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## Family Formation Trajectories in Romania, the Russian Federation and France: Towards the Second Demographic Transition?

### Trajectoires de formation de la famille en Roumanie, en Fédération de Russie et en France: en direction de la Seconde Transition Démographique?

Gina Potârcă · Melinda Mills · Laurent Lesnard

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**Abstract** This study examines family formation trajectories as a manifestation of the second demographic transition (SDT) in three countries, comparing and contrasting two post-socialist countries (Romania and the Russian Federation) with France as benchmark country advanced in the SDT. By examining combined partnership and fertility sequences and transcending the mainly descriptive nature of trajectory-based studies, the current study expands our knowledge by including key explanatory factors, such as cohort, country, and educational level. Pooled data from the Gender and Generations Survey ( $N = 30,197$ ) is used to engage in sequence, optimal matching (OM), cluster and multinomial logistic regression analysis. Post-Communist cohorts are significantly more likely to engage in long-term cohabitation, childbearing within cohabitation or lone parenthood. Educational level operates differently across countries, with the highly educated in Romania and the Russian Federation less likely to follow certain de-standardized paths. Non-marital cohabitation with children is associated with lower education in all countries. Strong differences emerge between the shape and stages of the SDT in Romania and Russia, with Russians having a higher probability to experience childbearing within cohabitation, opposed to Romanians who follow childless marriage patterns or adopt postponement and singlehood. The three countries differ in their advancement in the SDT and factors shaping partnering and childbearing choices. We conclude

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that although the SDT remains a useful construct, it needs to be supplemented with more nuanced contextual accounts of socio-economic conditions.

**Keywords** Partnerships and fertility trajectories · Young adulthood · Sequence analysis · Cross-national comparison

**Résumé** Cet article étudie les trajectoires de formation de la famille en tant qu'expression de la seconde transition démographique (STD) dans trois pays, comparant et contrastant deux pays postsocialistes (la Roumanie et la Fédération de Russie) avec la France, pays considéré comme référence pour son stade d'avancement dans la STD. En examinant conjointement les séquences d'union et de fécondité et en dépassant la nature essentiellement descriptive des études sur les trajectoires, cette étude inclut des facteurs explicatifs clés, tels que la cohorte, le pays, le niveau d'instruction, afin d'élargir les connaissances dans ce domaine. Des données intégrées des enquêtes Genre et Génération ( $N = 30.197$ ) sont utilisées pour effectuer des analyses de séquences, d'appariement optimal, de regroupement, et de régression logistique multinomiale. Les individus appartenant aux cohortes dénommées « post-communistes » sont significativement plus susceptibles de s'engager dans des cohabitations de longue durée, d'avoir des enfants dans le cadre d'une cohabitation ou de constituer une famille monoparentale. L'impact du niveau d'instruction varie selon les pays. En Roumanie et dans la Fédération de Russie, les individus ayant les niveaux d'instruction les plus élevés sont moins susceptibles d'adopter des trajectoires plus marginales. La cohabitation sans mariage mais avec des enfants est associée à de plus faibles niveaux d'instruction dans les trois pays. D'importantes différences apparaissent tant au niveau des formes que des étapes de la STD entre la Roumanie et la Fédération de Russie, les russes présentant une probabilité plus élevée d'avoir des enfants dans le cadre d'une cohabitation, au contraire des roumains qui privilégient les mariages sans enfant ou postposent les naissances ou optent pour le célibat. Les trois pays diffèrent dans leur stade d'avancement dans la STD et dans les facteurs qui façonnent leurs choix de mises en union et de procréation. En conclusion, bien que la STD demeure un cadre théorique utile, elle doit être enrichie et nuancée par la prise en compte des contextes socio-économiques.

**Mots clés** Trajectoires d'unions et de fécondité · Jeunes adultes · Analyse de séquence · Comparaisons transnationales

## 1 Introduction

Countries across Europe have experienced complex changes in partnership and parenthood patterns in the last decades (Billari 2001). The pathways to family formation became increasingly multifaceted, characterized by a decline in marriage or childbearing within marital unions, rising cohabitation, postponement and reordering of events (e.g. childbearing followed by marriage) (Lesthaeghe and

Neels 2002; Billari 2004; Rydell 2003; Mills et al. 2005; Billari and Liefbroer 2010). These large scale changes in family formation patterns have often been described using the heuristic of the second demographic transition (SDT), which argues that demographic developments are primarily driven by ideational and cultural transformations (Lesthaeghe and Van de Kaa 1986; Van de Kaa 1987; Lesthaeghe 1995; see Sobotka 2008 for a review).

While these changes occurred earlier in many Western European nations, former Eastern Bloc countries progressed towards the SDT mainly after the fall of the socialist regimes in 1989, witnessed by an extreme and rapid decline in period fertility rates, postponement of marriage, and a rise in non-marital cohabitation and childbearing outside of marriage (Spéder 2005; Sobotka 2008; Zakharov 2008). The idiosyncrasies of demographic change in this region refer not only to the late onset of the SDT but also to the social groups that drive innovative family formation behaviour (Sobotka 2008). The transition to democracy and market economy after the fall of the totalitarian regime not only brought deep changes and high economic uncertainty but also an increased opportunity for choice and expression of individual preferences. This widespread 'turmoil' left its mark on the partnering and childbearing decisions of individuals (Jensen 1998), especially in the case of disadvantaged social groups. Eastern Europe, however, is a region where the emergence of the SDT remains insufficiently understood and comparative studies are scarce.

The aim of the current study is to compare and contrast the manifestation of the SDT by examining family formation trajectories in two distinct Eastern Bloc countries (Romania, Russian Federation) with one Western European country (France), which acts as benchmark that has advanced in the progression of the SDT. To achieve this goal, we focus on two main research questions. What are the differences or communalities between Romania, the Russian Federation and France in relation to the typical demographic outcomes of the SDT? What explanatory role do cohort and educational level play in the likelihood of following certain family formation trajectories?

This study builds upon and contributes to existing research in several ways. First, there are few studies that have considered the diffusion of the SDT in Eastern European countries, and of those that exist, most include only highly descriptive aggregated statistics (Sobotka et al. 2003; Mureşan 2007; Zakharov 2008; Hoem et al. 2009). Romania, the Russian Federation and France represent different socio-economic and political contexts and characterize different stages of the SDT. Although Eastern European countries are often grouped together within the literature, the path-dependent nature of national systems means there are likely considerable differences between these societies (Billari and Wilson 2001; Mills et al. 2008).

Second, studies that engage in cross-country comparisons of the SDT generally adopt an aggregated macro-level approach, focusing on broader indicators such as changes in the total period fertility rate, mean age at first childbirth and marriage and aggregated proportions of women cohabiting or never married at certain ages (e.g. Sobotka et al. 2003; Mureşan 2007). Although informative for gauging broader SDT changes, this approach neglects a deeper empirical examination into *who* is

more likely to be driving these changes, such as the higher or lower educated. The current study draws upon individual-level data from the Gender and Generations Survey to gain a richer understanding of these aspects. Although previous studies have adopted a micro-level approach using individual-level data to examine some of these questions (e.g. Hoem et al. 2009), they often only focus on one event or transition, such as union formation and not multiple life domains.

A related and third contribution, therefore, is that we move beyond the examination of partnership and fertility behaviour in isolation of one another to focus on the interplay and simultaneity of events. This is achieved by modelling the entire trajectory of partnership and fertility histories during young adulthood. This strategy enables us to understand family events from a 'holistic' perspective (Mills 2011), providing simultaneous information about their incidence, timing and order across time (Barban and Billari 2010). The succession of partnership and fertility statuses will be explored, as well as positioning more recent types of family formation (i.e. cohabitation, non-marital childbearing) among these sequences. This approach allows us to empirically test a central premise of the SDT, which is the emergence of 'destandardization' and 'more frequent, less strictly patterned, and more complex' life-course transitions (Lesthaeghe 1995, p. 18). It contributes to a larger body of literature that posits a more general 'pluralization' (Kuijsten 1996; Brüderl 2003), 'destandardization' (Lesthaeghe and Moors 2000; Mills 2004) or 'individualization' (Billari 2004) of life courses. Although a growing number of studies have examined the transition to adulthood as a trajectory of interrelated life domains (e.g. Billari 2001; Elzinga and Liefbroer 2007; Billari and Liefbroer 2010), they often remain highly descriptive, showing general patterns and focusing on aspects such as turbulence and similarity or dissimilarity between cohorts or countries. There has been less theoretical attention to the SDT and individual-based hypotheses examining *who* or which social groups are more associated with certain trajectories.

After briefly outlining the relevant aspects of the SDT, we develop a series of hypotheses. Using data from the first wave of the Gender and Generations Survey (GGS), we first examine the partnership and fertility trajectories of individuals across countries by means of sequence analysis and optimal-matching-based clustering (Abbott and Tsay 2000; Lesnard 2010). We then engage in a multinomial logistic regression of the prominent patterns of trajectories to assess whether a certain type of trajectory is significantly related to particular groups. After describing our results in relation to our anticipated hypotheses, we conclude and reflect upon these findings, particularly in relation to the SDT framework and alternative explanations.

