

Why is congregational participation associated with higher fertility?

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Religion is an influential and poorly understood determinant of fertility. Demographers commonly accept that Baby Boom era fertility differences between religious traditions in the United States have disappeared (Hout, Greeley, and Wilde 2001; Voas 2007).¹ We now see a robust and significant fertility differential between women who do and do not attend worship services regularly (Heaton 1986; Lehrer 1996; Mosher, Williams, and Johnson 1992; Williams and Zimmer 1990).² However, no previous study has analyzed why attending worship services is associated with elevated fertility. Instead, worship attendance is typically treated as if it is a “dose” of religion, which, through unexamined pathways, increases the chance of pregnancy like a fertility drug. Studies find that high doses of religion, in the form of frequent worship attendance, are linked to above average fertility. The nature of this association has not been tested beyond demonstrating that it is robust to the inclusion of various control measures for individual characteristics also related to fertility.

¹ However, I have demonstrated elsewhere that differences between denominations and religious traditions persist, though these differences, like fertility levels overall, have diminished since the Baby Boom era.

² However, Zhang (2008) argues that no “frequency of religious participation” effect remains in 2002 National Survey of Family Growth (NSFG) data after controlling for compositional characteristics. Zhang’s null result is due to her model specification. She predicts parity for men and women age 15 to 44, controlling for worship attendance and other relevant background variables. Unfortunately, she does not take into account that the relationship between congregational participation and fertility varies in the early and latter childbearing years. Congregational participation is associated with low fertility for women in their teens and early twenties. Women are more likely to complete their education and marry by their mid to late childbearing years and it is during this period that women active in congregations exceed the parity levels of similar women who are not active in congregations. Because Zhang does not consider the opposing effects of congregational participation upon fertility at different ages, her analysis of the participation effect is misleading.

Among measures of religious commitment, worship attendance is important because it gauges social religious activity. In contrast, personal devotional activity, measured by prayer frequency, is less predictive of fertility outcomes than worship attendance. In many social and demographic surveys, worship attendance is the only measure of communal religious activity. A worship attendance measure is thus a clue that participating in a congregation is linked to fertility but it is not sufficient to reveal why congregational participation matters.³

Previous studies fail to distinguish between what may be more and less direct influences of worship attendance. For example, worship services may disseminate pronatalist messages directly or, alternately, frequent attendance at worship services may be associated with other types of congregational participation and social interaction that have more direct influence upon fertility. Existing studies also fail to consider whether characteristics of the congregation attended may influence the participation effect. For example, congregations teaching a conservative theology may encourage traditional gender roles and pronatalist attitudes.

Although empirical evidence suggests that congregational participation somehow exerts a strong influence upon fertility, recent prominent surveys of the literature on religious influence upon fertility fail to even mention congregations or congregation-based social processes as possible mediators of religious influence. Theoretical discussions about the relationship between religion and fertility still tend to focus on

³ Forms of congregational participation beyond worship attendance, such as lay leadership, small group participation, and volunteering probably influence family-related behaviors, including fertility. Unfortunately, the only measure of congregational participation in most social surveys is attendance. With data on multiple measures of congregational activity, attendance is found to have a small effect upon civic engagement while types of congregational participation beyond attendance have a stronger effect (Beyerlein and Chaves 2003; Schwadel 2005).

differences between religious groups rather than considering how participation in a religious community itself shapes fertility. For example, congregational participation is not discussed in Kevin McQuillan's (2004) *Population and Development Review* article "How Religion Influences Fertility" or in Goldscheider's (2006) essay, "Religion, Family, and Fertility: What do we Know Historically and Comparatively." In contexts where religious groups are geographically bounded monopolies, it may be appropriate to consider group fertility differentials. For example, the units of analysis in the European Fertility Project generally coincided with Catholic or Protestant regimes (Coale and Watkins 1986). In the United States, where religious participation and identity is voluntary and the population is highly mobile, choosing to participate regularly in a congregation is likely to have more consequences than a nominal religious preference. Yet the potential influence of congregations upon patterns of American religious fertility is often overlooked entirely.⁴ While many studies do at least include worship attendance as an independent variable, I do not know of any studies that evaluate how congregational participation influences fertility.

In this paper, I evaluate evidence for two new explanations of the relationship between congregational participation and fertility. First, I consider the **Reference Group Hypothesis**: Greater involvement with congregation-based social networks increases the

⁴ For example, one study compares the relationship between how Catholic and Protestant couples in Detroit make decisions as determinants of their fertility without controlling or discussing their religious participation (Liao 1992). Liao explains differences in completed and desired fertility among 466 Catholic and Protestant women in the 1978 Detroit Area Study based upon whether household decisions tend to be made jointly or if one party (either husband or wife) has greater influence. Liao argues that the family decision making process reflects the type of social organization of the marriage. He concludes that Catholic and Protestant women "living in families organized as social systems," where decisions tend to be made more unilaterally have higher fertility "than those residing in families organized as associations," in which decisions are made in a more egalitarian fashion. Despite this article's focus on the influence of social systems upon fertility, it ignores the congregation entirely, with no consideration of past or present religious participation (Liao 1992). There is evidence that religious participation is related to style of household decision making (Wilcox 2004).

likelihood that these networks will function as reference groups for desired and achieved fertility, encouraging and supporting women in having more children than otherwise similar women with less exposure to congregation-based social networks have. Second, I consider the **Congregational Characteristics Hypothesis**: Characteristics of congregations, such as theology, affiliation, and composition mediate fertility outcomes independent of the theology and characteristics of individual congregants. I test these hypotheses in a large sample of women attending hundreds of different congregations around the country. This allows me to examine fertility variation among women who participate in congregations. The hypotheses are tested in models that also control for individual demographic characteristics, religious commitment, and county characteristics. After evaluating these hypotheses with data on women in congregations, I provide evidence from two other national surveys demonstrating that the impact of congregational participation upon fertility ideals and achieving a high parity level cannot be dismissed as a simple selection process.

