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The decline of Spanish fertility: the role of religion

Abstract

The Spanish total fertility rate declined from 2.8 to below 1.4 children per woman from 1975 to 2020. Spain is categorised as a "lowest-low fertility" country. Although there have been many attempts to explain the Spanish fertility decline, there has been an insufficient focus been given to religion. This brief report aims to analyse how religious affiliation, particularly being Catholics, associates with fertility behaviours—entering parenthood and the total number of children. Using three nationally representative surveys we show that, compared with the religiously non-affiliated, Catholic women have a higher likelihood of entering parenthood after controlling for demographic, union status and educational characteristics. After controlling for changes in education and union formation, changes in religious affiliation account for approximately 4% of the cohort variation in the age at first birth, but there is no significant contribution for men nor to the total number of children for both sexes.

Keywords: Fertility; Total number of children; Entering parenthood; Religion; Spain

1. Introduction

Averting a future of low fertility in Europe is a central policy aim for several national governments, including in Spain where fertility has been below replacement levels since the early 1980s (United Nations 2016). Spain's path toward current low fertility levels has followed a similar course to other Southern European countries (Esteve and Treviño 2019; Zeman et al. 2018). The Spanish Total Fertility Rate (TFR) fell below replacement levels only in the 1980s, somewhat later than most Northern and Western European countries, yet Spanish fertility declined to lower levels than the European average: the Spanish TFR was consistently below 1.4 children per woman from 1990 to 2020 (Eurostat 2021). There are widespread concerns about whether low fertility may cause population decline, leading to a reduction in the number of new labour market entrants, thereby challenging economic growth, and also whether it will diminish a country's political and cultural importance (Teitelbaum 2013; Wesolowski and Ferrarini 2018). Since the mid-2010s, Spain has experienced negative natural population growth. Such concerns have triggered increased interest in social, economic and policy-related determinants of low fertility (Ayllón 2019; Bellido and Marcén 2019; Del Bono et al. 2015; Sobotka et al. 2019).

Among the many attempts to explain the Spanish fertility decline, many focus on difficult economic conditions and high unemployment, lack of gender equity, later ages on leaving the parental home, insufficient government support, few childcare options and a lack of family-friendly work arrangements (Bueno 2020; Esteve and Treviño 2019; Puig-Barrachina et al. 2019; te Velde et al. 2012). Less attention has been paid to the influence on childbearing patterns of cultural factors, including religious change. This is in spite of the rapid religious change that has occurred in recent years in Spain, with widespread secularization and a decline in the dominance of the Catholic religious faith.

In previous work, religion has been found to positively correlate with childbearing patterns in many countries (e.g., Anson and Meir 2017; Dilmaghani 2019; Goujon et al. 2007; Peri-Rotem 2016). How religious decline relates to the reduction in Spanish childbearing rates has received insufficient attention. To remedy this, the current study aims to analyse how religion relates to the transition to parenthood, as well as to childbearing outcomes, by mainly focusing on the differences between Catholics and non-religious individuals.

2. Background

2.1 Religiosity and Fertility

Net of schooling, financial context or regional characteristics, religion is independently related to family formation patterns, as found across a range of different national contexts (Anson and Meir 2017; Dilmaghani 2019; Goujon et al. 2007; Peri-Rotem 2016). Those who attend religious meetings, follow religious teachings and declare themselves more religious tend to have an earlier onset of childbearing and higher fertility outcomes. Such outcomes are found for instance in France or the Netherlands (Berghammer 2012; Regnier-Loilier and Prioux 2008) as well as in the US (Skirbekk et al. 2010). Catholics tend to have higher levels of fertility than those without religious affiliation (Goujon et al. 2007; Haug and Wanner 2000), whilst Yoo and Agadjanian (2021) found the opposite trend in the mid-1980s in South Korea. But in general, Catholic teachings, religious services and rituals tend to be pronatalist and focus on the sanctity of the family, often focusing on marriage, procreation, marital stability and family unity (LeMaire 2017; Skirbekk et al. 2010).

