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Religion, Social Networks, and Life Satisfaction

Chaeyoon Lim^a and Robert D. Putnam^b

Abstract

Although the positive association between religiosity and life satisfaction is well documented, much theoretical and empirical controversy surrounds the question of how religion actually shapes life satisfaction. Using a new panel dataset, this study offers strong evidence for social and participatory mechanisms shaping religion's impact on life satisfaction. Our findings suggest that religious people are more satisfied with their lives because they regularly attend religious services and build social networks in their congregations. The effect of within-congregation friendship is contingent, however, on the presence of a strong religious identity. We find little evidence that other private or subjective aspects of religiosity affect life satisfaction independent of attendance and congregational friendship.

Keywords

life satisfaction, religion, social networks, social identity

Interest in subjective well-being has a long tradition in philosophy and psychology, but only recently have scholars across many disciplines begun to explore the question of happiness and life satisfaction. This emerging body of interdisciplinary literature embraces subjective perceptions of well-being as important indicators of quality of life. A main contribution of this literature is an improvement in the reliability and validity of measures of subjective well-being, such as self-rating questions about happiness and life satisfaction (e.g., Diener et al. 1999; Kahneman and Krueger 2006). These studies suggest that subjective aspects of quality of life can be quantified and systematically analyzed.

A wide range of factors can influence subjective well-being (Campbell, Converse, and Rodgers 1976). For example, numerous studies find religion to be closely related to life satisfaction and happiness (e.g., Ferriss 2002; Greeley and Hout 2006; Hadaway 1978; Inglehart 2010). However, much

theoretical and empirical controversy surrounds the question of how religion actually shapes individuals' well-being. Some studies emphasize social networks that people find in religious organizations as the major source of well-being (e.g., Krause 2008), others examine private and subjective aspects of religion (e.g., Greeley and Hout 2006). While both approaches are plausible, it remains unclear which aspect of religion plays a more significant role and how these dimensions might interact to shape subjective well-being.

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Furthermore, most of these studies are based on cross-sectional data, and, although they control for sociodemographic factors and well-known correlates of subjective well-being, unobserved individual characteristics may still be responsible for the association between religion and well-being. As religiosity—at least some aspects of it—is the result of individual choice, it is likely that people who are religious differ from those who are not in respect to various factors that could be related to life satisfaction. It is just as plausible that life satisfaction influences religious choice. These possibilities must be taken seriously, not only to establish the effect of religion on life satisfaction, but also to understand more broadly the mechanisms of religion's effect.

This study uses data from the Faith Matters Study—a panel survey of a representative sample of U.S. adults in 2006 to 2007—to advance our understanding of how and why religion affects life satisfaction. The panel structure of the data allows us to examine selection bias more effectively than earlier studies; we can therefore perform more stringent tests of religion's effect. More important, the data include rich information on religious beliefs and practices and provide an excellent opportunity to explore the underlying relationship between religiosity and life satisfaction. By unpacking this relationship, this study reveals the mechanisms of religion's influence on quality of life and contributes to the development of theoretical frameworks that enable us to understand how religion influences people's lives. Our findings on religious social networks shed light on how and why personal relationships enhance life satisfaction, and in particular, how the social contexts and identities in which such networks are embedded shape social networks' effects.

RELIGIOUS INFLUENCE ON SUBJECTIVE WELL-BEING

Scholars who study the connection between religion and subjective well-being appear to

agree on a few points. First, most studies find a positive association between religious involvement and individuals' well-being. Witter and colleagues (1985) undertook a meta-analysis of 28 studies and found that in most of these studies, religion is positively associated with subjective well-being. Reviews of more recent studies confirm these findings (e.g., Ellison and Levin 1998). Second, studies find that the association between religion and subjective well-being is substantial (Inglehart 2010; Myers 2000; Witter et al. 1985). Witter and colleagues (1985) estimate that the gross effects of religious involvement account for 2 to 6 percent of the variation in subjective well-being. When compared with other correlates of well-being, religion is less potent than health and loneliness, but it is just as or more potent than education, marital status, social activity, age, gender, and race. Other studies find that religious involvement has an effect comparable to or stronger than income (Ellison, Gay, and Glass 1989). In many studies, frequency of religious service attendance is the most consistent correlate of subjective well-being (Ferriss 2002), although several studies find that inner or spiritual dimensions of religion are also related to well-being (e.g., Ellison 1991; Greeley and Hout 2006; Krause 2003).