Reference groups

Research suggests that reference groups shape fertility ideals and theory suggests that social interactions influence achieved parity levels (Bongaarts and Watkins 1996; Clay and Zuiches 1980). People evaluate their life circumstances and behavior in reference to other people. Fertility levels in reference groups create family size norms and individuals who deviate from these norms are subject to social sanctions. “In this way, modal family sizes arising from shared economic, social, and cultural experiences can have “normative” effects on each individual’s behavior” (Thomson and Goldman 1987: 176). Discussion of fertility within reference groups shapes fertility ideals (Clay and Zuiches 1980).

Surprisingly, there is no research into whether the religious characteristics of reference groups and social interactions influence fertility patterns in the United States. Religious reference groups, which are often connected to a congregation, are likely to shape and reinforce the influence of religion over individual behavior, including fertility. Women who actively attend congregations have opportunities to develop social ties with other members of the congregation through Sunday School classes, committees, study groups, prayer groups, women's groups, coffee hours, and in many other activities offered by congregations. Religious reference groups are likely to affirm the desirability of children, confer positive social status on parents, and provide social support for childbearing. Achieved and desired parity levels in congregations, which are usually above the national average, are expected to create normative bounds for appropriate family size. Therefore I expect women in congregations who have no children or only one child are more likely to have a high parity ideal than similar women who do not regularly attend a congregation.

The reference group account is a distinctly sociological explanation for why congregational participation influences fertility. To my surprise, I have not found any detailed studies of how religious reference groups influence fertility in the United States. Heaton (1986) did argue that Mormon church attendance measures exposure to Mormon reference groups but his reference group measurement strategy is limited to church attendance. Heaton (1986) writes that "maintenance of a Mormon reference group through weekly church attendance" helps sustain high Mormon fertility. He also considers whether both of the respondent's parents are Mormon and whether the respondent had a Temple wedding, which is no doubt related to having strong Mormon

reference groups. Conceptually, however, he frames worship attendance as the influential reference group context, rather than, for example, the density of co-religionists in friendship networks. Although there has been considerable research about religion and fertility, aside from Heaton's brief treatment, the literature has ignored reference groups as a mechanism transmitting religious norms related to fertility behavior. Goldscheider (2006) does not mention congregations or reference groups in his otherwise excellent survey of research on religion and fertility. He argues, "The values that most significantly influence fertility are those that relate to the centrality of the family, the roles of men and women, and the roles of parents and children" (2006: 57). While congregation-based reference groups probably influence these values and their observance, Goldscheider does not discuss this possibility.

Social interaction in congregations is likely to influence values, knowledge, and behavior related to fertility. In Mozambique, information about birth control passed in congregations influences fertility (Agadjanian 2001). I assume that birth control is occasionally discussed among women in U.S. congregations but that this information is available to women outside congregations.⁵ However, other patterns of social interaction may be more influential in the U.S. than straightforward discussion about birth control. Social interactions may influence fertility by "the exchange of information and ideas, the joint evaluation of their meaning in a particular context, and social influence that constrains or encourages actions" (Bongaarts and Watkins 1996).⁶

⁵ Some congregations may effectively discourage contraception or shelter women to such a degree that they will not gain access to much information about birth control. I do not have any data on how birth control knowledge, access, or usage is related to congregations in the CLS.

⁶ Social networks are also the usual source of new adult members for religious groups. Typically, converts are drawn to a religious group because of ties to group members and later come to accept the tenets of the group as true, despite conversion stories that often emphasize initial recognition of religious truth (Stark and Finke 2000).

People who are active in congregations have larger families than people who are not active in congregations. Therefore, the more someone socializes with and is exposed to congregations or people they know from congregations, the more likely they are to spend time with families that are larger than the national average.⁷ This reference group effect, influencing perceptions of normality, may be an important part of why churchgoing women with no children of their own have higher perceptions of ideal fertility than similar women who are not churchgoers.

Participation in small groups connected to congregation can have a profound influence on members (Wuthnow 1994). When it comes to decisions to have children, the social influence of co-religionists should be strongest when an individual feels connected to others who are having children. Therefore, participation in small groups like Bible studies and choir with others who are having or have had children should produce a more direct fertility effect than just sitting in the congregation. Those most involved and committed will be more likely to develop influential congregation-based social networks and therefore, fertility reference groups.

Alternative explanations of the congregational participation effect

If the Reference Group hypothesis is correct, density of co-religionists in friendship networks, congregational small group participation and other such measures of congregational reference group exposure will be associated with elevated fertility. If the Congregational Characteristics hypothesis is correct, we will observe that congregational religious tradition, theology and composition are related to fertility. Fertility is also

⁷ There are few settings where people have regular, prolonged contact with adults as family units. In congregations, unlike the work environment or a social club, parents are present with their children. Although children may attend classes or stay in the nursery while parents attend services and classes, children are likely to be visible before and after services. In many congregations, children have a special portion of the worship service devoted to them (a “children’s time”), after which they may leave to their own classes.

expected to be related to individual and county level religious and demographic characteristics. Worship service attendance may have an independent influence on fertility due to pronatalist sermons, rituals celebrating children, and positive portrayals of children in the worship service. Another possibility is there is a generic positive effect of religion on fertility such that any measure of religious commitment will be associated with increased fertility levels, including personal devotion, communal participation, religious knowledge, and beliefs. Although the purpose of this paper is not to describe how individual and county characteristics relate to fertility, it will be necessary to control for these characteristics in order to get an accurate sense of the validity of the Reference Group and Congregational Characteristics hypotheses.

