WITH OR WITHOUT YOU. PARTNERSHIP CONTEXT OF FIRST CONCEPTIONS AND BIRTHS IN HUNGARY

JÚLIA MIKOLAI[1]

ABSTRACT: *Using notions from the Second Demographic Transition theory and the Pattern of Disadvantage argument, I study how women's risk of a first conception within different union types (single, cohabitation, marriage) is influenced by education in Hungary and whether this influence has changed over time. Additionally, I examine the transition to marriage among women who experienced a non-marital conception. Using the first wave of the Hungarian Generations and Gender Survey from 2004, I conduct discrete time survival analyses and logistic regression. I find a positive educational gradient of marital conceptions, while this gradient is negative for cohabiting conceptions. Moreover, highly educated women are less likely to experience a cohabiting or a single conception than a marital conception compared to their medium educated counterparts. Furthermore, the impact of education on the risk of a single and marital conception changes over time. The positive gradient of education on the risk of a single conception emerged after the transition, while it declined for marital conceptions. No consistent patterns are found for cohabiting conceptions. Additionally, highly educated women and those who experienced a conception while being single are more likely to marry than their lower educated counterparts and those who experienced a cohabiting conception.*

INTRODUCTION

In the last few decades the prevalence of alternative family forms, such as non-marital cohabitation and non-marital childbearing have increased across Europe and in the United States. The increase in the proportion of births out of wedlock was mainly the result of the rising number of cohabitations and cohabiting births in most European countries (Perelli-Harris and Gerber 2011; Perelli-Harris et al. 2010; Spéder 2004b), except in the UK where the number of births to single mothers also increased (Kiernan 2004).

There has been much debate about how the increasing share of non-marital births can be explained and which societal groups are experiencing these new forms of family behaviours. On the one hand, the Second Demographic Transi-

[1] University of Southampton, email: jm1e11@soton.ac.uk.

Demográfia, 2012. Vol. 55. No. 5. English Edition, 37–60.

tion (SDT) theory argues that ideational and value changes contribute to changing family behaviours. Thus, liberal, individualistic, and more secularised people are expected to be the forerunners of these family formation behaviours (Lesthaeghe and van de Kaa 1986). On the other hand, using the Pattern of Disadvantage argument, some studies have shown that more disadvantaged groups (i.e. those with low education and fewer resources) are more likely to give birth within cohabitation (Berrington 2001; Perelli-Harris and Gerber 2011; Perelli-Harris et al. 2010). If this is the case, the increasing proportion of non-marital births might contribute to the reproduction of inequalities. These contradictory arguments have not been tested in the Hungarian context before.

In Hungary, a societal, political, and economic transition took place in 1990; democracy replaced socialism, market economy was implemented and people's norms and values changed. These changes affected fertility and family formation behaviours (Thornton and Philipov 2009). For example, first births and marriages were increasingly delayed or forgone, and the prevalence of cohabitation and non-marital childbearing increased (Hoem et al. 2009). The rate of extramarital pregnancies remained very low (5–7 per cent) until the 1980s when it started to increase (Pongrácz and Molnár 2003) along with the proportion of cohabitants. Before the 1980s most cohabitation in Hungary was post-marital, but after the mid-1980s never-married cohabitation as well as non-marital childbearing became more common (Carlson and Klinger 1987; Spéder 2005). Between 1998 and 2011 the proportion of out-of-wedlock births rose dramatically from 26.6 per cent to 42.3 per cent. This rate is among the highest in post-socialist countries following Estonia (59.7%), Slovenia (56.8%), Bulgaria (56.1%), and Latvia (44.6%) (Eurostat 2012). Yet, attention has mainly been focussed on describing rather than explaining trends in the partnership context of first births in Hungary. As a result, it is not clear whether non-marital conceptions are more likely to occur among people with high or low socio-economic status in the Hungarian context. Using educational attainment as a proxy for socio-economic status, it is possible to examine which societal groups are more likely to experience these new family forms.

Therefore, this study aims to answer the following research questions: How does education influence women's risk of a first conception within different union types (i.e. single, cohabitation, marriage) in Hungary, and has this influence changed over time? To capture possible changes in partnership status between conception and birth, I focus on first conceptions. Higher order conceptions are less likely in a non-marital union as the union type of unmarried parents usually changes after the first conception. This also implies that if the spouses marry between conception and birth, partnership status at conception might not be of importance *per se*. Therefore, this paper also investigates whether women who experienced a non-marital conception marry between conception and birth.

This study contributes to the literature in several ways. First, most previous studies on Hungary have investigated which educational groups cohabiters belong to (Pongrácz and Spéder 2003; Spéder 2005) or how education is related to the timing of first union formation and first birth (Aassve et al. 2006; Bradatan and Kulcsár 2008; Hoem et al. 2009; Hoem et al. 2010). Much less attention has been paid to the relationship between education and partnership status at first conception or birth. An exception is Spéder (2004b), who found that the least educated women are the most likely to have a child in a non-marital union and within cohabitation using logistic regression models. He did not, however, distinguish between first and higher order births and did not compare the risk of a single, cohabiting, and marital birth by education within the same model. The present study aims to contribute to the literature by applying discrete time competing risks models.

Second, previous research has not investigated whether and how the influence of education on the risk of a single, cohabiting, and marital conception has changed over time. For example, Spéder (2004b) restricted the multivariate analyses to births that occurred after the transition in 1990. However, given the vast social, economic, and political changes after the transition, one would expect the extent to which education influences the partnership status of first conception to have also changed over time. Furthermore, as previous studies have indicated, some changes in partnership and family formation behaviours had already started before the transition (Carlson and Klinger 1987; Spéder 2005). Therefore, by examining how the influence of education on the risk of a first conception within different union types has changed over time, the present study fills a gap in the literature on Hungary.

Third, in order to be able to assess changes in partnership status between conception and birth by education, I investigate time to first conception (rather than to first birth, as was done by Spéder (2004b)). This might be essential, as the partnership status of spouses often changes between conception and birth. If this is the case, partnership status at conception may be less important than at birth. Furthermore, there might be educational differences in the decision to marry following a non-marital conception.

To sum up, the present study contributes to the literature by applying discrete time competing risks analyses to examine the risk of a first conception within different union types in Hungary, differentiating between cohabiting and single non-marital conceptions. Furthermore, I examine possible changes over time of the influence of education on the risk of a first conception within different union types. Last, studying first conceptions as opposed to first births allows the examination of changes in partnership status between conception and birth by education.