## 2 The Second Demographic Transition and Family Formation

### 2.1 The Second Demographic Transition

The concept of the Second Demographic Transition (SDT) introduced by Lesthaeghe and van de Kaa (1986) and further extended by van de Kaa (1987)

and Lesthaeghe (1995) was developed in the late 1980s to describe changes in partnership behaviour, fertility and family formation since the late 1960s in Western and Northern Europe. Although sometimes criticized for its standardizing assertions (Sobotka 2008), the SDT is a useful framework to explain changing trends in partnership and fertility patterns. The focus is on falling fertility rates below replacement level, ideational change in the motivation to have children and a shift to an 'individualistic family model'. The weakening of the family as an institution is witnessed by the decline of marriage and rise of cohabitation, a re-evaluation of the role and number of children, contraceptive change and more pluralistic families and households (Van de Kaa 1987) and less strictly patterned life courses (Lesthaeghe 1995; Lesthaeghe and Moors 2000). The focus of this study is on the examination of destandardized family formation trajectories—interrelated partnership and fertility events—as expected demographic outcomes of the SDT.

## 2.2 The Rise of Destandardized Family Formation Trajectories

Various studies have examined the archetypal behavioural patterns of the SDT, such as a clear shift from marriage to cohabitation, first across Northern, Western and Central European countries, and increasingly in Eastern Europe (Kiernan 1999; Heuveline and Timberlake 2004; Hoem et al. 2009).

Examining women's partnership trajectories in Canada, the Netherlands, and the Russian Federation, Mills (2004) demonstrated that although the type and timing of relationships have changed, union formation remains stable. The timing and sequencing of partnership and fertility decisions are no longer perceived as a 'must-have' qualification for becoming an adult (Furstenberg et al. 2004). Instead, they become an expression of increasingly pragmatic individuals that prioritize their own values and preferences (Cherlin 2004; Sobotka and Toulemon 2008).

Synthesizing the demographic trends of post-war cohorts in (mainly Western) European countries, Corijn and Klijzing (2001) observe not only the postponement of both union formation and childbearing, but a striking disconnection between the two. This refers to the weakening of a predetermined pattern of first marriage, followed by parenthood. In a 14-country comparative study of the transition to adulthood, Mills et al. (2005) concluded that economic, employment relation and temporal uncertainty (e.g. fixed-term contracts) in the labour market not only gave rise to the postponement of both partnership and parenthood but also the adoption of less long-term binding commitments such as cohabitation.

Comparing the sequencing of family-life events in early adulthood in 19 European countries, Elzinga and Liefbroer (2007) illustrated that even though trajectories do not become more complex or 'turbulent' across cohorts, younger generations generally face more varied family formation trajectories. Building on these previous findings, our first hypothesis proposes that changes will follow a diachronic pattern, from one cohort to the next. We distinguish between standard versus de-standardized trajectories, with a 'standard pathway' referring to the classic sequence of singlehood followed by marriage and parenthood within marriage with at least two children. Building on the SDT, which argues that there will be a gradual introduction of new family forms over time (Lesthaeghe 1983), we

anticipate that younger cohorts will be more prone to these changes, leading to our first hypothesis.

**H1** Younger cohorts are more likely to follow de-standardized family formation trajectories.

### 2.3 Convergence or Path-Dependence? The Contexts of Romania, the Russian Federation and France

One criticism often raised against the SDT is the notion that there is one linear trajectory or final state where societies will eventually converge. Or, as Sobotka (2008, p. 173) asserts: ‘the notion of common cross-country trends suggests that the differences between countries are likely to diminish’. It is likely, however, that key institutions in nations such as welfare regimes, family, cultural and gender systems, educational systems and employment systems, as well as path-dependent histories operate as a strong ‘filter’ that operates between large macro-level changes and responses at the individual micro-level (Billari and Wilson 2001; Mayer 2001; Mills et al. 2008).

We anticipate that changes experienced across countries are more likely to be a case of ‘converging divergences’ (Mills et al. 2008) or grouping of particular regions. This is attributed to the fact that economies, historical and cultural systems of regional subgroups of countries remain more similar and integrated with one another than with the larger European or global society. Similar welfare regimes, industrial relation systems, gender systems and cultural traditions, which are highly implicit, allow them to easily coordinate with one another. This argumentation concurs with researchers such as Micheli (2004), who have argued that family formation patterns are strongly geographically and regionally embedded. Others have persistently highlighted diversity in family formation and patterns across Europe, largely based on deep historical differences (Kuijsten 1996; Reher 1998). We would therefore not anticipate a linear trajectory of path-dependence leading up to a final uniform end state of the SDT, but rather particular pathways based on non-convergent ‘life-course regimes’ (Mayer 2001).

To examine the progression at which different nations engage in the SDT, this study looks at two countries that belong to the Eastern European bloc and one Western European country. Romania is contrasted with the Russian Federation to determine the existence of ‘converging divergences’ in Eastern Europe. An overview of the main demographic indicators for each country is provided in Table 1. When comparing the figures from the two chosen time points—1990 (around the time of the fall of socialism in the two Eastern European countries) and 2006 (time when the data used for this study were collected)—the disparity is more prominent in the case of Romania and the Russian Federation.

Whereas France exhibits an increase in the total fertility rate, there is a marked decrease in the two Eastern European countries. In fact, France’s uniqueness among Western European countries is related to close to replacement level fertility and a prevalence of typical SDT family patterns (i.e. long-term cohabitation and non-marital childbearing). This is attributed to the existence of policies supportive of the

**Table 1** Demographic and labour market indicators for France, Romania and the Russian Federation, 1990 and 2006

	France		Romania		The Russian Federation	
	1990	2006	1990	2006	1990	2006
Total fertility rate	1.78	1.98	1.84	1.32	1.90	1.29
Mean age at first marriage						
Women	27.7	29.2	23.9	25.3	21.6	27.5
Men	29.8	31.2	27.2	28.6	24.3	29
Mean age at first birth	27.0	27.8	22.7	25.1	22.6	24.2
Share of nonmarital births (%)	30.1	50.49	4	28.97	14.6	29.8 <sup>a</sup>
Female labour force participation (% of female population ages 15+)	46	50.3	59.9	47.9	60	56.3

*Sources* Council of Europe (2002), Eurostat, UNECE/PAU Demographic Database, UNECE Gender Statistics Database, World Development Indicators

<sup>a</sup> Value for 2004

dual-earner model and non-standard family forms, including employment and social benefits for working mothers (Lesnard 2008), support for unmarried couples (e.g. possibility of registering their partnership), as well as for children born within non-marital unions (Kreyenfeld et al. 2009; Toulemon et al. 2008). Based on these demographic and policy-related idiosyncrasies and the advanced progression of France in the SDT, we anticipate a higher incidence of non-standard family forms in France in comparison with both Romania and the Russian Federation, irrespective of birth cohort.

**H2a** Compared to Romanians and Russians, individuals in France are more likely to follow de-standardized family formation trajectories.

Several unique factors differentiate Romania and the Russian Federation from France. Features that distinguish Eastern European countries during communism were the socialist ideal of high rates of female full-time employment and universally accessible and affordable childcare (Motiejunaite 2008). Family-related policies were directed at combining full-time employment with motherhood and strong state childcare, which was considerably more supportive than many Western European countries. Although, the combination of work and family roles was assisted by universal support delivered by the state, such paternalistic politics were often denounced for not providing any freedom of choice to working mothers and imposing a substantial double burden (Frejka 2008; Zhurzhenko 2001). Although a side-effect of these socialist policies was gender equity in the labour market, women also often remained primarily responsible for household labour. The collapse of communism and subsequent economic constraints (i.e. lower incomes, job insecurity, diminished welfare protection) maintained the need for women's full-time labour market participation (Pascall and Kwak 2005, in Motiejunaite 2008; Zhurzhenko 2001). The insecure post-socialist labour market and employment conditions in the 1990s were particularly problematic for women (Frejka 2008). The above-mentioned factors, as well as the elimination of



coercive population policy and the shrinking of family benefits, resulted in a sharp decline of the total fertility rate, general postponement of family formation, a reduction in family size and a rise in non-marital cohabitation and childbearing after 1989 (Mureşan et al. 2008; Sobotka et al. 2003).

There is also considerable heterogeneity among post-socialist countries. Among the group of post-socialist countries, Romania and the Russian Federation are usually contrasted with Central European countries (e.g. the Czech Republic, Poland) (Philipov and Jasilioniene 2008; Sobotka et al. 2003). The lower levels of fertility experienced by Eastern European countries (e.g. Bulgaria, Russia) can be attributed to the more turbulent transition stage and the stronger impact that instability and change had on family formation and childbearing patterns (Frejka 2008; Philipov and Kohler 2001). Conversely, in the Czech Republic and other Central European countries, the uncertainty of a changing social, economic and political environment was buffered by more protective welfare arrangements and more vigorous economic development (Frejka 2008; Sobotka et al. 2008). This entails that the SDT progressed in particular ways in Eastern European countries, diverging from both Western European and other post-socialist countries.

Although most Eastern European countries started experiencing demographic changes after the fall of the socialist regime (Hoem et al. 2009), there are substantial differences between Romania and the Russian Federation. Differences that already existed before the fall of socialism were amplified during the transition to democracy and a market economy (Fodor et al. 2002). In terms of destandardized family forms, Russians began to perceive cohabitation as an alternative to marriage, whereas cohabitation in Romania remained limited (Sobotka 2008). In fact, increasing cohabitation rates alongside declining marital rates emerged in the Soviet Union already in the middle of the 1980s, years before the fall of socialism (Gerber and Berman 2010). Zakharov (2008) also demonstrates that the birth cohorts from the 1970s already started to postpone marriage and parenthood. This was coupled with an increase in effective contraception and changing attitudes about family formation, resulting in, what Zakharov (2008) argues, was the start of the SDT, albeit with many remnants of traditional fertility and partnership patterns.