Data and methods

I evaluate the explanatory power of the Reference Group and Congregational Characteristics hypotheses in multilevel models that simultaneously control for the effect of individual, congregational, and community characteristics, using 2001 Congregational Life Survey (CLS) data. The CLS provides information on the congregational participation and children ever born to over 120,000 men and women who were surveyed in over 430 congregations, from a sampling frame designed to be representative of the congregations in which Americans gather.⁸ In this analysis, I focus on the subsample of

⁸ Congregations were nominated by respondents in the 2000 GSS who attended worship services at least once a year. Since the GSS is a nationally representative sample of adults, the assumption is that the congregations these adults attend should also be nationally representative. This sampling strategy is also used by the National Congregations Study, which studies congregations via key informant surveys. The National Congregations Study, unlike the Congregational Life Survey, does not include a census survey of worshippers attending each congregation.

All religious congregations were eligible to participate in the CLS, including mosques, temples, and synagogues. However, the majority of congregations in the sample are Christian congregations. The National Opinion Research Center confirmed contact information and invited 1,295 eligible congregations to participate. The majority, 811 congregations, agreed to administer surveys of all their worshippers during the weekend of April 29, 2001. Of these, 431 congregations returned the attendee surveys (separately, surveys were also collected information from a key informant and from a clergy person). One factor that

over 18,000 women age 35 to 49 in this data set. I exclude men from the analysis for two reasons. First, men are known to provide less reliable information about their fertility than women do. Second, many of the men participating in congregations share a household with women completing the survey. By only counting women, I reduce the likelihood of counting children from the same household twice.

The CLS is well suited for a test of how networks and reference groups may be related to fertility outcomes. Using CLS data a simple cross-tabulation suggests the strong relationship between the concentration of a woman's friendships in a congregation and her fertility level. Women with limited contacts with other congregants average 2.0 children while women whose friends are concentrated in the congregation average 2.3 children (Table 1).⁹ I test for further evidence of a reference group effect in the CLS data using multilevel models.

Multilevel analysis

Multilevel modeling permits the test of multiple hypotheses simultaneously, while measuring residuals at the congregational level to account for the clustered structure of data in the CLS. People in the same congregation may have similar fertility characteristics because similar people were drawn to the congregation, because the congregation has jointly influenced them, or because they happen to all be residents of the community in which the congregation is nested. The models that follow have

lowered the response rate was that the delivery company contracted to pick up the surveys during the week following the survey administration actually attempted to pick up the surveys the week prior to the survey administration. Despite the efforts of the research team to correct this problem, some congregations returned survey forms before they were completed.

⁹ This difference is greatest for Catholics. Among Black Protestants, those with the lowest level of congregational friendships have the highest fertility levels (2.5 children versus 2.2 children for those with the densest congregational friendship networks). There are only 31 Black Protestants in this sample with the lowest levels of congregational friendship density so this pattern should be interpreted with caution.

variables to control for characteristics of the individual, congregation, and community, allowing us to examine the relative influence of each of these forces.

Using a large sample of women in the latter half of the childbearing years, I test which factors are associated with having three or more children. This provides for tests of group differences (doctrine), effects of group size, individual characteristics, participation, reference groups, and contextual effects. Other models are presented that predict the count of children ever born, though these models do not include as many control variables due to model convergence issues.

Random intercept logistic and Poisson models are used, capturing error at the congregational level. The intercept is allowed to vary for each congregation, while the effects of all other variables are fixed across congregations. Variance component analysis reveals that for the women age 35 to 49 in the CLS data, 95 percent of variation exists within congregations and only 5 percent is across congregations. In other words, most differences in fertility are attributable to the characteristics of women in congregations, including the extent of their participation in their congregation rather than to the characteristics of congregations.

Analyzing women age 35 to 49 minimizes fertility differences due to delays in the beginning of childbearing while capturing the current fertility of a recent cohort of women still in their childbearing years. Cases with missing information are deleted listwise except for missing household income values, which are imputed using a multiple regression routine in Stata. After dropping cases with missing data, 18,525 women remain. All respondents were asked, “How many children of any age do you have, whether they live at home or elsewhere?” Although this question does not provide

specific information about children who died young or were adopted, it serves as a crude measure of the children ever born to women. This fertility measure is less detailed than those used in formal demographic surveys are but it is more comprehensive than the “own children” measure in many social surveys, which simply measure the number of the respondent’s children who are living in the household. Since the CLS does not collect data on recent fertility, it is not suitable for estimating period Total Fertility Rate (TFR). Compared with period TFR, measures of completed (and nearly complete) cohort fertility are more robust to changing tempo of childbearing. Most analyses of religion and fertility are plagued with significant data limitations like reliance on own fertility measures, sample sizes, or limited religion data (Hout 2003). The CLS does not have these limitations.

Descriptive statistics for this sample are in Table 2. On average, these women have 2.1 children and over a third have at least three children. Average household income is between \$50,000 and \$74,999 and the average woman has some college education.

The CLS includes several measures of religious commitment. If there is a generic relationship between religious commitment and fertility, then these measures should predict fertility outcomes in the regression models. A quarter of respondents chose “the Bible is the word of God, to be taken literally word for word” to describe their view of the Bible. About a third disagreed with the statement, “All the different religions are equally good ways of helping a person find ultimate truth.” Nearly half (45 percent) said that they spend time in private devotional activities, such as prayer, meditation, and reading the Bible alone, on a daily basis.