THEORY AND HYPOTHESES

Second Demographic Transition versus Pattern of Disadvantage

From the 1960s, major demographic changes took place in western Europe: the quantum of fertility was declining, marriage and childbearing were being postponed, new living arrangements were being adopted and the proportion of married people was decreasing while the proportion of cohabiting couples was increasing, as was the proportion of births out of wedlock (Frejka 2008; Lesthaeghe and Moors 2000; Lesthaeghe and Neidert 2006; van de Kaa 2002). Theorists of the Second Demographic Transition (SDT) argue that these changes were not only demographic in their nature but that they were also linked to changes in peoples' values (Lesthaeghe and van de Kaa 1986). As a result of increasing living standards, weakened normative regulations, increasing gender equality and female autonomy, people discovered their need for self-development and self-fulfilment. New lifestyle choices, related to the rise of higher-order needs (Maslow 1954) and self-realisation, led to changes in family formation behaviours (Surkyn and Lesthaeghe 2004).

Although the SDT does not offer an explicit explanation of how ideational changes are related to the increasing proportion of non-marital births, from its arguments it follows that more egalitarian people with more secular values would practice new living arrangements to fulfil their needs for self-development and individualism (Lesthaeghe and Neidert 2006; Surkyn and Lesthaeghe 2004). In other words, more liberal people are more likely to choose to cohabit with a partner without being married, live alone, or have a baby within a non-marital union than those who are less liberal. Previous research interpreted the diffusion of new family behaviours, including non-marital childbearing and cohabitation, as support for the SDT in the United States (Lesthaeghe and Neidert 2006; Raley 2001) and western Europe (Lesthaeghe 2010; Lesthaeghe and Moors 2000; Surkyn adn Lesthaeghe 2004; van de Kaa 2002).

The SDT was originally formulated to understand changing family behaviours in the United States and western Europe, as countries belonging to the Soviet Bloc had completely different experiences. For example, when the baby boom was occurring in western Europe, central and eastern European countries were experiencing fertility decline. In the 1970s and 1980s, due to pro-natalist policies, the centrally planned economy, and full employment (of both men and women), fertility rates stabilised around replacement level in Hungary. Furthermore, early and universal marriage, low age of childbearing, high rates of first and second births as well as low rates of childlessness characterised the country (Frejka 2008; Hoem et al. 2009). In Hungary, changes in values were reinforced by the socialist regime; society became atomised and demobilised,

and people drew back to the privacy of family life (Beluszky 2000). After the mid-1960s, the system had softened and the importance of consumption had increased, though there were limited consumption possibilities (Sobotka 2008). Moreover, there was a general acceptance and imitation of "Western norms" and lifestyles, assuming that these were linked to modern life and economic prosperity (Sobotka 2008; Thornton and Philipov 2009). After the fall of the Soviet Union, and with the implementation of the market economy, uncertainty, anomie, job insecurity, and unemployment characterised Hungarian society (Spéder 2004a, 2006). At the same time, demand for highly educated people, and professional and leisure opportunities emerged. The society was left with weakened norms and institutions and people were therefore ready to adjust their behaviours to the new circumstances (Beluszky 2000; Frejka 2008).

Thus, after the transition, Hungarian society became more similar to western European countries (Spéder 2003). The increased consumption possibilities allowed higher educated people to develop higher-order needs, and in order to be able to fulfil them they could choose alternative means of forming a family. Thus, the SDT anticipates that higher educated people are more likely to experience a single or cohabiting conception than a marital conception compared to their lower educated counterparts. Consequently, lower educated people are expected to be more likely to conceive within marriage than in cohabitation or while being single compared to higher educated people.

On the contrary, it might be that cohabitation and non-marital childbearing reflect structural differences and circumstances rather than ideational choices. In other words, those with lower socio-economic status tend to establish families in these alternative settings (Berrington 2001; Perelli-Harris and Gerber 2011; Perelli-Harris et al. 2010). Indeed, studies in the United States (Bumpass and Lu 2000; Seltzer 2004; Thornton et al. 1995), the UK (Berrington 2001; Ermisch and Francesconi 2000; Hobcraft and Kiernan 2001; Perelli-Harris et al. 2010; Seltzer 2004), Russia (Perelli-Harris and Gerber 2011; Perelli-Harris et al. 2010), Austria, Italy, France, the Netherlands, West Germany, and Norway (Perelli-Harris et al. 2010) have found that cohabitation and non-marital childbearing is associated with lower education and disadvantaged economic position.

Previous studies on Hungary mainly interpreted the spread of cohabitation and non-marital childbearing in the framework of the SDT (Bradatan and Kulcsár 2008; Hoem et al. 2009; Pongrácz and Spéder 2003; Spéder 2004b). However, it might be that in Hungary, non-marital childbearing characterises disadvantaged social groups as found in other countries. If this is the case, lower educated people would be more likely to experience a single or cohabiting conception than a marital conception compared to their more highly educated counterparts.

Changes over Time in Hungary

In short, over time not only political, societal, and economic but also demographic changes occurred in Hungary. Therefore, I expect that the influence of education on the risk of a single, cohabiting, and marital conception also changed over time. Again, I provide arguments along the SDT and the Pattern of Disadvantage argument.

Before the transition, Hungarian society had traditional values, and the country was isolated from western Europe. During the 1980s, consumerism became more important and people idealised Western norms and lifestyles (Thornton and Philipov 2007). This process accelerated following the fall of the Berlin wall and Hungary became more similar to western European countries (Spéder 2003). Therefore, if the SDT holds true, one would expect the positive effect of education on the risk of a single or cohabiting conception to be greater after the transition than before it.

The Hungarian labour market before the transition was characterised by job security and full employment. Most of the housing was owned by the regime, to which access was granted through the housing allocation system. As the aim of the communist ideology was to decrease social inequalities, differences between social groups were reduced (Ferge 2002). For example, in the early 1980s, the differences between the lowest and highest income groups were four-fold (Spéder 2003). I argue that this might also imply smaller differences between higher and lower educated people's family formation behaviour. Thus, I expect to see small or no differences between educational groups with respect to the likelihood of a single or cohabiting conception in Hungary before the transition. After the transition, differences between the lowest and highest income groups increased to ten-fold (Spéder 2003); job insecurity, poverty, unemployment levels, and house prices also increased. Additionally, the structure of the housing market changed and most housing became privately owned. As it became more difficult for young people to find a stable job and to achieve home ownership, the educational system started to expand. This might imply that the role of education became more important in the process of family formation after the transition. Thus, I would expect the negative effect of education on the risk of a single or cohabiting conception, as anticipated by the Pattern of Disadvantage argument, to be greater after the transition than before it.

