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Religiosity and Fertility: Jews in Israel

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Abstract We analyze the relationship between religiosity and fertility among Jews in Israel—a modern democracy in which there is no separation of religion and state. Micro-level data from the 2009 Israel Social Survey are used to perform multivariate analyses of the odds of having at least three children. The findings from separate analyses of women and men are consistent with a theoretical framework, outlined by McQuillan and C. Goldscheider, which suggests how religiosity affects fertility. In particular, measures of the importance of religious *community* explain in part the higher levels of fertility among some religiosity groups; attitudes toward religion as a *social and political institution* as well as *norms regarding family building* over the life course also partly account for the influence of religiosity on fertility. While women's employment activity is significantly related to their fertility, as many economic theories predict, controlling for paid work in regression models does not affect the estimated relationship between religiosity and women's fertility. We conclude that, in the current context, fertility variation across religiosity groups can be understood largely in terms of the cultural, political, and institutional power of religion, and the impact of religion through community, and via norms and ideals.

Keywords Religiosity · Religion · Fertility · Israel · Jews · Gender roles · Community · Family · Institutions · Nationalism · Familism · Parity · Ideal family size · Civil marriage · Secular · Traditional · Ultra-Orthodox

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1 Introduction

Various theories have been laid out to describe the mechanisms by which religion and religiosity may affect demographic behavior (e.g., DeJong 1965; Goldscheider 1971; Goldscheider and Mosher 1991; Lehrer 2004; McQuillan 2004). Empirical research over the past decade has documented that religiosity is positively associated with fertility in various parts of Europe and the USA (e.g., Adsera 2006a; Berghammer 2012; Hayford and Morgan 2008; Peri-Rotem 2016; Westoff and Marshall 2010; Zhang 2008). However, because measures of religiosity and other theoretically relevant variables are often limited in survey data, it has been difficult in previous research to test theories of religiosity and fertility (e.g., Adsera 2007; Neuman 2007). The primary purpose of this paper is to investigate specific factors which may be associated with fertility differentials by religiosity, in an attempt to test empirically the relevance of theories of religiosity and fertility. Our focus is on contemporary Israel, which presents a fascinating case study of the role of religiosity in demographic processes because it provides a rare example of a modern, affluent democracy in which there is significant overlap between civil and religious authorities. Moreover, recent research has documented striking heterogeneity in cohort and period fertility by religiosity, within the majority Jewish population of Israel (Okun 2013; Hleihel 2011). By exploiting a particularly rich source of data from the 2009 Israel Social Survey, we are able to investigate the mechanisms through which religiosity influences fertility and fertility ideals.

2 Theoretical Considerations

McQuillan (2004) suggests that the potential impact of religion on demographic behavior may play out through the *institutional roles* of religion in the political, social, and economic context, and that religious values are most likely to matter when religious institutions have the means to communicate values to their members and to institute mechanisms to promote compliance and punish nonconformity. Given the Israeli context, which will be described below, these ideas suggest that there are important effects of religion and religiosity on fertility in Israel.

Another particular circumstance in the Israeli case relevant to the potential effect of religion on demographic behavior is the political context of the Arab–Israeli conflict. McQuillan emphasizes the importance of *religious identity* and suggests that "…where religious affiliation is widely accepted by the population as a key marker of who they are as a people, there is likely to be broader popular support for upholding the teachings of the faith and greater public pressure on rule-breakers to conform. This kind of voluntary identification with a religious faith is most common in situations where religion and nationalism blend together, and where religious identity distinguishes a people from other groups in the territory who are either competitors or oppressors" (p. 47). Given the threat and oppression felt during the long-term conflict over territory and political autonomy in the Middle East, by both

Jews and Arabs, it seems likely that the role of religion and religiosity on fertility may be enhanced (Fargues 2000; Anson and Meir 1996).

A central part of McQuillan's theoretical arguments is developed from the writings of C. Goldscheider, who stresses that the impact of religion is often conveyed through "broadly based norms of family control and gender relations" (Goldscheider 1999, p. 312). Goldscheider (1971, 1999) emphasizes that norms are often *not* directly related to over-simplified and misunderstood scriptural proscriptions on such specific behaviors as the use of birth control or abortion. Scriptural writings can often be interpreted in different ways; moreover, popular understandings of religious teachings do not always correspond with scriptural writings. Thus, the connection between *particularized theology* and actual demographic behavior is often tenuous or nonexistent (Okun 2000).

Instead, Goldscheider argues that broader sets of sociocultural messages that are associated with religious faiths have more important effects on fertility levels of the religious. Important examples are the association between religiosity, gender relations, and gender inequality (Goldscheider et al. 2014). Goldscheider (1999, 2015) suggests that among the more religious in Israel (Jews or Muslims), the role of women is linked primarily with family and childbearing and is not viewed as equal to that of men. He puts forth this great(er) asymmetry between women and men's roles among the religious, as compared with the secular, as a primary reason for the higher fertility levels of the former subpopulations. Moreover, the effects of norms concerning women's roles may operate through marriage and exposure to sexual intercourse, rather than, or in addition to, the use of birth control and abortion. Thus, Goldscheider has emphasized the importance of religion's influence on *values* regarding family life and gender roles.

We note that the theoretical notions developed by Goldscheider and McQuillan are potentially complementary to economic theories of the role of religion, which emphasize the importance of *perceived costs/sanctions* and *benefits/rewards* from demographic choices that women and men make over the life course (e.g., Lehrer 1996, 2004; Stark and Finke 2000). For example, among the religious, Judaism may provide psychological and social rewards to those who have many children, in the form of approval and social status. Moreover, Judaism, a scriptural religion, contains pro-natalistic values that are translated through strong religious institutions in Israel. The strict adherence to a very particular, constrained way of life on the part of the Ultra-Orthodox in Israel must be understood in the context of the powerful religious institutions and leaders which exert their influence on community members through sanctions and rewards for particular behaviors. Also, economic theories emphasize the effects of religion and religiosity on investments in human capital, such as education, as well as labor force activity. In turn, education, labor market activity, and gender division of household labor are interrelated. For example, if more religious women tend to invest less in education and labor market activity, they may in turn choose to specialize in home production, by having more children and investing more time in household labor (Lehrer 2004). Thus, according to economic theories, the relationship between religiosity and fertility must be understood in terms of a more general model which considers human capital and labor market activity. Specifically, we expect empirical associations between

religiosity and fertility to be weaker when models include factors associated with education and measures of employment.

3 Previous Empirical Research

A long line of research focused on the USA examining baby boom and post-baby boom fertility differentials between Catholics and Protestants. While during the baby boom era, Catholics had substantially higher fertility than their Protestant counterparts in the USA (Ryder and Westoff 1971), the post-baby boom era was characterized by an "end to 'Catholic' fertility" (Westoff and Jones 1979; Mosher et al. 1992). Perhaps as a result of this apparent end to the effects of Catholic affiliation on fertility in the USA (McQuillan 2004), the focus of research in the area of fertility and religion in the contemporary USA changed. In the past couple of decades, emphasis has been placed on understanding the demographic behavior of groups such as fundamentalist Protestants, Mormons, and the religiously unaffiliated (e.g., Lehrer 2004; Westoff and Frejka 2007).

Most recently, the focus of research attention has been placed on the potential importance of religiosity (and not only religion *per se*). Recent research focused on the USA and Europe has provided varied evidence that women and men with greater religious commitment and consistent religious practice, those who define themselves as practicing Catholics, those who report more frequent church attendance, and those whose parents were more religious tend to have higher fertility ideals, intentions, and levels (Adsera 2006a, b; Baudin 2015; Philipov and Berghammer 2007; Berghammer 2009, 2012; Peri-Rotem 2016; Zhang 2008; see Skirbekk et al. 2015 for examples of different patterns in the Buddhist Asian context). However, data used in most previous research have not included theoretically relevant variables—community factors, norms of traditional family forms, and traditional gender roles, and measures of the importance of religion as a social or political institution.

In Israel, contemporary fertility differentials by religion and religiosity are very much the focus of current popular debate, if relatively little scholarly studied. Fertility differentials across religiosity subgroups within the Jewish population have important effects on population composition in Israel, and consequent political and religious developments.[1] Estimation of differential fertility rates across groups has been hampered because direct data on religiosity are not collected in census or vital registration systems.

