Islam, Religiosity, and Marital Fertility among Israeli Palestinians

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Compared to studies of religious denomination and fertility, religiosity has received far less attention in the literature. Generally, couples with a taste for religious activity tend to have an above-average preference for children (Sander, 1992, p. 489). Most of the evidence for a positive relationship between religiosity and reproductive behavior comes from studies on Christian and Jewish populations (e.g. Adsera, 2006; Mosher & Hendershot, 1984; Neuman, 2007; Neuman & Ziderman, 1986; Sander, 1992). Whereas, a significant and positive relationship between religiosity and contraceptive behavior has been documented in several Muslim populations (Azaiza, 1997; Amin et al., 1997; Kamal et al., 1999; Maloney et al., 1981), there are very few reports of a positive relationship between religiosity and marital fertility (e.g. Eisenbach, 1978). Moreover, at least two studies report a *negative* correlation between religiosity and fertility (Mistry, 1999; Schellekens and Eisenbach, 2010). Using survey data we will try to show that after controlling for socio-economic characteristics religiosity has a positive effect among Israeli Muslims.

Previous studies measured religiosity at the time of data collection. Any study of the effect of religiosity on reproductive behavior, however, must consider the possibility of reverse causation. Thus, it has been argued that family formation causes greater religiosity (Hout & Greeley, 1987, p. 331-32; Thornton, Axinn & Hill, 1992). Hence, we will try to show that our results remain after controlling for reverse causality. When we replace religiosity as measured at the time of the survey with a time-varying measure of religiosity, the effect of religiosity *increases*.

Religiosity and Fertility

There are at least three hypotheses to explain the influence of religiosity on fertility (Goldscheider, 1971). The characteristics hypothesis asserts that religiosity itself has little independent influence, and that it is the demographic, social and economic characteristics of the more and less religious that largely account for the differences in reproductive behavior.

A second hypothesis asserts that differences in fertility between religions are due to specific values. This implies that within a religious group, differences should be related to the degree of religiosity (Anderson, 1986, p. 300). Family planning is permitted by all four major schools of Islamic law (Obermeyer, 1992; Sachedina, 1990). However, people may be ignorant of 'official' religious rulings. Knodel et al. (1999) and Iyer (2002), for example, observed that most Muslims believe their religion opposes contraception. A trained religious teacher in Israel explained that the belief Islam forbids contraception "is actually a very common misconception" (Kanaaneh, 2002, p. 145).

Religious values may also influence fertility through breastfeeding patterns (Iyer, 2002, p. 9). The Quran (2: 233) recommends breastfeeding for two whole years. Thus, in theory, a decline in religious commitment could lead to an *increase* in marital fertility through a decline in breastfeeding, other things being equal (Schellekens and Eisenbach, 2010).

Religious values may not only influence fertility directly through proximate variables, such as the use of contraceptive methods or post-partum infecundability, but also indirectly by increasing the number of children that couples desire without specifying a particular proximate determinant (McQuillan, 2004, p. 31). Although, the Quran states two purposes for marriage – love and procreation – some religious

scholars argue that the procreative element is the major aspect of marriage (Sachedina, 1990). Thus, religious teachings may affect the number of children that couples desire.

Another class of religious values addresses broader issues of social organization that may ultimately affect marital fertility (McQuillan, 2004, p. 30). Examining the case of Israeli Muslims, Goldscheider (1999) argues that the group's high fertility does not reflect specific teachings related to contraception but rather Muslim views on the nature of familial relationships and the segregated roles of women. The traditional Muslim family is considered to be strongly patrilineal and patrilocal with male dominance and responsibility prescribed by the Quran (Kirk, 1966; Caldwell, 1986, p. 175). Patriarchal systems can increase the demand for children because they usually limit women's non-familial opportunities for social status and economic support. Where women's opportunities outside the home are severely constrained, their survival strategies focus inward on family and children. Moreover, where group norms and practices limit women's mobility and their contact with non-family members, women's exposure to novel ideas or technological innovations, including contraceptives, may be constrained (Morgan, Stash, Smith & Mason, 2002). The lower status and seclusion of women in Islamic societies has been attributed to the influence of religious texts. For example, religious texts specify that sons are to receive twice as great an inheritance as daughters, and that a man's testimony in court is worth twice that of a woman (Obermeyer, 1992, p. 46). One should note, however, that patriarchal systems may quote such rulings to boost their support while ignoring other religious rulings that are less sympathetic to their ideology.

