. Marital bonds do exist across the educational structure. On the other hand, there is high educational homogamy (low educational heterogamy) when marriages between people with different educational levels are not very common. Societal barriers between educational levels are reflected in partner choices. Marriages tend to take place within educational categories rather than across them. In this case, educational levels must be considered as predictors of assortative mating.

Social mobility refers to the labour market, educational mobility to the educational structure. High social and educational mobility is considered to be a condition for the prosperity of national states (Blau and Duncan, 1967; Breen, 2004). Socially and educationally open societies work on the basis of the merit principle and are stratified according to the acquired and not prescribed qualities of a person, which has a beneficial effect on the functioning of their economies. Homogamy refers to conditions in the marriage market and indicates to what extent the choice of a spouse is influenced by social, cultural and economic criteria.

All of these concepts draw on the ‘openness’ of the social and educational structure; thus, a relationship should exist between them. According to Ultee and Luijkx (1990), high social mobility should go hand in hand with low educational homogamy. In this case people overcome class differences relatively easily (whether inter- or intragenerationally); they similarly overcome educational differences when entering into marriage. In contrast, low social mobility is linked to high educational homogamy (Ultee and Luijkx, 1990). Here class barriers are too high to be easily overcome, just as educational inequalities are too large and decisive for assortative mating. In such societies, people are selected on the basis of ascribed characteristics, such as gender, race, religion or social origin, which retards the economic development of a society (Blau and Duncan, 1967).

In this article, we focus on educational mobility and study the relationship between this mobility and educational homogamy. Investigating the relationship between these two phenomena is important for the study of social stratification. Both concepts are seen by social stratification researchers as indicators of distances between levels of education.1 However it is not clear yet which of these indicators is going to be more important
for the study of educational inequalities. Which is it: educational mobility or educational homogamy? Another problem is whether these indicators measure the distances between degrees of education by the same yardstick. It is quite possible that each of these indicators ‘captures’ a different dimension of educational inequality, and that each indicates something different about the distances between levels of education. These problems are more methodological than practical; nevertheless they are important for the study of social stratification, and so far have not been convincingly answered. We hope this study will shed some light on these problems.

The subject of this article therefore is the relationship between educational mobility and educational homogamy. The article specifically addresses three interrelated questions. (1) Is there a relationship between educational mobility and educational homogamy? (2) Is this relationship positive or negative? Alternatively, does educational homogamy decrease (compensate for) educational mobility (negative relationship) or does educational heterogamy strengthen educational mobility (positive relationship)? (3) If there is any positive relationship, do educational mobility and educational heterogamy indicate the level of educational inequality with the same intensity? Alternatively, is one of these indicators systematically stronger than the other?

In the first section of the article we focus on the relationship between educational mobility and educational homogamy as proposed in four generations of social stratification research (Ganzeboom et al., 1991; Treiman and Ganzeboom, 2000). The next section of the article presents two contradictory hypotheses on the relationship between educational mobility and educational homogamy that involve our three research questions. The methodological section deals with an analytical approach to measuring educational mobility and educational homogamy. Further on, we analyse the relationship between these two social phenomena, first in absolute figures and then on the relative level, test our hypotheses and offer answers to our research questions.

**Educational mobility and educational homogamy in social stratification research**

Four generations of researchers have distinguished themselves in the field of social stratification analysis (Ganzeboom et al., 1991; Treiman and Ganzeboom, 2000). The first generation (in the 1950s and 1960s) did not empirically test the relationship between educational mobility and educational homogamy; nonetheless, data on marriages were used several times as an indicator for the openness of the social structure (see Berent, 1954; Hall, 1954; Lipset and Zetterberg, 1959). Nor was the relationship between educational mobility and educational homogamy empirically tested by the second generation (active in the 1960s and 1970s). Blau and Duncan (1967) measured only spouses’ closeness in terms of social background (indicated by the employment status of the spouses) and the difference in the spouses’ educational level. The association between the spouses’ education turned out to be stronger than that between their social backgrounds. Thus education structured the marital choice more than the social background in American society.

In the third generation (dominant in the 1970s and 1980s), the relationship between social mobility and educational homogamy was theoretically laid out (see Hout, 1982;
Sixma and Ultee, 1984) and empirically tested as well. Ultee and Luijkx (1990) analysed social mobility along with educational heterogamy in 23 countries, and found a correlation of .51 between the proportion of intergenerationally socially mobile men and the proportion of educationally heterogamous couples. The correlation was even higher (.67) between the relative measures (net changes in the marginal distributions of mobility and in educational homogamy) of both types of data: relative mobility opportunities and relative opportunities for educational heterogamy seem to be interrelated. A relationship between social mobility and educational homogamy was found. Unfortunately, none of the social stratification researchers of this generation analysed the relationship between educational mobility and educational homogamy.