As a result of this lack of information, attempts have been made in the literature to indirectly estimate fertility patterns by religiosity. For example, Friedlander and Feldmann (1993) took an innovative approach that measures religiosity indirectly, based on the percentage of the population in a geographic area voting for religious parties in the 1984 general elections. That study concludes that variation in

[1] A study of the fertility of the Arab population in Israel, a heterogeneous minority with distinct and varied population processes, is beyond the scope of this paper. See Atrash and Schellekens (2011) for a study of religiosity and fertility among Muslims in Israel.

religiosity across geographic areas was the most important explanatory factor of Jewish fertility differentials at the time—more important than variation in women's labor force participation, socioeconomic status, and urban residence. Other studies using indirect measures of religiosity such as those based on the type of school attended by men (e.g., religious schools called *yeshivot*) have focused almost exclusively on the behavior of the Ultra-Orthodox (Berman 2000; Gurovich and Cohen-Kastro 2004; Mayshar and Manski 2000).

More recently, a new source of survey information which contains direct measures of religiosity has become available in the form of the Israel Social Surveys (ISS). Hleihel (2011) and Okun (2013, 2016) have documented striking fertility differentials among Jews by religiosity using measures of self-reported current religiosity in these surveys from the 2000s.

In this paper, we present the first multivariate empirical tests of the McQuillan/Goldscheider framework using detailed data at the micro-level. Israel Social Survey data from 2009 are analyzed to test empirically the theoretical framework outlined by McQuillan (2004) and Goldscheider (1999) in the context of Jewish fertility in Israel. In particular, we examine religiosity differentials in fertility and examine the extent to which these differentials can be understood in terms of community, social, and political factors. We examine not only self-reported religiosity, but also indicators of religious community, attitudes toward religion as a social and political institution, attitudes toward traditional family and gender values, and family-building ideals associated with different religiosity groups. These factors are thought, in the McQuillan–Goldscheider framework, to underpin the relationship between religiosity and fertility. It is important to note that this study also accounts for many of the more traditional socioeconomic variables that are often associated with fertility and religion or religiosity, such as women's education and labor market characteristics, as well as household socioeconomic status, ethnicity, and immigrant status (Forste and Tienda 1996; Lehrer 1996, 2004). Therefore, we test the explanatory power of the framework outlined by McQuillan and Goldscheider, beyond that of other theoretical perspectives.

4 The Israeli Context: Religiosity Among Jews

A discussion of religiosity in the Jewish population in Israel can be organized around categories of Jewish religiosity which correspond with well-defined social constructs (Hleihel 2011). Although there is variation within broadly defined groups, distinctions are made among the following numerically important groups: (1) Ultra-Orthodox; (2) religious; (3) traditional; and (4) secular/not religious. It is generally quite well understood what these groups mean, both socially and in terms of religious practice (Goldscheider 2015); thus, we take these groups as our starting points in the discussion of religiosity within the Israeli context here, as well as in our empirical analyses. Below, we discuss the different religiosity groupings in terms of distinctions based on social characteristics and behaviors.

The *Ultra-Orthodox* have a commitment to extreme segregation from the secular world in general and, in particular, from the rest of Israeli society. As Friedlander

and Feldmann (1993) discuss, Ultra-Orthodox groups stem from a contra-acculturation movement, which developed during the period of Enlightenment in Europe. They shun all contact with outside culture and essentially form a separate society. For example, Ultra-Orthodox men often study in *yeshivot* (religious schools) well into their 20s and 30s; they do not generally study secular subjects; they have very low labor force participation rates; and they have not usually performed the military service that is mandatory for other Jewish men. While Ultra-Orthodox women may have greater contact with Israeli secular society than their male counterparts, their behavior is also more limited than among secular women, and their labor force participation is generally lower than that of other women [Israel Central Bureau of Statistics (ICBS) 2010]. Likewise, community norms prohibit any exposure to secular culture in the form of mass media and internet for men, women, and children; social norms are enforced from within by neighbors and community members, through social surveillance and threat of rejection by the group. The strict adherence to a very particular, constrained way of life on the part of the Ultra-Orthodox in Israel must also be understood in the context of the powerful religious institutions and leaders. Politically, the Ultra-Orthodox groups are organized and have formed the balance between the two large political parties on the left and on the right. This strategic political position has empowered religious leaders and enabled the Ultra-Orthodox to receive much government assistance in terms of financial support; for example, Ultra-Orthodox, in particular, have benefited from government child allowances, which increase according to family size (Toledano et al. 2011; Marom 2015). Nonetheless, the Ultra-Orthodox are among the poorest segments of the Israeli population (Friedman 1991). Based on the 2009 ISS, 7.6% of adult Jewish women aged 20 and over define themselves as Ultra-Orthodox (ICBS no date, a). Recent research, based on ISS data, has documented that among women born during the 1950s and 1960s, Ultra-Orthodox women have levels of cohort completed fertility ranging from 6.2 to 8.0 (Okun 2013).

Distinct from the Ultra-Orthodox movement, the *national religious* movement originated during Enlightenment in groups that promoted contact with the outside world while maintaining Jewish culture and practices (Friedlander and Feldmann 1993). These religious Jews are generally well integrated into Jewish Israeli society: they participate in major institutions such as the military; their school system teaches secular as well as religious subjects; they participate in secular, post-secondary study; and they have high labor force participation rates, both among men and women. Persons who see themselves as part of the national religious movement are likely to self-identify as religious, but not Ultra-Orthodox. Based on the 2009 ISS, 10.6% of adult Jewish women aged 20 and over self-identify as religious (ICBS no date, a). Religious women have been shown to have cohort fertility of about 4.0 among women born during the 1950s and 1960s (Okun 2013).

An additional 39.8% of Jewish adult women in the 2009 ISS define themselves as traditional (ICBS no date, a). Traditional Jews in Israel do not define themselves as (strictly) religious or Ultra-Orthodox, and not as secular. Generally, traditional Jews do fulfill some religious commandments and maintain Jewish customs. However, their traditional behavior is not necessarily motivated only by religious

commitment, but may also be associated with identification and affiliation with the Jewish people or with their Jewish ethnic group, community, and family (Ben-Rafael and Sharot 1991). Self-defined traditional women from the 1950s and 1960s birth cohorts have cohort completed fertility in the range of 2.5–3.5, with a slight downward trend noticeable among some of these traditional women (Okun 2013). The large category of traditional Jews is sometimes further broken down into two subcategories: traditional/religious Jews and traditional/less-religious Jews. The former group, while less likely to fulfill strictly the Jewish commandments (such as Sabbath observance) than are Ultra-Orthodox or self-defined religious women, are more likely to do so than are traditional/less-religious women.

The largest group of adult Jewish women, 41.8%, self-defines themselves as secular/not religious (ICBS no date, a). We note that substantial proportions of self-identified secular women report at least occasional observance of religious commandments, attend synagogue for major holidays, and rate religious ceremonies as very important in their lives.[2] This would suggest that even self-defined secular Jews in Israel are not completed secularized. Secular women have the lowest number of children on average among all Jewish religiosity groups, but maintain replacement-level or just above replacement-level cohort fertility across birth cohorts of the 1950s and 1960s (Okun 2013).

5 Data and Sample

The ISS are conducted annually by the Israel Central Bureau of Statistics (ICBS) on a changing sample of men and women aged 20 and over. Questionnaires are administered in face-to-face interviews. Survey weights are computed for the purpose of correcting for selective non-response in order to ensure that the sample is representative of the adult population of Israel. Statistical measures presented here were based on weighted cases, and information is taken based on the questionnaire administered to main respondents. All the results in this paper are based on the 2009 ISS, which includes a detailed module on family life and religious observance and has a response rate of 84% (ICBS no date, b).

We limit our samples to individuals aged 25–49 who self-identify as Jewish.[3] We perform analyses separately by gender, as patterns may differ for women and men. The age range of 25–49 was chosen to reflect major segments of the life course during which women and men are engaged in the process of family building, and during which dual emphases are placed on family and labor market activity, with most adults having completed or nearly completed their education. The samples of Jewish women and men total 1309 and 1238, respectively.