A third hypothesis focuses on minority group status and is only relevant in the case of Muslims being a minority (Goldscheider & Uhlenberg, 1969). If acculturation is not desired and the group feels economically or politically disadvantaged, minority status may encourage higher fertility to ensure group preservation and strength in numbers. In Israel, Muslims are not only a religious minority, but also part of an ethnic one (Palestinian or Arab). Ethnic conflict may shape "ideational change related to fertility, sharpening identities and the vision of the nation as a quasi-biological body whose vitality is closely linked to reproduction, and thus make natalism a corollary of nationalism" (Fargues, 2000, p. 442).

Data and variables

In 2007, 888 women aged 25-55 and currently in their first marriage constituting a random sample of approximately 20 per cent from the town of Tamrah were interviewed. The women were asked about their birth histories, contraceptive methods, socioeconomic status, work, and religiosity. The dependent variable is a variable indicating whether a woman gave birth in a specific calendar year. The independent variables include measures of religiosity, demographic variables and several socio-economic characteristics.

The survey asked the woman to define herself and her husband on a scale of religiosity and orthopraxis. Preliminary analyses indicated that the correlations between fertility and measures of orthopraxis are higher than those with self-defined measures of religiosity. The Five Pillars of Islam or duties incumbent on every Muslim are: 1) the confession of faith "that there is no God but Allah and that Muhammed is the Messenger of Allah;" 2) praying five times a day; 3) alms-giving; 4) fasting during the month of Ramadan; and 5) making a pilgrimage to Mecca. Two

of these –praying and fasting– are relatively easy to measure. Hence, the survey includes three questions – two specific and one general – on orthopraxis: (1) how often the woman prays; (2) whether the woman strictly fasts during the month of Ramadan; and (3) whether she observes all five religious commandments (compare Mistry 1999). Preliminary analyses indicated that the third variable has the highest correlation with fertility. Hence, we used it as our measure of religiosity. Religiosity of the husband is highly correlated with that of the woman. Hence, it is not included in the model. Fifteen percent of the women indicated that they observe all five religious commandments.

Unlike previous surveys, the survey also asked at what age the woman first started to pray and fast. Using the information in the survey we constructed an additional indicator variable of religiosity that changes over time. Women who declared that they observed all five religious commandments at the time of the survey were defined as religious from the first year in which they both prayed and strictly fasted during the month of Ramadan.

The analysis includes the following demographic variables: age of the woman; marital duration; and the number of births. A set of seven age dummies is used to model the effect of the woman's age. In the survey there are no questions on infant and child mortality. Infant and early childhood mortality among Israeli Palestinians, however, is now so low that this omission should not influence our results to any extent.

In the absence of parity-dependent marital fertility control, the age pattern of marital fertility closely follows a standard schedule, a fact which led Coale and Trussell (1974) to propose to use the deviation of the age pattern of marital fertility from such a schedule as a measure of parity-dependent fertility control. However,

fertility control is a function not only of age but also of marital duration. For this reason, Page (1977) proposed a model of marital fertility incorporating both age and marital duration. Later Van Bavel (2003) introduced the number of children or parity into the model in order to determine whether the effect of marital duration on marital fertility is primarily attributable to parity-dependent control or to declining coital frequency. The inclusion of parity is essential in order to control for fecundability and secondary sterility. There is a positive correlation between parity and fecundability, while there is a negative correlation between parity and secondary sterility. Parity is measured in the previous year.