It would be ideal to have panel data with details about congregational participation, fertility attitudes, and fertility outcomes each measured at multiple points in time. Although such data is not available for a cohort that has completed the childbearing years, the CLS data provides some clues about longitudinal patterns. One question in the CLS asks respondents, “Before you started coming to this congregation, were you participating in another congregation?” Respondents could indicate continuous congregational participation (“I’ve come here for most or all of my life” or “immediately prior to coming here, I was participating in another congregation”). They could also signal that they had a period of inactivity (“before coming here I had not been attending any congregation for several years”) or that they had never previously been active in a congregation (“before coming here I had never regularly attended”). The women who were inactive for a period of at least several years before their current congregational participation have selected into their congregation for some reason. Some of these women probably became active in the congregation to provide religious socialization to children born before joining the congregation. The more important such a selection process is for explaining the fertility advantage of women in congregations, the smaller the differences we should expect between women who have a continuous history of congregational participation and those who had a period of inactivity. On the other hand, if the effect of congregational participation on fertility is cumulative, then we should expect a significant difference between the women who have continuous and non-continuous records of congregational participation.

Congregational friendship networks are measured with a question asking, “Do you have any close friends in this congregation?” Responses range from (1) “No, I have

little contact with others from this congregation outside of activities here” to (4) “Yes, most of my close friends are part of this congregation” (see Table 1). Congregational group membership is a dummy variable coded 1 if the respondent said they participated in a congregation-based group as a Sunday school class, prayer, discussion, social, or Bible study group.

The average respondent attends worship services nearly every week, and has close friends both inside and outside the congregation. One in five reports that before they started coming to their congregation they were either absent from church life for a few years or had previously never regularly attended a congregation. About half of respondents report that their spouse is also present in the congregation and over half (54 percent) are involved in a congregation-based group.

Over half of respondents (57 percent) are Catholic although their parishes make up only a quarter of the congregations in the sample (102 of 422 congregations). This is consistent with the fact that Catholic parishes are typically larger than Protestant congregations (Chaves 2004). Women attending Protestant congregations make up 40 percent of respondents while their congregations are 70 percent of the sample. Other traditions including Unitarian Universalism, the Church of Jesus Christ of Latter-day Saints, and the Greek Orthodox Archdiocese represent 3 percent of respondents and 5 percent of congregations. As a measure of congregational theology, I use the average percent of women age 35 to 49 in the congregation who disagreed with the statement that “All the different religions are equally good ways of helping a person find ultimate truth.”¹⁰

¹⁰ As an alternative to this measure, I could use a key informant report of the theological and political conservatism of the congregation and whether the congregation or denomination has rules against a series

Information on county level fertility comes from the Center for Disease Control's *Interactive Atlas of Reproductive Health*.¹¹ County level demographic data was downloaded from the USDA Economic Research Service's Profiles of America data set (<http://ers.usda.gov/data/ProfilesofAmerica/>).¹² The average respondent lives in a county with 63 births annually per 1,000 women of childbearing age, where a quarter of the population is under 18, per capita income is 32 thousand dollars, and there are 97 men for every 100 women.

This data is uniquely suited for analysis of the factors associated with higher fertility among the population of women who typically attend worship services.

Results

I present multilevel logistic regression results for having at least three children as well as multilevel Poisson regression results for the number of children ever born. The direction, magnitude, and significance of coefficients in each type of model are similar. The Poisson models do not include county level characteristics because the models did not converge when county level characteristics were included with individual and congregational characteristics. The multilevel logistic regressions do include some county

of behaviors. These measures seemed initially promising as indicators of congregational conservatism. However, preliminary analysis suggested that these measures were unreliable. The conservatism questions are probably contaminated by a reference group problem. For example, a moderate church in San Francisco may be labeled conservative while the same church in rural Georgia might be described as liberal. The question about rules regarding various behaviors does not distinguish whether the respondent is replying about the denominational or congregational theology. With regard to a topic such as homosexuality, congregational and denominational policies may vary largely. Unfortunately, it is not possible to determine with certainty the congregational position on these issues. In this analysis, I do not use the conservatism or rule measures.

¹¹ The original source for the data is the National Center for Health Statistics (NCHS). NCHS does not provide annual fertility rate information for counties with populations less than 100,000 due to concerns about reliability and data disclosure. The *Atlas* data is based on pooled information from the years 1998 to 2002, minimizing privacy and reliability concerns.

¹² The original source of age and sex data is the 2000 decennial census and the U.S. Bureau of Economic Analysis collected per capita income data.

characteristics, which are modeled as attributes of congregations. In all models, the two levels formally considered are the individual level and the congregational level.

Model 1 in Table 3 includes controls for demographic characteristics as well as measures of religious belief and practice. Neither having a literal approach to the Bible nor engaging in daily devotional activity has a statistically significant effect. Yet believing that all religions are not equal paths to truth has a highly significant, positive relationship with likelihood of having three or more children. In Model 1, worship attendance has a marginally significant, positive relationship with high fertility. Models 2 and 3 add measures of friends in congregation and participation in a congregational group, respectively. In each case, these measures of exposure to a congregation-based network dilute the effect of worship attendance. These network effects are much more significant than the attendance variable was in the first model. Model 4 adds measures of prior inactivity and spousal participation. Spousal presence has a small positive effect. However, periods of inactivity are associated with decreased likelihood of having a high parity.