[2] For example, among native-born secular women aged 20–44, 49% report that they follow kosher laws at least to some degree, 26% report attending synagogue on Rosh Hashanah or Yom Kippur, or more frequently, and 45% report that having a Jewish burial is very important for themselves (author calculations, based on ISS 2009).

[3] In 2009, 80% of persons aged 20 and over identified themselves as Jewish, 13% as Muslims, 3% as Christians, and 3% as Druze, others, or of no religious affiliation (ICBS no date, c).

6 Dependent Variable

Our main purpose is to examine fertility differentials in a multivariate framework which attempts to unpack the effects of religiosity on parity, within a theoretical framework motivated by McQuillan and Goldscheider, as well as by economic models of fertility, as described above. The dependent variable in our analyses is defined as whether the respondent reports having at least three children. The choice of the dependent variable reflects the remarkable and consistent numerical dominance of the three-child family among Jews in Israel (see Okun 2013) and is further motivated by practical considerations of data availability and sample size. One alternative we did not choose for the dependent variable is a parity progression ratio, for example from two children to three children; this choice has several disadvantages, including a reduction in sample size to include only persons with at least two children; loss of information regarding first and second births; and a detailed data requirement on exposure to third birth (since the time of the second birth), which is not available for all persons. We are also unable to focus exclusively on completed fertility (for example of three or more children), because this would require limitation of the sample to older ages, which would significantly reduce sample size, something which is problematic for the Ultra-Orthodox and religious groups, which are relatively small. In addition, we are unable to look at measures of the timing of fertility (e.g., age at first birth) because we do not have complete information on timing of birth of the oldest child for all individuals. Thus, rather than focusing narrowly on parity progression or the timing of fertility, and instead of limiting the sample to persons with completed fertility, we take a broader view and look at cumulative fertility, controlling for exposure to fertility by including age and marital history in the analyses. This approach has been usefully undertaken in other research on religiosity and fertility, which often must cope with issues of limited sample size and data availability (e.g., Frejka and Westoff 2008; Westoff and Frejka 2007).

7 Main Explanatory Variables

ISS questionnaires include demographic information on main respondents' number of children ever born, current marital status, number of times married, and country of birth. Socioeconomic data collected include information on ethnicity, education, labor market activity, and standard of living. It is important to note that the 2009 data module also contains subjective reports on religiosity at the time of the survey, retrospective reports on religiosity of household of origin at age 15, and a wide range of questions on attitudes and values related to religiosity and family. Details on variables included in our multivariate analyses are provided below; descriptive statistics are provided in Table 5 in the "Appendix".

7.1 Subjective Self-Identification of Religiosity

In the analyses that follow, we take subjective self-identification of religiosity, as reported in the ISS, as the primary measure of religiosity. Subjective self-identification of religiosity refers primarily to the concept of subjective religious

salience (how religious one considers oneself to be), which is considered an appropriate measure of religiosity for non-Christian populations (González 2011), and has clear social meaning in the current context. In particular, the Jewish main respondents are asked "How do you see yourself?" and are asked to choose one answer among five categories: (1) Ultra-Orthodox, (2) religious, (3) traditional/religious, (4) traditional/less-religious, or (5) secular/non-religious. These measures of self-identification of religiosity have been shown to encapsulate the fundamental meanings of religiosity among Jews in Israel (Goldscheider 2015). Moreover, these categories are well-understood social constructs within Jewish society in Israel, are associated with clear patterns of social behavior as described above, and are frequently usefully employed in social research in the current context (e.g., Bystrov 2012; Friedlander 2002; Hleihel 2011; Landau 2003; Okun 2000, 2013; Remennick and Hetsroni 2001). Therefore, we take subjective self-identification of religiosity (also referred to, for convenience, as self-defined religiosity or self-reported religiosity) as our starting point and consider how the relationship between self-defined religiosity and fertility can be understood in terms of relevant theoretical factors, which shed light on that relationship.

Figure 1 depicts proportions of Jewish women and men, aged 25–49, with at least three children, by category of self-reported religiosity. A large majority of Ultra-Orthodox women and men have at least three children, and about 50% of religious women and men have at least three as well. There are also lower, but still substantial proportions with at least three children among traditional/religious, traditional/less-religious, and secular women and men. We note that even among secular women and men, more than one-fifth have cumulative fertility of at least three. Differences are relatively small when comparing between traditional/less-religious and secular groups. Differences between women and men may be related to gender differences

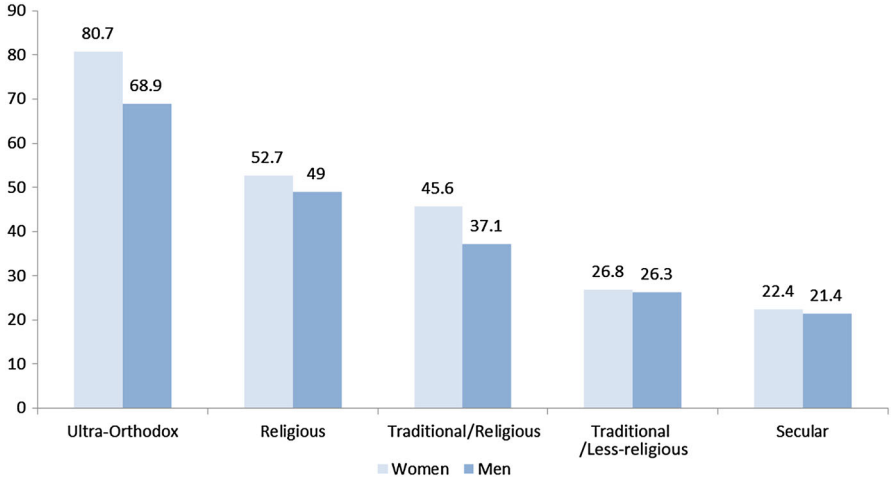

Fig. 1 Percent of Jewish women and men with at least three children, by religiosity. *Notes*: Jewish women aged 25–49, $N = 1309$. Jewish men aged 25–49, $N = 1238$. *Source*: Israel Social Survey, 2009

in patterns of family building. For more detailed information on parity by religiosity level, see Okun (2013).

We now describe the other major explanatory variables included in our analyses, their hypothesized association with fertility in line with the theoretical framework considered, and their statistical associations with self-defined religiosity (see Tables 1, 2).

7.2 Influence of Religious Communities

According to the McQuillan–Goldscheider framework, the effects of religion and religiosity on fertility are transmitted in large part through community; therefore,

Table 1 Descriptive statistics for variables thought to be associated with self-defined religiosity and fertility (% or mean within self-defined religiosity group), among Jewish women aged 25–49

Variables	Self-defined religiosity					
	Ultra-Orthodox	Religious	Traditional/religious	Traditional/less-religious	Secular	All women
Values living in residential area with persons of similar religiosity (%)	65.1	26.9	21.2	8.9	11.8	18.4
Sees herself as affiliated with a movement/group within Judaism (%)	67.0	75.4	26.7	12.1	3.5	21.2
Participates in organized setting of religious learning (%)	62.4	54.6	16.7	10.2	2.8	16.6
Does not support option of civil marriage (%)	92.7	58.0	32.8	13.7	3.7	22.9
Resides in West Bank (%)	11.9	19.8	2.2	1.0	1.4	4.1
Strongly opposes separation of religion from state (%)	75.2	53.4	36.1	24.9	10.9	27.3
Holds traditional gender role attitudes (%)	68.8	34.4	10.0	15.9	14.4	20.7
Holds traditional family attitudes (%)	83.5	58.0	41.1	28.3	17.9	33.1
Believes women should start family by age 24 (%)	91.7	65.4	34.4	21.1	12.7	29.5
Ideal family size among those who provided a numerical answer (mean)	6.2	4.7	3.8	3.3	3.1	3.5
Provides non-numerical answer for ideal family size (%)	45.9	14.5	3.3	0.6	1.9	6.7
Not in labor force (%)	36.7	14.5	18.3	15.0	11.5	15.7
Working full-time (%)	18.3	48.9	45.6	56.1	60.6	52.7