Despite this general consensus, some issues merit further examination. First, most of the evidence for the effect of religiosity on subjective well-being comes from cross-sectional studies. While these studies control for known predictors of subjective well-being, skeptics may question the causal interpretation of the relationship between religion and well-being (Regnerus and Smith 2005). Unobserved or poorly measured differences between the religious and the non-religious could explain the association. Self-selection is another possible issue: Happy people may take up religion to pursue spiritual well-being. Moreover, people who find happiness in religion may be more likely to stay religious than those who do not. There could be

self-selection bias in both those who join a religion and those who stay religious.

Although most studies of religion and subjective well-being use cross-sectional data, a few longitudinal studies examine the causal effect of religiousness more rigorously (Krause 2006; Levin and Taylor 1998). Using panel data collected from a national sample of African Americans, Levin and Taylor (1998) find that neither public nor private aspects of religiosity measured in the first wave of their survey significantly affected life satisfaction in the second wave. In a study of elderly Christians, however, Krause (2006) finds that people with greater doubt about their religious faith report lower levels of psychological well-being. While these studies represent a significant step forward, they focus on specific demographic groups. Thus, the findings may be difficult to generalize to the wider population. In a recent study, Krueger and colleagues (2009) use a time-diary survey to measure individuals' emotional experiences associated with various daily activities. Based on a nationally representative sample, they find that people report the highest level of positive emotions when they are involved in religious activities. Although not a longitudinal study, their findings offer strong evidence for religious influence. While none of these studies offer definitive evidence for or against the effect of religion, the conflicting findings indicate that evidence from cross-sectional studies should be viewed with caution. These studies also point to the need for evidence that is representative of the broader population, longitudinal, and attentive to selectivity.

WHY DOES RELIGION MATTER?

Studies diverge as to why people who are committed to their religion, and especially those who regularly attend services, have a higher level of subjective well-being. One explanation is that religion offers personal networks and support. This proposition dates

back to classical sociologists such as Durkheim and Simmel, who considered the social dimension of religion the "essence and substance" of religion (Durkheim 1951; Simmel 1997; see also Krause 2008). According to this argument, religious involvement enhances subjective well-being because religious organizations offer opportunities for social interaction between like-minded people, nurturing friendships and social ties. Although this interpretation is plausible, previous studies largely fail to find direct evidence to support it (e.g., Ellison et al. 1989; Greeley and Hout 2006). Specifically, these studies find that the relationship between religious involvement and well-being remains robust even after controlling for social resources such as the frequency of social activities and the size of one's friendship network.

Most of these studies, however, focus on general social networks and modes of support without making a distinction between religious and secular social resources. This assumes that social resources found in religious organizations are no different from those found in secular communities. However, if social resources offered by religious organizations possess qualities that secular social networks do not provide, measures of general social resources employed by these studies would not demonstrate religious social networks' influence. In fact, some studies do suggest that religious social resources have distinctive qualities. For example, Ellison and George (1994) propose that churchgoers may derive a greater sense of comfort from their co-religionists because they have similar beliefs about the practice and meaning of helping behavior. Psychological literature on social identity and social support provides a similar line of argument; these studies indicate that social support is more likely to be "received and interpreted in the spirit in which it is intended" when provided by someone with whom the recipient shares a sense of social identity (Haslam et al. 2009:11). Furthermore, Krause and Wulff (2005) propose

that church-based friendship may promote a sense of belonging and thus enhance physical and mental health. In a subsequent study based on elderly Christians, Krause (2008) finds a positive relationship between involvement with a church friend and life satisfaction.

In brief, although many studies fail to find empirical support, social resources could link religious involvement and life satisfaction. To examine this possibility, however, we need multiple measures of social networks and supports that gauge the dimensions of social resources. In particular, we must make a distinction between religious and secular social resources. We need to determine whether religious social resources have independent effects that are not captured by measures of general social resources, and whether religious social networks account for the effect of religious service attendance on life satisfaction.

Rather than focus on religion's public, participatory aspects, several studies focus on private and subjective dimensions of religion as potential mediating factors, that is, on religious meaning rather than religious belonging (as characterized by Ellison and colleagues [1989]). Some scholars suggest that religious faith enhances well-being by offering a comprehensive framework for the interpretation of world events, which provides existential certainty, and thus a sense of meaning and purpose in life, in an unpredictable world (Emmons, Cheung, and Tehrani 1998; Inglehart 2010). Studies also suggest that strong religious faith and personal spiritual experiences can improve well-being by bolstering self-esteem and self-efficacy (Ellison 1991).