Romania is also a unique case due to the ban of abortion in 1967 and the virtual absence of contraceptive use. In most Eastern European countries and in the Soviet Union, abortion was legalized and provided free of cost since the mid-1950s and throughout the socialist period (Sobotka et al. 2003; Frejka 2008). This however, was not the case in Romania, where illegal abortions were often performed (Mureşan 2007). After 1989, although abortion was legalized, contraceptive use remained low, resulting in Romania having one of the highest rates of abortions in Europe, which only started to decline a decade later (Henshaw et al. 1999; Mureşan et al. 2008; Oanes and Haragus 2009).

Romania and the Russian Federation also differed in their political history and exposure to Western nations. Starting with the mid-1980s until the eventual collapse of the Soviet Union in 1991, Russians experienced a less authoritarian political regime and more exposure to Western European family lifestyles (Gerber and Berman 2010) than Romanians. The Soviet Union liberalized divorce in the mid-1960s, with divorce rates accelerating to levels comparable to those in Western

Europe (Mills 2004; Perelli-Harris et al. 2010). Conversely in Romania, divorce rates remained low, which is mainly attributed to structural factors (e.g. the housing crisis) and the public stigma of divorce (Mureşan et al. 2008). Examining Romania's demographic trends, Mureşan (2007) concludes that the population underwent some SDT transformations after the 1989 revolution, but that marriage persists as a strong and highly valued institution, with cohabitation as marginal and not regarded as a viable alternative to marriage (Mureşan et al. 2008). This leads us to our final country-specific hypothesis:

**H2b** Compared to Romanians, Russians will be more likely to follow non-marital childbearing and long-term cohabitation trajectories

## 2.4 Educational Level

Pursuing de-standardized family formation pathways is also interrelated with educational expansion. The highly educated not only pursue more individualistic and higher-order needs but also educational training which means a longer study in the student role and investment in careers, particularly for younger cohorts (Corijn and Klijzing 2001; Sobotka 2004; Mills et al. 2005; Van Bavel 2010; Mills et al. 2011). Postponement is predominantly an issue for highly educated women, whereas the decision to have a child is related to higher opportunity costs when interrupting a burgeoning career (Vos 2009; Begall and Mills 2011). The result is the delay or even forgoing of parenthood and adoption of more flexible partnership options such as cohabitation.

It is likely, however, that contextual differences are central to this process and that education may in fact play a very different role across countries. The more disadvantaged are often the frontrunners in fertility and marriage transformations in the former Eastern Bloc (Sobotka 2008). This differs from the expectations of the SDT and the findings in several Western countries (e.g. the Netherlands, UK, Italy, or Spain), where the highly educated are generally considered as the innovators of non-standard demographic behaviour, such as cohabitation (Sobotka 2008). The increased uncertainty or 'pattern of disadvantage' (Edin and Kefalas 2005) faced by the lower educated after the demise of the socialist regime in Romania and Russia likely forced them to adapt their family decisions. Previous cross-national research has found that the lower educated are less sheltered during periods of increased economic uncertainty, which in turn results in a higher likelihood of postponing both partnership formation and first birth for men. Conversely, there is an increase for women in certain countries where labour market options are more limited (Mills et al. 2005). Lower educated women are significantly more likely to experience childbearing within cohabitation in some Western European countries (e.g. Austria, West Germany, Italy, the Netherlands, Norway). This has been attributed to the disproportionately negative consequences that economic and technological changes in the 1980s and 1990s had on those who were the least educated and trained (Perelli-Harris et al. 2010). We therefore hypothesize contrasting associations between educational level and the likelihood to follow certain family formation trajectories in different national contexts as follows:

**H3** The higher the educational level an individual holds in France, the higher the probability that they will adopt a de-standardized family formation trajectory. However, we anticipate an opposite pattern for Romania and the Russian Federation where individuals with a higher educational level are expected to be less likely to adopt destandardised family formation trajectories

We also control for additional factors that are important in family formation processes, including the sex of the respondent and family history. We control for sex not only due to the differences in timing of events but also the likelihood of finding gendered clusters, such as single parents. Family history is also included since childhood experiences guide union and parenthood decisions (Vikat et al. 2007) and can either speed up or delay the transition to first union and childbearing (Corijn and Klijzing 2001; Ivanova et al. 2011).

### 3 Data, Measurement and Methods

#### 3.1 Data and Sample

The data we analyse is taken from the first wave of the Generations and Gender Surveys (GGS), collected during 2004–2006, which includes nationally representative samples of the 18–81 year-old resident population (Vikat et al. 2007). The first wave provides cross-national comparable survey data for a series of countries, including our selected countries of France ( $N = 9,045$ ), Romania ( $N = 11,165$ ) and the Russian Federation ( $N = 9,987$ ). The three samples were pooled into one dataset ( $N = 30,197$ ) to enable statistical comparison between countries. The surveys include retrospective histories of the partnership and childbearing histories of both men and women, making it possible to construct their family formation trajectories. We chose an observation window between the ages of 12 and 30, which coincides with the transition to adulthood and is recognized to be highly ‘dense’ in demographic events (Rindfuss 1991). The age of 12 was adopted not only to accommodate early unions in Romanian, largely within the Roma population, but also early family formation in the large rural populations in both Romania and Russia.

An advantage of the GGS is that it includes data on the young generation that came of age after the fall of the socialist regime, enabling us to examine for the first time, the study of changes that occurred in family patterns since 1989. Although the trajectories of these individuals are not fully completed (given that they were under age 30 at the time of the interview), the inclusion of this cohort in the analysis nevertheless offers new and informative findings. We also tried an alternative specification of estimated trajectories up to age 35, but this could not adequately capture the family formation of the youngest cohort. When comparing the results between the age cut-off of 30 versus 35, only slight differences were found, such as a slightly lower number of singles and transitions out of cohabitation when age 35 was used. Moreover, right-censoring the data at age 30 is a relatively common methodological practice among studies looking at early life-course trajectories (see

for e.g. Aassve et al. 2007). We exclude sequences belonging to persons younger than 25 at the date of the interview, since initial analyses indicated that such short trajectories tended to cluster together. Appendix Table 8 provides the descriptive statistics of all variables used in the regression analyses.

## 3.2 Measurement of Variables

### 3.2.1 Partnerships and Fertility Histories

Respondents reported the starting and (if relevant) ending dates of all cohabitating and marital unions and the dates of birth of biological children. Only co-residential partnerships were included in this analysis. We then created a complete sequence of monthly partnership and fertility states between the ages of 12 and 30, which served as the input for the subsequent sequence analysis. We distinguished between three partnership states (single, cohabiting and married), and combined them with three fertility states (childless, one child, two or more children), which in the end led to a 9-state model of partnerships and fertility (Table 2). As described in detail shortly, this information was used to produce common clusters of family formation trajectories, which then serve as the dependent variable in the regression analysis. Whenever sub-sequences such as ‘first cohabitation directly into second cohabitation’ were observed, a two month period of singlehood was inserted in between to separate the two unions. The respondents that experienced relationship dissolution (including divorce) are categorized as single until (and if) they enter a new partnership. Although this remains a strong assumption, only a relatively small number of individuals experienced relationship dissolution before the age of 30, with additional analyses adopting alternative assumptions showing no demonstrable differences in the results.

### 3.2.2 Cohort

We distinguished between five birth cohorts, which represent groups born during five different decades of the previous century. Building upon Mayer’s (2001) life-course regimes and the SDT framework, the first cohort represents the early industrialist cohort (1923–1940), followed by the industrialist cohort (1941–1950), contraceptive revolution cohort (born between 1951–1960 and age 18 1969–1978), the Fordist cohort (born 1961–1970; age 18 1979–1988) and the Post-Fordist/Communist cohort (1971–1980). The youngest Post-Fordist/Communist cohort includes individuals that came of age after 1989, known as the historical milestone that brought the end of communism in Eastern Europe. Although the collapse of the Soviet Union occurred in 1991, 1989 is often seen as a unanimous threshold year given that the changes that preceded the fall of socialism for the Russian nation were already visible in 1989 (Brown 2009). We acknowledge that this terminology (e.g. contraceptive revolution cohort) is based on a Western categorization and does not adequately capture the Eastern context. The temporal

**Table 2** Partnership and fertility states

Value	State
1	Single
2	Single with 1 child
3	Single with 2 or more children
4	Cohabiting
5	Cohabiting with 1 child
6	Cohabiting with 2 or more children
7	Married
8	Married with 1 child
9	Married with 2 or more children

division, however, remains useful to distinguish between cohorts across the different countries.

### 3.2.3 Country

Three dummy variables were constructed with France as the reference category since it serves as a useful benchmark, given both its advanced stage in the SDT and its high fertility rate.

### 3.2.4 Educational Level

Education is categorized following the International Standard Classification of Education (ISCED). We differentiated between three educational levels and created three dummy variables which range between: low (ISCED levels 0, 1 and 2, reference category), medium (ISCED 3 and 4) and high (ISCED 5 and 6).

The control variables include *sex*, measured as a dummy variable (male reference group) and experience of a *parental divorce*, which distinguishes between respondents whose parents never separated (reference group) from those who experienced parental divorce, and respondents in other situations (e.g. parents never lived together).