A fourth generation is still in the process of establishing itself (Treiman and Ganzeboom, 2000) and continues the legacy of the three previous generations of social stratification research. They base their work on the statistical-methodological tools developed by previous generations. Nevertheless, they do not focus so much on developing these tools further, but instead use them to answer specific and down-to-earth research questions. The turn towards the substantive issues of the social stratification process instead of its methodological and statistical specification characterizes this fourth generation of researchers. The relationship between social mobility and educational homogamy as indicators of ‘societal openness’ was conceptually developed by the representatives of this generation (see Smits et al., 1998a, 1998b). However, it has not yet been empirically tested. This generation of researchers, in particular those focusing on log-multiplicative modelling, measure social and educational mobility and compare their trends within nation-states (see Breen, 2004; Ganzeboom et al., 1989; Wong, 1990, 1992), or measure educational homogamy and analyse its trends in distinct countries (see e.g. Blossfeld and Timm, 2003; Kalmijn, 1991; Mare, 1991; Qian, 1998; Qian and Preston, 1993; Uunk et al., 1996) or compare various countries (see e.g. Raymo and Xie, 2000; Smits et al., 1998a, 1998b, 2000). They regard social and educational mobility as well as educational homogamy as the main indicators of the openness of the social structure. Still, these indicators have not been examined together at the same time within the framework of nation-states.

What kind of a relationship can we expect between educational mobility and educational homogamy?

According to some theoretical assumptions (Blau and Schwarz, 1983; Goody, 1983; Jones, 1987; Schumpeter, 1951), we would expect a positive relationship between educational mobility and the assortative mating process. In this case educational reproduction and educational homogamy (or educational mobility and educational heterogamy) go hand in hand (Blau and Schwarz, 1983; Goody, 1983; Ultee and Luijkx, 1990). But according to other theoretical assumptions (Jones, 1987), we expect the relationship to be negative. Educational mobility and educational homogamy (or educational reproduction and educational heterogamy) act against one another, or neutralize each other. More educational mobility in a society means less educational heterogamy and vice versa.

Let us focus on these two relationships in more detail. In the first case, restricted educational mobility and strong class and educational reproduction also imply a
considerable social and educational similarity between partners (Ultee and Luijkx, 1990). Between educational reproduction and educational homogamy there is a positive correlation. Class and educational structure is rigid, and barriers and differences between social classes are high. It is difficult to overcome them from one generation to another. The majority of descendants end up in the same social class and have the same education as their parents. At the same time, they take as a husband or wife a person belonging to the same social class and having the same education. On a microstructural level this positive link between educational reproduction and educational homogamy means that it is above all the norms, values and ‘habitus’ (patterns of behaviour) of a person (Bourdieu, 1989), together with family origin, which structures the course of his/her education and influences the selection of his/her spouse. The educational reproduction of a person also limits his/her range of opportunities to meet a potential partner with a different level of education (Kalmijn, 1991, 1998; Mare, 1991). Not only that person’s values, but his/her structurally conditioned opportunities tend to greatly increase the chances of an educationally homogamous marriage.

A positive correlation also means that there is a link between educational mobility and educational heterogamy. In educationally open societies, where the chances to obtain education do not depend on social origin, descendants from various social origins acquire various levels of education, and pass through various social environments. For them, besides advancement over their parents, educational mobility is a way of broadening their environment, and a way of adopting new patterns of behaviour (Bourdieu, 1989). The structurally conditioned opportunities to meet various possible marriage partners are thus greater (Kalmijn, 1991, 1998). An educationally mobile person is freed from the environment of the origin family, and takes on a new ‘habitus’ (patterns of behaviour) in the educational system (Bourdieu, 1989). His/her cultural horizon is broader than that of a person remaining intergenerationally at the same level of education. Models of behaviour adopted during the mobility movement expand the acceptability of potential partners from various cultural environments, and allow the person to pass through diverse social environments which structure the selection of a mate (Kalmijn, 1991, 1998; Mare, 1991).

In the second case we should expected that high educational mobility means a low educational heterogamy and vice versa. The correlation between educational mobility and educational heterogamy is negative. The barriers between social classes are small. The descendants of the parents belonging to different social classes end up with different educations (regardless of whether their educational mobility is upward or downward) and their education matches that of their husband or wife. Educational mobility weakens the survival of social classes from one generation to another, but educational homogamy strengthens the social classes and contributes to the current inequalities in the labour market (Jones, 1987). On a microstructural level this means that social origin does not predict the achieved education level. Expansion of the educational system weakens the effect of the parents’ education on the education of their offspring. However, because it is above all the educational system that structures the selection of a spouse (Blossfeld, 2009; Blossfeld and Timm, 2003; Mare, 1991), the same expansion of the educational system assures that young people will encounter one another mainly within its bounds, and thus form educationally homogamous marriages.
Nevertheless, it can be also the other way around; the mechanism of social and educational mobility can strengthen the intergenerational coherence of social classes, yet the mechanism of assortative mating damages the coherence of social classes. In this case there is a negative link between educational reproduction and educational homogamy (i.e. educational reproduction is high and educational homogamy is low). The descendants have the same education as their parents; however, they take as a husband or wife a person of another educational level. Educational mobility acts to benefit the stability of the social structure, but the choice of a husband or wife disrupts that stability. On a microstructural level this means that the offspring of families with less education do not have the chance to gain higher education. The educational system is not opened. This of course means that the educational system does not determine the selection of a spouse. Instead people tend to meet one another through employment or other social or cultural places, where the chance of finding a mate with the same level of education is less than in the educational system (Kalmijn, 1991).

