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# Does family structure affect children's academic outcomes? Evidence for Spain

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### ABSTRACT

Several sociodemographic phenomena have changed family organization in Spain over the last few decades, where less structured forms than the traditional nuclear family have gained in importance. In view of the importance of children's and adolescents' education, we aim to identify the effect of non-nuclear family membership on academic outcomes of Spanish children in fourth-year primary education and adolescents in second-year secondary education. To do this, we use a propensity score matching approach to compare the impact of family structure on student performance, measured through grade retention and mathematics scores, with the results of standard econometric models. The results show that non-nuclear family membership has a significant negative impact on student grade retention with more significant differences among older students. In addition, this family structure is only found to have a consistently negative effect on mathematics scores for secondary education students.

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## 1. Introduction

Over the last few decades Europe has witnessed a substantial change in family organization forms as a result of a sizeable rise in marital breakups and extramarital births. While Spain has always been and still is one of the countries with more traditional family structures, there has been a major turnaround in recent years. According to Spanish National Institute of Statistics data (INE, 2015a, 2015b) the marriage rate declined from 4.97% in 2003 to 3.25% in

2013. Simultaneously, the marital breakup rate in terms of divorces and separations dropped moderately from 2.86% in 2003 to 2.13% in 2013. All of the above, plus the fact that official INE data do not include co-habitation breakups, explains the sharp growth in the proportion of single-parent families to all households in Spain from 6.62% in 2001 to 9.36% in 2013.

Spain is one of the worst-ranked European countries in terms of educational outcomes in standardized tests, which are below the EU-28 average. The relatively poor results of the educational system lead to higher school failure, educational dropout and youth unemployment rates. In 2013, early educational dropout in Spain reached 23.6% almost doubling the EU-28 figure of 12%; at the same time, Spain's youth unemployment rate was 55.5%, whereas the rate for EU-28 stands at 23.7% (EUROSTAT, 2015; OECD, 2013). In this regard, one of the key concerns of parents today is their

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children’s education. There is strong evidence to conclude that the number of years of quality education that a child receives will condition his or her future access to the labor market, a higher productivity and success in life in the long term (Becker, 1964; Heckman, Stixrud, & Urzua, 2006).

In this respect, half a century of social science research has shown that family is a key explanatory variable of any child’s or adolescent’s education (Hanushek, 2003). Therefore, any significant family-related change will also have an effect on children’s academic achievement. This paper aims to explore how family structure influences Spanish children’s academic outcomes within the new scenario in Spain.

Many earlier studies have analyzed the potential effect of changing family structures on children’s wellbeing, and particularly on academic achievement (Astone & McLanahan, 1991; Biblarz & Gottainer, 2000; Björklund, Ginther, & Sundström, 2007; Francesconi, Jenkins, & Siedler, 2010; Garasky & Stewart, 2007; Gennetian, 2005; Hampden-Thompson, 2013; Pollak & Ginther, 2003; Pong, Dronkers, & Hampden-Thompson, 2003; Steele, Sigle-Rushton, & Kravdal, 2009).<sup>1</sup> Although most studies conclude that children that live with only one of their parents fare worse than their peers that live with both biological parents, Steele et al. (2009) note that is no agreement on either the size of this effect or on what its real cause is.

Some authors defend the notion that family structure is itself the cause of poorer performance (Cid & Stokes, 2013; Francesconi et al., 2010; Frisco, Muller, & Frank, 2007). By contrast, other authors provide evidence that this association is mediated by other factors simultaneously correlated with family structure and academic outcomes. If family structure is correlated with other family characteristics, for example, parents’ education, immigrant status or income level, then it will not be randomly distributed across all individuals, and comparisons based on mean results would be unfair. In this case, these other characteristics need to be taken into account in order to consistently compare and be able to capture the effect of family structure on academic performance. After accounting for unobserved differences between the two family structures, some authors find that family structure is no longer a significant variable (Biblarz & Gottainer, 2000; Björklund et al., 2007; Ermisch & Francesconi, 2001), whereas others find that nuclear family membership still has a significant positive effect despite controlling for other family and academic variables (Gennetian, 2005; Gruber, 2004; Painter & Levine, 2000).

This study aims to measure the effect of belonging to a non-nuclear family structure<sup>2</sup> on academic performance of Spanish fourth-year primary and second-year secondary education students in terms of mathematics test scores and grade retention. To do this, we compare the academic outcomes of children from both nuclear and

non-nuclear family structures using logistic regression and a PSM method. Second, we empirically analyze whether there is any type of statistical association between parental practices, like parental concern about and commitment to their children’s academic life, and academic outcomes. To do this, we control for other factors that also affect family structure and academic achievement, such as socioeconomic background and immigrant status. Differences in academic performance between the two family structures are quantified conducting the analysis by educational institution ownership.

## 2. Methodology

The empirical analysis outlined in this paper is mostly exploratory. We compare two methods for measuring the association of family structure with student educational achievements: a regression analysis and a PSM. A regression analysis is able to compare performance according to family structure controlling for a set of different characteristics that also influence academic outcomes. Applying this standard regression analysis, we implicitly assume that family structure is ‘exogenous’ in the sense that non-nuclear or nuclear family membership is a random life event unconnected with other social and economic variables. However, if there were observed or unobserved parental variables potentially influencing the probability of non-nuclear family membership, only families with similar observable characteristics as well as family structure would be comparable. In order to account for the possibility of family structure not being random, we also apply PSM as a robustness check.

PSM is an econometric technique useful for controlling or at least trying to minimize the possible bias in the estimation of the effect of a non-random variable (also known as the treatment), which, in our case, is family structure, controlling for observed characteristics. The idea behind this approach is that the comparison of the two family structures is fairer when we only compare the results of individuals in the treated group (non-nuclear families) with the results of individuals in the counterfactual group (nuclear families) that are very similar in terms of the observable variables that influence group membership.<sup>3</sup> In order to estimate the effect of the treatment variable, we have to enact three stages:

**Stage 1:** Estimate the probability (propensity score) of receiving the treatment, which, in our case, is non-nuclear family membership. To do this, we estimate the selection equation through the logit regression model shown in Eq. (1) that explains the probability of belonging to a particular family structure based on certain Z variables. The selection equation of family structure for all analyzed individuals can be written as

$$p(F_i) = \frac{\exp^{Z_i \cdot \gamma}}{1 + \exp^{Z_i \cdot \gamma}} + \varepsilon \quad (1)$$

where  $F_i$  is one if the individual is a member of a non-nuclear family and zero if the individual is a member of

<sup>1</sup> Amato (2010) offers a detailed review of the literature analyzing the impact of family structure on children’s wellbeing.

<sup>2</sup> Following Yucel (2014) we consider that a student belongs to a non-nuclear family when he or she does not live with both biological or adoptive parents simultaneously.

<sup>3</sup> Rosenbaum and Rubin (1983) offers an in-depth discussion of PSM.

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