In addition, religious belief or practice may affect fertility through mediators. For instance, the more religious may be more likely to marry, they are more likely to marry

at earlier ages and they are more likely to stay married (Li et al. 2016; Mullins 2016). Marriage remains a strong predictor of childbearing; even in European settings where non-marital childbirth is widely practised and accepted (OECD 2022). Religion may also influence other factors related to marital and family formation probabilities. Major religions tend to encourage health-promoting behaviour, such as moderate lifestyles, limited alcohol intake and social support (Ellison & Hummer 2020; Koenig 2018). If religion reduces risky behaviours and improves health, being religious raises marital chances and mediates the effects on health (Torche & Rauf 2021; Tumin 2018). Being religious can also relate to belonging to a community and influence who one meets and interacts with in adolescence and adulthood (Pearce et al. 2019). Religious belonging can imply that one is likely to interact with a "pool" of spouses with similar beliefs—where many may share similar beliefs on marriage, childbearing and family ideals.

2.2 Secularization in Spain

Spain has changed dramatically over the last four decades, with the rapid growth of religiously non-affiliated. During the Franco regime (1936–1975), Roman Catholicism was promoted and given special regulatory status. At the time of Franco's death (1975), non-Catholics accounted for less than 1% of the population (Solsten and Meditz 1990). In May 1978, when fertility was still above replacement levels, only 7.6% were non-believers or indifferent about religion in the Spanish population aged 18+ years (CIS 2021). However, this proportion has been gradually increasing and reached 37.5% in May 2021 (Figure A1 in the Appendix). The secularization process differs by age: the change is starker among the younger population. The CIS surveys report that, in November 2009, 30.4% of the population aged 15–29 years did not follow or were indifferent to any religion or were atheist/agnostic and this rises to 37.7% in September 2014 (CIS 2021).

This supports an argument that rapid secularization in recent years may be a key factor in the very low fertility observed in Spain. Despite growing interest in the demographic effects of religious change, only a relatively modest amount of research has been conducted for Spain in recent years (Adsera 2006; Stonawski et al. 2015).

3. Data and Method

This brief report uses three nationally representative survey data sources, the Fertility and Family Survey (FFS) conducted in 1994–1995 and the Spanish National Fertility Surveys of 2006 and 2018 from the Harmonized Histories database. After pooling these three datasets, selecting respondents aged 15–49 years and removing those with any missing values in the variables used (89 cases; 0.4%), the working sample comprises 19,892 individuals. Using this pooled data, we assess models for two different fertility outcomes: 1) the entering parenthood and 2) the total number of biological children at ages 40+.

Our main independent variable of interest is a categorical variable of the respondent's religion[1] (1: Catholic, 2: Other religions, 3: I do not want to declare, 4: None). In the FFS, respondents were not asked if they were born in Spain or not, and we cannot consequently control for immigrant status, which highly associates with fertility behaviours (e.g., Saarela and Skirbekk 2019; Sobotka 2008). Hence, we omit the individuals who gave their religion as Islam or Judaism (224 cases: 1.1% of the total sample) to reduce the impact of immigration on the outcomes. The results after including the Muslim and Jewish respondents do not change the main results shown below. Religiosity is a complex phenomenon that religious theorists and scholars have for many years attempted to define, conceptualize and analyse. Still, there exists no universal

[1] Both SNFSs ask "¿Cuál es su religión, si es que tiene alguna? (What is your religion, if you have any?)" and the FFS asks "Which religion do you adhere to?" (We were not able to find the Spanish version of the questionnaire).

