

Family networks and fertility in Europe: an analysis of cohorts born between 1920 and 1960



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1. Overview

Until today we find differences in fertility behavior between European regions which are difficult to explain by social-economic and cultural factors alone (Grandits 2010; Dalla Zuanna 2007). In this context, the family and its structure seem to be a fundamental precondition to understand regional differences as well as the spatial continuities in fertility behavior (Widmer & Jallinoja 2008: 399; Duranton et al. 2009). The reasons are that (1) families are the prime place in which values and norms affecting fertility behavior are transmitted and hence reproduced (Anderton et al. 1987: 467), that (2) families provide social control over their members fertility behavior (Lesthaeghe 1980), and that (3) fertility could differ between family structures, as the accepted number of children differs (Mason 2001: 162-163). Most important however, (4) families provide the mechanism by which the persistence in differential regional fertility can be explained: namely, ritualized kin relationships and transmitted family culture, working through social support, social pressure and social influence (Reher 1998; Heady 2010: 47).

We investigate the effect of family structures on people's fertility behavior from a social network perspective. Reflecting social networks, peoples' social relationships are used to derive ego-network characteristics. Using regression analysis the influence of these characteristics on respondents' total number of children (completed fertility) is evaluated, while also taking possible differences between welfare regimes into account.

2. Theoretical background

2.1 Fertility and family networks

Researchers are increasingly taking non-parental family and kin relationships into account, to explain fertility behavior (Bongaarts & Watkins 1996; Kohler 2001; Bernardi 2003; Keim 2011; Balbo & Mills 2011). Yet, their studies are often limited to relationships (ties) based on co-resident households (Madhavan, Adams & Simon 2003: 58). It is important to also include non-household ties (Widmer & Jallinoja 2008: 397; Bonvalet & Lelièvre 2008: 377-383). Especially in regions where children traditionally leave the parental home early and stay in close proximity such relationships might be crucial to understand people's behavior. Moreover, the way familie relationships are organized, "tells a great deal [...] about the strategies developed in order to reinforce or lossem them" (Bonvalet & Lelie'vre 2008: 380).

2.2 Mechanism of family influence

In general, four different mechanisms by which family structures might influence fertility, can be described: *social support*, *social pressure*, *social learning*, and *social contagion* (Madhavan, Adams & Simon 2003; Bernardi 2003; Keim, Klärner and Bernardi 2009: 896-897). We assume that growing up in more familialistic families positively influences peoples attitudes towards family formation (through social learning and social contagion; Axinn et al. 1994: 77). Additionally, we assume that more familialistic family networks potentially provide more social support, reducing the economic risk of founding a family (Reher 2004: 63-64).

Concerning social pressure, we assume a negative effect of larger more familialistic families on people's fertility, because changes in the micro-demographic strategy of families occurred (Billari & Kohler 2004; cited in Dalla Zuanna 2007: 457). Whereas for older birth cohorts the micro-demographic strategy was to have several children to ensure families' biological and social reproduction, for more recent birth cohorts having few children while investing much into their education and future social status is the premise (Micheli 2000: 16).

2.3 Hypotheses

Based on these assumptions on how the family structure could affect peoples' completed fertility, we derive the following hypothesis:

H1: fertility levels will be higher in familialistic family networks than in individualistic ones.

H2: fertility levels in familialistic families decreased over the included birth cohorts.

3. Setting

We are studying the fertility behavior of the birth cohorts 1920 till 1960 retrospectively. Their reproductive careers can be placed between 1940 and 2005 (assuming 25 years of biological reproduction, starting at age 20), including fertility decline, as well as fertility recovery in certain European countries. We have to be aware of the fact that the oldest birth cohorts got their children during the 'economic boom', increasing males wages and better employment conditions improved families economic situation (Sprague 1988: 697). A decreasing age at first marriage and marriages becoming more universal supported higher fertility rates and lead to the so called 'baby boom', as women were much longer and earlier exposed to a period of potential childbearing (Bean 1983: 360-361).

The younger birth cohorts, on the other hand, were faced with growing individualism and liberalization. Together with increasing women's labor force participation and improving contraceptives, this lead to the so called 'baby burst' (Watkins 1987; Westhoff 1986: 156).

4. Data

First Wave of the *Survey of Health, Ageing and Retirement in Europe* (SHARE), conducted in 2004/05.

15,970 included cases, born between 1920 and 1960 in one oft the following European countries: Austria, Belgium, Denmark, France, Germany, Greece, Italy, Netherlands, Spain, Sweden. Only respondents with no missing information on their completed fertility, at least one social relationships and information on more than one third of their social relationships were included.