$N = 1309$

Table 2 Descriptive statistics for variables thought to be associated with self-defined religiosity and fertility (% or mean within self-defined religiosity group), among Jewish men aged 25–49

Variables	Self-defined religiosity					
	Ultra-Orthodox	Religious	Traditional/religious	Traditional/less-religious	Secular	All men
Values living in residential area with persons of similar religiosity (%)	61.3	24.2	19.9	7.6	14.0	18.4
Sees himself as affiliated with a movement/group within Judaism (%)	68.9	74.0	32.9	14.8	3.1	24.1
Participates in organized setting of religious learning (%)	86.8	68.0	32.2	7.9	1.7	23.1
Does not support option of civil marriage (%)	90.6	58.2	41.7	23.0	4.8	22.9
Resides in West Bank (%)	17.9	13.1	2.6	2.0	1.3	4.5
Strongly opposes separation of religion from state (%)	79.2	52.9	40.8	21.7	10.5	28.1
Holds traditional gender role attitudes (%)	70.8	37.0	25.0	23.0	26.0	30.3
Holds traditional family attitudes (%)	83.0	65.4	53.9	33.2	23.3	39.8
Believes women should start family by age 24 (%)	99.1	71.2	52.0	32.0	17.2	38.8
Ideal family size among those who provided a numerical answer (mean)	7.3	4.8	3.9	3.4	3.1	3.7
Provides non-numerical answer for ideal family size (%)	41.5	11.0	2.0	1.0	2.7	6.5
Not in labor force (%)	50.0	4.5	12.5	7.3	5.9	10.7
Working full-time (%)	29.2	77.1	73.7	75.0	76.9	72.0

$N = 1283$

women and men who emphasize the importance of religious community in their lives should have higher fertility than their counterparts who do not. In other words, we expect that community-related effects explain, in part, the association between self-identified religiosity and fertility. Moreover, in light of our discussion above, it is likely that the importance of religious community differs among those who self-identify as Ultra-Orthodox, religious, or traditional.

We measure the subjective importance of religious community in *three* different ways. The *first* measure refers to the extent to which the respondent places great importance on living in a residential area with persons of similar religiosity. This measure may be related to a desire to live near chosen synagogues and places of religious learning, as well as a preference for surrounding oneself with persons of

similar values, or for segregating oneself from others who differ in their ways of life. The motivations for and social significance of preference for residential segregation are likely to differ across religiosity subgroups; for example, among the Ultra-Orthodox, segregation may be seen as critical for shutting out secular culture, while for those who self-define as religious, it may be seen as important in terms of convenient access to neighborhood religious facilities. Therefore, we suggest that the stated preference for living near persons of similar religiosity may be associated with fertility in different ways for Ultra-Orthodox, religious, traditional, and secular women and men.

The answer to the question on residential preferences is measured on a four-point scale ranging from very important to not important at all. Those who answered that it is very important for them to live in a residential area with persons of similar religiosity were coded 1; those who answered otherwise were coded 0. Tables 1 and 2 indicate that, for both women and men, living in a residentially segregated area is particularly important for those who self-define as Ultra-Orthodox (over 60% rate this as very important), and is much less important for other groups. Religious and traditional/religious were about as likely to state that this value is very important for them (about 20–25%), while other groups were less likely to do so. This finding is consistent with what we understand regarding the critical importance of a separate way of life for the Ultra-Orthodox (Friedman 1991).

A *second* measure of community effects of religiosity is based on the survey response as to whether the respondent sees herself or himself as affiliated with a movement within Judaism (such as national religious, Orthodox, conservative, or reform). Affiliation with movements, which are often community- and synagogue-based networks, is indicative of the greater centrality of religious community in one's life. As theory suggests that the social importance of religious community explains how religiosity is associated with fertility, we expect that affiliation will partly account for the relationships between religiosity on fertility.

Those who answered that they affiliate with a particular movement/group within Judaism were coded 1; those who answered otherwise were coded 0. Tables 1 and 2 suggest that this measure of community is particularly salient for those women and men who self-identify as religious, with roughly three-quarters of these individuals seeing themselves as affiliated. It is noteworthy that these proportions are higher than among women and men who self-identify as Ultra-Orthodox, as well as among all other groups. This finding demonstrates that religiosity within the Jewish population cannot be understood as linear or unidimensional.

The *third* measure of community effects indicates whether the respondent reports that she or he participates in an organized setting of religious learning (such as lectures, seminars, or religious classes). An organized setting of religious learning may comprise part of a social network and contribute to the establishment and reinforcement of social norms and expectations. Also, women and men who engage in religious learning with their peers actively show evidence of the centrality of religion in their lives. For these reasons, participation in an organized setting of religious learning is hypothesized to explain, in part, the relationship between self-defined religiosity and fertility. Moreover, the social significance of an organized setting of religious learning may differ across religiosity groups; for example, for

Ultra-Orthodox men, religious learning is often their primary activity; for other men and women, religious learning may take place in various forms and take on varied meanings, ranging from formal learning to community-based discussion groups. In other words, participation in organized settings of learning may be associated with fertility in different ways across religiosity groups.

Those who answered that they participate in an organized setting of religious learning were coded 1; those who answered otherwise were coded 0. Tables 1 and 2 suggest that organized settings of religious learning are much more important for Ultra-Orthodox and religious women and men than for all others; there are also gender differences, with men participating more than women in most religiosity groups.

7.3 Religion as a Social Institution

Consistent with the McQuillan–Goldscheider framework, previous research has suggested that the institutionalization of religious family law in Israel serves as a social and cultural code for dictating the proper life for women and men, emphasizing familism, high fertility, marriage, marital stability, and fertility within marriage (Fogiel-Bijaoui 2002; Toren 2003). One of the key ways that religious family law affects life in Israel is the central issue of marriage: there is no civil law in Israel regulating personal status. Thus, for Israeli citizens, religious law is the only law regulating marriage and divorce. There is ongoing public debate as to whether the option of civil marriage should be provided by the state (see Bystrov 2012). As theory suggests that the social institutionalization of religion explains, in part, how religiosity is associated with fertility, we hypothesize that opinions regarding the desirability of an option for civil marriage partly account for the effects of religiosity on fertility.

We measure the subjective importance of religion as a social institution by way of a question which asks, based on a four-point scale, to what extent the respondent agrees that there should be an option of civil marriage. Those who strongly disagreed were coded as 1; all others were coded 0. As reported in Tables 1 and 2, Ultra-Orthodox women and men overwhelmingly disagreed that civil marriage should be an option, and a clear majority of religious also disagreed. Other groups were much less likely to disagree, and nearly no seculars disagreed that there should be such an option.

7.4 Religio-Nationalist Ideology

The McQuillan–Goldscheider framework suggests that religiosity matters more for demographic behavior when it is closely linked to nationalism. Inglehart and Welzel (2005), in turn, find a strong interconnection between religious traditionalism and values of nationalism and familism, based on evidence from the World Values Surveys.

Jewish nationalism has a particular meaning for Jews in Israel. For many Jews, Judaism means being a member of the Jewish people and the Jewish majority of Israel and does not refer primarily or only to the Jewish religion (Smooha 2005). In a similar vein, it has been argued that a "demographic competition" between Jewish

and Arab citizens of Israel fosters higher fertility rates among both groups (Anson and Meir 1996). Thus, religion-based nationalism may explain part of the relationship between religiosity and fertility.

We have two explanatory variables that capture aspects of religio-nationalism. One is a dummy variable based on current residence in the Occupied Territories of the West Bank. There are ideological considerations in a decision to live in the West Bank, related to the idea that territories west of the Jordan River should be part of Israel, and not part of a separate Palestinian-controlled area. Some Jewish settlements in the West Bank are heavily religious and some have a strong nationalistic bent, while some settlements are characterized by a combination of religio-nationalistic ideology. As theory suggests that religio-nationalism explains, in part, how religiosity is associated with fertility, we hypothesize that residence in the West Bank partly accounts for the effects of self-defined religiosity on fertility. It is also important to note that residence in the West Bank may be related to economic and practical considerations, as residential units tend to be cheaper in those areas as compared to similar units within the State of Israel.