definition of what religion constitutes and how it best can be measured (Bruce 2011). It is also not known which measure or indicator of religiosity most strongly relates to reproductive behaviour, including fertility outcomes and timing of family formation (Skirbekk et al. 2015; Stonawski et al. 2015; Régnier-Loilier & Prioux 2008). Measures of religiosity include religious affiliation (religious group, whether one is not associated with any religion), self-assessed religious belief (how religious one perceives oneself), belief in the supernatural (e.g., afterlife) and religious practice (e.g., church attendance, prayer). These effects may also depend on the type of religion, e.g., one study found that reduced church attendance predicts fertility decline for Catholics but not for Protestants (Berman et al. 2018). We capture the religiosity by religious affiliation, mainly due to data availability[2], however, there is strength of using it. Measures of religious affiliation will capture both those who are highly religious and those who are less religious (or not religious) but still affiliated (Marchisio & Pisati 1999). Being unaffiliated may be a stronger measure of low/no religiosity in traditionally religious societies where many are born into a religion, but represent a conscious choice and one would need to actively exit religion (Burchardt 2022). The cohort change in the distribution of the respondents' religion among the analysed cases aged 15–49 years by sex can be found in Table A1 in Appendix A.

In addition, two key variables, union status and education, should be controlled for. Whilst both the timing and the likelihood of entering a long-term relationship have changed in recent years, most children were born in a couple in a union—cohabiting or

[2] We have conducted supplemental analyses including another measure of religion: religious practice. Only the FFS asks that question ("How often do you attend religious services (apart from weddings, funerals, baptisms, and the like)?"), thus, the supplemental analyses have been done using only the FFS. This question is not stratified by their religious beliefs in the questionnaire. The results show that the religious practice does not have any significant association with either entering parenthood and the total number of children, while religious affiliation holds the general trends that found without including religious practice for both outcomes. See more details in Table A4 for the analysis of entering parenthood and Table A5 for the total number of children.

married (Perelli-Harris et al. 2012). Thus, the in-union status is still a proximate determinant of fertility (Bongaarts 1978). We use two different definitions of union status for each outcome. As we have person-year data to analyse the outcome of entering parenthood, union status is defined at a lag of two years (1: Not in union, 2: Cohabiting, 3: Married). This allows us to take into account the influence of the planning of pregnancy and pregnancy period on the first birth at a given age. The robustness checks, changing the lagged years to one year and three years respectively, gave similar results as the main results. For the outcome of the total number of children at ages 40+ years, we use union history of ever-cohabited and ever-married, and categorise it as 1) Never in a union, 2) Ever in union: Only cohabitation, 3) Ever in union: Only marriage, 4) Ever in union: Cohabitation and marriage.

For the first outcome, entering parenthood, data was transformed into a person-year long format structure: the observation of each case starts from age 15 and ends at either the current age at the time of the survey (maximum age 49 years) or the age at first birth. We obtained 293,385 person-years for the analyses. Regarding the second outcome, the total number of children, we select individuals aged 40–49 years at the time of the survey to reduce the left censoring bias, giving an analytical sample of 7,727 individuals. Because the maximum age of the sample in the FFS is 50 years, it is not possible to extend the age limit.

To estimate the association of religion with entering parenthood, the discrete-time logistic regression models are used, controlling birth cohorts (1945–1949, 1950–1959, 1960–1969, 1970–1979 and 1980–1989), age (continuous scale), age squared, survey type, union status and educational attainment. For the association between religion and the total number of biological children at ages 40+ years, we use a Poisson regression model with additional independent variables as controls or moderators: birth cohorts

(1945–1949, 1950–1959, 1960–1969 and 1970–1979), union status and educational attainment. All models were estimated separately by sex using survey weight[3] from each data survey (the descriptive statistics of variables used by sex and each outcome are shown in Tables A2 and A3 in Appendix A).

4. Results

Figure 1 shows how the proportion of having a first child by age differs between Catholics and non-religious individuals. The left panel shows the proportion among women and the right one that among men. For both sexes, the Catholic group (solid line) has a higher proportion of first childbirth, particularly in middle ages than the non-religious group (dotted line). For example, the difference between Catholic and non-religious groups is the largest at age 27 among women (3.7 percentage points, pp) and at age 31 among men (3 pp).

[3] The weight provided by SNFS 2018 is not standardised, thus we calculated a standardised weight as default weight / mean of the default weight.