When we take into account these two possible views on the relationship between educational mobility and educational heterogamy, we can formulate two hypotheses:

**H1:** High educational mobility (low educational reproduction) indicates ‘societal openness’ and is linked to high educational heterogamy (low educational homogamy). The relationship between educational mobility and educational heterogamy (or between educational reproduction and educational homogamy) is positive.

**H2:** High educational mobility (low educational reproduction) indicates ‘societal openness’, nevertheless is not positively linked to high educational heterogamy (low educational homogamy). The relationship between educational mobility and educational heterogamy (or between educational reproduction and educational homogamy) is negative.

**Description of the data**

We test the relationship between the educational mobility and the educational homogamy as the relationship between the parents’ educational background and the respondent’s educational background (educational mobility), and the respondent’s education and the education of his/her spouse (educational homogamy).

Within the nation-state framework, we begin with the respondent, first focusing on mapping the relationship between his/her educational background and his/her educational level, and second on the relationship between the respondent’s education level and his/her spouse’s educational level (see Figure 1). We do not analyse either the relationship between the parental educational background of the respondents’ spouses and the spouse’s educational level, or the relationship between the respondent’s educational background and the educational background of his/her spouse.

We answer our three research questions (and test the two interrelated hypotheses) using data from the European Social Survey (ESS). In our investigation, we analysed 29 countries from three waves of ESS data collection (years 2002, 2004 and 2006).² For each country, we created a four-way contingency table combining the respondent’s gender, education of his/her parents (always the higher education of one of the parents), respondent’s education and spouse’s education. We constructed this table only for people
on the labour market (age boundary 25–65 years). In cases where a country was repeatedly included in separate waves of ESS (in all three years or in any two years), we merged this four-way table into one. This contingency table design allows us to combine the measures of educational mobility and educational homogamy appropriate for log-linear and log-multiplicative modelling.

Education was originally measured using the seven categories of ISCED97. We collapsed this into a three-category educational variable by merging categories (0), (1) and (2); categories (3) and (4); and finally categories (5) and (6). This was a necessary step because of the sufficient number of cases in table cells. Thus, we work with primary, secondary and tertiary education in our analysis.

Figures 2 and 3 present the relationship between absolute educational reproduction and absolute educational homogamy in the 29 countries analysed. On the x-axis, we present the proportion of educationally immobile in each country (those people who did not change their educational level in comparison to their parents), while on the y-axis the proportion of those who entered into educationally homogamous marriages is represented. The data are presented separately for men (Figure 2) and women (Figure 3).

In both cases, we can see a clear tendency for the countries analysed to aggregate around the regression line. In countries where we identify a lower proportion of educational shifts between parents and their descendants, there are also fewer marriages between partners with different educational levels and vice versa; absolute higher educational reproduction indicates a higher proportion of educationally homogamous marriages. This relationship is slightly stronger for women than for men (the value of the correlation coefficient is .60 for men and .69 for women). There are three outlier countries that differ significantly from the others (Ukraine, Bulgaria and Iceland). If we use the dataset without these countries, the correlation rise to .78 for men and .82 for women, so the gender differences tend to diminish.

A relationship between absolute educational mobility and absolute educational heterogamy exists (it is relevant to our first research question), and it is positive (relevant to our second research question). Our first hypothesis (H1) assumed that the relationship between educational mobility and educational heterogamy is positive (higher educational mobility means higher educational heterogamy); our second hypothesis (H2)
suggested that this relationship is negative (higher educational mobility means lower educational heterogamy). On the absolute level, we have to reject the second hypothesis. In societies where a higher proportion of people have different educational levels than
their parents (educational mobile people), we also found a higher proportion of educational heterogamous marriages. It seems that the social mechanisms that influence absolute educational mobility and provide descendants with different educational levels than their parents (mechanisms making societies more educationally open) may influence the proportion of achieved marriages by different educational levels of spouses.