Congregational characteristics are added in Model 5. Compared with mainline Protestant and non-Christian congregations (the reference category), women in Catholic and Black Protestant congregations are more likely to have three or more children. The average level of education in a congregation is inversely related to the likelihood of women in the congregation achieving high parity, independent of the women's own education level. In contrast, the average percentage of congregants agreeing that all religions are not equal does not have a significant independent effect on high fertility.

Some county characteristics are added in Model 6. In this model, the general fertility rate is inversely related to the likelihood of women in congregations having at least three children. The percentage of the population under 18, per capita income, and sex ratio are each positively related to high fertility. In counties where the ratio of men to women is higher, women are more likely to be married and are able to be more particular about whom they marry. Among the total sample of the CLS discussed here, 8 percent have never married and 48 percent have a spouse present with them in worship. In contrast, among women in counties with over 110 men for every 100 women, only 4 percent have never married and 58 percent have a spouse present in worship. Among women in counties with fewer than 90 men for every 100 women, 16 percent have never married and only 41 percent have a spouse present in worship.

Besides the results presented here, I have tested models with additional combinations of county characteristics, including female civilian labor force participation, population per square mile, total religious adherence rate, presence of a Catholic plurality, and interaction terms for Catholic/Protestant congregation and Catholic/Protestant county plurality. These variables did not have a significant independent effect but including them in a model with the county characteristics that are significant (Model 6) prevented the model from converging. Congregational religious tradition is related to fertility outcomes but I did not find any evidence of an independent effect related to religious market share at the county level, based on broad Protestant and Catholic categories.

The same panels of independent variables are presented in Table 4 for multilevel Poisson regressions of children ever born as were presented in Table 3, except for the

absence of county-level characteristics. The Poisson models did not converge when county characteristics were added to the full panel of individual and congregational characteristics. The results of the Poisson regressions closely parallel the results of the logistic regression. All the patterns described above for the first five models in Table 3 also apply to the likelihood of having more children in Table 4. One small difference is the negative relationship between Biblical literalism and fertility is significant at the .05 and .1 levels in the Poisson models while it was not significant in the logistic models. Biblical literalism has a positive bivariate relationship to fertility but this pattern is not robust to the additional control variables in this model. This challenges the idea that obedience of Biblical literalists to the command to “Go forth and multiply” is a proximate cause of fertility (Dejong 1965; Dejong and Ford 1965).

Discussion of results of multilevel model analysis

These multilevel regressions are useful for evaluating many of the different hypotheses about how congregations influence fertility, including the Reference Group hypothesis. The characteristics of individuals explain much of the variation in fertility attitudes and outcomes. However, religion retains considerable explanatory power in these models after age, socioeconomic status, race, ethnicity, and marital status are controlled. I do find evidence consistent with an effect of Catholic congregational affiliation. Even with a full set of individual, congregational, and county controls, worshipping in a Catholic parish has a positive, independent effect on fertility. This may be because of the influence of Catholic doctrine about birth control among active Catholic worshippers.

Within the population of typical churchgoers, those who worship more often have higher fertility (Model 1 in Table 3 and Table 4). The reason that attending worship

services is associated with fertility seems to be that frequent worshippers have a network of friends in the congregation and participate in groups that reinforce natalist norms and values. The CLS provides compelling evidence that an important reason congregational participation is related to fertility is because attending worship services is often associated with having congregation based friendships and group memberships which reinforce values compatible with childbearing and having larger families than non-churchgoers.

Many adults become active in congregations after getting married or having children (Lesthaeghe and Moors 1996; Stolzenberg, Blair-Loy, and Waite 1995). Among women age 35 to 49 in the CLS sample, 5 percent were not active in a congregation before taking part in the congregation they currently attend and 15 percent had prior inactivity that lasted for several years (Table 2). If selection alone explained the high fertility of women in congregations, then the fact a woman selected into a congregation after inactivity should not necessarily be associated with decreased fertility. In fact, if as is commonly assumed, inactive parents join congregations so their school-age children can get religious education, then we might expect women who have selected into a congregation to have fertility at least as high, if not higher, than women with a continuous history of participation have. However, Model 4 in Table 3 and Table 4 reveals that a history of inactivity is, in fact, associated with lower levels of fertility.

Other evidence discounting a selection process explanation

It has often been noted that it is difficult to determine the relationship between participation and fertility with cross-sectional data (Hayford and Morgan 2008; Marcum

1988; Mosher, Williams, and Johnson 1992).¹³ In this section, I present new approaches to this problem. Women who are active in congregations have higher fertility ideals than otherwise similar women. To counter the possibility that this is the result of higher existing parity levels among the church going women, I demonstrate that this pattern obtains in the population of women who have never had children. I acknowledge that some young adults become active (or more active) in congregations as they marry, have a first child, and as that child reaches school age. I argue that exposure to a congregation, even if it follows a period of inactivity, can nonetheless lead to elevated fertility ideals and parity levels. To support this argument, I demonstrate that among young women who have one child, those active in congregations have higher fertility ideals than women who are less active in congregational life.