## 3.3 Analytical Methods

Given the complexity of the research goal to both describe and then explain interrelated partnerships and fertility trajectories, the analytical design of this study includes multiple analytical methods, including: sequence analysis, optimal matching (OM), cluster and multinomial logistic regression analysis.

The first objective of describing family-life-course trajectories is achieved via Optimal Matching (OM), a dissimilarity measure adapted to sequence data, and cluster analysis. OM comes from research conducted on signal theory in the 1950s and 1960s (Hamming 1950; Levenshtein 1966) and was introduced in the social sciences by Andrew Abbott and colleagues (Abbott and Forrest 1986; Abbott 1990). Instead of examining the timing of particular events, sequence analysis methods—

OM being the most prominently used technique—provides an overview of multiple life-course events (Piccarreta and Lior 2010) or puts the ‘course’ back into life-course (Aisenbrey and Fasang 2010). Dissimilarity between two sequences is defined as the least weighted number of edits that are necessary to make them identical. Each of the three kinds of transformations used in OM (insertion, deletion and substitution) is given a cost and the total minimum cost to match two sequences is used as a measure of their dissimilarity. Because insertion and deletion operations are completely symmetrical, their cost is necessarily identical and they are called ‘indel’.

The usefulness of OM for the social sciences has been challenged mainly on two grounds. First, it was argued that careers or any other sort of sequence data are very different from DNA (Levine 2000; Wu 2000). This criticism is actually a misunderstanding coming from the fact that OM was brought to the attention of the social science community through biology, even though it was not a method devised in this field but borrowed from computer science. It was successfully adapted to their data and goals not because edit operations would mimic biological phenomena, but rather through theoretically-informed cost setting (Durbin et al. 1998). There were also some concerns about the effect of cost setting on findings and the potential of ‘massaging’ results (Wu 2000). In fact, as argued by Abbott (2000), OM is just about fishing for patterns. As inserting or deleting an event warps time, the more these transformations are used, the less the timing of identical sub-sequences matters (Lesnard 2010). On the contrary, using only substitution operations (Hamming distance) preserves the timing of sequences. Deciding on the ratio of these two kinds of costs should be based on how important timing is for a given analysis. Moreover, cost setting can be fine-tuned using a matrix of pairwise substitution costs that is theoretically defined (e.g. Halpin and Chan 1998) or empirically derived, for instance from transitions.

The potential of OM for life-course researchers has been emphasized since the late 1990s (Settersten and Mayer 1997; Shanahan 2000; Billari 2001; Kohli 2007) and OM or other sequence analysis variants have been used in this field since this time (Mouw 2005; Aassve et al. 2007; Piccarreta and Lior 2010; Martin et al. 2008; Schoon et al. 2009; Chaloupková 2010; Robette 2010; Billari and Piccarreta 2005). In this article, we use the Levenshtein I OM parameterization in which indel and substitution costs are set to 1. The Levenshtein I distance can be seen as a sort of ‘happy medium’ between the Hamming distance, where only substitution operations are used, and the Levenshtein II option that only makes use of insertions and deletions. With the Levenshtein I distance, an identical sub-sequence located far away in the two sequences will be more penalized than with the Levenshtein II specification. We also considered using the Dynamic Hamming Distance (Lesnard 2010), the only parameterization that allows time-varying substitution costs, but found little time variation in substitution costs and as such could see no benefit in using it. To estimate our models, we used the numerous options provided in the TraMineR library of R (Gabadinho et al. 2008), which is an open-source, flexible and well-documented statistical package for these types of analyses.

The resulting dissimilarity matrix is further subject to cluster analysis to create the empirical typologies of family formation trajectories. We used the beta-flexible

linkage, which is, empirically, the most effective linkage available (Milligan 1980, 1981), which was also implemented in R. To determine the optimal number of clusters, we used the elbow criterion that consists of identifying a spike in the graph depicting the distance of the last two merged clusters according to the number of clusters. A spike indicates that two very heterogeneous clusters (in terms of the OM distance and linkage used) have just been merged and that the previous cluster solution is better. Statistical tests are only available with additional assumptions (normality) and conditional on using the Ward method, which is at a theoretical level, an appealing linkage, but in empirical terms is far less effective (noise or outliers) than the beta-flexible one.

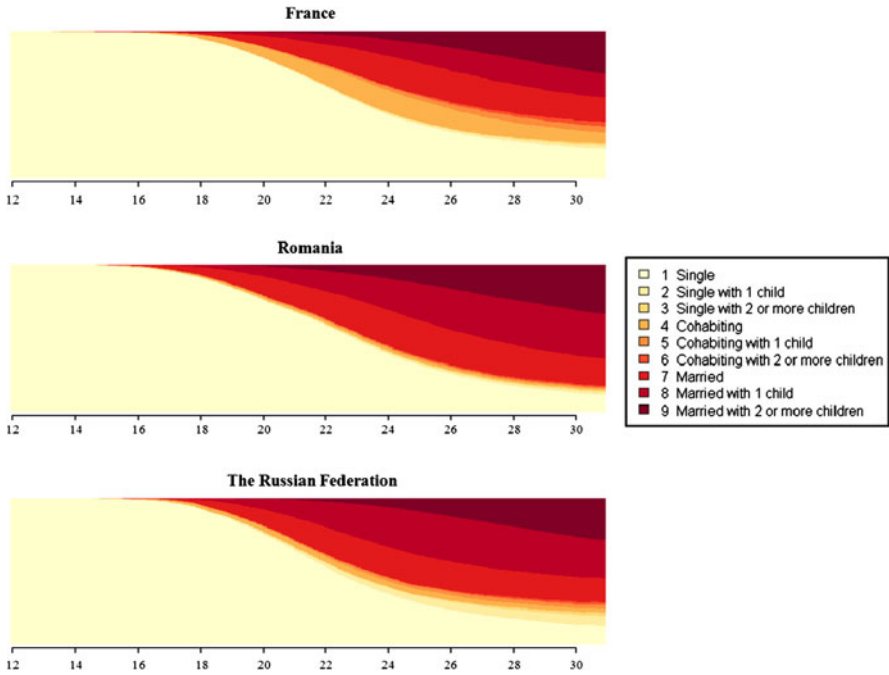
The previously identified clusters become outcome variables in multinomial logistic regression models, which allow us to test our hypotheses. The reference category is the standard family trajectory, comprising of individuals that are married with at least two children by the age of 30, with a short preceding phase of cohabitation. Significance was assessed by performing the Wald test and examining whether or not the inclusion of a term in the model improves model fit. In order to inspect inter-cohort, inter-country and inter-educational level differences, we estimate a series of models with interaction terms. For the sake of parsimony and readability of results, we only present contrast estimates of marginal effects calculated from predictions of previously fit models at averaged values of all covariates. We also report interaction plots based on the predicted probabilities of experiencing different pathways to family formation by different factors.

## 4 Results

We first show the descriptive results of the sequence analysis in the form of state distribution plots, followed by the cluster analysis results. We then turn to the testing and discussion of our hypotheses in relation to the multinomial logistic regression results.

### 4.1 State Distribution Plots

The aggregated family formation trajectories were examined first by plotting the state distribution of partnerships and fertility states for each month within the 12–30 age intervals by country (Fig. 1). In Fig. 1, age is on the horizontal ( $x$ ) axis with the proportion of individuals belonging to each state at a given month shown on the vertical ( $y$ ) axis. France stands out for its larger portion of cohabiters and cohabiting parents. By the end of the observation window, 14.5 % of French residents either cohabit or have children in a non-marital cohabiting union, while for Romania and the Russian Federation, the percentages are 3.1 and 7 %, respectively. Marriage and marriage with children are prominent for the two Eastern European countries; with 82.3 % Romanians and 71 % Russians belonging to these groups by age 30, in comparison to 61.4 % of the French. The Russian Federation has the largest percentage of single parents at the end of the observation period, namely: 9.2 % compared to 3 % for Romania and 3.9 % for France.



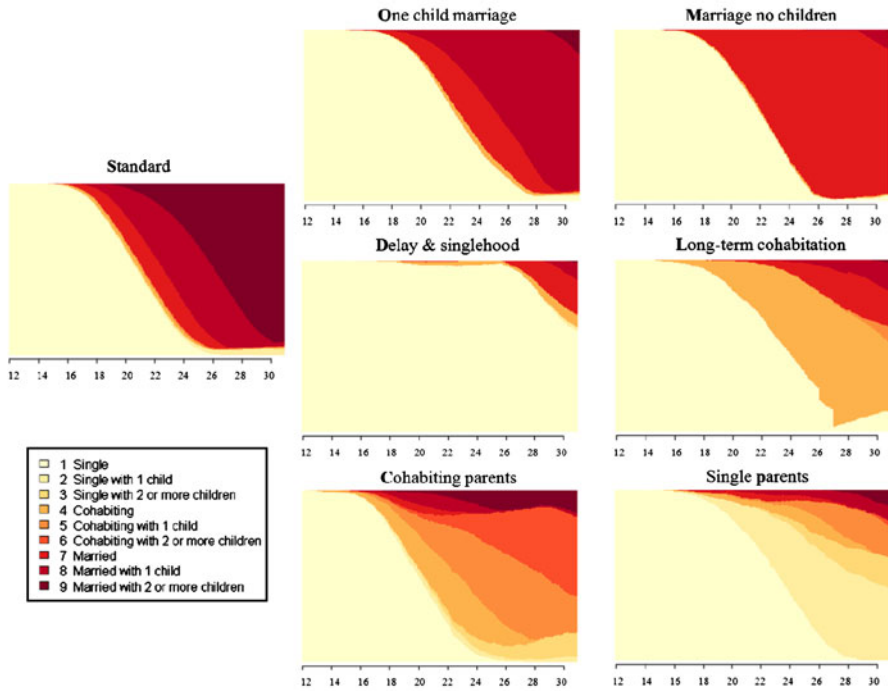
**Fig. 1** Distribution of partnerships and fertility statuses by month for France, Romania and the Russian Federation. *Source* Combined French, Romanian and Russian GGS first wave data sets (2004/2006)