The education of the woman and that of her husband are both included in the analyses. Two distinct education vectors were constructed for each woman from information on the number of years of schooling. The first –educational status– charts yearly enrollment in education. The second vector –educational level– reflects actual attainment. The analysis does not include additional socio-economic variables, such as income. However, measures of the education of the husband may serve as a (poor) proxy for life-time income (Ben-Porath, 1973). Labor-force participation may also influence fertility decisions (Brewster and Rindfuss 2000). Hence, we also control for the woman's labor-force participation in the previous year.

Methodology

Discrete-time event history models are used to assess the effects of the independent variables on the probability of giving birth in a specific year. Estimation of the discrete-time models is done using logistic regressions of woman-year data. This approach allows considerable flexibility in handling time-varying covariates and censored observations (Allison 2010: 236-240).

Event history models were introduced by Cox (1972) as a synthesis of regression models and life tables, initially to analyze non-repeatable events such as death. By contrast, the nature of fertility is that births are repeatable events. Because we are not interested in any specific birth interval, birth intervals were pooled. Pooling birth intervals is also statistically more efficient. Unfortunately, pooling introduces a problem: dependence among birth intervals. Dependence can be thought of as arising from unobserved heterogeneity. Hence, random effects were added to control for unobserved heterogeneity between women. The GLIMMIX procedure in SAS 9.2 was used to estimate regression coefficients (Allison 2010: 260-280). In the final models, there are no significant random effects.

The dependent variable is the log odds of a woman giving birth in a specific calendar year. The unit of analysis is the 'woman-year'; that is, each woman contributes as many units to the analysis as the number for which she is observed. The women in the survey contributed 14,358 person-years to the analysis.

Results

Table 1 presents three logistic regression models of the correlation between religiosity on marital fertility. Coefficients are presented as odds ratios or exponents of the raw logistic coefficients. The odds ratios are multiplicative effects on the odds of giving birth in any one-year interval. A coefficient of 1.00 represents no effect, a coefficient greater than 1.00 represents a positive effect, and a coefficient less than 1.00 represents a negative effect on the odds.

[Table 1 about here]

The first model includes religiosity at the time of the survey and demographic variables, but no socio-economic variables. The second model adds the education

variables and a variable indicating whether the woman worked in the previous year. The third model replaces the variable indicating religiosity at the time of the survey with a measure of religiosity that varies over time.

Religiosity has a significant and positive effect on the odds of giving birth. The first model suggests that the odds of a religious woman having a birth are more than 20 per cent higher than the odds of other women. The social and economic characteristics of the more and less religious, however, may largely account for the differences in reproductive behavior. Hence, the second model adds education variables and a variable indicating whether the woman worked in the previous year. Employment in the previous does not have a significant effect. Perhaps, because relatively few married women are employed. All three education variables – enrollment, years of education of the woman and her husband– have a negative and significant effect on the odds of giving birth. The socio-economic variables, however, only attenuate the effect of religiosity to a marginal extent. Thus, we reject the characteristics hypothesis.

It has been argued that family formation causes greater religiosity. Hence the third model replaces the measure of religiosity at the time of the survey by a measure that indicates whether the woman was religious in the previous year. If some women became religious after marriage and religiosity causes an increase in fertility, then in the third model the positive effect of religiosity should increase. Indeed, the effect of religiosity in the third model is slightly higher than in the second model.

Conclusion and Discussion

Two major findings emerge from our analysis. First, among Muslims religiosity has a positive effect on fertility. This effect is not the result of reverse causality. Second, the characteristics hypothesis does not explain the effect of religiosity.

It is possible that we underestimated the effect of religiosity, because the survey did not ask women who are not religious, whether they were religious at an earlier stage of their marriage. We counted women as religious from the year they prayed and strictly observed the fast of Ramadan. In theory, however, some women who became more religious over the course of their marriage may not have observed all religious commandments for several years after they started to pray and strictly observe the fast of the Ramadan. Again, to the extent that this is the case, our estimate may underestimate the true effect of religiosity.