Data for fertility ideals come from pooled 1996 to 2006 General Social Survey data. The GSS has a core of questions answered by all respondents, a set of questions usually asked of some respondents in each wave, and additional modules and questions that vary in each wave. Religious affiliations and parity levels are gathered for all respondents in all waves but fertility ideals are only measured in subsets of recent waves. Ideal fertility is measured with the question, “What do you think is the ideal number of children for a family to have?” In **Table 5**, I present odds ratios from logistic regressions

¹³ It would be ideal to use panel data to test the causal relationship between participating in a congregation and having children. Unfortunately, the available panel data is limited in terms of repeated measures of religious involvements. The National Longitudinal Study of 1972 has a few measures of whether or not one is on church mailing lists. The National Longitudinal Survey of Youth 1979 collected attendance data in 1979, 1982, and 2000. However, I discovered that the 2000 measure suffers from a coding problem that makes the variable implausible as currently disseminated by the NLSY research team (e.g., it suggests that over 70 percent of the non-affiliated worship at the highest measured level of frequency). More promising measures of religion are contained in recent panel studies such as the Panel Study of American Religion and Ethnicity, the National Survey of Youth and Religion, the National Longitudinal Survey of Youth 1997, and the National Longitudinal Study of Adolescent Health. However, none of these sources has much more than a decade of panel data and none has information on completed fertility.

predicting that a woman considers the ideal number of children is three or more. The first model includes only women who have no children. These women are more likely to consider a large family ideal if they are Catholic and if they participate in a congregation. The second model includes only women who have one child. Religious affiliation is not statistically significant in this model. Attendance, however, has a larger and still statistically significant relationship in the second model. These results demonstrate that congregational participation is associated with high parity ideals for low parity women. While selection into congregational life based on current parity does not readily explain this result, the pattern is compatible with the hypothesis that congregational participation independently influences fertility ideals.

In Table 6, I present the predicted probabilities of saying that the ideal number of children for a family to have is three or more, based on the regression models in Table 5. Using mean values for the other variables in Table 5, women who attend more than once a week are predicted to be 50 percent more likely to say that three or more children is ideal compared with women who never attend (39 percent of frequent churchgoers are predicted to have this ideal versus 26 percent of women who do not attend). I have argued that church going should increase perceptions of ideal fertility, even for women who already have a child. Consistent with this expectation, women who already have one child are nearly twice as likely to hold the three or more children ideal if they attend more than weekly compared with women who never attend (43 percent versus 23 percent).

Fertility ideals are probably the reflection of reference group influence and do not necessarily indicate fertility intentions. To further my argument that congregational participation increases fertility for those who already have a child, I present National

Survey of Family Growth data on the relationship between current attendance and current pregnancy status. I am not aware of any literature suggesting that pregnancy per se increases attendance. Therefore, analyzing the relationship between current attendance and current pregnancy may be the most reliable way to establish a causal relationship between attendance and fertility with available cross-sectional data.

Table 7 presents results from a logistic regression predicting whether women are currently pregnant for the third or higher time among women age 20 to 44 in the NSFG. Having no religious affiliation has a marginally significant negative relationship to being currently pregnant for at least the third time. Attendance has a statistically significant positive relationship.¹⁴

Conclusion

This paper has explored explanations of variation in fertility among congregants to understand what aspects of congregational participation, if any, are associated with higher fertility. Using the CLS data, I find that exposure to congregation-based reference groups, measured by dense congregational friendship networks and participation in congregation-based groups has a strong, statistically significant relationship to fertility that is robust to an extensive set of additional control variables.¹⁵ In contrast, practicing daily devotional activity and frequency of worship service attendance do not have significant effects in the models that include reference group variables. Biblical literalism

¹⁴ I ran separate regressions not shown here predicting first (and higher) and second (and higher) pregnancy. Attendance was not significantly related to pregnancy at these lower thresholds.

¹⁵ Marcum (1988; 1981; 1986) suggested that high parity families have difficulty participating in congregations due to the logistical challenges of bringing a large family to the congregation. This may be true but the CLS data demonstrates that despite logistical challenges, higher parity levels are associated with being present and active in a congregation as is high parity pregnancy. If Marcum is correct, then many of the high parity families absent from congregations could have been motivated by previous congregational participation to have their children despite their current absence from congregational life.

varies between nonsignificance and significant negative effects in the full models.

Besides the reference group variables, other religious effects include having a spouse present in the congregation, having a continuous history of congregational participation, and disagreeing with the statement that all religions are equal.

This paper finds evidence to support both the Reference Group and Congregational Characteristics hypotheses. Catholic parishes tend to produce higher levels of fertility than other congregations, independent of the characteristics of congregants. Congregational particularistic theology (believing all religions are not equal) is tied to elevated fertility. On the congregational level, the average education level of 35-49 year old women has a negative relationship to fertility independent of the respondent's own education level. I did not find any evidence that county level religious adherence, including Catholic or Protestant plurality status had an effect on fertility in full models. County general fertility rate is negatively related to congregant fertility while county sex ratio, per capita income, and percentage of the population under 18 are all positively related to congregant fertility.

People who go to church regularly may perceive the typical number of children in a family to be larger than non-churchgoers perceive. We have seen that congregational participation is associated with high ideal fertility. Attending worship services binds congregants but it does not seem to be sufficient to explain the participation effect upon fertility. Instead, it seems that orthodox belief, group membership, and concentration of religious friends are most strongly associated with raised fertility. Although I have not been able to study reference groups directly with this data, it is compatible with the

possibility that reference groups influence perceptions of what is normal, ideal, and, eventually, achieved regarding fertility.

There may be genetic, psychological, or sociological characteristics that simultaneously predispose a woman to take part in a congregation, and to have high fertility ideals and to achieve parity levels. Such omitted variables could explain some portion of the congregational participation effect displayed in this paper. I have tried to control for all such traits that I can measure in data sets including the GSS and CLS and still I find a strong participation effect. The evidence presented so far indicates that congregational participation has a cumulative effect in which duration of continuous congregational participation is associated with increases in fertility ideals and number of children born. Low parity women who participate in congregations have higher fertility ideals than inactive women. Women with a continuous history of congregational participation have higher fertility than women who selected into congregational life after inactivity (Table 3 and Table 4). Though some women join congregations after they begin bearing children, the evidence presented here proves that the relationship between congregational participation and fertility should not be dismissed as the simple result of women with children selecting into congregations.

