

A Multiway Analysis for Cross-countries Comparisons of Family Behaviors in Southern Europe ⁽¹⁾

Un'analisi "a tre vie" per il confronto internazionale dei comportamenti familiari nei paesi dell'Europa Meridionale

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Riassunto: Si propone un'applicazione dell'analisi fattoriale *a tre vie* in cui la terza dimensione, dopo quella degli individui e delle variabili, è rappresentata dai paesi. I dati derivano dall'Indagine Fertility and Family Survey condotta negli anni '90 nei paesi ECE. L'approfondimento è sui paesi dell'Europa Meridionale. Nonostante alcune difficoltà di rappresentazione grafica, il metodo si rivela efficace nel mettere in evidenza prossimità e differenze tra i paesi considerati.

Keywords: Inter-countries Comparison, Fertility and Family, Multiway Analysis

1. Issues of comparability in family research

Since the '60s, deep changes in family life have been observed quite everywhere in Europe. Decrease in marriage rates and fertility, increase of informal unions and divorce and the consequent complication of family structures are the main symptoms of what has been called "Second Demographic Transition". However, the intensity and the timing of the above mentioned phenomena are quite different among different areas of Europe, and their diffusion is far to be completed, if ever it will be.

Namely in the Southern European countries, while fertility has reached the lowest level in the world in a very short time and nuptiality rates are on decrease, divorces and informal unions still are uncommon and not very popular neither among young people. But, among these countries too, we observe important differences as far as couple and family life indicators are concerned. If we compare specific statistics between Italy, Spain, Greece and Portugal, for example, while observing similar trends as far as level and timing of fertility and marriage, we also note quite different patterns in sexual and partnership behaviours (Council of Europe 2002).

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Various questions arise while comparing social and demographic behaviours between countries: how far can we go in singly comparing a number of indicators? How can we synthesize lots of pairs of comparisons? What's the weight of the differences? And what's that of the similarities?

From an explorative point of view, the method we applied in this study helps in giving answers to some of the previous methodological issues.

2. Data and Method ⁽²⁾

We focus on differential behaviours and individual characteristics among a few European countries. In particular, as we mentioned above, we are interested in underlining similarities and differences among countries in Southern Europe, namely Italy, Spain, Portugal and Greece.

We use a *multiway* approach for comparative descriptive analysis. It is also called three-mode or three-way analysis, where there is a third dimension besides the individuals' and the variables' ones. In usual *multiway* analysis, the third dimension is time; in our proposal, the third dimension will be space, that takes into account the inter-countries differentials. This approach allows us to compare matrices of micro data coming from a small number of *occasions* (4 countries in our case), performing a simultaneous factorial analysis.

The *multiway* approach has been developed for managing quantitative variables. The extension for including qualitative variables has been recently developed at University of Rome "La Sapienza", through the Analysis of Relation Matrices (RMA). RMA is based on the idea that every occasion-matrix can be related to a new variable which measures the *relation* between a couple of units, variables or occasions (Coppi, 1986). The power of the technique is that its results can be directly read in comparative terms, with a more powerful meaning than that obtained by separate analyses for each occasion and just comparing the final results.

The output consists of scores for:

- Global Comparison between occasions (G), that enlightens similarities/dissimilarities among occasions;
- Average Structure Analysis (ASA) that enlightens relations between couples of units or variables
- Fine Structure Analysis (FSA) that enlightens paths of relations between units or variables along the different occasions.

Both the ASA and the FSA can be graphically represented on compromise planes showing, respectively, the average and the specific occasions' findings and distances between them.

Data come from Fertility and Family surveys in the UNECE countries. Four countries - Italy (1995/96), Spain (1995), Greece (1999) and Portugal (1997) - are the occasions for the Multiway Analysis. As individual data we used information on women aged 25-49 at the interview: 3933 women for Italy, 3060 for Spain, 2266 for Greece, 3985 for Portugal.

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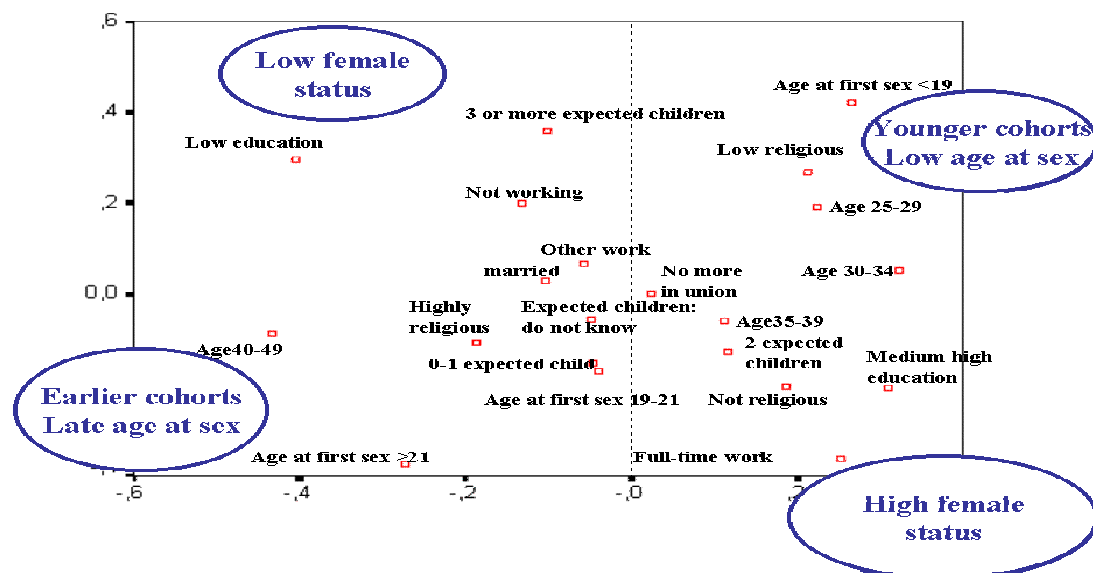
The following variables have been included in the analysis:

1. Age (25-29, 30-34, 35-39, 40-49)
2. Type of union (*married, informal union, never in union, non more in union*)
3. Age at first sexual intercourse (<19, 19-21, >=21)
4. Contraceptive method (*pill, IUD, condom, coitus interruptus, other, nothing, no sexual intercourse*)
5. Parity (0, 1, 2, 3 or more)
6. Age at first birth (<25, 25-29, >29)
7. Total Expected Fertility³ (0-1, 2, 3 or more, don't know)
8. Level of education (*low, middle, high*)
9. Work activity (*employed full-time, employed part-time, self-employed, no working*)
10. Religious attendance (*frequent, occasionally, not religious*)

3. Results

The ASA results give us the information we need to interpret the meaning of the factorial plane (Figure 1). The horizontal axis is mainly related to age of women and, education, while the vertical one highly depends on work activity and age at first intercourse and, to a lesser extend, on education. Along the diagonal lines we can define four typologies of women: the youngest birth cohort with modern sexual behaviours opposite to the oldest, and women with low socio-economic status (lower educated and not working women) opposite to high-status ones. The highest fertility expectations (3 children or more) appear to be negatively related to female status, but quite independent on women birth cohort.

Figure 1: Average Structure Analysis (ASA)



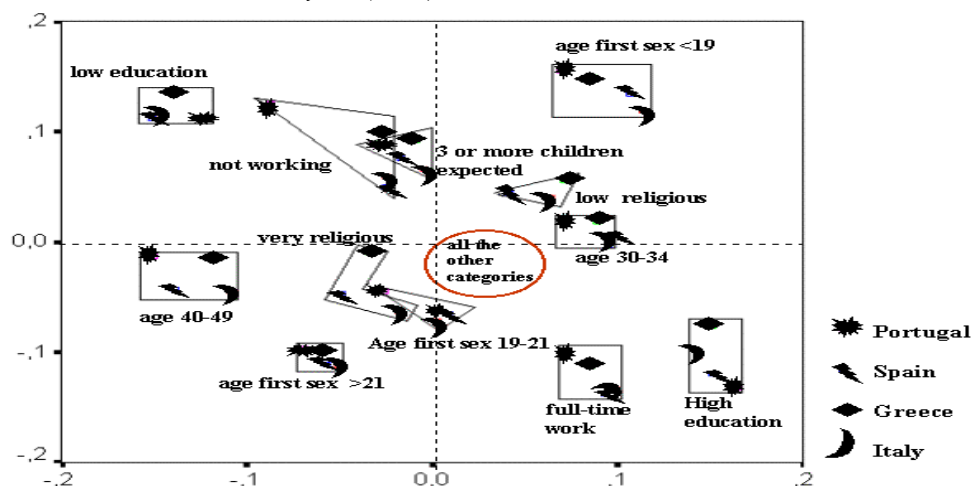
The graphical representation of the FSA (Figure 2) is the key for reading findings of the Multiway Analysis. Distances among occasions-countries are interpreted like

³ Total Expected Fertility is the sum of actual parity and number of children further expected.

differences among them, as well as the proximities between countries for the same category can be interpreted as similarities between them. It has to be underlined that the simultaneous representation of all the categories for every occasions lead to a very confused picture and hard to be interpreted. In order to draw a more readable graph, we included in a circle all the points relative to categories close to the barycentre of the plane. On the whole, the similarities among the four countries prevail in number on the differences, thus supporting the hypothesis that Southern Europe is an homogeneous area as to the demographic system. The most interesting distances among countries are due to the socio-economic and cultural variables: in comparison with Italy and Spain, that show quite similar patterns, Portugal stands for a stronger association between low level of education and not working condition among women; Greece appear to be in an intermediate position. The highest relative distances among countries are those between Italy and Portugal. Interesting the results that relative to age at first sex below 19: in Italy (and Spain) having the first sexual intercourse before the age of 19 seems to be more associated to low religious attendance and younger birth cohort than in Portugal (and Greece).

Although to be further experienced, the Multiway Analysis proved to be of some aid in exploring differences in demographic behaviours among a small group of populations and could be a promising tool for the international comparative research.

Figure 2: *Fine Structure Analysis (FSA)*



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