### 4.2 Cluster Analysis Results

Although these descriptive plots are useful in providing a general picture of the proportions of individuals experiencing each family status and the dynamics occurring with these shares across time, our main interest is in isolating the typical patterns of trajectories. This involves the clustering of sequences based on dissimilarity measures as computed via OM. We began with a 20 cluster solution (Appendix Fig. 6) to first examine the patterns and avoid the loss of any distinctive groups. With the goal to address this lack of parsimony, we then proceeded with assembling similar clusters manually into seven major categories, based on the events experienced and their order. For example, Fig. 6 illustrates that groups 5, 7, 9, 11, 13 and 16, which describe trajectories of marriage with two or more children, only differed by a slightly earlier or later start of family formation. It was therefore possible to collapse these groups into one cluster. This grouping provided the standard family group (1) (i.e. marriages with at least two children), which represents the largest category (26.4 %) and serves as the reference group in the multinomial regression model. In the end, seven clusters of partnerships and fertility trajectories were distinguished.

As illustrated in Fig. 2, in addition to the standard cluster (1), the remaining six clusters represent the following typologies of family formation: (2) one child marriages—23.8 % (clusters 6, 8, 12, 19 and 20 in Fig. 6, which are quite





**Fig. 2** Clusters of partnerships and fertility trajectories—7 clusters solution. *Source* as for Fig. 1

homogeneous and include sequences of short pre-marital cohabitation, followed by marriage and parenthood), (3) childless marriages—13.1 % (clusters 4 and 15, describing those married by the age of 25, who remain so until age 30), (4) delay and singlehood—21.9 % (cluster 1, exemplifies sequences of long-term singlehood or postponement), (5) long-term cohabitation—6.6 % (clusters 3 and 17, individuals who choose cohabitation as a long-standing arrangement and might eventually marry and have children or engage in parenthood within cohabitation), (6) cohabiting parents—3.8 % (clusters 2 and 18; trajectories that mainly lead to childbearing within cohabitation); and, finally, (7) single parents—4.4 % (clusters 10 and 14).

### 4.3 Multinomial Logistic Regression Analysis Results

The results of the multinomial logistic regression are shown in Table 3, where we test our central hypotheses by adding cohort, country, educational level (and controls). This is followed by Tables 4, 5, 6, 7 and Figs. 4 and 5, which illustrate the magnitude of interaction effects and test the more detailed hypotheses regarding the country-specific effect of education (H3). As mentioned previously, the standard family trajectory cluster was chosen as the reference category. Relative risk ratios are shown, representing the exponent of the beta coefficients, which stand for the change in the odds of belonging to one group versus the standard reference cluster

**Table 3** Relative risks ratios of the multinomial logistic regression model (reference group: standard trajectory)

Variables	One child marriage		Childless marriage		Delay & Singlehood		Long-term cohabitation		Cohabiting parents		Single parents	
	Exp (B)	S.E.	Exp (B)	S.E.	Exp (B)	S.E.	Exp (B)	S.E.	Exp (B)	S.E.	Exp (B)	S.E.
Constant	0.767***	(0.043)	1.193***	(0.070)	2.168***	(0.112)	0.274***	(0.028)	0.067***	(0.010)	0.130***	(0.013)
Cohort (ref.: 1923–1940)												
1941–1950	0.662***	(0.036)	0.392***	(0.022)	0.464***	(0.026)	0.738**	(0.092)	1.780***	(0.297)	0.755***	(0.082)
1951–1960	0.586***	(0.031)	0.253***	(0.015)	0.425***	(0.023)	0.955	(0.109)	2.504***	(0.392)	0.734***	(0.077)
1961–1970	0.636***	(0.035)	0.131***	(0.010)	0.428***	(0.024)	1.610***	(0.177)	6.766***	–1.010	1.271**	(0.128)
1971–1980	0.905	(0.056)	0.204***	(0.017)	0.798***	(0.049)	8.524***	(0.910)	13.350***	–2.036	1.855***	(0.201)
Country (ref.: France)												
Romania	1.430***	(0.063)	0.904**	(0.045)	0.587***	(0.025)	0.152***	(0.011)	0.239***	(0.020)	0.462***	(0.040)
The Russian Federation	1.263***	(0.059)	0.746***	(0.040)	0.457***	(0.021)	0.222***	(0.015)	0.511***	(0.041)	1.226***	(0.092)
Educational level (ref.: low)												
Medium	1.639***	(0.070)	1.288***	(0.063)	1.357***	(0.059)	1.412***	(0.106)	0.672***	(0.053)	1.153*	(0.094)
High	2.369***	(0.123)	1.577***	(0.098)	2.695***	(0.140)	2.546***	(0.209)	0.466***	(0.048)	1.407***	(0.131)
Missing	1.720***	(0.209)	0.761	(0.146)	1.620***	(0.221)	1.510*	(0.352)	0.423***	(0.118)	1.216	(0.236)
Sex (ref.: male)	0.746***	(0.025)	1.063	(0.045)	0.479***	(0.017)	0.604***	(0.033)	1.364***	(0.095)	1.219***	(0.079)
Parental divorce (ref.: never divorced)												
Occurred parental divorce	1.025	(0.048)	0.977	(0.058)	1.154***	(0.056)	1.368***	(0.097)	1.667***	(0.133)	1.364***	(0.109)
Other situation	1.031	(0.086)	1.512***	(0.150)	2.109***	(0.165)	1.638***	(0.211)	1.346*	(0.211)	1.288*	(0.180)
Missing	0.786	(0.155)	1.574**	(0.307)	2.615***	(0.417)	2.208***	(0.489)	1.626*	(0.469)	2.619***	(0.598)

Source Combined French, Romanian and Russian GGS first wave data sets (2004/2006)

Standard errors are in parentheses;  $N = 30,197$ ; Cox-Snell  $R^2 = 0.222$

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\* $p < 0.01$

**Table 4** Contrast estimates of inter-cohort differences, by country (1)

	Cohort 1961–1970 vs. Cohort 1923–1940	Cohort 1971–1980 vs. Cohort 1923–1940
One child marriage		
France	−0.235***	−0.246***
Romania	−0.160***	−0.155***
Russia	−0.207***	−0.211***
Childless marriage		
France	−0.051***	−0.041**
Romania	−0.049***	0.004
Russia	−0.124***	−0.126***
Delay and singlehood		
France	−0.030**	−0.095***
Romania	0.049***	−0.005
Russia	0.018	0.057***
Long-term cohabitation		
France	−0.235***	−0.246***
Romania	−0.160***	−0.155
Russia	−0.207***	−0.211***
Cohabiting parents		
France	−0.051***	−0.041**
Romania	−0.049***	0.004
Russia	−0.124***	−0.126***
Single parents		
France	−0.030**	−0.095***
Romania	0.049***	−0.005
Russia	0.018	0.057***

Calculations by authors, based on multinomial logistic regression models with significant interactions of birth cohort and country, controlling for education, gender, and occurrence of parental divorce  
 \*  $p < 0.10$ , \*\*  $p < 0.05$ ,  
 \*\*\*  $p < 0.01$

associated with a one unit change on the independent variable. Figure 3 is included as a more intuitive manner of examining the results and comparing the magnitude of effects (Long and Freese 2006).

Recall that our first hypothesis predicted that younger cohorts would be more likely to follow de-standardized family formation trajectories. The results in Table 3 and Fig. 3 provide partial support for this general expectation of the SDT. Compared to the oldest cohort, the members of the Post-Fordist/Communist cohort are significantly more likely to engage in long-term cohabitation, childbearing within cohabitation or lone parenthood. When examining the evolution of childbearing within non-marital cohabitation over time, Fig. 3 visibly shows that this pattern is progressively more likely to be adopted. Not all non-standard types of trajectories, however, are linked to the younger generations. For both the Fordist (1961–1970) and Post-Fordist/Communist (1971–1980) cohorts, childless marriages, postponement and one child family forms were less likely, compared to the oldest cohort.