Dependent Variable: completed fertility

Explanatory Variables: Average Distance, Average Contact,

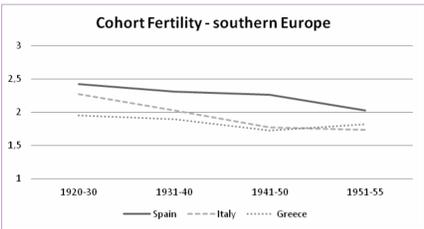
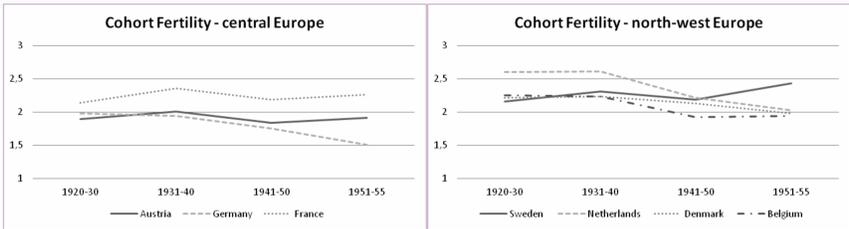
Contro Variables: Urbanity (urban or rural), Education (ISCED 97), Cohort (in groups), Country, Welfare Regime (conservative, democratic or mediteranian)



5. Measurement

5.1 Dependent Variable

The dependent variable in our analysis is respondent's completed fertility; including children who died. The following graphs describe the observed cohort fertility in the data-set, for cohort groups:



5.2 Main Explanatory Variables

Family networks were classified using the information on people's social relationships. These included:

- the relationships we derived from a respondent's household structure,
- respondents' relationships to their parents (if alive),
- respondents' relationships to their children (if they had any),
- the information to whom respondents provided help within the last twelve month (*possibility to name max three persons*),
- the information who provided the respondents with help during the last twelve month (*possibility to name max three persons*)*.

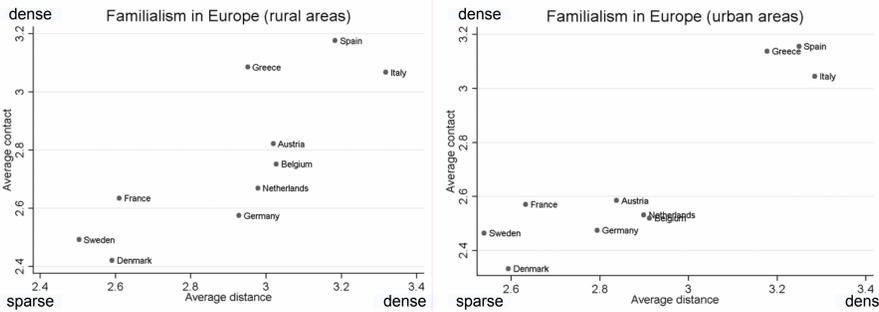
We regarded the household as the core of an integrated system of social ties, organized in two circles around the core: the first includes all kin relations that are close to the household, the second circle contains all network persons who have relative 'strong' relationships with members of the household (Micheli 2000: 12-13). We identified different family networks, by determining the relative strength of social ties, based on the *spatial distance*, the *frequency of social contact* and the relative share of the different network parts (family/kin vs. friends):

Table : Family Networks Characterized by Social and Spatial Proximity

Family Network	Spatial distance	Social Contact	Characteristics
Familialistic	Most ties within the household or to family/kin living in close distance	Frequent social contact to family and kin	Strong familialism
Mixed	Intermediate Form	Intermediate Form	Intermediate Form
Individualistic	Most ties outside the household to friends or to family/kin living far away	Sparse social contact to family and kin	Weak familialism

For each ego-network mean values of *spatial distance* and *frequency of social contact* were created, reflecting network density (higher values indicate more familialistic network structures).

Looking at country averages of the indicators *spatial distance* and *social contact* reveals an expected pattern: family-networks in the Mediterranean countries a rather familialistically structured, while family networks in the north-western European countries are rather individualistically structured.



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6. Results

Our results confirm earlier findings: with education increasing, the number of children significantly decreases (Boongarts 2003), the oldest cohort had a higher fertility than two younger ones (probably going back on more traditional gender-roles and higher orientation towards familialistic values; Gerstel and Gallgher 1994), and people living in urban areas tend to have fewer children (Robinson 1963: 292-293). As expected, we find significant differences in the completed fertility of certain European countries.

Introducing our indicators of family network structures into the model (*model 2*) changes most the coefficients in our models only slightly. While *frequency of social contact* has no significant influence on people's completed fertility, we find a significant negative effect of *closer spatial distance*, supporting earlier findings of Dalla Zuanna (1995) and Micheli (2000) for familialistic family regimes, rejecting our first hypothesis (**H1**) so far.