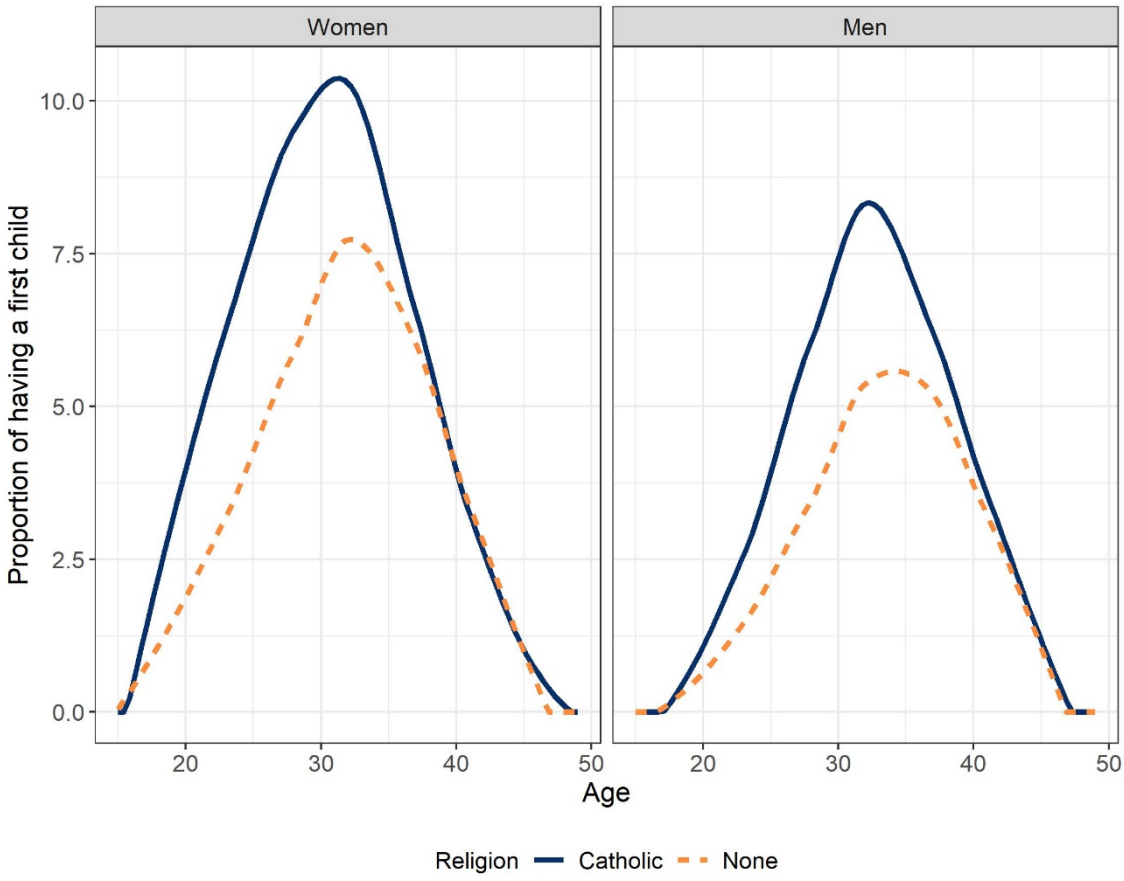

Figure 1: Proportion of having a first child by age, sex and religion in Spain (Catholic group and non-religious group)
Note: The survey weights from each survey were applied. The lines are smoothed by the Loess method.

Echoing the result of Figure 1 for the first birth, the total number of children at ages 40–49 years differs by religious affiliation (Figure 2). A much lower proportion of Catholic individuals remain childless (16% for females and 31% for males) than is the case for those who are non-religious (27% and 43%, respectively). Parity 1 is slightly higher among the non-religious group for women (23% vs 18% of Catholics), but on the same proportion among Catholics for men (18%). Above parity 2, Catholics have consistently higher shares than those who are religiously unaffiliated. To this extent, the descriptive results show that religion matters for fertility behaviours in both entering parenthood and the total number of children. We analyse further this association between

religion and fertility using regression models controlling for demographic and socioeconomic characteristics.