Figures 4 (for men) and 5 (for women) show the same data as Figures 2 and 3, but from a different perspective. In both figures, the countries analysed are situated on the x-axis. We can see the proportion of educationally reproductive respondents and educationally homogamous respondents (y-axis) for each country. Countries are sorted from the lowest to the highest proportion of educational reproduction, from the left side to the right side of the graphs. With the exception of Germany (men as well as women) and Austria (women), we observe that the proportion of educationally homogamous respondents is higher than the proportion of respondents mirroring the educational level of their parents in all the countries studied. To answer our third research question, we can assume that the probability for the same level of absolute educational mobility and absolute educational heterogamy is not the same. With the exception of one or two countries, absolute educational homogamy is higher than absolute educational reproduction.

Analysis and results

Absolute educational mobility and absolute educational homogamy are to some extent structurally determined (Breen, 2004; Erikson and Goldthorpe, 1992). Therefore, our next step is to use log-linear and log-multiplicative models that analyse the associations in the frequency tables net of marginal distributions. In this case, the results describe the
relative educational mobility and relative educational homogamy, which refer to unequal educational opportunities in the educational system (educational mobility) or the marriage market (educational homogamy) (for more information on these analyses, see Goodman and Hout, 1998, 2001; Hout, 1983; Powers and Xie, 2000; Xie, 1992; Yamaguchi, 1987).

We analysed a four-way contingency table. The structure of the data was $29 \times 3 \times 3 \times 3$ (Country $\times$ Parents’ education $\times$ Respondent’s education $\times$ Spouse’s education). The analysis was run separately for men and women. We tested whether a relationship between educational mobility and educational homogamy exists (our first question), what form it takes (our second question) and measured the relative intensity for both concepts (our third research question) against empirical reality. In terms of our hypotheses, we have examined if educational mobility is linked to educational heterogamy (positive relationship – H1) or if it is connected to educational homogamy (negative relationship – H2).

Figure 6 shows a graphic representation of the possible relationships between educational reproduction (PR – the association between parents’ and respondent’s educational level) and educational homogamy (RS – the association between the respondent’s and his or her spouse’s educational level) in every analysed country (C), tested using log-linear and log-multiplicative models. The model equation of table frequencies completes each graphic representation for these relationships. If we do not take into consideration the model 0, in which we assume the non-existence of educational reproduction as well as educational homogamy, the graphic representations of relationships (and their model equations) are sorted by numbers according to the concept of parsimony (for model 1, we need to estimate the most parameters, for the last model 5, the least parameters).

Figure 5. Educational reproduction and educational homogamy in 29 countries – sorted by educational reproduction (women)
Model 0: \( \log(L_{CRS}) = \lambda_C + \lambda_P^C + \lambda_P^R + \lambda_S^R + \lambda_{CP}^C + \lambda_{CP}^{CR} + \lambda_{CS}^C \)

Model 1: \( \log(L_{CRS}) = \lambda_C + \lambda_P^C + \lambda_P^R + \lambda_S^R + \lambda_{CP}^C + \lambda_{CP}^{CR} + \lambda_{CS}^C + \phi_C\mu \mu_j + \psi_j \mu \mu_k \)

Model 2: \( \log(L_{CRS}) = \lambda_C + \lambda_P^C + \lambda_P^R + \lambda_S^R + \lambda_{CP}^C + \lambda_{CP}^{CR} + \lambda_{CS}^C + \phi_C\mu \mu_j + \phi_j \mu \mu_k + \phi_C \mu \mu_k \)

Model 3: \( \log(L_{CRS}) = \lambda_C + \lambda_P^C + \lambda_P^R + \lambda_S^R + \lambda_{CP}^C + \lambda_{CP}^{CR} + \lambda_{CS}^C + \phi_C\mu \mu_j + \phi_j \mu \mu_k \)

Model 4: \( \log(L_{CRS}) = \lambda_C + \lambda_P^C + \lambda_P^R + \lambda_S^R + \lambda_{CP}^C + \lambda_{CP}^{CR} + \lambda_{CS}^C + \phi_C\mu \mu_j + \psi_j \mu \mu_k \)

(Continued)
In the first case (model 1), we assume that there are differences in the association between parents’ and respondents’ education level (PR – educational reproduction) and in the association between respondents’ and their spouses’ education level (RS – educational homogamy) among countries. In the second case (model 2), we suppose that there are differences in both associations among countries as well. Nevertheless, the distance between educational reproduction (PR) and educational homogamy (RS) is constant in each country. In the third case (model 3), the countries differentiate in the association of educational reproduction and homogamy. However, the intensity of educational reproduction and educational homogamy is the same in every country (PR = RS). In the next model (model 4), we assume that the educational reproduction (PR) and educational homogamy (RS) are the same in all countries, and the distance between them is also the same. In the last case (model 5), countries do not diverge either by educational reproduction (PR) or by educational homogamy (RS), and there are no divergences of the two measures among the countries analysed (PR = RS).