We note from Table 1 that the highest proportion of religious women (nearly 20%) live in the West Bank, followed by nearly 12% of the Ultra-Orthodox and tiny proportions of other groups. Among men, slightly higher proportions of the Ultra-Orthodox than of the religious live in the West Bank.

The second variable that captures aspects of religio-nationalism is based on an attitudinal question concerning whether the respondent supports the separation of religion from state. We hypothesize that opposition to separation of religion from state partly accounts for the effects of self-defined religiosity on fertility. We note, however, that opposition to separation of religion from state may not be a clear-cut measure of religio-nationalism since some may oppose separation because of their economic dependence on state-sponsored religious institutions and subsidies (and not because of ideology). Also, a minority of Ultra-Orthodox might support separation of religion and state because they reject everything associated with the State of Israel, as part of a staunch anti-Zionist stance (Keren-Kratz 2016).

Respondents who strongly oppose separation of religion from state (on a four-point scale) were coded with the value 1; all others were coded 0. As Tables 1 and 2 show, opposition to separation of religion from state is found among all groups and is most common among the Ultra-Orthodox. Even among secular women and men, some 10% oppose such separation.

7.5 Gender and Family Norms

Part of the McQuillan–Goldscheider framework focuses on the role of gender and family norms as mediating factors in the relationship between religion and fertility. For example, those women and men who self-define as traditional/religious, religious, or Ultra-Orthodox are expected to have more traditional gender and family norms, which account in part for their higher fertility than secular and traditional/less-religious women.

We have one summary measure of gender norms and one summary measure of family norms. Traditional gender norms are measured based on a series of four

attitudinal questions concerning women's roles as homemakers and paid workers, equal division of household labor between spouses, and economic contributions of spouses to the household budget. Those respondents with more traditional responses were coded with a value of 1; others were coded with a value of 0.

A dummy variable on traditional family norms is based on a series of five attitudinal variables concerning the importance of marrying before having children, as well as attitudes toward parenting, single parenting, divorce, and the effects on small children of working mothers. Those with traditional values concerning at least two of these family issues were coded with a value of 1; others were coded with a value of 0 (Further information is available from the author).

Generally, Ultra-Orthodox women and men have the most traditional gender and family norms (Tables 1, 2). It is worth noting, however, that some groups are quite traditional in terms of their family norms, while their attitudes toward gender roles are similar to those of the liberal secular group. For example, the religious and traditional religious seem to combine conservative views of the family along with more open views of gender roles. We also note that men tend to have more traditional gender and family attitudes than do women.

7.6 Ideals Regarding Family Building Over the Life Course

Beyond attitudinal questions about gender roles and norms regarding traditional family forms, more concrete expectations or ideals concerning family building over the life course may partly account for the effects of religiosity on fertility. We define variables based on respondents' answers to questions concerning the ideal age by which a woman should start a family, as well as ideal family size. A series of dummy variables indicate whether the respondent favors women starting a family early (by age 24), and whether ideal family size is less than three, three (reference), four, five or more, or whether the respondent provided no numerical answer to the question. An overwhelming proportion of Ultra-Orthodox women and men, and a majority of religious women and men, as well as traditional/religious men believe that women should start a family by age 24; other men and women are much less likely to believe that. Among those who report a numerical answer for ideal family size, the means for Ultra-Orthodox women and men are 1.5 children and 2.5 children more than for religious women and men, respectively. Religious women and men, in turn, have ideals that are 0.9 children more than for traditional/religious women and men; differentials among the traditional and secular groups are smaller. Over 40% of Ultra-Orthodox women and men do not provide a numerical answer for the question on ideal family size. Much smaller proportions among other groups do not do so.

7.7 Labor Market Activity

Economic theories suggest that education, labor market activity, and gender division of household labor are interrelated. For example, if more religious women tend to invest less in education and labor market activity, they may in turn choose to specialize in home production, have more children and invest more time in

household labor (Lehrer 2004). In our analyses of women's fertility, we include a variable on women's labor market activity to test whether their employment status may be interrelated with religiosity and fertility, controlling for education. Dummy variables representing female respondents' status as outside of the labor force, unemployed, employed part-time and employed full-time (reference) are included in the model of women's fertility. Ultra-Orthodox women are much more likely to be out of the labor force (about 37%) and much less likely to be working full-time (about 18%) as compared with other women; differentials among the other groups of women are smaller, although traditional/religious women are slightly more likely to be out of the labor force and slightly less likely to be working full-time.

We also note that employment among Ultra-Orthodox men is low; however, in the analyses of men's fertility, we do not include a variable on labor market activity, because the theoretical frameworks we consider here do not speak directly to the relationship between men's employment, religiosity and fertility, and unmarried men do not have wives by which to measure women's employment (In models not presented here, men's labor market activity was not found to be associated with their odds of having at least three children, full details available upon request from the author.)

8 Method

In analyses performed separately on samples of women and men, we estimate logistic regression models of the odds of having at least three children, where the main covariates of interest are respondent's subjective self-identification as Ultra-Orthodox, religious, traditional/religious, traditional/less-religious, and secular. These analyses allow us to assess the importance of self-defined religiosity in explaining fertility differentials beyond other sociodemographic and socioeconomic factors that are commonly included in analyses of fertility. More importantly, in various models, we include a range of theoretically relevant variables which may mediate the relationship between self-defined religiosity and fertility and thus allow us to test quantitatively the theoretical frameworks. The unexponentiated coefficients on the self-defined religiosity variables in various models will be compared with the goal of understanding how specific factors included in the models may explain how and it what ways self-defined religiosity is associated with fertility. Also, in some instances, where we hypothesize that the effects of certain factors on fertility may vary be level of self-defined religiosity, we test for the significance of interaction terms, as described below.

9 Multivariate Results

9.1 Results from Analyses of Women

Table 3 presents results from multivariate logistic regression models of the odds of having given birth to at least three children, among women aged 25–49. Each of the models contains four dummy variables measuring self-defined religiosity (secular

Table 3 Results from multivariate logistic regression models of the odds of having given birth to at least three children among Jewish women

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Self-defined religiosity								
Ultra-Orthodox	3.54** (0.36)	2.61** (0.51)	3.14** (0.40)	3.46** (0.38)	3.34** (0.38)	2.28** (0.45)	3.39** (0.37)	1.39* (0.59)
Religious	1.77** (0.27)	0.56 (0.38)	1.49** (0.29)	1.62** (0.29)	1.67** (0.28)	0.69* (0.33)	1.74** (0.27)	−0.37 (0.44)
Traditional/religious	1.06** (0.24)	0.89** (0.25)	0.97** (0.24)	1.04** (0.24)	1.04** (0.24)	0.66** (0.25)	1.02** (0.24)	0.49+ (0.27)
Traditional/less-religious	0.23 (0.20)	0.14 (0.20)	0.20 (0.20)	0.22 (0.20)	0.21 (0.20)	−0.02 (0.21)	0.21 (0.20)	−0.14 (0.22)
Secular	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Religious community[a]								
Values living in residential area with persons with similar religiosity		0.16 (0.22)						0.12 (0.23)
Values living in residential area with persons with similar religiosity, *among Ultra-Orthodox*		0.98 (0.61)						1.08+ (0.65)
Sees herself affiliated with a movement/group within Judaism		0.68** (0.23)						0.65** (0.24)
Participates in organized setting of religious learning		−0.11 (0.29)						−0.21 (0.30)
Participates in organized setting of religious learning, *among religious*		1.57** (0.55)						1.51** (0.57)
Religion as a social institution								
Does not support option of civil marriage			0.54* (0.23)					–[b]
Religio-nationalism								

Table 3 continued

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Residence in West Bank				0.78* (0.39)				–[b]
Strongly opposes separation of religion and state				0.04 (0.19)				
Gender and family norms								
Traditional gender role attitudes					0.23 (0.20)			
Traditional family attitudes					0.14 (0.17)			
Ideals regarding family building								
Woman should start family by age 24						0.92** (0.20)		0.92** (0.21)
Ideal family size up to 2						−0.88** (0.30)		−0.83** (0.30)
Ideal family size 3						Ref.		Ref.
Ideal family size 4						0.77** (0.19)		0.78** (0.19)
Ideal family size 5 or more						1.06** (0.35)		0.86** (0.36)
Non-numerical answer for ideal family size						0.81+ (0.40)		0.59 (0.42)
Labor market activity								
Out of labor force							0.53* (0.22)	0.53* (0.23)
Unemployed							0.44 (0.33)	0.49 (0.35)
Employed part-time							0.57* (0.18)	0.51** (0.19)
Employed full-time (reference)							Ref.	Ref.