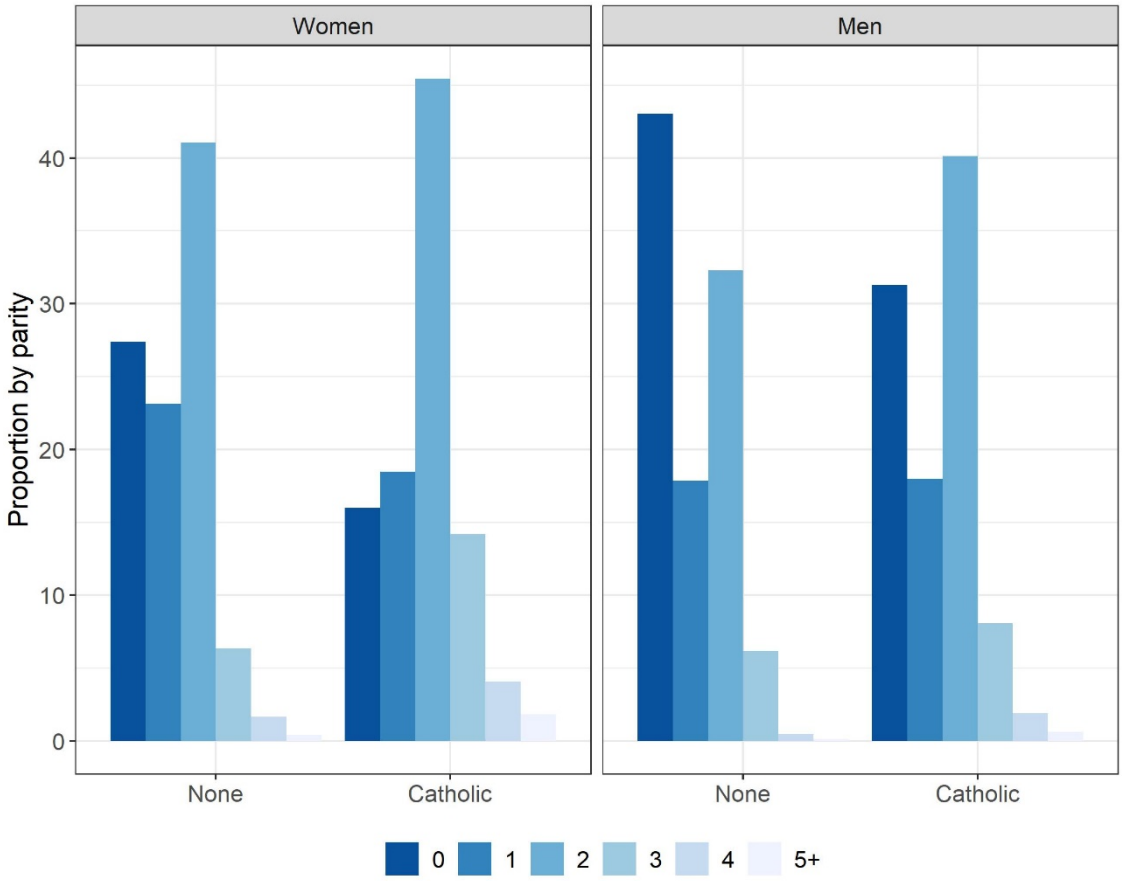

Figure 2: Parity structure from 0 to 5+ of the population aged 40–49 years by gender and religion (Catholic group and non-religious group)
Note: The survey weights from each survey were applied.