Transition to Marriage in Hungary

During state socialism the majority of the couples legitimised non-marital pregnancies by getting married (Pongrácz and Molnár 2003). After the 1980s, as societal values changed and social norms weakened, cohabitation became a more accepted form of living arrangement and non-marital childbearing was

more widely tolerated (Pongrácz and Molnár 2003; Pongrácz and Spéder 2003). In contemporary Hungary, however, marriage is still seen as the preferred living arrangement for couples with children (Pongrácz and Spéder 2003). Therefore, it is important to investigate whether people with different education would marry following a non-marital conception. Studies using data from 2001 have shown that pregnancy accelerates the transition to marriage, whether it happens within cohabitation or while being single (Bradatan and Kulcsár 2008; Kulik 2005). However, we do not know whether the risk of marriage differs between educational groups or by the type of non-marital conception (i.e. single or cohabiting).

DATA

I made use of the first wave of the Hungarian Generations and Gender Survey (GGS) from 2004 (N = 13,540). The dataset has extensive retrospective monthly information on life-course events, such as children's dates of birth and the beginning and end of up to six previous co-residential partnerships (both cohabitations and marriages). To ensure that the stratified, multistage sample is representative of the population aged 21–78 at the time of the interview, I applied weights. This study focuses on women because they are the actual childbearers. Also, previous research has shown that men's retrospective fertility histories are much less reliable than women's (Rendall et al. 1999).

To answer the research questions, I conducted two sets of analyses. For the first set of analysis, I selected women who were childless at age 15 and did not live with a same-sex partner. These women were observed from age 15 until nine months before the interview to account for births that occurred after the interview. Individuals were censored when they experienced a first conception or, if this did not happen, at age 39; only 15 conceptions happened after this age. Additionally, women whose first child was not biological were deleted from the sample. The sample consists of 7,317 observations (767,590 person-months). After taking into account only those who had valid answers on each variable included in the final models, I ended up with a sample size of 761,980 person months.

For the second set of analysis, I examined a subsample of women (N = 2,034) who experienced either a single or a cohabiting conception.

ANALYTICAL APPROACH

First, discrete time competing risks analysis is employed to examine the risk of a first conception within different union types as compared to no conception. In other words, the risk that a woman is in one of the following situations is modelled: having a first conception while being single, having a first conception within cohabitation, having a first conception within marriage, or experiencing none of these types of conceptions. As these events are mutually exclusive, a competing risks model can be applied. Conducting multinomial logistic regression on a person-months dataset is analogous to discrete time competing risks analysis; it creates unbiased coefficients and produces consistent estimates of the standard errors (Allison 1982). This approach estimates $m - 1$ models, where m is the number of categories of the outcome variable. In our case $m = 4$, where no conception, single conception, cohabiting conception, and marital conception are the possible outcomes. The monthly risk of a conception within a given union type is calculated as the ratio of the number of women who experience a certain type of conception in each month to the number of women who are at risk of experiencing any type of conception.

Results are reported and interpreted based on relative risk ratios. Relative risk ratios, which can be obtained by exponentiating the regression coefficients, express how the risk of the outcome in the comparison group relative to the risk of the outcome in the reference group changes with the variable in question. A relative risk ratio greater than 1 indicates that as the variable in question increases, the risk of the outcome in the comparison group also increases relative to the risk of the outcome in the reference group. That is, the comparison group is more likely than the reference group. Consequently, a relative risk ratio smaller than 1 shows that as the variable in question increases the risk of the outcome in the comparison group decreases compared to that of the reference group.

Second, to examine whether and how education influences the probability of marrying between a non-marital first conception and birth, I study a subsample of women who experienced either a single or a cohabiting conception. Using logistic regression, I estimate the risk of experiencing a marriage between a single or cohabiting conception and birth.

MEASURES

Partnership Context of First Conception

For the first set of analysis, the following variables are defined.

Partnership context of first conception. The dependent variable, partnership context of first conception in a given month, was measured with a categorical variable with categories: no conception (0), single conception (1), cohabiting conception (2), and marital conception (3). The date of the conception was calculated by subtracting 9 months from the date of the birth of the first child. Although this computation assumes that all conceptions end with a live birth, studying conceptions instead of births gives us a more reliable picture of the actual partnership status of the respondents. In this way, "shotgun marriages" and "shotgun cohabitations" that would bias the union status of the respondents at the time of conception can be avoided; it is common that couples immediately marry or start cohabiting once they realise that the woman is pregnant. The variables used in the analyses are described in Table 1.

Table 1
Description and distribution of the variables used in the analyses, weighted estimates

	Competing risks models	Logistic regression models
	% or mean of variables, N = 761,980	% or mean of variables, N = 2,034
Education		
Low	61.1%	52.0%
Medium	33.0%	42.1%
High	5.9%	5.9%
Age	20.7	20.8
Age^2	454.8	449.5
Period		
1941–1960	19.8%	13.7%
1961–1970	18.1%	13.3%
1971–1980	18.7%	24.0%
1981–1990	16.6%	21.4%
1991–2004	26.8%	27.7%
Type of conception[a]		
Single	30.6%	83.5%
Cohabiting	6.2%	16.5%
Marital	63.2%	NA

[a] This variable has four categories: no conception, single conception, cohabiting conception and marital conception. 'No conceptions' are not taken into account when calculating these proportions.

Note: NA – not applicable.

Education. Respondents' highest attained educational level was classified into three categories: low (pre-primary to lower secondary), medium (upper secondary and post-secondary non-tertiary), and high (tertiary) education. Following Perelli-Harris et al. (2010), I created a time-varying variable indicating the highest reached education in a given month, using information on the year and month of reaching the highest educational level at the time of the survey. This calculation assumes that respondents have stayed in school continuously, as no information is available on whether they interrupted their educational careers. Information on the month of graduation was missing for 92 per cent of the respondents. As most schools in Hungary end the school year in June and as this was the most frequent answer among the valid answers (71.23 per cent), I imputed June for the missing values.

Period. This variable indicates the years during which the respondent was at risk of conceiving. To control for the change in the risk of a first conception over time, I created a categorical variable with ten-year periods (1941–1960, 1961–1970, 1971–1980, 1981–1990, 1991–2004). The first category covers 20 years to ensure that the cell sizes are relatively comparable across the categories. Note that 1991–2004 refers to the period after the transition. Each category was entered as a dummy variable in the analyses, with the period '1941–1960' being the reference category.

Age. Respondents' age was measured in years and was calculated for each month. To see the possible non-linear effects of age, a polynomial specification of age (age squared) was also added to the models.