This study has a couple of important limitations. First, I assume that congregational reference group exposure is fairly constant so that current reference group exposure is correlated with reference group exposure prior to recent births. Second, I do not have first-hand information gathered from study of particular networks. In the CLS, I know that respondents who participate in groups and have dense networks have more children than those who do not. Correspondingly, I assume that a woman who has dense

congregational networks or is involved in a congregational group is therefore likely to be exposed to other women who desire or have achieved relatively high parity levels.

Ideally, I would be able to measure the characteristics of reference group members directly and observe them over time. While study of saturated social networks over time could reveal a lot about reference group effects on fertility, such a study would be expensive and entail years of data-gathering. Since study of reference groups as an explanation for the participation effect is at such an early stage, much can be learned from efforts that are more modest.

Future studies might entail interviews with women in congregations to learn about how they perceive the influence of the congregation and acquaintances in the congregation upon their attitudes and decisions regarding family size. Participant observation of congregational groups over time could analyze the social norms they communicate regarding family, gender roles, and fertility ideals. Future social surveys that already measure fertility and religion could add additional measures of reference groups and religious group membership. Ideally, such questions would be added to multiple waves of a panel study.

Table 1. Average children ever born to women age 35 to 49, by concentration of friends in congregations

Q: Do you have any close friends in this congregation?	Children ever born	Distribution (%)
No, I have little contact with others from this congregation outside of activities here	1.97	16
No, I have some friends in this congregation, but my closest friends are not involved here	2.04	20
Yes, I have some close friends here as well as other close friends who are not part of this congregation	2.16	51
Yes, most of my close friends are part of this congregation	2.34	13

Data: Congregational Life Survey, 2001.

Table 2. Descriptive statistics for women 35 to 49 in Congregational Life Survey

		Mean	SD	Min	Max
Demographic characteristics	Number of children ever born	2.13	1.35	0	12
	Three or more children ever born	0.34	0.47	0	1
	Age	42.17	4.17	35	49
	Household income	4.03	1.37	1	6
	Education	5.86	1.62	1	8
	Black	0.06	0.24	0	1
	Hispanic	0.14	0.34	0	1
	Never married	0.08	0.26	0	1
	Divorced	0.09	0.29	0	1
	Committed Relationship	0.02	0.14	0	1
Religious commitment	Biblical literalist	0.25	0.43	0	1
	All religions are not equal	0.32	0.47	0	1
	Daily devotional activity	0.45	0.50	0	1
Congregational participation	Worship attendance	5.74	1.08	1	7
	Friends in congregation	2.62	0.91	1	4
	Previously inactive	0.15	0.35	0	1
	Previously never active	0.05	0.23	0	1
	Spouse in congregation	0.48	0.50	0	1
	Member of congregational group	0.54	0.50	0	1
Congregational characteristics	Catholic	0.57	0.50	0	1
	Evangelical Protestant	0.22	0.41	0	1
	Mainline Protestant	0.17	0.38	0	1
	Black Protestant	0.01	0.11	0	1
	Average education level	5.86	0.75	2.71	8
	Average proportion agreeing religions not equal	0.32	0.24	0	1
County characteristics	General fertility rate	63.32	7.28	43.71	93.67
	Percentage of population under 18	25.83	2.63	14.52	34.57
	Per capita income 2001	32007	8676	17774	87098
	Sex ratio	96.65	4.29	86.78	121.67

Note: missing cases have been deleted list-wise. N=18,525 for all variables. All averages are reported at the individual level.

Table 3. Multilevel logistic regression of having at least 3 children

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Demographic characteristics						
Age	0.01 **	0.01 **	0.011 **	0.01 **	0.011 **	0.011 **
Household income	-0.028 ^	-0.031 *	-0.03 *	-0.038 *	-0.03 ^	-0.027 ^
Education	-0.105 ***	-0.104 ***	-0.111 ***	-0.116 ***	-0.1 ***	-0.103 ***
Black	0.27 **	0.287 ***	0.271 **	0.287 **	0.171 ^	0.212 *
Hispanic	0.232 ***	0.252 ***	0.27 ***	0.267 ***	0.174 **	0.194 ***
Never married	-2.291 ***	-2.29 ***	-2.27 ***	-2.238 ***	-2.24 ***	-2.215 ***
Divorced	-0.746 ***	-0.741 ***	-0.733 ***	-0.682 ***	-0.68 ***	-0.669 ***
Committed relationship	-0.522 ***	-0.508 ***	-0.49 ***	-0.462 ***	-0.46 ***	-0.444 ***
Religious commitment						
Biblical literalist	-0.047	-0.055	-0.049	-0.066	-0.07	-0.057
Religions not equal	0.213 ***	0.203 ***	0.184 ***	0.157 ***	0.175 ***	0.174 ***
Daily devotional activity	0.048	0.039	0.036	0.019	0.016	0.017
Congregational participation						
Worship attendance	0.027 ^	0.008	-0.01	-0.023	-0.03 ^	-0.026
Friends in congregation		0.122 ***		0.083 ***	0.081 ***	0.08 ***
Member of congregational group			0.286 ***	0.243 ***	0.272 ***	0.274 ***
Previously inactive				-0.392 ***	-0.35 ***	-0.345 ***
Previously never active				-0.235 *	-0.22 *	-0.209 **
Spouse in congregation				0.089 *	0.092 **	0.088 *
Congregational characteristics						
Catholic					0.294 ***	0.33 ***
Evangelical Protestant					0.005	0.074
Black Protestant					0.396 *	0.445 *
Average education level					-0.18 ***	-0.153 ***
Aver. proportion agreeing religions not equal					0.017	-0.131
County characteristics						
General fertility rate						-0.011 **
Percentage of pop. under 18						0.036 **
Per capita income						0 *
Sex ratio						0.023 ***
Intercept	-0.783 ***	-0.785 ***	-0.796 ***	-0.793 ***	-0.76 ***	-0.764 ***
N	18,525	18,525	18,525	18,525	18,525	18,525
Congregations	422	422	422	422	422	422
Wald Chi2	678.712	715.383	732.77	819.33	901.2	959.29
Degrees of Freedom	12	13	13	17	22	26
rho	0.034	0.033	0.037	0.031	0.017	0.013