Tables 1A and 1B show the average marginal effects (AME) of each variable on entering parenthood estimated using discrete-time logistic regression models for women and men, respectively. Compared with the religiously non-affiliated, Catholics have a higher likelihood of entering parenthood for both sexes. For women, the predicted probability of entering parenthood in model 3 among Catholic individuals is 2.5 pp higher than among the non-religious. Similarly, for men, the difference is 1.1 pp. Two interaction terms, between religion and education, and religion and union status, are added separately to the model; however, they do not reveal any interesting trends by education and union

status. This means that education and union status show only non-divergent differences between religious types (Figures A4 and A5 in Appendix C). Those who did not wish to declare their religious status do not differ significantly from non-religious groups.

Birth cohorts are negatively associated with entering parenthood in all models. Compared to those who were born in 1950–1959, people who were born more recently are much less likely to enter parenthood. In general, this trend can be interpreted as resulting from various societal and individual changes across cohorts, such as educational expansion, values in fertility, union formation and employment. In model 2 with union status and educational level for women in Table 1A, the AMEs of birth cohorts decline by 28% ($1 - (\frac{-0.0089}{-0.0123})$; 1960–1969 cohort), 35% (1970–1979 cohort) and 35% (1980–1989 cohort) from model 1, whilst in model 3 including religious information, the AMEs of birth cohorts decrease by 28%, 36% and 38%, respectively from model 1. This indicates that the changes in education and in union formation have had a larger influence on the cohort changes than changes in religious affiliation. From model 2 and model 3, the AMEs of birth cohorts decline by 0.4%, 1.6% and 3.6% respectively. Thus, religion accounts for a small but significant part of the cohort variation (less than 4%) after controlling for changes in education and union formation.

Table 1B shows similar trends for men. However, the difference in the AMEs of birth cohort between model 1 and model 3 is smaller than for women, partly because the educational expansion for males has been significant at a similar level as for women. The AMEs of birth cohorts from model 2 and model 3 decrease by 1% (1960–1969 cohort), 0% (1970–1979 cohort) and 2% (1980–1989 cohort). Interestingly, religion accounts for the cohort variation more in the recent cohort among women, whilst the trend is not so clear among men. Also, it is important to note that, in model 3, for both sexes, recent

cohorts are less likely to experience the transition to the first child, suggesting that other unobserved characteristics might be contributing to the declining trend.

Table 1A: Results of the association between religion and first childbirth in Spain for female individuals aged 15–49 years born in 1945–1989 estimated by discrete-time logistic regression models

	(1)		(2)		(3)	
	AME	SE	AME	SE	AME	SE
Birth cohort (ref: 1950–1959)						
1945–1949	0.0034	0.0041	0.0025	0.0036	0.0010	0.0035
1960–1969	-0.0123	0.0022	-0.0089	0.0019	-0.0089	0.0019
1970–1979	-0.0278	0.0024	-0.0180	0.0022	-0.0177	0.0022
1980–1989	-0.0328	0.0026	-0.0212	0.0024	-0.0205	0.0024
Age	0.0312	0.0007	0.0232	0.0006	0.0232	0.0006
Age squared	-0.0005	0.0000	-0.0004	0.0000	-0.0004	0.0000
Survey type (ref: FFS 1994–1995)						
SFS 2006	-0.0080	0.0017	-0.0037	0.0017	-0.0050	0.0017
SFS 2018	-0.0206	0.0019	-0.0172	0.0018	-0.0169	0.0018
Union status lagged two years (ref: Not in union)						
Cohabited			0.0632	0.0027	0.0655	0.0028
Married			0.1228	0.0031	0.1220	0.0031
Educational level (ref: Primary completed)						
Secondary completed			-0.0191	0.0012	-0.0181	0.0012
Tertiary completed			-0.0267	0.0012	-0.0253	0.0012
Religious type (ref: None)						
Catholic					0.0098	0.0011
Other religions					0.0084	0.0026
I do not want to declare					0.0002	0.0021

Note: The survey weights from each survey were applied. AME is the average marginal effect of each variable and SE is its standard error.