Table 3 continued

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
N	1309	1309	1309	1309	1309	1309	1309	1309
McFadden's Pseudo-R-squared	0.34	0.36	0.34	0.34	0.34	0.38	0.35	0.40

Source: Israel Social Survey, 2009. Sample includes Jewish women, aged 25–49

Unexponentiated coefficients (standard errors in parentheses)

Models also include controls for age, marital history, ethnicity, education and car ownership. See text for details of variable definitions and online-only appendix for full results

[a] In models which included community variables, interaction effects were included in estimated models if one or both of the following two conditions held: (1) the interaction effects were statistically significant at the 10% level or (2) the interaction effects led to total effects that were statistically significant at the 10% level. The total effect is defined as the sum of the main effect and the interaction effect

[b] In model 8, a chi-square statistic indicated that in a comparison of −2 log likelihood of models including the variable and excluding the variable, the model excluding the variable fit the data better

** $p < 0.01$; * $p < 0.05$; $^{+}$ $p < 0.10$

women form the reference group). In all models presented, we use measures of *current* self-defined religiosity to estimate the relationship between religiosity and fertility. Reported religiosity in the household of origin when the respondent was aged 15, in the same five categories, is also available in the survey data. We choose to use current self-definition of religiosity because in models estimated using measures of religiosity in respondent's household at age 15, the coefficients on the religiosity dummy variables are in the same direction, but smaller than those estimated using current religiosity (results not presented). Moreover, when controlling for current self-reported religiosity, there is no significant effect of changes in religiosity over the lifetime. Most importantly, the substantive results regarding the effects of other theoretically relevant variables do not vary in important ways depending on whether we include current self-reported religiosity or self-reported religiosity in household at age 15.

As many of the women in the sample have not yet completed their reproductive years, we also control for age in all models (modeled as dummy variables in standard five-year age groups). All models also include, in addition to the religiosity and age dummy variables, sociodemographic and socioeconomic factors as control variables, in order to take into consideration differences across religiosity groups in marital history, ethnicity, education, and car ownership (a measure of standard of living). Marital history is important as it is an indicator of exposure to childbearing and may be closely related to religiosity. Two dummy variables provide information on marital history: one which is an indicator for persons who are once and currently married at the time of the survey, and another which is an indicator for persons who have experienced marital dissolution (i.e., are previously married or are married more than once at the time of the survey); the reference group is those who have never been married.[4] Having an academic education (B.A. or higher) is potentially important, as education is an indicator of cultural as well as human capital, and may be associated with attitudes and values, labor market activity and fertility. Ethnicity is included in the models, as it is also associated in Israel with differing values, demographic patterns, and socioeconomic status (Okun and Khait-Marelly 2008; Manor and Okun 2016). Car ownership is used as a proxy for economic status of the household. Parameter estimates for explanatory variables based on age, marital status, education, ethnicity and car ownership are not presented in the tables, but are reported in online appendix tables. Substantive results relating to these variables are discussed in the text where relevant.

The results from model (1), as shown in Table 3, confirm that there are differential odds of women having had at least three children by religiosity group. Ultra-Orthodox women have by far the highest odds, while religious and traditional/religious women have significantly lower odds than the Ultra-Orthodox, but still significantly higher odds than among secular women. There is no statistically significant difference in the odds of having at least three children between traditional/less-religious and secular women. Based on results available in the online appendix tables only, we note that in comparing models with and without controls for marital status, ethnicity, education, and car ownership, the

[4] The data do not contain information on age at first marriage for all women.

unexponentiated regression coefficients on the Ultra-Orthodox, religious, and traditional/religious dummy variables are each reduced by up to about one standard deviation, indicating the importance of these factors—particularly marital status—in understanding part of the religiosity group differentials in cumulative fertility.

Before turning to the remainder of the models, we note briefly that women who are once and currently married or have been previously married have significantly higher odds of having had at least three children as compared with women who have never been married (see Tables in the appendix). Women with academic degrees (B.A. or higher) have lower odds of having had at least three children than women with lower levels of completed education, but the effect is not statistically significant at conventional levels in most models. Ethnicity and car ownership are not statistically associated with attaining parity three and above, once controlling for other factors in the model.[5]

Models (2)–(8) add different explanatory variables meant to capture aspects of theoretical relationships between religiosity and fertility. The unexponentiated coefficients on the self-defined religiosity variables in these models will be compared to those in model (1).

9.1.1 Influence of Religious Communities

Model (2) includes measures of the role and importance of religious community. The first is a measure of preference for residential segregation. Because theory suggests that the relationship between preference for residential segregation and fertility may vary by level of self-defined religiosity, the measure of preference for residential segregation was interacted with each level of religiosity (full results available from author). Among the Ultra-Orthodox, those who strongly value living in residential areas with persons of similar religiosity are more likely to have at least three children. While the interaction effect falls short of statistical significance, the total effect of preference for residential segregation (the sum of the main effect and the interaction effect) is large and statistically significant at the 10% level, among Ultra-Orthodox women. Among other religiosity groups, the interaction and total effects were not statistically significant, so the interaction effects were not included in model (2).

In model (2), a second measure of community effects of religiosity is based on whether the respondent sees herself as affiliated with a movement within Judaism. Those women who view themselves as affiliated with a specific social, religious, or political movement within Judaism have statistically significantly higher odds of having at least three children (Interaction effects with specific religiosity groups were not statistically significant, and did not add to the explanatory power of the model).

The third measure of community effects included in model (2) indicates whether the respondent reports that she participates in an organized setting of religious

[5] In contrast, the results from the male sample indicate that men born in the FSU have consistently lower odds of having at least three children, in all models considered. See Okun (2012, 2015) for more on this topic.

learning. Again, interaction terms with this factor and different levels of religiosity were tested, as this factor may be related to fertility in different ways, depending on the level of self-defined religiosity. Among self-defined religious women, those who participate in an organized setting of religious learning have statistically significantly higher odds of having at least three children, and the total effect is also positive and statistically significant (Other interactions were not significant, and were not included in the model).

Overall, in model (2), the inclusion of the three community variables, along with their interactions with religiosity levels, reduces the size of the dummy variables on Ultra-Orthodox and religious women substantially, by approximately two to three standard errors each, as compared with model (1). The importance of living in residential areas with persons of similar religiosity is relevant for women who self-define as Ultra-Orthodox; participating in organized settings of religious learning is relevant for women who self-define as religious. In fact, holding other factors constant in model (2), self-defined religious women who do not study in organized settings of religious learning have no higher odds of having three or more children than their secular counterparts. For women who self-define as traditional/religious, the community variables appear to mediate the effect of religiosity on fertility to a smaller extent. Overall, a comparison between models (1) and (2) suggests that religious community plays an important role in the relationship between religiosity and fertility, particularly for women who see themselves as Ultra-Orthodox or religious.

9.1.2 Religion as a Social Institution

According to the results from model (3), women who oppose the option of civil marriage have significantly higher odds of having at least three children, as compared with others. Moreover, the sizes of the religiosity coefficients among Ultra-Orthodox and religious women are reduced by approximately one standard deviation when the model includes opposition to civil marriage [compare model (3) to model (1)]. Thus, the results support the notion that the effect of religiosity is related to the impact of social institutions which define its meaning.

9.1.3 Religio-Nationalist Ideology

Results from model (4) are supportive of the idea that residence in the West Bank is associated with higher fertility. We note, however, that we cannot rule out the possibility of the importance of economic and practical considerations, whereby families with more children desire to live in less expensive, subsidized residential areas in the West Bank, in order to be able to afford larger homes. We find no empirical support for the relationship between higher fertility and strong opposition to separation of religion and state. Moreover, the coefficients on the dummy variables on religiosity in model (4) remain very similar to those in model (1), which indicates that the religio-nationalistic variables do not explain the relationship between self-defined religiosity and fertility.