Table 1 presents the goodness-of-fit statistics of all estimated models for men and women. Model 0 is a null association model. It assumes that the educational associations between parents and respondent (PR) as well as between respondent and his or her spouse (RS) do not exist. In both tests (men and women), this model poorly represents the data – it has a positive BIC value (Raftery, 1986, 1995) and it misclassifies about 27% of the cases.

The structure of association for all the next five models is the same for both sexes: row and column scores for educational mobility (PR) and educational homogamy (RS) are estimated as the same. This is the row and column association model RCII (Goodman, 1979; Clogg, 1982a; 1982b), where row and column scores are equal ($\mu_i = \mu_j = \mu_k$). In model 1, we assume that the levels of association PR (educational reproduction $\phi$ parameters) and association RS (educational homogamy $\psi$ parameters) are different in all countries (C), and distances between these levels of association PR and RS are also different in all countries (C) (equation 1, Figure 6). In model 2 (compare to model 1), we captured 28 more parameters. This implies that the 29 parameters $\psi$ for the levels of
<table>
<thead>
<tr>
<th>Model</th>
<th>Description of model</th>
<th>d.f.</th>
<th>Men</th>
<th>Δ</th>
<th>BIC</th>
<th>Women</th>
<th>Δ</th>
<th>BIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 CP CR CS</td>
<td>Null association PR and RS</td>
<td>580</td>
<td>18449.76</td>
<td>27.40%</td>
<td>12411</td>
<td>19999.17</td>
<td>27.34%</td>
<td>13923</td>
</tr>
<tr>
<td>1 model 0, PR = RS, ( \phi^{PR</td>
<td>C} ), ( \psi^{RS</td>
<td>C} )</td>
<td>RCII model for PR and RS association, equal row and column distances PR and RS, levels of association PR and RS (phi and psi parameters) are heterogeneous by C, distances between levels of associations PR and RS are different by C</td>
<td>521</td>
<td>2685.83</td>
<td>8.93%</td>
<td>−2739</td>
<td>2586.20</td>
</tr>
<tr>
<td>2 model 0, PR = RS, ( \phi^{PR</td>
<td>C} ), ( c^* \psi^{RS</td>
<td>C} )</td>
<td>RCII model for PR and RS association, equal row and column distances PR and RS, levels of association PR and RS (phi and psi parameters) are heterogeneous by C, distances between levels of associations PR and RS are constant by C (it means ( \psi^{RS</td>
<td>C} = c^* \psi^{RS</td>
<td>C} ))</td>
<td>549</td>
<td>2746.18</td>
<td>9.12%</td>
</tr>
<tr>
<td>3 model 0, PR = RS, ( \phi^{PR</td>
<td>C} = \psi^{RS</td>
<td>C} )</td>
<td>RCII model for PR and RS association, equal row and column distances PR and RS, levels of association PR and RS (phi and psi parameters) are homogeneous by C, distances between levels of associations PR and RS do not exist by C</td>
<td>550</td>
<td>2945.64</td>
<td>9.64%</td>
<td>−2781</td>
<td>2804.22</td>
</tr>
<tr>
<td>4 model 0, PR = RS, ( \phi^{PR} ), ( \psi^{RS} )</td>
<td>RCII model for PR and RS association, equal row and column distances PR and RS, levels of association PR and RS (phi and psi parameters) are homogeneous by C, distances between levels of associations PR and RS are constant by C</td>
<td>577</td>
<td>3498.63</td>
<td>10.43%</td>
<td>−2509</td>
<td>3639.23</td>
<td>10.27%</td>
<td>−2405</td>
</tr>
<tr>
<td>5 model 0, PR = RS, ( \phi^{PR} = \psi^{RS} )</td>
<td>RCII model for PR and RS association, equal row and column distances PR and RS, levels of association PR and RS (phi and psi parameters) are homogeneous by C, distances between levels of associations PR and RS do not exist by C</td>
<td>578</td>
<td>3675.32</td>
<td>10.96%</td>
<td>−2343</td>
<td>3740.32</td>
<td>10.62%</td>
<td>−2315</td>
</tr>
</tbody>
</table>