Transition to Marriage

For the second set of analysis, the operationalisation of the control variables (i.e. period and age) and education remains the same as for the first set of analyses. The only difference to be noted is that while both age and education are time-varying in the discrete time competing risks models, in the logistic regression model both age and education are time constant and are measured at the time of conception. Additionally, the following variables are defined.

Marriage. The binary dependent variable indicates whether or not the woman married between the non-marital conception and the birth of the child.

Partnership status at conception. This dummy variable indicates whether conception happened within cohabitation (reference category) or while being single.

DESCRIPTIVE RESULTS

Partnership Context of First Conception

Table 2 shows the distribution of single, cohabiting, and married first conceptions by level of education and time period. Overall, among all educational categories, the proportion of single conceptions increased over time. Furthermore, in all periods, the proportion of low educated women was the highest and that of high educated women was the smallest among those who experienced a conception while being single. For example, after the transition the proportion of single conceptions was 27.9 per cent for highly educated, 35.6 per cent for medium educated, and 42.2 per cent for low educated women. This suggests that higher educated women are the least likely to experience a single conception while lower educated women are the most likely to do so.

Similarly, the proportion of cohabiting conceptions increased in all educational groups over time; this increase was greatest among low educated women and it was smallest among highly educated women. Thus, women with low education are the most likely to experience a cohabiting conception while highly educated women are the least likely. Additionally, the differences in the proportion of cohabiting conceptions have increased considerably among all educational groups after 1981.

Table 2
Number and weighted proportion of first conceptions by period, educational level, and union status at conception (N = 761,980)

Period	Low education			Medium education			High education			Unweighted number of conceptions		
	S	C	M	S	C	M	S	C	M	S	C	M
1941–1960	25.5	0.7	73.8	21.7	0.5	77.9	16.3	1.8	82.0	285	13	872
1961–1970	25.5	1.8	72.7	20.8	0.5	78.7	18.7	0.0	81.3	267	16	871
1971–1980	40.2	3.3	56.5	29.0	1.4	69.5	20.0	2.4	77.6	448	33	873
1981–1990	46.6	11.7	41.7	31.9	7.9	60.2	17.2	2.5	80.3	346	75	605
1991–2004	42.2	30.3	27.5	35.6	17.3	47.1	27.9	10.5	61.7	382	196	522
Total	32.8	5.3	61.9	29.6	7.1	63.3	21.5	6.0	73.6	1728	333	3743

Note: S – single conception, C – cohabiting conception, M – marital conception.

Not surprisingly, the proportion of marital conceptions decreased over time in all educational categories; this decrease was most prominent among women

in the lowest educational category (46.3 percentage points). In all time periods, more educated women were more likely to experience a marital conception than medium educated women who, in turn, were also more likely to experience a marital conception than low educated women.

Transition to Marriage

The proportion of women who marry following a single conception is 56.5 per cent while this proportion is 39.7 per cent for women who conceived within cohabitation. There are greater educational differences in the probability of marrying following a single conception than after a cohabiting conception (Table 3). Just over 60 per cent of women in the lowest educational category who conceived while being single married before the birth of their child; this proportion is 53.2 per cent among medium educated and 47.3 per cent among highly educated women. These figures suggest that more highly educated women are less likely to marry before the birth of the child following a single conception. On the contrary, higher educated women who experienced a cohabiting conception are 6.3 percentage points more likely to marry before the birth of the child than low educated women, indicating a positive relationship between educational level and the probability of marrying before the birth of the child following a cohabiting conception. Additionally, women who were not in a coresidential union when the conception happened are more likely in all educational groups to marry before the birth of the child than those who were cohabiting at the time of conception.

Table 3
Number and weighted proportion of women marrying following a non-marital first conception by educational level and type of conception (N = 2,034)

	Single conception (N = 1,713)		Cohabiting Conception (N = 321)	
	Number	Proportion	Number	Proportion
Low education	555	60.4	56	37.3
Medium education	385	53.2	70	42.6
High education	52	47.3	11	43.6

MULTIVARIATE RESULTS

Partnership Context of First Conception

Table 4 shows the discrete time competing risks models (Model 1 and Model 2). These models estimate the relative risk ratios of a single, cohabiting or marital first conception compared to no conception (baseline category) in a given month. Additional analysis is performed to examine the risk of a cohabiting and single conception as compared to a marital conception. The first model shows the effect of education on the risk of each type of conception, controlling for period and age. Interaction effects between education and period are added in Model 2 to examine the changing influence of education on the risk of a first conception within different union types over time.

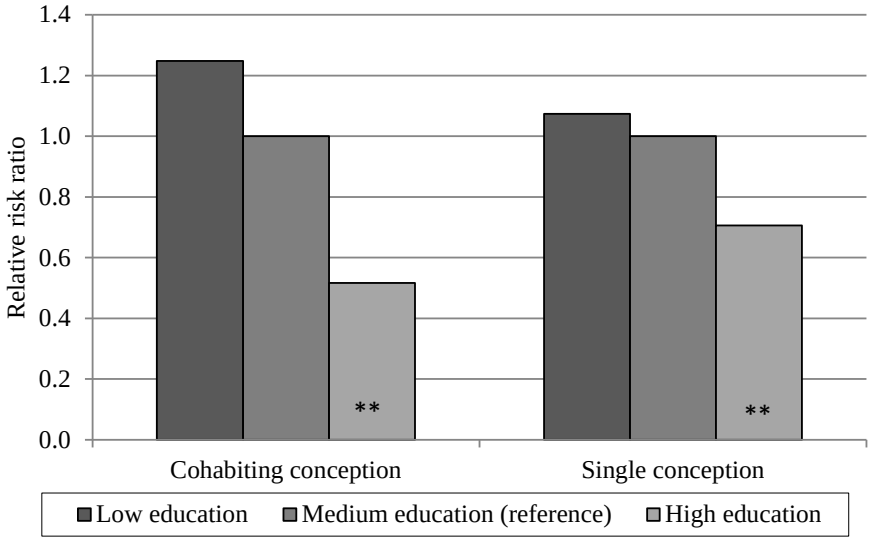
Table 4
Results of the competing risks models, relative risk ratios, base outcome: no conception (N = 761,980), weighted estimates