9.1.4 Gender and Family Norms

Model (5) includes two dummy variables that capture aspects of attitudes toward traditional gender norms and traditional family norms. Neither of the dummy variables considered adds statistically significant explanatory power to the model, and the religiosity coefficients in model (5) differ little from those in model (1). Thus, we do not find that these attitudinal factors are associated with higher fertility, net of other factors considered. Moreover, we do not find support for the mediating effects of family and gender norms in explaining the relationship between religiosity and fertility. We note, however, that in models that do not explicitly control for self-defined religiosity (not presented here), there are significant effects of traditional attitudes toward gender roles and family forms; however, when self-defined religiosity is included in the model, the effects of these traditional attitudes no longer have independent, significant effects on fertility. We also note that the effects of the family and gender norms may be partially absorbed by the marital history variables, which are also included in the models.

9.1.5 Ideals Regarding Family Building Over the Life Course

The variables we include in model (6) are based on respondents' answers to questions concerning the ideal age by which to start a family, and ideal family size. All of these dummy variables have estimated coefficients which are large and statistically significant. In particular, women who favor starting families at a young age and women with larger family size ideals are more likely to have attained at least three children by the survey date. We note that the inclusion of this set of dummy variables reduces dramatically the size and statistical significance of the religiosity dummy variables in model (6), as compared with model (1). One interpretation of these findings is that specific norms regarding the family-building process over the life course underpin the relationship between religiosity and fertility. Of course, we cannot eliminate the possibility that the ideals reported by women are themselves influenced by the turns which their own lives have taken. Nonetheless, it is interesting to note that not only are the family-building variables significant in and of themselves; they also go quite far in reducing the size and significance of the religiosity variables. If, in model (6), the relationships between attitudes toward family-building variables and fertility were indeed a result of the impact of actual fertility on attitudes (rather than the other way around, as suggested by the McQuillan–Goldscheider framework), we would not necessarily expect to see the addition of these attitudinal variables to lead to the reductions we do see in estimated coefficients on religiosity dummy variables in model (6), as compared with model (1).

9.1.6 Labor Market Activity

In model (7), we control for women's labor market activity. The results indicate that women who are outside of the labor force and those who work part-time have significantly higher odds of having at least three children, than are women who

work full-time. However, it is interesting to note that while labor market status is significantly associated with fertility, the estimated effects of religiosity in this model are essentially unchanged from model (1). That is, labor market activity is related to fertility, but does not explain the relationship between religiosity and fertility. This finding is consistent with that reported in Ekert-Jaffe and Stier (2009), who find that in Israel, a context in which high fertility and women's employment are both socially supported by policy and ideology, employment decisions do not strongly affect fertility decisions, while cultural factors such as religiosity do.

9.1.7 Summary of Multivariate Findings on Sample of Women

In the final model, we present a multivariate regression of fertility while taking into consideration the various factors found to be of relevance in previous models. Due to covariation across different factors discussed, some of the factors lose statistical significance and are not included in the final model. However, in general, the results of the final model bear close resemblance to those discussed in previous models. In particular, the models highlight the role of religious community in understanding the association between fertility and religiosity. Among the Ultra-Orthodox, women who strongly value living in segregated residential areas tend to have higher fertility than those who do not[6]; among religious women, those who participate in an organized setting of religious learning tend to have higher fertility than those who do not; among all women, those who see themselves affiliated with a particular movement within Judaism tend to have higher fertility than those who do not. Attitudes toward ideal family-building trajectories are also closely associated with higher fertility and underpin the effects of religiosity. Labor market activity is also strongly associated with fertility. Opposition to civil marriage and residence in the West Bank are no longer statistically significant. In the final model (8), the main effects of the dummy variables on women who self-define as Ultra-Orthodox or religious are reduced by approximately six to eight standard deviations, as compared with model (1), while the main effect for the dummy variable on women who self-define as traditional/religious is reduced by about two standard deviations; moreover, the statistical significance of the effects is also reduced or eliminated. These findings suggest that the relationship between self-defined religiosity and fertility can be largely understood in terms of the factors included in the final model, particularly factors related to the role of religious community and family-building norms.

9.2 Results from Analyses of Men

Results from analyses of the sample of men are broadly consistent with those described above, based on the sample of women and are supportive of the McQuillan–Goldscheider theoretical framework. We highlight here the results based on men, as presented in Table 4. The setup of the table is very similar to that

[6] The interaction effect between self-defined Ultra-Orthodox women and this community variable is statistically significant in model (8), as is the total effect of this community variable.

Table 4 Results from multivariate logistic regression models of the odds of having at least three children, among Jewish men

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Self-defined religiosity							
Ultra-Orthodox	3.20** (0.39)	3.45** (0.52)	3.34** (0.44)	3.23** (0.42)	3.07** (0.41)	2.11** (0.48)	2.36** (0.55)
Religious	1.53** (0.27)	0.82+ (0.45)	1.62** (0.30)	1.52** (0.29)	1.51** (0.28)	0.78* (0.33)	0.23 (0.44)
Traditional/religious	0.88** (0.28)	0.73* (0.32)	0.94** (0.29)	0.92** (0.29)	0.93** (0.29)	0.52+ (0.30)	0.38 (0.33)
Traditional/less-religious	0.39+ (0.22)	0.42+ (0.23)	0.41+ (0.22)	0.41+ (0.22)	0.40+ (0.22)	0.28 (0.23)	0.32 (0.23)
Secular	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Religious community[a]							
Values living in residential area with persons with similar religiosity		0.09 (0.23)					0.07 (0.24)
Values living in residential area with persons with similar religiosity, *among traditional/religious*		1.24+ (0.67)					1.33* (0.66)
Sees himself affiliated with a movement/group within Judaism		−0.23 (0.24)					
Participates in organized setting of religious learning		−0.11 (0.33)					−0.15 (0.34)
Participates in organized setting of religious learning, *among religious*		1.41* (0.59)					1.12+ (0.60)
Religion as a social institution							
Does not support option of civil marriage			−0.16 (0.23)				

Table 4 continued

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Religio-nationalism							
Residence in West Bank				1.03** (0.40)			0.92* (0.41)
Strongly opposes separation of religion and state				−0.19 (0.22)			
Gender and family norms							
Traditional gender role attitudes					0.52** (0.19)		0.37+ (0.20)
Traditional family attitudes					−0.15 (0.18)		
Ideals regarding family building							
Woman should start family by age 24						0.30 (0.21)	
Ideal family size up to 2						−0.77* (0.32)	−0.79* (0.33)
Ideal family size 3						Ref.	Ref.
Ideal family size 4						0.44* (0.21)	0.44* (0.22)
Ideal family size 5 or more						0.86** (0.30)	0.71* (0.31)
Non-numerical answer for ideal family size						1.28** (0.44)	1.09* (0.45)
N	1238	1238	1238	1238	1238	1238	1238
McFadden's Pseudo-R-squared	0.40	0.41	0.40	0.41	0.41	0.42	0.43

Source: Israel Social Survey, 2009. Sample includes Jewish men, aged 25–49

Unexponentiated coefficients (standard errors in parentheses)

Models also include controls for age, marital history, ethnicity, education and car ownership. See text for details of variable definitions and online-only appendix for full results.

[a] In models which included community variables, interaction effects were included in estimated models if one or both of the following two conditions held: (1) the interaction effects were statistically significant at the 10% level or (2) the interaction effects led to total effects that were statistically significant at the 10% level. The total effect is defined as the sum of the main effect and the interaction effect

** $p < 0.01$; * $p < 0.05$; $^{+}$ $p < 0.10$

of Table 3, for women, with the exception that there is no model which includes measures of labor market activity, for reasons discussed above.