Notes: C: country; P: parents’ education level; R: respondent’s education level; S: spouse’s education level; L2: log-likelihood ratio chi-square statistic; d.f.: the degrees of freedom; BIC: Bayesian information criterion; Δ: the index of dissimilarity that indicates the proportion of cases misclassified by the model.
association RS (educational homogamy) in every country from model 1 are replaced by 1 parameter $c$ that shows a constant distance among the levels of PR association (educational reproduction) and RS association (educational homogamy) in each country (equation 2, Figure 6). Model 3 originates from model 2, but presupposes that there is no distance between educational mobility and educational homogamy (levels of associations PR and RS are the same). In this model, we capture one more parameter that describes the distance between the levels of educational mobility (PR) and educational homogamy (RS) in each country (equation 3, Figure 6) in model 2. Model 4 is the same as model 2, but more restrictive. Like model 2, it assumes that the distances between the levels of PR and RS associations are constant by $c$. Moreover, it assumes that these levels of associations are constant in all countries analysed. To compare this model to the second one, we saved 28 more parameters in this model, which implies that the 29 parameters for the identification of the levels of association PR (educational reproduction) in each country (C) are replaced by one parameter. In order to compare to model 3, we captured 27 more parameters in model 4. It suggests that the 29 parameters for the identification of the two levels of associations PR and RS (educational reproduction and educational homogamy) in each country are replaced by two parameters. One of them is given for the identification of the PR level association for all countries; the other is given for the identification of the RS level of association for all countries, thus the distance between PR and RS associations is the same in each country (see equation 4, Figure 6). Finally, model 5 is similar to model 3. It supposes that there is no distance in the levels of PR and RS associations (educational reproduction is the same as educational homogamy). Moreover, in comparison to model 3, it assumes that these associations are the same for all countries analysed.

When comparing to model 4, we saved one more parameter in this model showing the level of RS association and indicating the distance between PR and RS association in model 4 (equation 5, Figure 6)

The comparison of the BIC criteria for these five models suggests that we should interpret the data based on model 2 (for men as well as for women). However, because the conditional $L^2$ test of model 2 to model 1 is statistically significant (for men and women, alpha criterion 5%), and according to classical fit statistics ($L^2$ and delta) the fit of model 1 is better than the fit of model 2, we thus interpret the data with the help of both these models.

Figure 7 shows the results from model 1 for men and Figure 8 for women ($\phi$ and $\psi$ parameters from equation 1, Figure 6). In this case, these parameters show a relative deviation in the levels of association against the first parameter (here for Austria). In both figures, we see that a stronger association between parents’ and respondent’s education (higher relative educational reproduction) means a stronger association between respondent’s and his or her spouse’s education (higher relative educational homogamy). In both figures, the correlation between relative educational reproduction and relative educational homogamy (the correlation between $\phi$ and $\psi$ parameters from model equation 1, Figure 6) is positive and high (for men .81, for women .86).

Given these results, we have to reject our second hypothesis (H2) assuming a negative relationship between educational mobility and educational heterogamy. The results from model 1 show that higher educational mobility opportunities go hand in hand with higher educational heterogamy opportunities for both men and women. A positive relationship
exists between relative educational mobility and relative educational heterogamy. In societies where we find higher educational opportunities with regard to educational origin, we find also higher opportunities for marriage to a spouse of different educational
level. This indicates in everyday reality that descendants with different educational attainments to their parents do not keep to their educational status by marriage with a similar educational level partner.

Figures 9 and 10 show the results from model 2. In both figures on the x-axes, we can see the analysed countries sorted by (log) levels of association (indicated by $\varphi$ parameter for relative educational reproduction and by multiplication of $c\varphi$ parameters for relative educational homogamy, cf. equation 2, Figure 6). The distance between relative educational reproduction and relative educational homogamy is estimated as a constant $c$ in all countries. For men (the log of) this distance is 0.27 (relative educational homogamy is 1.32 times higher than educational reproduction in all countries analysed); for women (the log of) this distance is 0.22 (relative educational homogamy is 1.24 times higher than educational reproduction in all countries analysed). For both men and women, educational homogamy indicates the extent of educational opportunities – relative openness of educational structure – with a systematically higher intensity than educational reproduction. Between these two measures we find the association, but the intensity by which they indicate the level of educational inequalities is different.

The order of the countries according to strength of association in Figures 9 and 10 show that Bulgaria, Ukraine, the Czech Republic, Slovakia, Italy, Greece and also Switzerland are countries where there is a relatively high educational reproduction and educational homogamy compared to other analysed countries. The lowest relative educational reproduction and homogamy are found in Iceland, Sweden, Finland and Norway, but also in France and Great Britain. Domański and Przybysz (2007) came to a similar conclusion in their analysis of educational homogamy in selected European countries. Their analysis showed that the strongest association between couples’ education is in the
former socialist countries (Slovakia, Czech Republic, Poland, Ukraine, Hungary and Estonia), the lowest association is in the Scandinavian countries, France and Luxembourg.

**Conclusion and discussion**

The main aim of this article was to test two contradictory hypotheses. The first one (H1) considers the relationship between educational mobility and educational heterogamy as an indicator of the concept of societal openness. The second hypothesis (H2) proposes a more complicated relationship and states that educationally heterogamous marriages do not go hand in hand with the level of educational mobility in societies. We refuted the second hypothesis. A positive association exists between educational reproduction and educational homogamy (or between educational mobility and educational heterogamy) in the European countries studied in the article. We can conclude that a permeable educational system is related to a permeable marriage market, which is confirmed in our work in both the results of the descriptive analysis, and the results of log-multiplicative models.