Table 1B: Results of the association between religion and first childbirth in Spain for male individuals aged 15–49 years born in 1945–1989 estimated by discrete-time logistic regression models

	(1)		(2)		(3)	
	AME	SE	AME	SE	AME	SE
Birth cohort (ref: 1950–1959)						
1945–1949	-0.0081	0.0038	-0.0031	0.0039	-0.0043	0.0039
1960–1969	-0.0153	0.0036	-0.0181	0.0035	-0.0179	0.0035
1970–1979	-0.0213	0.0062	-0.0210	0.0059	-0.0209	0.0058
1980–1989	-0.0226	0.0063	-0.0190	0.0062	-0.0187	0.0062
Age	0.0287	0.0016	0.0217	0.0013	0.0218	0.0013
Age squared	-0.0004	0.0000	-0.0003	0.0000	-0.0003	0.0000
Survey type (ref: FFS 1994–1995)						
SFS 2006	-0.0171	0.0052	-0.0169	0.0050	-0.0172	0.0051
SFS 2018						
Union status lagged two years (ref: Not in union)						
Cohabited			0.0391	0.0036	0.0397	0.0036
Married			0.0931	0.0053	0.0910	0.0053
Educational level (ref: Primary completed)						
Secondary completed			-0.0056	0.0018	-0.0051	0.0018
Tertiary completed			-0.0071	0.0019	-0.0064	0.0020
Religious type (ref: None)						
Catholic					0.0054	0.0018
Other religions					0.0076	0.0044
I do not want to declare					0.0038	0.0033

Note: The survey weights from each survey were applied. AME is the average marginal effect of each variable and SE is its standard error.

Tables 2A and 2B present the results of Poisson regressions for the association between religion and the total number of children among women and men, respectively. Our results present that Catholic women have a higher number of children than religiously non-affiliated counterparts, while there is not a statistically significant association at the 95% level among men. Again, the coefficients of the recent birth cohort are larger than the older birth cohort: The recent birth cohort is less likely to have a greater number of children. The predicted total number of children in model 3 at ages 40–49 years is 1.85

(females) and 1.52 (males) for Catholics and 1.68 and 1.51 respectively for the non-religious.

Table 2A: Results of the association between religion and the total number of children in Spain for female individuals aged 40–49 years born in 1945–1979 estimated by Poisson regression models

	(1)	(2)	(3)
Birth cohort (ref: 1950–1959)			
1945–1949	0.218***	0.149***	0.147***
	(0.033)	(0.031)	(0.031)
1960–1969	-0.149***	-0.077**	-0.080***
	(0.027)	(0.024)	(0.024)
1970–1979	-0.390***	-0.193***	-0.184***
	(0.023)	(0.025)	(0.025)
Union status (ref: Never in union)			
Ever in union: Only cohabitation		1.160***	1.167***
		(0.111)	(0.111)
Ever in union: Only marriage		1.777***	1.765***
		(0.098)	(0.098)
Ever in union: Cohabitation and marriage		1.653***	1.651***
		(0.099)	(0.099)
Educational level (ref: Primary completed)			
Secondary completed		-0.119***	-0.110***
		(0.024)	(0.024)
Tertiary completed		-0.110***	-0.104***
		(0.021)	(0.021)
Religion (ref: None)			
Catholic			0.096***
			(0.027)
Other religions			0.170**
			(0.063)
I do not want to declare			-0.018
			(0.051)
Constant	0.678***	-0.985***	-1.065***
	(0.018)	(0.100)	(0.101)
Observations	6,549	6,549	6,549
Log Likelihood	-9,816	-9,199	-9,191

Note: The survey weights from each survey were applied. The values in parentheses are the standard deviations. +p < 0.1; *p < 0.05; **p < 0.01; ***p < 0.001.