References

Adsera, Alicia (2006). Marital fertility and religion in Spain, 1985 and 1999. *Population Studies*, *60*, 205-221.

Allison, Paul D. 2010. *Survival Analysis Using the SAS® System: A Practical Guide*. 2nd ed. Cary, NC: SAS Institute Inc.

Amin, Sajeda, Diamond, Ian & Steele, Fiona (1997). Contraception and religiosity in Bangladesh. In G. W. Jones, R. M. Douglas. J. C. Caldwell and R. M. D'Souza (eds.), *The Continuing Demographic Transition* (pp. 268-289). Oxford: Clarendon Press.

Azaiza, Faisal (1997). Contraceptive utilization: Profile of the Muslim Arab women in rural Israel. *Scandinavian Journal of Social Welfare*, *6*, 317-324.

Ben-Porath, Yoram (1973). Economic analysis of fertility in Israel: point and counterpoint. *Journal of Political Economy*, *81*, S202-S233.

Brewster, Karin L., and Ronald R. Rindfuss (2000). Fertility and Women's Employment in Industrialized Nations. *Annual Review of Sociology* 26: 271-296.

Coale, Ansley J., & Trussell, T. James (1974). Model fertility schedules: variations in the age structure of childbearing in human populations. *Population Index*, *40*, 185-258.

Cox, D. R. 1972. Regression Models and Life Tables. *Journal of the Royal Statistical Society*, Series B, 34 (2): 187-220.

Dharmalingam, A., & Morgan, Philip (2004). Pervasive Muslim-Hindu fertility differences in India. *Demography*, *41*, 529-545.

Eisenbach, Zvi (1978). Trends and variations in Moslem fertility in Israel. Ph.D. thesis, Hebrew University (in Hebrew).

Fargues, Philippe (2000). Protracted national conflict and fertility change among Palestinians and Israelis. *Population and Development Review*, *26*, 441-82.

Goldscheider, Calvin (1971). *Population, Modernization, and Social Structure*. Boston: Little Brown and Company.

Goldscheider, Calvin (1999). Religious values, dependencies, and fertility: Evidence and implications from Israel. In R. Leete (Ed.), *Dynamics of Values in Fertility Change* (pp. 310-330). Oxford: Oxford University Press.

Goldscheider, Calvin, & Uhlenberg, P. R. (1969). Minority group status and fertility. *American Journal of Sociology*, *74*, 361-72.

Hacker, J. David (1999). Child Naming, Religion, and the Decline of Marital Fertility in Nineteenth-Century America. *The History of the Family: An International Quarterly*, *4*, 339-365.

Haidar, Aziz. 1995. *On the Margins: The Arab Population in the Israeli Economy*. London: Hurst and Company.

Islam, M. M. & Khan, H. T. (1993) Pattern of coital frequency in rural Bangladesh. *Journal of Family Welfare*, *39*, 38–43.

Iyer, Sriya (2002). *Demography and Religion in India*. New Delhi: Oxford University Press.

Kamal, Nashid, Sloggetti, Andrew, & Cleland, John G. (1999). Area variations in use of modern contraception in rural Bangladesh: A multilevel analysis. *Journal of Biosocial Science*, *31*, 327-341.

Kanaaneh, Rhoda Ann (2002). *Birthing the Nation: Strategies of Palestinian Women in Israel*. University of California Press.

Kirk, Dudley (1966). Factors affecting Moslem natality. In *Family Planning and Population Programs: A Review of World Developments* (pp. 561-579). Chicago and London: The University of Chicago Press.

Knodel, John, Gray, Rossarin Soottipong, Sriwatcharin, Porntip & Peracca, Sara (1999). Religion and reproduction: Muslims in Buddhist Thailand. *Population Studies*, 53, 149-64.

Maloney, Clarence, Aziz, K. M. Ashraful, & Starker, Profulla C. (1981). *Beliefs and Fertility in Bangladesh*. Dacca, Bangladesh: International Centre for Diarrhoeal Disease Control.