We posed three interrelated questions in the introduction to our article: Is there any relationship between educational mobility and educational heterogamy? Is this relationship positive or negative? Is one of these indicators systematically stronger than the other? Our answer is that the relationship between educational mobility and educational heterogamy exists, and is positive, but educational mobility and educational heterogamy do not indicate the level of educational inequalities with the same intensity. Relative educational homogamy is a systematically stronger indicator than relative educational mobility. On a general level we can distinguish four explanations for this difference.

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**Figure 10.** Relative educational reproduction and relative educational homogamy in 29 countries (women – model 2)
First, this it can be due to the difference in the data analysed (see Blau and Duncan, 1967). While educational homogamy refers only to those respondents in the samples who entered into marriage, educational mobility refers to all the respondents in the samples.

Second, the time factor can be behind this difference. Educational mobility happens over time, and thus the process can be influenced by other variables such as the openness of the educational system (Breen, 2004), peer group, or educational/employment aspirations (Hauser, 1972; Hauser et al., 1983; Sewell and Hauser, 1972, 1975), all of which can weaken the educational relationship between parents and descendants. On the contrary, the selection of a spouse is, in comparison with educational mobility, accomplished in a relatively brief period. Moreover, our research presumed that education does not change significantly in the course of one’s life, while there might occur a so-called educational ‘pull’ between the spouses, which remains hidden in the data we worked with (respondents stated the spouses’ education at the time of data collection rather than at the time of entry into marriage). These facts might distort the relative degree of educational homogamy.

Third, this systematic difference can be linked to intimacy. Educational homogamy can indicate ‘societal openness’ more strongly because it is a more intimate issue than the process of educational mobility. A number of factors must be taken into consideration when we talk about the educational homogamy process: emotional closeness, similarity of opinions, value orientations, cultural preferences and lifestyles. All these go hand in hand with educational level (Bourdieu, 1989). As a result, the concept of educational homogamy can capture more sensitively the inequalities in educational opportunities than the concept of educational mobility.

Fourth, we should consider the different aspects of the concept of ‘societal openness’ (Ultee and Luijkx, 1990). Educational mobility refers to one aspect of the openness of the social structure, yet educational homogamy refers to a different aspect of the same thing. The two concepts are interrelated; although each of them indicates one and the same thing to a different degree, they point to different aspects of the same phenomenon. Educational mobility refers to inequalities of educational opportunity; it indicates (inter- or intragenerational) educational movements. Educational homogamy refers to educational inequalities and indicates how people approach each other with regard to the educational levels in society.

Generally, we believe that each of these four explanations must be taken into account when interpreting the different relative measures of educational mobility and educational homogamy. Nevertheless, the first explanation does not apply to our analysis. We have dealt with respondents who have experienced educational mobility and were also married. For this reason we turn to the second, third and fourth explanations to interpret why educational homogamy is relatively higher than relative educational reproduction. But our data cannot decide which of these explanations is correct. To determine this, a different type of data will be necessary and a different analytical approach (for more see Blossfeld, 2009).

Since the first generation of social stratification research the question ‘which countries are among those with an open social structure’ has remained an open one (Breen and Jonsson, 2005). Although today’s social stratification researchers have at their disposal a number of studies and analyses of social and educational mobility and educational homogamy, no consensus has been reached on the above question. Our study does not
enable us to reject the hypothesis of a positive relationship between educational mobility and educational heterogamy. Bearing in mind these facts, we suggest that the analysis of the relative social or educational mobility should be supplemented with an analysis of relative educational homogamy in further social stratification research. We believe that the question of openness of social structures in individual countries will be better addressed using both these measurements.

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**Notes**

1. Education is an ordinal variable wherein we can recognize which level of education is greater and which lower. However we cannot say how far these levels are apart from one another, and whether they move closer to one another over time or further apart. For example we know that university education is higher than secondary school, but we do not know whether the distance between them is less the difference between secondary school and trade school, and how these distances develop over time.

2. With the first wave of ESS (2002) we use the Integrated File – Edition 6.0, which we supplemented with the national data file from the Czech Republic. The survey involved 22 countries, and the total number of respondents in this file was 42,359. Data collection was conducted in 2002 and 2003. With the second wave of ESS (2004) we use the Integrated File – Edition 3.0, which we supplemented with the national data file from Great Britain. In this wave the research involved 25 countries (research conducted in 2004 and 2005). The number of respondents was 47,537. With the third wave of ESS (2006) we use data file Edition 1.0, containing 30,949 respondents from 17 countries. Samples in all of the countries were selected at random and are representative of the given countries. The codes of the countries in the data file are as follows: AT – Austria, BE – Belgium, BG – Bulgaria, CY – Cyprus, CZ – Czech Republic, DE – Germany, DK – Denmark, EE – Estonia, ES – Spain, FI – Finland, FR – France, GB – United Kingdom, GR – Greece, HU – Hungary, CH – Switzerland, IE – Ireland, IS – Iceland, IL – Israel, IT – Italy, LU – Luxembourg, NL – Netherlands, NO – Norway, PL – Poland, PT – Portugal, SE – Sweden, SI – Slovenia, SK – Slovakia, TR – Turkey, UA – Ukraine.