More detailed analyses, however, reveal that these findings are in actual fact country-specific. Figure 4 plots the predicted probabilities of experiencing different

**Table 5** Contrast estimates of inter-cohort differences, by country (2)

	Cohort 1961–1970 vs. cohort 1951–1960	Cohort 1971–1980 vs. cohort 1961–1970
One child marriage		
France	−0.039***	−0.066***
Romania	0.043***	−0.054***
Russia	0.004	0.039***
Childless marriage		
France	−0.090***	−0.010**
Romania	−0.036***	0.005
Russia	−0.056***	−0.004
Delay and singlehood		
France	−0.003	0.010
Romania	−0.008	0.053***
Russia	−0.026**	−0.002
Long-term cohabitation		
France	<b>0.062***</b>	<b>0.164***</b>
Romania	−0.002	0.098***
Russia	0.009**	0.114***
Cohabiting parents		
France	<b>0.090***</b>	0.013
Romania	0.002	0.014**
Russia	0.034***	0.005
Single parents		
France	0.053***	−0.018**
Romania	0.004	−0.001
Russia	0.018**	−0.003

Calculations by authors, based on multinomial logistic regression models with significant interactions of birth cohort and country, controlling for education, gender, and occurrence of parental divorce

\*  $p < 0.10$ , \*\*  $p < 0.05$ ,  
\*\*\*  $p < 0.01$

pathways to family formation by birth cohort for all countries. This is achieved by contrasting the estimates of inter-cohort differences in Table 4, which contrasts both the Fordist (1961–1970) and Post-Fordist/Communist (1971–1980) cohorts with the early industrialist (1923–1940) cohort. Figure 4 shows that whereas the youngest cohorts in France show a gradual decrease in the likelihood of belonging to the ‘one-child’ family form, those in the Fordist (1971–1980) cohort in Romania and the post-communist (1971–1980) cohort in the Russian Federation show an increase in the probability of belonging to this group. Although insignificant, the contrast between the oldest and youngest generations in Romania reveals that the post-communist cohort is more likely to postpone family formation. Finally, the youngest cohorts in all three countries have significantly lower chances of engaging in childless marriage pathways, compared to the early industrialist cohort (1923–1940). In fact, childlessness within unions was commonly characteristic of the generation that came of age during and after the Second World War, a period known for its general drop in fertility (Winter 1992).

The second set of hypotheses focus on further country-specific differences. In support of hypothesis 2a, Table 3 shows that individuals in France are more likely

**Table 6** Contrast estimates of inter-country differences, by educational level

	Romania vs. France	Russia vs. France
One child marriage		
Low	0.085***	0.046***
Medium	0.154***	0.116***
High	0.169***	0.174***
Childless marriage		
Low	-0.012	-0.014
Medium	0.029***	0.002
High	0.050***	0.013*
Delay and singlehood		
Low	-0.106***	-0.070***
Medium	-0.057***	-0.104***
High	-0.006	-0.150***
Long-term cohabitation		
Low	-0.039***	-0.004
Medium	-0.110***	-0.093***
High	<b>-0.120***</b>	<b>-0.132***</b>
Cohabiting parents		
Low	-0.011***	0.004***
Medium	-0.052***	-0.025***
High	<b>-0.033***</b>	<b>-0.018***</b>
Single parents		
Low	-0.005	0.035***
Medium	-0.027***	0.019***
High	<b>-0.023***</b>	<b>0.027***</b>

Calculations by authors, based on multinomial logistic regression models with significant interactions of country and education, controlling for birth cohort, gender and occurrence of parental divorce

\*  $p < 0.10$ , \*\*  $p < 0.05$ ,  
\*\*\*  $p < 0.01$

to have followed all forms of de-standardized family formation trajectories. This is with the exception of one child marriages, which are more frequent for Romanians and Russians, and single parenthood trajectories, more likely for the Russian Federation. Although there is virtually full support for this hypothesis, the first exception demonstrates the emergence of a one child family model in both Eastern European countries.

Nearly all birth cohorts in France have a more pronounced deviation from the standardized family formation patterns in comparison to the other two countries. Particularly when looking at the cohabitation patterns displayed by the Fordist (1961–1970) and Post-Fordist/Communist (1971–1980) cohorts compared to previous ones, France shows a more dynamic rate of change, as further contrast estimates of inter-cohort differences (i.e. contrasting both the Fordist (1961–1970) and Post-Fordist/Communist (1971–1980) cohorts with their preceding cohort) reported in Table 5 reveal. Figure 4 also illustrates that the youngest French cohorts display higher probabilities of engaging in cohabitation both with and without children. Even though the post-communist cohorts in Romania and the Russian Federation also display significant increases in long-term cohabitation, the Post-Fordist French cohorts experienced an even more prominent rise in long-term

**Table 7** Contrast estimates of differences between the lower and higher educated, by country

	Higher educated vs. lower educated
One child marriage	
France	0.005
Romania	0.073***
Russia	0.133***
Childless marriage	
France	-0.036***
Romania	0.021*
Russia	-0.012
Delay and singlehood	
France	0.114***
Romania	0.198***
Russia	0.022*
Long-term cohabitation	
France	<b>0.073***</b>
Romania	<b>0.020***</b>
Russia	<b>-0.035***</b>
Cohabiting parents	
France	<b>-0.030***</b>
Romania	<b>-0.034***</b>
Russia	<b>-0.049***</b>
Single parents	
France	0.001
Romania	-0.016***
Russia	-0.014

Calculations by authors, based on multinomial logistic regression models with significant interactions of education and country, controlling for birth cohort, gender and occurrence of parental divorce

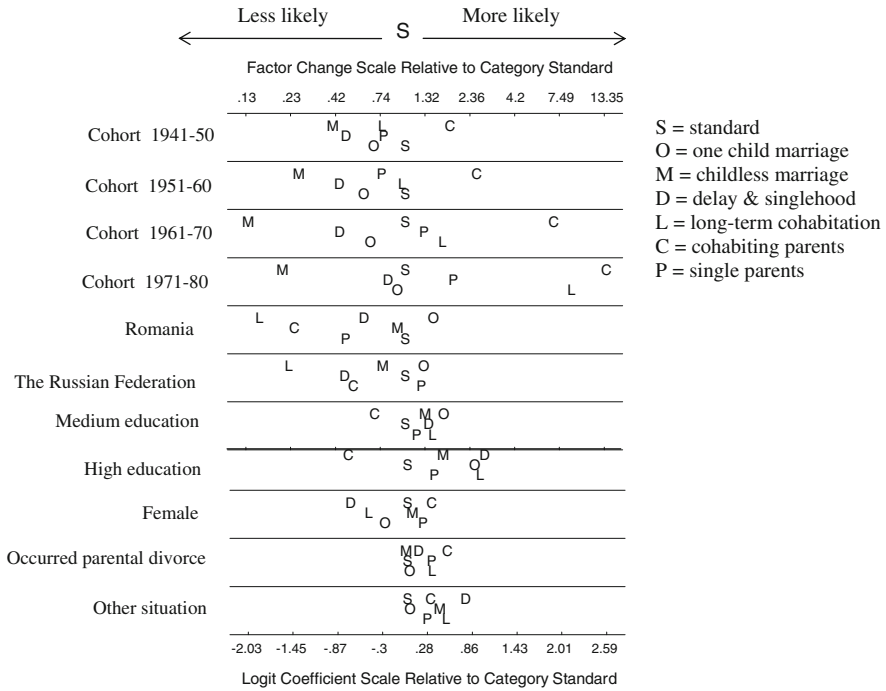
\*  $p < 0.10$ , \*\*  $p < 0.05$ ,

\*\*\*  $p < 0.01$

cohabitation. Furthermore, the fact that the youngest generation in France continues to display significant declines in standardized family formation pathways and increases in long-term cohabitation patterns demonstrates that the SDT is still unfolding and that an equilibrium state has not yet been reached.

As previously discussed, in comparison to both France and Romania, the Russian Federation shows an increased likelihood of single parenthood. To test hypothesis 2b, a separate model with Romania as the reference country was run to determine whether the differences between the coefficients in Romania and the Russian Federation are significant (available upon request). We gain full support for this hypothesis, with Russians having a higher chance of experiencing childbearing within cohabitation, as opposed to Romanians, who more strongly follow patterns of postponement and singlehood, or childless marriages. As shown in Fig. 4, these country differences are particularly prevalent for the youngest generations.

Our final hypothesis tested two opposing patterns of the effect of education on family trajectories (H3). Table 3 shows that the highly educated are significantly more prone to engage in all types of non-standard trajectories, with the exception of

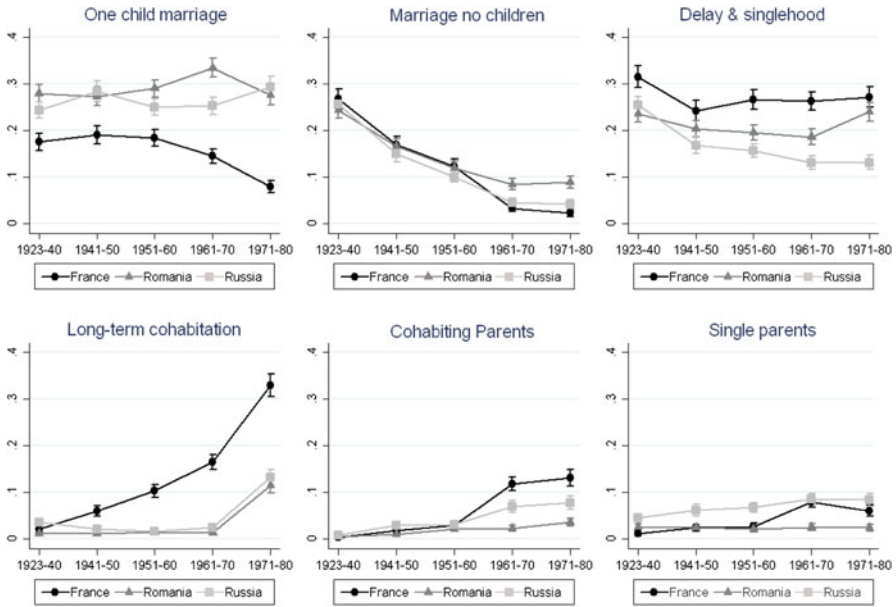


**Fig. 3** Odds ratios plots corresponding to the estimates of Model 2. *Notes* Each independent variable is represented on a separate row, indicating the influence of that precise factor on each outcome. The seven clusters are each assigned a different letter. Given that the role of reference group is played by the standard cluster, S (standard) stands in the middle of the row. If a letter is to the right of S, it means that increases in the independent variable make the outcome to the right more likely. The opposite holds if a letter is to the left of S. The spread of letters point to the magnitude of the effect. *Source* as for Table 1

childbearing within cohabitation. Nevertheless, the influence of educational level on early family formation pathways is highly dependent on national context. Table 6 reports the contrast estimates of differences between the three countries for each educational level. Figure 5 plots the predicted probabilities of experiencing different pathways of family formation based on interactions between country and education.