Adding an interaction terms to our model, to incorporate possible differences in the effect of our indicator variables between the regarded birth cohorts (*model 3*), reveals further interesting results: In rather '*familialistic*' networks the average fertility increased for the younger cohorts, while for rather '*individualistic*' family networks fertility levels decreased. Rejecting our second hypothesis (**H2**), this result nuances the earlier interpretations of the cohort effect, making the effect more complex. In fact, it could indicate that being raised and socialized in a rather '*familialistic*' network, somehow compensates the negative trend of fertility decline, which occurred in rather '*individualistic*' families in the youngest cohort. This interpretation would support the research by Murphy and Wang (2001), who claimed that that the positive relationship between the family size of successive generations has increased over time (Murphy and Wang 2001: 92; Murphy and Knudson 2002: 247).

Additionally, our *model 3* revealed a significant direct positive effect for the variable '*average contact*'. Assuming that there is a qualitative difference between frequent social contact and close spatial distance, we can further interpret the significant coefficient of the variable '*average contact*' as underlining the assumption (**H1**) that rather familialistic networks positively affects people's attitudes, norms, values towards children through *social contagion* and *social learning*); at least in some birth cohorts. Spatial distances, on the other hand, increasing the potential of frequent social contact (De Jong Gierveld and Fokkema 1998), additionally raises the potential *social pressure* and *social support* within the family network, as living under the same roof increases the direct interaction between family members and hence their direct control of each other's behavior, possibly explaining the negative effect.

The structure of family networks can explain differences in completed fertility on an individual level. As fertility rates in the two older birth cohorts were lower in more '*familialistic*' networks, this might help to explain why lowest-low fertility occurred in the southern European countries: family obligations (working through *social support*), together with changes in the micro-demographic strategy (working through *social pressure* and *social learning*) (Dalla Zuanna (1995); Micheli 2000: 16), lead to reduced fertility in the cohorts which were mainly responsible for the reproduction period of 1950 till 1995. At the same time the 'economic boom' supported individualistic families and their fertility for a short time period, probably leading to the observed fertility peak (Bean 1983; Sprague 1988; Glass 1968).

7. Conclusion

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Table: Coefficients and their significance from regression analysis, explaining completed fertility

	Model 1	Model 2	Model 3	
Country				
Austria	ref	ref	ref	
Germany	-0.043	-0.035	-0.023	
Sweden	0.271 ***	0.160 **	0.180 ***	
Netherlands	0.310 ***	0.325 ***	0.332 ***	
Spain	0.174 **	0.248 ***	0.243 ***	
Italy	-0.129 **	-0.018	-0.032	
France	0.124 **	0.039	0.038	
Denmark	0.216 ***	0.146 **	0.160 **	
Greece	-0.142 **	-0.105 *	-0.121 *	
Belgium	0.026	0.068	0.064	
Ed (ISCED-97)				
Primary level/lower	ref	ref	ref	
Lower secondary	-0.178	-0.191 ***	-0.235 ***	
Upper secondary	-0.336 ***	-0.375 ***	-0.396 ***	
Post sec. (non tert.)	-0.388 ***	-0.433 ***	-0.449 ***	
First/second stage tertiary	-0.278 ***	-0.371 ***	-0.375 ***	
Urbanity (0-1)	-0.134 ***	-0.129 ***	-0.127 ***	
Family Network				
Average contact (0-4)		-0.253	0.251 ***	
Average distance (1-4)		-0.285 **	-0.011	
Cohort				
1951-60	ref	ref	ref	
1941-50	0.047	0.016	1.276 ***	
1931-40	0.151 **	0.088 ^	2.550 ***	
1920-30	0.121 *	0.074	2.421 ***	
Cohort* Network				
41-50 * distance.			-0.176 *	
31-40 * distance.			-0.456 ***	
20-30 * distance.			-0.364 ***	
41-50 * contact			-0.231 **	
31-40 * contact			-0.368 ***	
20-30 * contact			-0.433 ***	
Constant	2.185 ***	3.226 ***	1.555 ***	
R²	0.030	0.066	0.093	
RMSE	1.265	1.200	1.183	
N	15582	15034	15034	

^p < 0.10. *p < 0.05. **p < 0.01 ***p < 0.001 (weighted output)

Acknowledgements

The question might be raised, whether the analysis suffers a problem of endogeneity. In fact, two problems occur:

First, the number children is regarded as the outcome of familialistic networks, while at the same time the children are part of the studied family networks. Yet, by dividing through the number of social ties (including children), concerning our two variables of familialism, this problem is being addressed.

Secondly, fertility happened before the respective networks were measured. Therefore network characteristics might have been influenced by peoples' fertility behavior. Within this context, we assume that changes in the structure of peoples' social networks only occur within boundaries set by the network structure itself (path dependency). Especially in contexts in which other network ties (family/kin members) provide social influence on ego's social behavior, we assume that this influence prevails over the life course to a certain extent limiting the possibility of structural changes. Additionally, we assume relative stable family culture (family systems) underlying the measured ego-networks structures.

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