McQuillan, Kevin (2004). When does religion influence fertility? *Population and Development Review*, *30*, 25-56.

Mistry, Malika (1999). Role of religion in fertility and family planning among Muslims in India. *Indian Journal of Secularism*, *3*, 1-33.

Morgan, S. Philip, Stash, Sharon, Smith, Herbert L., & Mason, Karen Oppenheim (2002). Muslim and non-Muslim differences in female autonomy and fertility: Evidence from four Asian countries. *Population and Development Review*, *28*, 515-37.

Mosher, William D., & Hendershot, G. (1984). Religion and fertility: A replication. *Demography*, *21*, 185-191.

Mosher, William D., Williams, Linda B., & Johnson, David P. (1992). Religion and fertility in the United States: New patterns. *Demography*, *29*, 199-214.

Neuman, Shoshana (2007). Is fertility indeed related to religiosity? A note on: 'Marital fertility and religion in Spain, 1985 and 1999', *Population Studies* 60 (2): 205-221 by Alicia Adsera. *Population Studies*, *61*, 219-224.

Neuman, Shoshana, & Ziderman, Adrian (1986). How does fertility relate to religiosity: Survey evidence from Israel. *Sociology and Social Research*, *70*, 178-180.

Obermeyer, Carla Makhlouf (1992). Islam, women, and politics: The demography of Arab countries. *Population and Development Review*, *18*, 33-60.

Page, Hillary J. (1977). Patterns underlying fertility schedules: A decomposition by both age and marriage duration. *Population Studies*, *31*, 85-106.

Sachedina, Zulie (1990). Islam, procreation and the law. *International Family Planning Perspectives*, *16*, 107-111.

Sander, William (1992). Catholicism and the economics of fertility. *Population Studies*, *46*, 477-489.

Schellekens, Jona, & Eisenbach, Zvi (2002). The predecline rise in Israeli Moslem fertility. *Economic Development and Cultural Change*, *50*, 541-55.

Schellekens, Jona, & Eisenbach, Zvi (2010). Religiosity and marital fertility: Israeli Arab Muslims, 1955-1972. *Journal of Family History*, 35 (2): 147-163.

Thornton, Arland, Axinn, William G., & Hill, Daniel H. (1992). Reciprocal effects of religiosity, cohabitation, and marriage. *American Journal of Sociology*, *98*, 628-651.

Van Bavel, Jan (2003). Does an effect of marriage duration on pre-transition fertility signal parity-dependent control? An empirical test in nineteenth-century Leuven, Belgium. *Population Studies*, *57*, 55-62.

Table 1. Logistic regression of the odds of giving birth.

	Model 1		**Model 2**		**Model 3**	
Variables	e^b	***p*-value**	e^b	***p*-value**	e^b	***p*-value**
Birth ($t-1$)	0.561	0.000	0.475	0.000	0.476	0.000
No of children in $t-1$	0.873	0.000	0.834	0.000	0.836	0.000
Marital duration	0.916	0.000	0.898	0.000	0.898	0.000
Age:						
15-19	0.483	0.000	0.546	0.000	0.547	0.000
20-24	1.000	-	1.000	-	1.000	-
25-29	0.878	0.028	0.836	0.003	0.835	0.003
30-34	0.923	0.309	0.924	0.335	0.917	0.288
35-39	0.724	0.004	0.780	0.033	0.768	0.023
40-44	0.263	0.000	0.297	0.000	0.291	0.000
45-49	0.070	0.000	0.083	0.000	0.081	0.000
Religious						
at time of survey	**1.213**	**0.001**	**1.199**	**0.003**	**-**	**-**
time-varying	-	-	-	-	**1.210**	**0.017**
Years of education			0.961	0.024	0.979	0.014
Enrollment in t-1			0.546	0.000	0.548	0.000
Worked in t-1			1.019	0.817	1.206	0.750
Husband's education			0.983	0.024	0.981	0.016