We anticipated that in comparison to France, the effect of higher education on the likelihood of engaging in non-standard family formation trajectories would be weaker in Romania and the Russian Federation. We find support for this expectation, with the highly educated in the two Eastern European countries having a *lower* probability of engaging in certain non-standard trajectories. We see that compared to the highly educated in France, the same group in Romania or Russia is associated with significantly lower chances of following trajectories of long-term cohabitation and childbearing with cohabitation.

There are also differences between the two Eastern bloc countries, whereas in Romania the highly educated are significantly *less* likely to engage in lone parenthood than in France, the highly educated in the Russian Federation are *more*



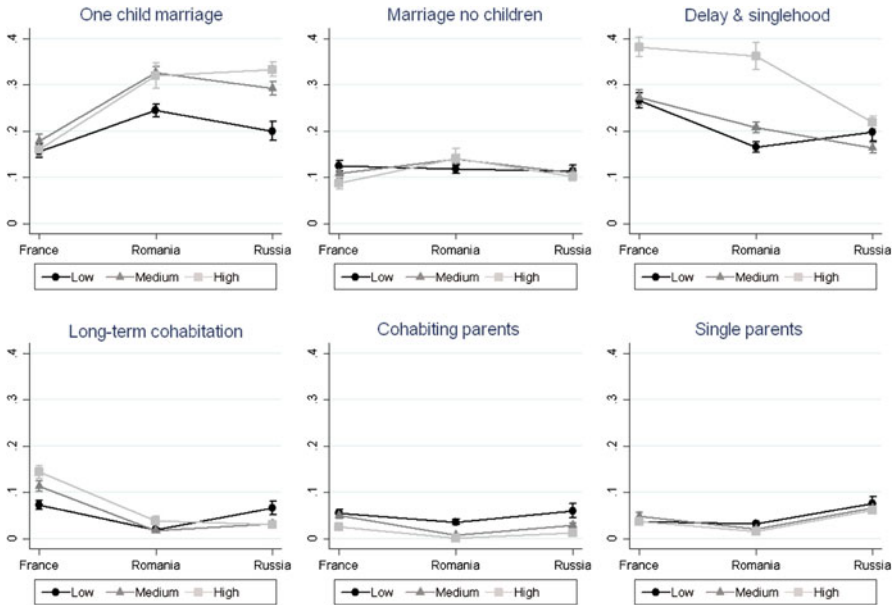
**Fig. 4** Predicted Probabilities of experiencing different family formation trajectories by birth cohort for France, Romania and the Russian Federation. *Note:* Based on multinomial logistic regression models with significant interactions of birth cohort and country, controlling for education, gender, and occurrence of parental divorce. *Source:* combined French, Romanian and Russian GGS first wave data sets (2004/2006)

likely to be single parents at age 30. The reduced likelihood of engaging in most forms of non-standard trajectories for the highly educated in Romania and Russia offers partial support for hypothesis 3. Despite country differences in the effect of higher education on the likelihood of adopting de-standardised family formation trajectories, the disparities between the lower and higher educated in each country remain unknown.

To examine the educational gradient of non-standard family forms, we report contrast estimates of differences between the lower and higher educated for each country in Table 7, whereas the higher educated in France and Romania are significantly *more* likely to engage in long-term cohabitation than the lower educated, the higher educated in the Russian Federation appear to be less likely to cohabit in the long term. Nonetheless, the higher educated in all three countries have significantly lower chances of having children within cohabitating unions. The ‘pattern of disadvantage’ therefore appears to be validated for cohabiting parents in all three countries. Or in other words, cohabiting with children is associated with the lower educated, irrespective of national context.

The control variables operated as anticipated with the occurrence of parental divorce resulting in individuals being significantly more prone to engage in delay and singlehood, long-term cohabitation and non-marital childbearing (Table 3). Respondents in other situations (e.g. parents never lived together) also display higher chances of having experienced childless marriage, postponement, long-term





**Fig. 5** Predicted Probabilities of experiencing different family formation trajectories by educational level for France, Romania and the Russian Federation *Note:* Based on multinomial logistic regression models with significant interactions of education and country, controlling for birth cohort, gender and occurrence of parental divorce. *Source* Combined French, Romanian and Russian GGS first wave data sets (2004/2006)

cohabitation and non-marital childbearing. Finally, women are more likely to be within the groups that are cohabiting parents and single parents.

## 5 Conclusions and Discussion

The goal of this study was to compare and contrast to what extent the manifestation of the second demographic transition (SDT) has taken place in Romania, the Russian Federation and France. We achieved this goal by examining the variations in interrelated partnership and fertility trajectories in relation to cohorts, countries and educational level. Pooled data from the Gender and Generations Survey ( $N = 30,197$ ) were used to engage in sequence, optimal matching (OM), cluster and multinomial logistic regression analysis.

Several behavioural shifts underpin the SDT framework, including the move from marriage to cohabitation, shifts to the ‘king-pair’ (Van de Kaa 1987), followed by parenthood and more pluralistic or destandardized trajectories. As anticipated, France served as a useful benchmark and forerunner in the SDT, with individuals more likely to embrace all patterns of destandardized family formation trajectories. This was with the exception, however, of the one child marriage pattern. It appears that the shift to a couple-centred ‘king-pair’ model with one child is not a

predominant pattern in France, suggesting that there is no fixed linear trajectory of the SDT.

The level of deviation from standardized family formation patterns in France is nevertheless more pronounced than in the two Eastern European countries. The ongoing cross-cohort change in partnership behaviour, fertility and family formation in France provides additional evidence against the SDT's assertion regarding the final state where all societies will eventually converge. Romania and the Russian Federation engage in 'converging divergences' by converging on several aspects that in turn differentiate them from a Western nation such as France. Although Eastern Bloc countries are often grouped together in the discussion of trends and progression in the SDT and there are some commonalities, our results demonstrate that they still remain strikingly different. Turning first to similarities, we see that the post-Communist cohorts that came of age around and after 1989 are significantly more likely to engage in long-term cohabitation. Childlessness within unions, however, was characteristic of the oldest cohort who came of age during and after WWII (Winter 1992).

When comparing the two Eastern Bloc countries, the Russian Federation clearly distinguishes itself as showing more visible markers of the SDT (e.g. cohabitation, non-marital childbearing) and exhibiting more destandardized family formation trajectories. Russians had a higher likelihood to experience non-marital childbearing, opposed to Romanians who were more likely to engage in childless marital unions or postponement and singlehood. One explanation may be related to the differences in the type and sources of ideational change in these two nations. As previously mentioned, the infusion of more individualistic and Western values already occurred in the 1980s in the former Soviet Union against the background of Gorbachev's *glasnost* (openness) policies (Gerber and Berman 2010). In fact, the proliferation of cohabitation started during the post-War period due to unbalanced marriage markets associated with the WWII losses of male population (Gerber and Berman 2010). On the contrary, Romania remained comparatively isolated from external Western influences (Mureşan et al. 2008). It is therefore likely that Russians already started to reassess their attitudes towards family and marriage at an earlier date. In fact, when comparing the state distribution plots (available upon request) corresponding to the generation that came of age after 1989, it is visible that the markers of the SDT (e.g. non-marital childbearing) are present to a much larger extent in the Russian Federation than in Romania. The strong norms surrounding marriage and traditional family patterns mean that young innovators cannot opt for cohabitation, but rather postpone or forgo partnerships. This would suggest that Romania in fact follows a SDT pattern similar to many Southern European countries.

Another striking finding was the high prevalence of single parents in Russia (even higher than for France), particularly for generations born after WWII. It is not ideational change driving these destandardized households, however, but an excess in the available female population, attributed to high divorce and particularly high adult male mortality largely due to alcohol-related deaths (Volkov 1993; Lokshin et al. 2000). Unbalanced sex ratios due to the massive population loss of young men during WWII had already resulted in lower rates of marriage and also higher

incidences of non-marital childbearing and abortions among women living in regions with tight marriage markets (Scherbov and van Vianen 2001).

One of the most striking findings of this study was that educational level operates differently across countries, with the highly educated in France or Romania and lower educated in the Russian Federation significantly more likely to follow long-term cohabitation trajectories. This suggests that, as opposed to the French context, cohabitation on the long run in the Russian Federation is a signal of limited financial capital. This results in marriage remaining the preferred choice of the highly educated. This is also likely related to legal regulations, since previous research has shown that cohabitation in Russia is generally linked to the least educated and lowest socio-economic groups with clear difficulties in 'legitimizing a non-marital conception' (Perelli-Harris and Gerber 2011, p. 2).