Table 2B: Results of the association between religion and the total number of children in Spain for male individuals aged 40–49 years born in 1945–1979 estimated by Poisson regression models

		(1)	(2)	(3)
Birth cohort				
(ref: 1950–1959)				
	1945–1949	0.043	0.030	0.033
		(0.060)	(0.047)	(0.047)
	1960–1969	-0.426***	-0.270**	-0.271**
		(0.103)	(0.094)	(0.095)
	1970–1979	-0.599***	-0.335***	-0.346***
		(0.055)	(0.052)	(0.052)
Union status				
(ref: Never in union)				
	Ever in union: Only cohabitation		1.900***	1.898***
			(0.355)	(0.355)
	Ever in union: Only marriage		2.705***	2.697***
			(0.328)	(0.329)
	Ever in union: Cohabitation and marriage		2.514***	2.509***
			(0.331)	(0.331)
Educational level				
(ref: Primary completed)				
	Secondary completed		-0.088	-0.087
			(0.062)	(0.062)
	Tertiary completed		-0.122*	-0.122*
			(0.061)	(0.061)
Religion (ref: None)				
	Catholic			0.008
				(0.066)
	Other religions			0.176
				(0.164)
	I do not want to declare			0.050
				(0.105)
Constant		0.661***	-1.889***	-1.894***
		(0.040)	(0.328)	(0.330)
Observations		1,178	1,178	1,178
Log Likelihood		-1,646	-1,463	-1,462

Note: The survey weights from each survey were applied. The values in parentheses are the standard deviations. +p < 0.1; *p < 0.05; **p < 0.01; ***p < 0.001.

Conclusions

This study aimed to analyse the association between religion and fertility behaviours—entering parenthood and the total number of biological children at ages 40–49 in Spain using three nationally representative surveys. At the individual level, our results show

that Catholic women are more likely to enter parenthood among women than the religiously non-affiliated counterparts, but do not have statistically significant differences between the Catholics and the religiously non-affiliated group in the total number of children for both sexes. One interpretation of our results could be that women may be more likely to let their religious convictions influence their fertility timing as they prioritize motherhood and family formation more than other life goals. Or it could be that women are more likely to follow social norms relating to religion, which can be partly seen in Table A1 showing that the share of women who do not have religious belief is lower compared to men. This may lead to a young age at first birth since they women have a shorter reproductive life span and may be less willing to risk the late onset of childbearing which lower ones likelihood of reaching ones fertility ideals. At the cohort level, however, the religious affiliation accounts for approximately 4% of the recent cohort changes in the transition to first birth after controlling for education and union formation. Therefore, religion matters for entering motherhood, however, it explains a minor part of cohort changes.

The limitations of this study should be mentioned. First, the sample sex ratio is unbalanced with a greater number of female cases in our sample. This is mainly due to that the SNFS 2006 does not contain any men in their survey, but also due to the smaller size of original male respondents in both surveys: the FFS (1,989 male cases vs 4,011 female cases) and the SNFS 2018 (2,435 male cases vs 13,196 female cases). Secondly, we are not able to disentangle "other religions" group. However, the proportion of people believing in other religions in Spain has been so low from 1978 (0.6%) to 2021 (2.7%). Also, this study measures religion using only religious affiliation. Although there are strengths to using religious affiliation as an indicator of religion (e.g., Marchisio & Pisati 1999), previous research argued that religiosity is a complex phenomenon including

religious affiliation (religious group, whether one is not associated with any religion), self-assessed religious belief (how religious one perceives oneself), belief in the supernatural (e.g., afterlife) and religious practice (e.g., church attendance, prayer). However, our supplementary analyses using the FFS in Table A4 and A5 in Appendix D suggest that religious practice does not have a significant association with both fertility behaviours, and religious affiliation holds the general trends found in Table 1A to 2B without including religious practice. Lastly, this analysis cannot fully take into account migrants in Spain. For the analysis of religion and fertility in Spain, it is important to consider migrants in general, including Muslim migrants, who have been found to have higher fertility, which may reflect religiosity, migration status, socioeconomic status and conditions in their country of origin (Aguilera and Korinek 2020; Milewski 2010; Saarela and Skirbekk 2019; Schmid and Kohls 2009). These limitations are mainly driven by the data issues, which should be addressed as far as possible by future research.

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