*** p<0.001; ** p<0.01; * p<0.05; ^ p<0.1; two tailed

Sample: Women 35 to 49 in Congregational Life Survey.

NOTE: CONSIDER INCLUDING A MODEL WITH NO RELIGIOUS COMMITMENT VARIABLES INITIALLY IN ORDER TO DEMONSTRATE HOW THEY MEDIATE EFFECTS

Table 4. Multilevel Poisson regression of children ever born on select characteristics

Demographic characteristics	Model 1	Model 2	Model 3	Model 4	Model 5
Age	0.004 ***	0.004 ***	0.005 ***	0.004 ***	0.005 ***
Household income	-0.009 *	-0.01 *	-0.01 *	-0.012 *	-0.009 ^
Education	-0.043 ***	-0.043 ***	-0.045 ***	-0.045 ***	-0.041 ***
Black	0.094 ***	0.1 ***	0.092 **	0.098 ***	0.081 **
Hispanic	0.056 *	0.062 ***	0.066 ***	0.068 ***	0.042 *
Never married	-1.411 ***	-1.41 ***	-1.403 ***	-1.389 ***	-1.389 ***
Divorced	-0.301 ***	-0.299 ***	-0.296 ***	-0.279 ***	-0.276 ***
Committed relationship	-0.272 ***	-0.267 ***	-0.261 ***	-0.255 ***	-0.254 ***
Religious commitment					
Biblical literalist	-0.022 ^	-0.025 ^	-0.023 ^	-0.028 *	-0.03 *
Religions not equal	0.064 ***	0.06 ***	0.054 ***	0.047 ***	0.048 ***
Daily devotional activity	0.004	0	0	-0.005	-0.006
Congregational participation					
Worship attendance	0.012 *	0.006	0.001	-0.004	-0.005
Friends in congregation		0.041 ***		0.029 ***	0.028 ***
Member of congregational group			0.088 ***	0.073 ***	0.081 ***
Previously inactive				-0.083 ***	-0.072 ***
Previously never active				-0.058 *	-0.053 *
Spouse in congregation				0.034 **	0.034 **
Congregational characteristics					
Catholic					0.068 ***
Evangelical Protestant					-0.022
Black Protestant					0.036
Average education level					-0.057 ***
Aver. proportion agreeing religions not equal					0.059
Intercept	0.695 ***	0.694 ***	0.69 ***	0.691 ***	0.696 ***
N	18,525	18,525	18,525	18,525	18,525
Congregations	422	422	422	422	422
Wald Chi2	1929.43	1978	1990.2	2061	2158.7
Degrees of Freedom	12	13	13	17	22

*** p<0.001; ** p<0.01; * p<0.05; ^ p<0.1; two tailed

Sample: Women 35 to 49 in Congregational Life Survey.

Table 5. Logistic regression of saying ideal number of children is three or more, women 18-44 (GSS 1996-2006)

	Parity=0	Parity=1
Age	0.960 **	0.946 ***
Married	0.684	1.170
Never married	1.422	1.187
Siblings	1.207 ***	1.062
South	0.951	0.605 *
Foreign born	0.589 ^	0.797
Hispanic	1.070	1.071
Black	1.211	1.054
GSS Year	1.057 *	1.064 *
No high school diploma	1.223	1.290
Assoc. degree	0.465 *	0.958
Bachelor's degree	0.647 *	0.719
Graduate degree	0.697	0.827
Household income under 25K	0.899	0.944
Household income above 75K	1.400	0.602
Evangelical Protestant	1.057	0.700
Black Protestant	0.675	1.464
Catholic	1.576 *	0.985
No affiliation	0.731	0.880
Attendance	1.079 *	1.122 *
N	785	515
Wald Chi2	100.147	50.294
Degrees of Freedom	20	20
Pseudo R2	0.100	0.077

*** p<0.001; ** p<0.01; * p<0.05; ^ p<0.1; two tailed

Table 6. Predicted probabilities of saying ideal number of children is three or more, by attendance levels, GSS 1996-2006

Attendance	Current parity=0	Current parity=1
Never	0.26	0.23
Less than once a year	0.28	0.25
Once a year	0.29	0.27
Several times a year	0.31	0.30
Once a year	0.32	0.32
Two or three times a month	0.34	0.35
Nearly every week	0.36	0.37
Every week	0.38	0.40
More than once a week	0.39	0.43

Table 7. Logistic regression of a women being currently pregnant for the 3rd or more time, women 20-44

Age	-0.100 ***
Ever married	1.486 ***
Hispanic	0.350
Black	0.202
Diploma or GED	-0.011
Some college	-0.501
Total household income	-0.055
Lived with both parents at 14	-0.429
Evangelical	0.105
Catholic	0.128
No affiliation	0.821 ^
Other religion	-0.196
Attendance	0.204 *
Intercept	-2.108 **
N	6,478

Data: NSFG 2002

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