Another prominent finding is that in all three countries, non-marital cohabitation with children is associated with the lower educated, displaying a similar 'pattern of disadvantage' that is often characterized by cohabitation in the United States (Edin and Kefalas 2005). The highly educated in France, Romania and the Russian Federation are less prone to opt for childbearing within cohabiting unions.

The fact that childbearing within cohabitation is not attributed belonging to a higher socio-economic group, as the common SDT scenario would predict indicates that this construct does have some limitations. Some of the original ideas appear to miss the entire spectrum of demographic change and behaviour, especially for Eastern Europe, whose recent trends are challenging and call for a multitude of explanations (Coleman 2004). Additional interpretations beyond the SDT are therefore also necessary to take into account the interplay between structural constraints, individual rational choice, as well as cultural guidelines and norms (Micheli 2004). In fact, norms and values 'do not operate in a social and political vacuum' (Bernhardt 2004, p. 25), but are constantly shaped by economic, political and social forces. This concern has led certain researchers such as Coleman (2004) to argue that the innovative demographic behaviour displayed by the wealthy in certain Northern and Western European countries represented a temporary trend that reflected individual lifestyle preferences sustained by a favourable welfare and economic system. As this trend failed to become a universal pattern, the converging predictions of the SDT remained unrealized. As previously stated, the economic circumstances of the last two decades of the twentieth century, which included an increasingly globalized economy, market deregulation and labour market uncertainty, led the most vulnerable and impoverished segments of the population to engage in de-standardized family formation behaviour, especially non-marital childbearing (Mills et al. 2005; Perelli-Harris et al. 2010). Therefore, a theoretical conclusion of this article is that although the SDT has served as a dominant theoretical concept within demographic research, it is useful to supplement it with more nuanced contextual accounts of socio-economic conditions.

Comparing three divergent countries in various stages of the SDT, we demonstrated clear differences in the Eastern Bloc countries of Romania and the Russian Federation. A number of limitations to our methodological approach, however, still remain. First, it was not possible to take into account the potential reversibility of events (e.g. we do not define a particular state for situations in which

individuals experience divorce and partnership dissolution). Nonetheless, given the focus on trajectories up to the age of 30, the number of individuals who ended their marriage before their 30s is too small to justify an extension of the state space that would include a ‘divorced’ partnership status. Second, we acknowledge that not all individuals will have completed the transition to family-life by the age of 30, which may entail an over-representation of delay and singlehood. Third, the use of retrospective data introduces a certain degree of bias due to problems in the recollection of events, especially among older participants (see Elzinga and Liefbroer 2007). Finally, due to data restrictions and the lack of availability of certain comparative measures for all countries, it was not possible to include other important indicators such as religion, religiosity, ethnicity or residence.

In spite of these limitations, by virtue of examining the inter-related trajectories of both partnership and fertility, this study adopted a different approach to establishing the stage of the SDT by going beyond macro-level aggregated figures. This approach allowed us to move beyond the description of prominent trajectories to describe which groups these changes and de-standardization were more likely to occur. By examining educational, cohort and country differences in the pathways of early family formation and thus “studying determinants of life schedules” (Billari 2001, p. 141), we were able to take full advantage of the richness of individual-level data (Lesnard et al. 2010). Moreover, the use of sequence analysis, optimal matching and cluster analysis in building typologies of family-life-course trajectories goes beyond estimating the probability of occurrence of a particular event (e.g. transition to first marriage, transition to first birth) and allows for a holistic study of the demographic outcomes of the SDT. By identifying an extensive typology of early family formation pathways and accounting for differences in the occurrence, timing and order of events, we were able to integrate the multiplicity of transitions to family roles. The methods employed in this study and the derived typologies of sequences are therefore in line with the complexity of demographic behaviour in relation to both partnering and childbearing decisions. We not only differentiated between standardized and de-standardized pathways, but also reflected on the differences and determinants of various de-standardized family formation patterns (e.g. childbearing within cohabitation, single parenthood). Despite limitations, the current study offers a more comprehensive overview of the types and reasons for contemporary changes in family formation in various European contexts.

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## Appendix

See the Appendix Tables 8 and 9. See the Appendix Fig. 6.

**Table 8** Descriptive statistics of sample used in the regression analysis

	Frequency	%
<b>Dependent variable</b>		
Standard	7970	26.4
One child marriage	7192	23.8
Childless marriage	3967	13.1
Delay and singlehood	6626	21.9
Long-term cohabitation	1992	6.6
Cohabiting parents	1133	3.8
Single parents	1317	4.4
<b>Independent variables</b>		
<b>Cohort</b>		
Early industrialist cohort 1923–1940	6886	22.8
Industrialist cohort 1941–1950	5300	17.6
Contraceptive revolution cohort 1951–1960	6567	21.7
Fordist cohort 1961–1970	6339	21.0
Post-Fordist/Communist cohort 1971–1980	5105	16.9
<b>Country</b>		
France	9045	30.0
Romania	11165	37.0
The Russian Federation	9987	33.1
<b>Educational level</b>		
Low	9523	31.5
Medium	12889	42.7
High	7241	24.0
Missing	544	1.8
<b>Sex</b>		
Men	13134	43.5
Women	17063	56.5
<b>Parental divorce</b>		
Never divorced	23700	78.5
Occurred parental divorce	4680	15.5
Other situation	1454	4.8
Missing	363	1.2
Total <i>N</i>	30,197	100

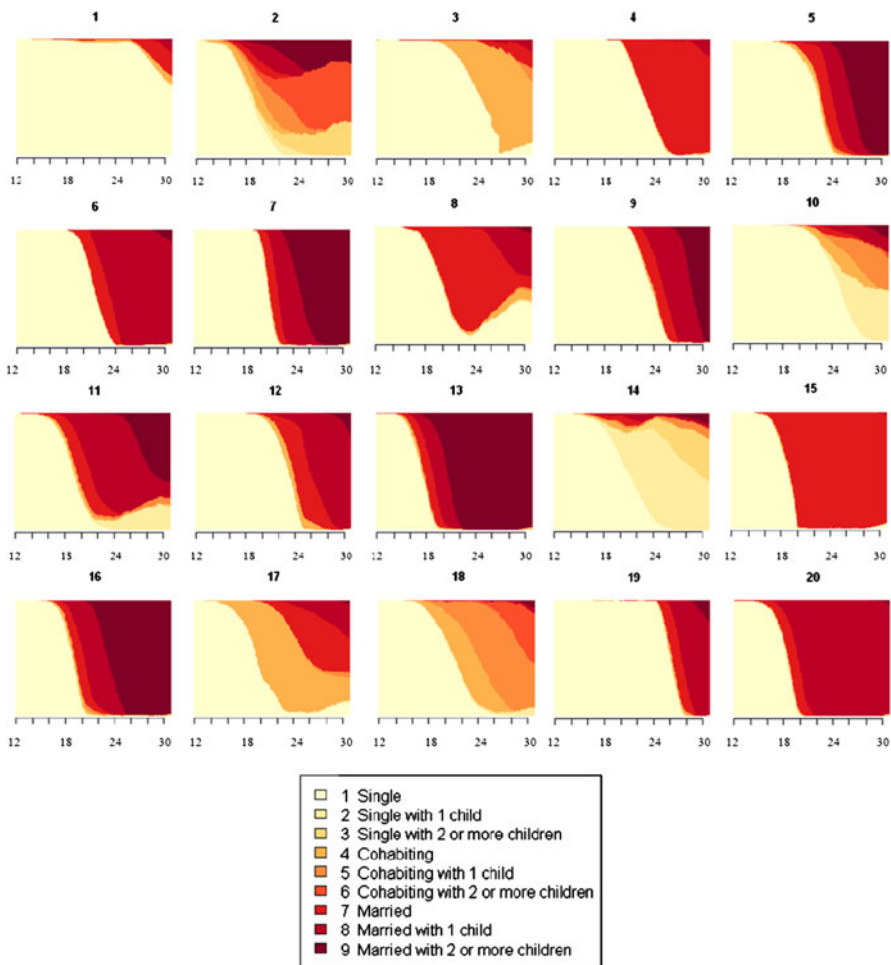
**Table 9** Descriptive Statistics for each cluster, Percentage in each group

	Standard	One child marriage	Childless marriage	Delay & Single-hood	Long-term cohabitation	Cohabiting parents	Single parents	Total
Size	26.4	23.8	13.1	21.9	6.6	3.8	4.4	100
Singles*	0.6	3.1	3.4	52.4	7.2	0.2	0.5	13.4
Ever married*	99.0	99.1	98.8	35.0	35.9	36.0	39.0	75.8

**Table 9** continued

	Standard	One child marriage	Childless marriage	Delay & Singlehood	Long-term cohabitation	Cohabiting parents	Single parents	Total
Ever cohabited*	24.9	23.4	16.7	20.9	81.4	90.6	50.0	29.9
Ever had children*	98.3	93.3	16.2	15.9	22.2	99.0	98.9	63.3
France	25.1	19.1	27.8	36.9	61.0	47.7	27.6	30.0
Romania	41.1	43.2	40.5	35.2	15.9	21.5	21.0	37.0
Russian Fed.	33.8	37.7	31.7	27.8	23.0	30.8	51.3	33.1

\* Shown as at by age 30



**Fig. 6** Clusters of partnerships and fertility trajectories—20 clusters solution. *Source:* As for Fig. 1

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