Model (1) in Table 4 shows similar patterns as the analogous model in Table 3 with the exception that men who identify as traditional/less-religious do have higher odds of having at least three children than do secular men (in contrast to results among women).[7] Model (2) indicates that among men, as among women, the association between religiosity and fertility can be partly understood in terms of the importance of community variables that measure preferences for residing near others of similar religiosity (among men who self-identify as traditional/religious), as well as participation in organized settings of religious learning (among men who self-identify as religious). There is no significant effect of affiliation on fertility. We note that the coefficients on the dummy variables indicating self-identification as religious or traditional/religious are reduced by approximately one-half to two standard deviations in model (2), as compared with model (1), and their statistical significance is also reduced.

In contrast to the results on women, there is no empirical evidence that support of the option of civil marriage is associated with fertility (model 3). Residence in the West Bank is associated with higher fertility, while opposition to separation of religion and state is not associated with higher fertility; these results are as among women (model 4). Holding traditional gender role attitudes is positively associated with higher fertility among men (model 5), which was not found to be the case in the analogous model among women. However, traditional gender role attitudes among men do not account for fertility differentials across religiosity groups [coefficients on religiosity dummy variables in model (5) do not differ much from those in model (1)]. Ideals regarding family-building processes are strongly associated with fertility among men (as among women) and also partly account for the relationship between religiosity and fertility [compare religiosity dummy variables in model (6) with those in model (1)]. In the final, summary model run on the sample of men (model 7), all the variables found to be associated with fertility in previous models are still statistically significant and operate in the same directions.

10 Conclusions

Religion and religiosity have been acknowledged as playing important roles in family and demographic processes, and theories have been suggested to explain the role of religion in demography. However, little research has systematically attempted to test theories empirically. More often than not, this has been due to a lack of theoretically relevant data suitable to the issues at hand. In this paper, we exploit a rich source of data on religiosity and family in order to explore interrelationships previously left unstudied.

We make several contributions toward understanding how religion and religiosity affect fertility. First, we note the importance of the role of religious community in

[7] We also note that among men, having been born in the Former Soviet Union is statistically significantly associated with lower odds of having at least three children. Results shown in online appendix table only.

understanding the relationship between religiosity and fertility at the individual level. Women and men who are more strongly connected to their religious community in terms of preferences for residing near others of similar religiosity, affiliation with a particular religious movement within Judaism (women only), and active participation in religious learning have higher fertility than others with the same self-identified level of religiosity. The religious community variables go some way toward accounting for the relationship between religiosity and fertility, beyond individual-level factors normally considered in studies of fertility. Second, we find evidence of the importance of the role of religion as a social institution central to the definition of familial values in Israel. Women who strongly oppose the option of civil marriage in Israel are more likely to have higher fertility than other women with the same self-defined level of religiosity and other relevant factors. Third, we find a very important role for attitudes toward family-building trajectories in accounting for the relationship between religiosity and fertility. While we cannot rule out bidirectional causality in that women may tend to align their stated attitudes to their actual fertility and marriage behavior, the results suggest that Ultra-Orthodox, religious, and traditional women and men tend to have early marriage and high fertility ideals, which explain a large part of their demographic behavior. This interpretation is consistent with conclusions drawn in Adsera (2006b), which states that religiosity is becoming an important predictor of attitudes toward childbearing, including ideal family size, in recent generations. Finally, we find that the economic component of female labor market activity, while significantly related to fertility per se, does not go far in explaining the relationship between religiosity and fertility among women.

Our main conclusion, therefore, is that in the Israeli context, fertility variation across religiosity groups can be understood largely in terms of the cultural, political, and institutional power of religion, and the impact of religion through community, and via norms and ideals. Our empirical test of the McQuillan/Goldscheider framework is the first of its kind conducted. A better understanding of the ways in which religion and religiosity affect fertility is important in Israel where fertility trends are closely watched and population composition is a matter of national importance. Also, while fertility differentials across religiosity groups in other Western countries are unlikely to be as large as those observed in Israel, an understanding of fertility differentials as they are affected by religiosity is relevant to a variety of developed populations with low and very low levels of fertility (Peri-Rotem 2016). In addition, the role of religiosity may be critical in the evolution of fertility levels in non-Western countries, both in terms of propping up fertility or in encouraging its decline (McQuillan 2004).

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Appendix

Appendix Table 5 presents descriptive measures of the explanatory variables and their relationships with the dependent variable (whether or not the respondent has at least 3 children). We present these measures separately for women and men in the sample. Based on an examination of the frequency distributions of the explanatory variables, we note that men, in comparison with women, tend to have less tertiary education, to hold more traditional family and gender attitudes; to have higher family size ideals; to object more to the option of civil marriage in Israel, and are more likely to be studying religion in an organized setting. In terms of association between social characteristics and cumulative fertility, the associations tend to be less pronounced among men than among women.

Table 5 Descriptive statistics. *Source*: Israel Social Survey, 2009

	Women		Men	
	% With 3 or more children	% Distribution in sample	% With 3 or more children	% Distribution in sample
Self-defined religiosity				
Ultra-Orthodox	80.7	8.3	68.9	8.6
Religious	52.7	10.0	49.0	12.4
Traditional/religious	45.6	13.7	37.1	12.3
Traditional/less-religious	26.8	24.0	26.3	24.5
Secular	22.4	44.0	21.4	42.3
Age				
25–29	10.0	22.9	5.6	24.7
30–34	23.6	23.9	14.3	22.7
35–39	42.1	19.8	39.1	19.0
40–44	51.5	17.4	55.8	18.3
45–49	58.1	16.0	63.9	15.4
Marital status				
Once and currently married	45.4	67.8	46.6	63.3
Previously married or married more than once	26.9	12.7	32.3	7.6
Never married	1.6	19.5	0.6	29.1
Ethnicity				
Mizrahi	42.9	37.1	39.2	39.2
Ashkenazi (not FSU)	39.7	20.8	41.9	17.9
Born in Former Soviet Union (FSU)	21.4	15.0	18.5	12.2
Third-generation Israeli	26.6	26.9	22.7	30.3
Socioeconomic status				
Academic degree/none	28.1/38.9	40.5/59.5	31.8/32.2	28.7/71.3

Table 5 continued

	Women		Men	
	% With 3 or more children	% Distribution in sample	% With 3 or more children	% Distribution in sample
Car ownership/none	35.1/33.4	68.5/31.5	32.4/31.4	68.1/31.9
Religious community				
Values living in residential area with persons with similar religiosity/does not value	53.5/30.3	18.5/81.5	47.8/28.6	18.4/81.6
Sees oneself affiliated with a movement or group within Judaism/does not see oneself affiliated	56.5/28.6	21.2/78.8	44.8/28.1	24.1/75.9
Participates in organized setting of religious learning/does not participate	57.1/30.0	16.6/83.4	50.0/26.7	23.2/76.8
Religion as a social institution				
Does not support option of civil marriage/supports option	57.7/27.8	22.9/77.1	46.5/26.6	27.7/72.3
Religio-nationalism				
Residence in West Bank/no residence in West Bank	63.0/33.4	4.1/95.9	62.5/30.7	4.5/95.5
Strongly opposes separation of religion and state/does not strongly oppose	47.8/29.5	27.4/72.6	39.4/29.2	28.1/71.9
Gender and family norms				
Traditional gender role attitudes/less traditional attitudes	46.7/31.4	20.7/79.3	40.2/28.5	30.4/69.6
Traditional family attitudes/less traditional attitudes	47.5/28.2	33.0/67.0	39.1/27.4	39.8/60.2
Ideals regarding family building				
Woman should start family by age 24/start older	59.9/23.9	29.5/70.5	45.2/23.7	38.8/61.2
Ideal family size up to 2	12.2	12.6	10.7	12.1
Ideal family size 3	22.1	39.8	24.0	42.4
Ideal family size 4	44.4	30.3	34.6	22.6
Ideal family size 5 or more	57.4	10.8	53.2	16.3
Non-numerical answer for ideal family size	67.8	6.6	61.7	6.5
Labor market activity				
Out of labor force	46.3	15.7	36.4	10.6
Unemployed	29.2	6.8	24.6	4.6
Employed part-time	45.5	24.8	25.8	12.8
Employed full-time	26.6	52.7	33.0	72.0
All	34.5		32.1	

Sample includes Jewish women and men, aged 25–49. $N = 1309$ for women; $N = 1238$ for men. See text for details of variable definitions

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