	Model 1			Model 2		
	S	C	M	S	C	M
Education						
Low	0 .89	1.04	0.83***	1.04	1.28	1.05
Medium (ref.)						
High	0.83	0.61*	1.18**	1.05	4.83	1.24
Age	2.00***	1.91***	4.58***	1.99***	1.90***	4.52***
Age^2	0.99***	0.99***	0.97***	0.99***	0.99***	0.97***
Period						
1941–1960 (ref.)						
1961–1970	1.02	2.11	0.95	1.06	1.11	1.03
1971–1980	1.72***	4.58***	0.89*	1.80**	3.87	1.09
1981–1990	1.54***	14.15***	0.71***	1.79**	19.24**	0.89
1991–2004	0.88	18.08***	0.26***	1.13	23.53**	0.35***
Interactions						
1961–1970*low				0.99	2.46	0.95
1961–1970*high				0.98	0.00***	0.73
1971–1980*low				1.01	1.42	0.80*
1971–1980*high				0.68	0.32	0.73
1981–1990*low				0.82	0.71	0.56***
1981–1990*high				0.76	0.09	1.18
1991–2004*low				0.58**	0.74	0.43***
1991–2004*high				0.80	0.12	0.94

Notes: S – single conception, C – cohabiting conception, M – marital conception. *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

Model 1 shows how the risk of a single, cohabiting, and marital conception changes with education when controlling for period and age. There are no educational differences in the risk of experiencing a single conception. However,

women with high education are almost 40 per cent less likely to experience a conception within cohabitation than their medium educated counterparts; there are no significant differences between low and medium educated women. Finally, low educated women are 17 per cent less likely than medium educated women to conceive within marriage. Similarly, medium educated women are 18 per cent less likely than high educated women to experience a marital conception. These results suggest that education has a negative gradient for cohabiting conceptions and a positive gradient for marital conceptions.



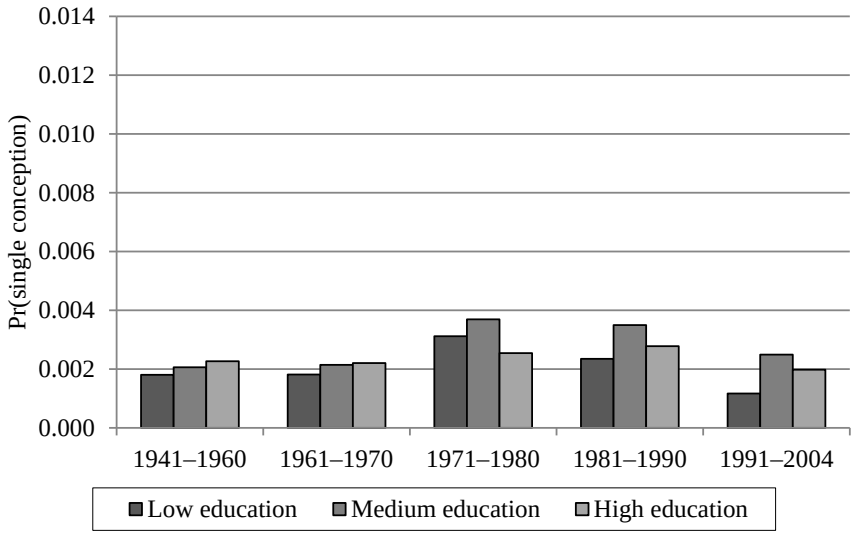
Note: $*p < 0.05$, $**p < 0.01$, $***p < 0.001$.

Figure I
Relative risk ratios of a cohabiting and a single conception compared to a marital conception by education

From these results it is not clear whether there are significant differences in the effect of education on the risk of a single or cohabiting conception compared to a marital conception. For this aim, I change the baseline category in the discrete time competing risks model to marital conception. The relative risk ratios of a single and a cohabiting conception compared to a marital conception are summarised in Figure I. Higher educated women are less likely to experience both a single and a cohabiting conception compared to a marital conception than medium educated women. There are no significant differences between low and medium educated women. In other words, higher educated women are more likely to conceive within marriage than within cohabitation or

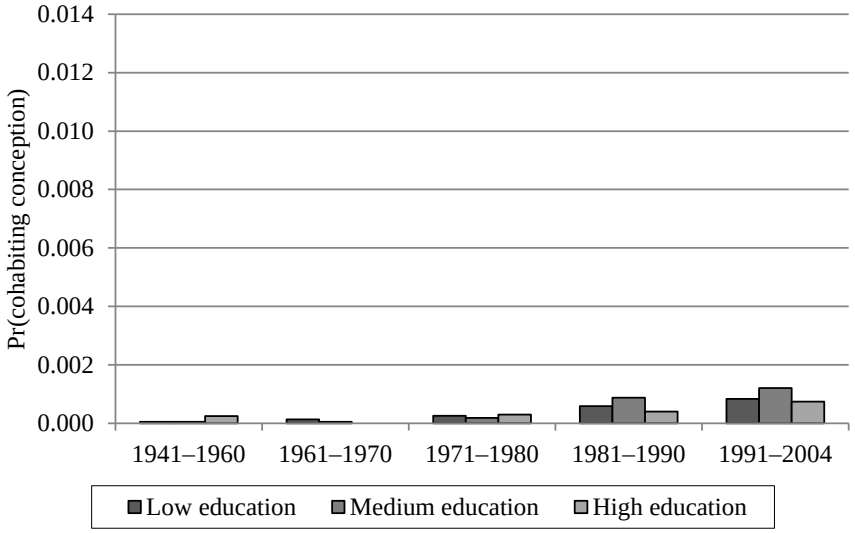
while being single. All in all, these results indicate that education has a negative gradient of non-marital childbearing; highly educated women are less likely to experience a single as well as a cohabiting conception compared to a marital conception than their medium educated counterparts, holding other variables in the model constant.

To see whether and how the influence of education on the risk of a first conception within certain union types changed over time, I interpret the interaction terms between period and education. To facilitate the interpretation of the interactions, I calculate monthly predicted probabilities, estimated for a woman with average age with different educational levels for the different time periods. The predicted probability of a single conception (Figure IIa) is slightly higher among medium educated women than among their higher and lower educated counterparts in all periods. Over time, the difference between medium and low educated women increases. The significant interaction effect between the period 1991–2004 and low education indicates that a positive gradient of education on the risk of a single conception has emerged after the transition, while before the transition educational differences in the risk of a single conception were not significant. Examining the significant main effects of period in Model 2 reveals that the probability of medium educated women experiencing a single conception increased between 1971 and 1990. Additionally, the probability of a cohabiting conception was very low between 1941 and 1970; after 1971, it started to increase gradually among all educational categories (Figure IIb). The interaction effects between period and education do not show a consistent pattern, suggesting that the educational gradient of the probability of a cohabiting conception did not change much over time. Last, the educational gradient of a marital conception is positive in all time periods; more educated women are more likely to experience a marital conception than their less educated counterparts (Figure IIc). The significant interaction effects indicate that medium educated women were significantly more likely to experience a marital conception than their lower educated counterparts between 1971 and 2004. Up until 1990, educational differences in the probability of a marital conception increased. However, after the transition, the differences seem to be smaller.