3. Before merging the tables from different years, we tested the differences in individual table frequencies using the chi-square test. At a 90% level of statistical significance, the chi-square test indicated the possibility of merging all the table frequencies from all countries we had data for more then one year. When we adopted a 95% significance level, the differences were statistically significant in two tables in Belgium, Spain and Finland, and in one table in France, Great Britain and Greece. Because in all these cases the value of chi-square test was just above the level 0.05 we decided to leave the data from these tables in analysis after merging them. The overall size of our analysed data is 68,720 respondents.

4. ISCED 1997 (International Standard Classification of Education) includes these educational levels: (0) pre-primary education; (1) primary education or first stage of basic education; (2) lower secondary or second stage of basic education; (3) (upper) secondary education; (4) post-secondary and non-tertiary education; (5) first stage of tertiary education; (6) second
stage of tertiary education (for more detail, see UNESCO, 1997; for an evaluation of ISCED 1997 see Schneider, 2007).

5. It is not possible to include the variable of sex in this analysis and estimate only one set of hierarchical models where the effect of sex on the other variables is presented, because the basic two-way interaction between respondent’s parents’ education and his or her sex does not have substantive meaning. Similarly, a two-way interaction between respondent’s parents’ education and his or her spouse’s education does not have substantive meaning either. All models were estimated using the LEM program (Vermunt, 1997). When analysing the relationship between educational reproduction and educational homogamy, some cells in the tables had zero frequencies. We added a small constant 0.1 to all these cells in order to achieve the most reliable estimate of models (Knack and Burke, 1980).

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Résumé

Cet article traite du lien entre homogamie éducationnelle et mobilité éducationnelle dans 29 pays d’Europe. Une réponse est apportée à trois questions liées entre elles : (1) Y a-t-il un lien entre mobilité éducationnelle et homogamie éducationnelle ? (2) La homogamie éducationnelle diverge-t-elle de la mobilité éducationnelle (lien négatif) ou bien la hétérogamie éducationnelle renforce-t-elle la mobilité éducationnelle (lien positif) ? (3) En cas de lien positif, la mobilité éducationnelle et la hétérogamie éducationnelle indiquent-elles dans une même mesure le niveau des inégalités en matière d’éducation ? Pour répondre à ces questions, les auteurs utilisent des données provenant du European Social Survey sur trois périodes (2002, 2004 et 2006). Les réponses sont données en termes absolus (pourcentages) ainsi que relatifs (effets log-multiplicatifs). Les résultats montrent qu’il existe un lien positif entre mobilité éducationnelle et hétérogamie éducationnelle. Dans l’ensemble des pays analysés, la hétérogamie éducationnelle relative est, en matière d’éducation, un indicateur de déségalités plus prononcé que la mobilité éducationnelle relative. L’écart systématique entre la hétérogamie éducationnelle et la mobilité éducationnelle s’explique par un certain nombre de facteurs que les auteurs analysent dans la dernière partie de l’article.

Mots-clés: European Social Survey, homogamie éducationnelle, homogamie sociale, mobilité éducationnelle, modèles log-linéaires, modèles log-multiplicatifs

Resumen

Este artículo analiza la relación entre la homogamia educativa y la movilidad educativa en 29 países europeos. Responde a tres cuestiones relacionadas: (1) ¿Hay alguna relación entre movilidad educativa y homogamia educativa? (2) ¿Existe divergencia entre homogamia educativa y movilidad educativa (relación negativa) o la movilidad educativa es reforzada por la heterogamia educativa (relación positiva)? (3) Si existe una relación positiva, ¿muestran la misma desigualdad educativa la movilidad educativa y la heterogamia educativa? Para responder a estas preguntas, los autores usan datos de tres oleadas de la Encuesta Social Europea (2002, 2004 y 2006). Las respuestas se muestran en términos absolutos (porcentajes) y relativos (efectos log-multiplicativos). Los resultados muestran que existe una relación positiva entre movilidad educativa y heterogamia educativa. Para todos los países analizados, la heterogamia educativa relativa es un mejor indicador de las desigualdades educativas que la movilidad educativa relativa. La desviación sistemática de la heterogamia educativa con respecto a la movilidad educativa es explicada por diversos factores que los autores discuten en la última parte del artículo.

Palabras clave: emparejamiento homogámico, Encuesta Social Europea, homogamia educativa, modelos log-lineales, modelos log-multiplicativos, movilidad educativa