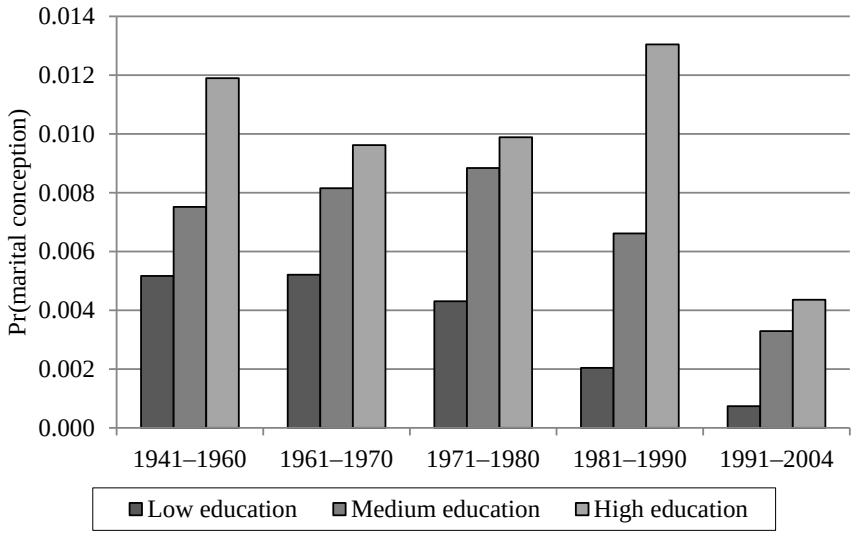
Note: Predicted probabilities are calculated for a woman with average age.

Figure IIa
Monthly predicted probabilities of a single conception by education and period



Note: Predicted probabilities are calculated for a woman with average age.

Figure IIb
Monthly predicted probabilities of a cohabiting conception by education and period



Note: Predicted probabilities are calculated for a woman with average age.

Figure IIc
Monthly predicted probabilities of a marital conception by education and period

Transition to Marriage

To examine whether and how education influences women's probability of marrying between a single or cohabiting conception and birth, I apply logistic regression (Table 5). The results indicate that low educated women are almost 60 per cent less likely to marry between conception and birth compared to their highly educated counterparts. Interestingly, there are no significant differences in marriage risks between medium and high educated women or between medium and low educated women (results not shown). Furthermore, women who experience a conception while being single are more than 1.4 times more likely to marry before the birth of the child than their counterparts who experienced a cohabiting conception. To examine whether this influence differs by educational level, interaction effects were tested, but no significant differences were found (results not shown). Finally, there are few changes in the risk of marriage after a non-marital conception over time. Between 1961 and 1990, this risk is about 35–39 per cent less than in before 1961. However, in 1991–2004 the risk of this transition was almost 70 per cent smaller than in 1941–1960. This might indicate that shotgun marriages played an important role throughout the years before 1991.

Table 5
Results of the logistic regression model, dependent variable: marriage, odds ratios (N = 2,034), weighted estimates

	Odds ratio
Education	
Low education (ref.)	
Medium education	1.19
High education	1.61*
Type of conception	
Cohabiting conception (ref.)	
Single conception	1.42*
Age	1.15
Age^2	0.99*
Period	
1941–1960 (ref.)	
1961–1970	0.65*
1971–1980	0.61**
1981–1990	0.64*
1991–2004	0.34***
Constant	1.02

Note: *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

CONCLUSION AND DISCUSSION

There has been much debate in the literature about the role of education in non-marital childbearing. On the one hand, according to the Second Demographic Transition theory higher educated women adjust their family behaviours in order to be able to fulfil their "higher order" needs. This means that these women are less likely to marry and, thus, are more likely to conceive within a non-marital union than their lower educated counterparts. On the contrary, some studies have argued that disadvantaged, lower educated women are more likely to have a child within these new types of family forms.

This article tested these contradictory expectations for the Hungarian setting by examining how the risk of a single, cohabiting, and marital conception is influenced by educational attainment. I found that higher educated women are less likely to experience a cohabiting conception compared to their medium educated counterparts. Interestingly, the risk of a cohabiting conception did not differ between low and medium educated women. This suggests that in Hungary the divide is between medium and high educated women rather than between those with the lowest level of education and their more educated counterparts. This result seems to support the Pattern of Disadvantage argument, although,

based on this, one would expect women from the lowest educational groups to have the highest risk of a cohabiting conception. Therefore, this finding is partially in line with previous studies which have found that education has a negative gradient of non-marital childbearing in Austria, France, West Germany, Italy, the Netherlands, Norway, Russia, and the UK (Perelli-Harris et al. 2010). Furthermore, in general, my findings corroborate Spéder (2004b), although he found significant differences between low and medium educated women when comparing their risks of a cohabiting conception and non-marital conception to a marital conception.

In addition, I found that in Hungary more educated women are more likely to experience a marital conception than their lower educated counterparts. Similarly, when comparing the risk of a single and cohabiting conception to a marital conception, highly educated women are less likely to experience both a single and a cohabiting conception compared to a marital conception than their medium educated counterparts. This indicates that the educational gradient of non-marital childbearing compared to childbearing within marriage is negative. This finding is in line with the Pattern of Disadvantage argument and corroborates previous studies on western European countries (Perelli-Harris et al. 2010) and countries in the region such as Romania (Hărăguş and Oaneş 2009), Bulgaria (von der Lippe 2009), Ukraine (Perelli-Harris 2008), and the Czech Republic (Zeman 2009).

Although education was not found to significantly influence the risk of a single conception, when examining changes in the influence of education on the risk of a single, cohabiting, and marital conception over time, I found that a positive gradient of education on the risk of a single conception emerged after the transition. Before 1990 differences between medium and low educated women were not significant. This finding is in line with the expectations of the SDT, but contradicts previous studies on the US and western European countries which found that low educated women have a higher risk of conceiving while single (McLanahan 2004; Perelli-Harris et al. 2010). A possible explanation for this finding might be that after the transition most of the highly educated single women had a non-resident partner at the time of conception but, for example, due to economic obstacles (e.g. common housing) they could not afford to move in together. The dataset did not allow for differentiating between co-resident and non-resident relationships. Additionally, there were no consistent changes in the risk of a cohabiting conception by educational attainment over time. Finally, between 1971 and 2004 the positive gradient of education on the risk of a marital conception became weaker. All in all, I conclude that there were some changes in the educational gradient of a single and marital conception over time, but that this was not the case for cohabiting conceptions. It might be that I did not have enough statistical power to detect significant changes over time because this behaviour has only just started to emerge in

Hungary. Moreover, the results also point out that changes in family behaviours had already started before the transition. After 1971 the risk of a single and cohabiting conception increased both for low and medium educated women while, at the same time, the risk of a marital conception declined. During these periods Hungary was less isolated from western Europe and the values and norms of people became more "Westernised". This result is in line with previous studies which examined union and family formation in Hungary and found that these behaviours had already started to change before the transition (Carlson and Klinger 1987; Frejka 2008; Spéder 2005).

Last, I studied the influence of education on the probability of marrying between conception and birth among women who experienced a non-marital conception. I found that women with high education are more likely to marry between conception and birth than their lower educated counterparts, and that there were no differences between medium and high educated women. Thus, it seems that in Hungary women with a high level of education find it more important to legitimise a non-marital conception through marriage than their lower educated counterparts. This finding is similar to earlier studies conducted in different contexts. For example, in Russia women with low education were found to be the least likely to marry following a single or cohabiting conception (Perelli-Harris and Gerber 2011). Furthermore, I found that women who experienced a single conception are more likely to marry than those who experienced a conception within a co-residential union. It might be that women who conceive in cohabitation do not marry because this setting is increasingly seen to be suitable for childbearing. Another, probably more likely, explanation is data related. Many of those women who do not live in a co-residential union might actually have a non-residential partner. In Hungary, due to constraints of the housing market, young couples often have limited opportunities to move in together. Although the GGS asked respondents if they had a non-residential partner, this question was unfortunately only asked for the time of the interview and no retrospective information was collected. Thus, it may be that most single conceptions actually happened within a non-residential union.

Finally, some limitations of this study should be mentioned. First, retrospective data might suffer from possible recall errors and misreporting. It can be expected that this may be particularly true in case of remembering the starting and ending dates of several cohabiting relationships and less so in case of marriages or childbirths. Conceptions to single women would, in this way, be overestimated relative to conceptions to cohabiting women. Second, some of the findings might be driven by the low prevalence of cohabiting conceptions during earlier time periods. The data may have lacked statistical power to detect significant changes over time, because conceptions within cohabitation only started to become more common in the latest periods. Third, the SDT is not only about the role of education but also about the role of values in the union

and family formation process. As the dataset does not contain time-varying information on the values and beliefs of the respondents, this dimension was not included in the paper. Future research could further investigate this question when later waves of the survey become available. Last, the risk of non-marital childbearing might not only be influenced by education but also by other factors such as urbanity or religiosity. However, while the GGS holds detailed information on union and fertility histories, it does not include time-varying information on these determinants. Future research might be interested in studying the influence of other time-varying factors on the risk of a non-marital conception once later waves become available.

Nonetheless, this study is the first to investigate the changing impact of education on the risk of a first conception and birth in Hungary within different union types, differentiating between single and cohabiting non-marital conceptions and applying competing risks models. I showed that in Hungary, highly educated women are less likely to experience a cohabiting conception compared to a marital conception than their low educated counterparts. Moreover, once a non-marital conception occurs, highly educated women are more likely to marry before the birth of the child than medium or low educated women. These findings indicate that in Hungary family formation behaviours vary by socio-economic status and that these behaviours might indeed play a role in the reproduction of inequalities.

ACKNOWLEDGEMENTS

An earlier version of this paper was prepared as the product of the European Doctoral School of Demography (EDSD), hosted by the Centre for Economic Demography at Lund University. The author is grateful for the financial support received from the Netherlands Interdisciplinary Demographic Institute (NIDI) while participating in EDSD. An early draft of this paper was presented as a poster presentation at the 77th Annual Meeting of the Population Association of America, 3–5 May, San Francisco, CA. The current version of this paper was prepared while the author was a PhD student at the University of Southampton, funded by the Economic and Social Research Council (ESRC). I am grateful for the financial support I received from the Centre for Population Change (CPC) at the University of Southampton. I would like to thank Brienna Perelli-Harris, Ann Berrington, Martin Dribe, and Mark Lyons-Amos for their comments and suggestions. The GGS data were obtained from the GGP Data Archive and refer to the publication that contains the model survey instruments: United Nations 2005. *Generations & Gender Programme: Survey Instruments*. New York and Geneva: UN.

REFERENCES

Aassve, A., Billari, F. C. and Spéder, Zs. 2006. Societal transition, policy changes and family formation: Evidence from Hungary. *European Journal of Population*, 22, 127–152.

Allison, P. D. 1982. Discrete-time methods for the analysis of event histories. *Sociological Methodology*, 13, 61–98.

Beluszky, T. 2000. Èrtékek, értékrendi változások Magyarországon 1945 és 1990 között. [Values and value changes in Hungary between 1945 and 1990]. *Korall, 1*, 137–154.

Berrington, A. 2001. Entry Into parenthood and the outcome of cohabiting partnerships in Britain. *Journal of Marriage and Family*, 63, 80–96.

Bradatan, C. and Kulcsár, J. L. 2008. Choosing between marriage and cohabitation: Women's first union patterns in Hungary. *Journal of Comparative Family Studies*, 39, 491–507.

Bumpass, L. and Lu, Hsien-Hen. 2000. Trends in cohabitation and implications for children s family contexts in the United States. *Population Studies*, 54(1), 29–41.

Carlson, E. and Klinger, A. 1987. Partners in life: Unmarried couples in Hungary. *European Journal of Population*, 3, 85–99.

Ermisch, J. and Francesconi, M. 2000. Cohabitation in Great Britain: not for long but here to stay. *Journal of Royal Statistical Society*, 163, 153–171.

Eurostat. 2012. http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&language=en&pcode=tps00018&plugin=1. Retrieved 26 Oct 2013

Ferge, Zs. 2002. Struktúra és egyenlőtlenségek a régi államszocializmusban és az új kapitalizmusban. [Social structure and inequalities in old socialism and new capitalism] *Szociológiai Szemle,* 4, 9–33.

Frejka, T. 2008. Overview Chapter 5: Determinants of family formation and childbearing during the societal transition in Central and Eastern Europe. *Demographic Research*, 19, 139–170. doi: 10.4054/DemRes.2008.19.7

Hărăguş, M. and Oaneş, C. 2009. The growth in non-marital fertility and other related behaviours in Romania after 1989. *Romanian Journal of Population Studies*, 1, 45–71.

Hobcraft, J. and Kiernan, K. 2001. Childhood poverty, early motherhood and adult social exclusion. *British Journal of Sociology*, 52(3), 495–517.

Hoem, J. M., Gabrielli, G., Jasilioniene, A., Kostova, D. and Matysiak, A. 2010. Levels of recent union formation: Six European countries compared. *Demographic Research*, 22, 199–210.

Hoem, J. M., Kostova, D., Jasilioniene, A. and Mureşan, C. 2009. Traces of the Second Demographic Transition in Four Selected Countries in Central and Eastern Europe: Union Formation as a Demographic Manifestation. *European Journal of Population*, 25(3), 239–255.

Kiernan, K. 2004. Unmarried cohabitation and parenthood in Britain and Europe. *Law & Policy*, 26(1), 33–55. doi: 10.1111/j.0265-8240.2004.00162.x

Kulik, M. C. 2005. The emergence of cohabitation as a first union and its later stability: the case of Hungarian women. *MPIDR Working Paper* 31. Rostock: Max Planck Institute for Demographic Research.

Lesthaeghe, R. 2010. The unfolding story of the Second Demographic Transition. *Population and Development Review*, 36, 211–251.

Lesthaeghe, R. and Moors, G. 2000. Recent trends in fertility and household formation in the industrialized world. *Review of Population and Social Policy*, 9, 121–170.

Lesthaeghe, R. and Neidert, L. 2006. The Second Demographic Transition in the United States: Exception or textbook example? *Population and Development Review*, 32(4), 669–698.

Lesthaeghe, R. and van de Kaa, D. J. 1986. Twee demografische transities? [Two demographic transitions?]. In van de Kaa, D. J. and Lesthaeghe, R. (eds.), *Bevolking: Groei en krimp [Population: Growth and crimp]*. Deventer: Van Loghum Slaterus, 9–24.

Maslow, A. H. 1954. *Motivation and Personality*. New York: Harper.

McLanahan, S. 2004. Diverging destinies: How children are faring under the Second Demographic Transition. *Demography*, 41(4), 607–627. doi: 10.1353/dem.2004.0033

Perelli-Harris, B. 2008. Family formation in post-soviet Ukraine: Changing effects of education in a period of rapid social change. *Social Forces*, 87(2), 767–794.

Perelli-Harris, B. and Gerber, T. P. 2011. Nonmarital childbearing in Russia: Second Demographic Transition or Pattern of Disadvantage? *Demography*, 48(1), 317–342.

Perelli-Harris, B., Sigle-Rushton, W., Kreyenfeld, M., Lappegård, T., Keizer, R. and Berghammer, C. 2010. The educational gradient of childbearing within cohabitation in Europe. *Population and Development Review*, 36(4), 775–801.

Pongrácz, M. and Molnár, E. 2003. Birth out of wedlock. *Demográfia English Edition,* 46, 104–121.

Pongrácz, M. and Spéder, Zs. 2003. Élettársi kapcsolat és házasság – hasonolóságok és különbségek az ezredfordulón. [Cohabitation and marriage – similarities and differences at the turn of the century] *Szociológiai Szemle,* 4, 55–75.

Raley, K. R. 2001. Increasing fertility in cohabiting unions: Evidence for the second demographic transition in the United States? *Demography*, 38, 59–66.

Rendall, M., Clarke, L., Peters, H., Ranjit, N. and Verropoulou, G. 1999. Incomplete reporting of men's fertility in the United States and Britain: A research note. *Demography*, 36(1), 135–144.

Seltzer, J. A. 2004. Cohabitation in the United States and Britain: Demography, kinship, and the future. *Journal of Marriage and Family*, 66, 921–928.

Sobotka, T. 2008. Overview Chapter 6: The diverse faces of the Second Demographic Transition in Europe. *Demographic Research*, 19, 171–224. doi: 10.4054/DemRes.2008.19.8

Spéder, Zs. 2003. Fertility behaviour in a period of economic pressures and growing opportunities: Hungary in the 1990s. In I. E. Kotowska, J. Jozwiak, P. Smith and A. Matysiak (eds.), *Population of Central and Eastern Europe: Challenges and Opportunities*. Warsaw: Warsaw School of Economics, 457–483.

Spéder, Zs. 2004a. Gyermekvállalás és a párkapcsolatok átalakulása [Childbearing and changes in partnerships]. In T. Kolosi, I. Gy. Tóth and G. Vukovich (eds.), *Társadalmi Riport 2004*. Budapest: TÁRKI, 137–151.

Spéder, Zs. 2004b. Gyermekvállalás házasságon kívül – egy terjedő magatartásminta összetevői. [Nonmarital childbearing – elements of a diffusing behaviour]. *Századvég,* 9, 83–99.

Spéder, Zs. 2005. The rise of cohabitation as a first union and some neglected factors of recent demographic developments in Hungary. *Demográfia English Edition,* 46, 52–72.

Spéder, Zs. 2006. Rudiments of recent fertility decline in Hungary: Postponement, educational differences, and outcomes of changing partnership forms. *Demographic Research,* 15, 253–288.

Surkyn, J. and Lesthaeghe, R. 2004. Value orientations and the Second Demographic Transition (SDT) in Northern, Western and Southern Europe: An update. *Demographic Research, Special Collection,* 3, 45–86.

Thornton, A., Axinn, W. G. and Teachman, J. D. 1995. The influence of school enrolment and accumulation on cohabitation and marriage in early adulthood. *American Sociological Review,* 60, 762–774.

Thornton, A. and Philipov, D. 2007. Developmental idealism and family and demographic change in Central and Eastern Europe. *European Demographic Research Papers*. Vienna: Vienna Institute of Demography.

Thornton, A. and Philipov, D. 2009. Sweeping Changes in Marriage, Cohabitation, and Childbearing in Central and Eastern Europe: New Insights from the Developmental Idealism Framework. *European Journal of Population,* 25(2), 123–156.

van de Kaa, D. J. 2002. *The idea of the Second Demographic Transition in industrialized countries*. Paper presented at the Sixth Welfare Policy Seminar of the National Institute of Population and Social Security Tokyo, Japan.

von der Lippe, E. 2009. The rise of cohabitation and childbearing outside of marriage in Bulgaria *Romanian Journal of Population Studies*, 1, 72–89.

Zeman, K. 2009. The link between women's education and non-marital childbearing in the Czech Republic *Romanian Journal of Population Studies*, 1, 90–108.