These studies use personal spiritual experience and private religious practices to gauge the effects of religiosity. Several studies find that the sense of closeness to God, or an index that includes this variable, is significantly related to well-being. For example, Greeley and Hout (2006) combine a sense of closeness to God with other measures of "religious feeling" (e.g., "feeling God's love" and "feeling deep inner peace and harmony") and find

a positive relationship between the index and happiness. Pollner (1989) uses the same measures to construct an index of the "relation to a divine other," which is significantly related to well-being, and then draws a parallel between a divine relationship to God and social relationships with significant others in respect to their impact on well-being.¹

While these findings provide important insights into how and why religious involvement enhances life satisfaction, many questions remain unanswered. For instance, some studies show that the private and subjective dimensions of religiosity reduce the effect of religious service attendance on subjective well-being to a statistically insignificant level (e.g., Ellison 1991). Other studies, however, find attendance to have a substantial effect on well-being even after those factors are taken into account (e.g., Pollner 1989). Even if these variables (i.e., religious feeling and divine interaction) are accepted as mediating factors, the remaining direct influence of attendance may still need to be explained. Another difficulty arises from the fact that many variables employed in these studies are open to different interpretations, making it difficult to pinpoint what these variables measure. Moreover, variables such as "feeling God's love" and "feeling inner peace" may be conceptually so close to life satisfaction that they may not be useful for unpacking the mechanisms behind religion's relationship to well-being. As Krause (2008:10) points out, it would not be surprising to find that an index containing "feeling inner peace" predicts happiness, as the two variables may be "essentially measuring the same thing."

Despite their limitations, these studies suggest that religion's private and subjective dimensions must be taken seriously as we assess the effects of religion on life satisfaction. Some of these dimensions may have an independent effect on well-being and, more important, may mediate the effects of religious service attendance. This study considers both possibilities.

THE FAITH MATTERS STUDY

To examine the effect of religion on subjective well-being, we use data collected during 2006 and 2007 as part of the Faith Matters (FM) Study, a nationwide study examining the connection between religion and social capital in America.² In 2006, a commercial research company conducted random-digit-dial phone interviews with a representative sample of 3,108 adults. The response rate in the 2006 survey, based on the formula recommended by the American Association for Public Opinion Research (AAPOR), was 53 percent, which compares favorably with other major surveys in recent years.³ In 2007, these adults were re-contacted for the second wave of the study, and 61.6 percent of the respondents ($N = 1,915$) were interviewed.⁴

Subjective well-being, the key outcome variable of this study, refers to “global feelings of well-being about life” as perceived by individuals themselves (Campbell et al. 1976).⁵ This is usually measured with self-rating questions on life satisfaction and happiness. In general, “happiness” tends to tap a short-term, transient assessment of mood, whereas “life satisfaction” reflects more stable evaluations of personal well-being. While it is important to recognize the multidimensional nature of subjective well-being, some studies find that the two measures yield broadly consistent results in multivariate analysis (e.g., Helliwell and Putnam 2004). In this study, we focus on life satisfaction, which is measured as a single self-rating question. Survey respondents were asked how satisfied they were with their lives as a whole on a 10-point scale, 10 being “extremely satisfied.” Although we would prefer multiple measures of subjective well-being, numerous studies show that responses to this question correspond well with external reports on respondents and with observed behavior (e.g., Andrew and Withey 1976; Diener et al. 1999; Donovan, Halpern, and Sargeant 2003).⁶

We use several variables to measure religious involvement. First, we construct

a dichotomous measure for each of the nine religious traditions, including “no religion.” We use a common classification scheme to group denominational affiliations into these nine categories (Steensland et al. 2000).⁷ Frequency of religious service attendance was originally measured on an ordinal scale, ranging from “never” to “more than once a week.” We translate this into an interval scale by approximating days of attendance per year and then log-transforming the result.⁸ To examine the private and subjective dimensions of religion, measures include several groups of factors: (1) private religious practices, including prayer and reading scripture; (2) self-reported importance of religion in different aspects of life; (3) spiritual and religious experiences, including feeling the presence and love of God; and (4) theological and religious beliefs, including measures of religious conservatism (i.e., inerrancy of scripture).

We also measure social resources with several variables. For general social resources, measures include the size of intimate social networks and composite indices for social and civic involvements. Size of social network is measured by a question about the number of “close friends” respondents have.⁹ To ease respondents’ burden, the survey provided intervals rather than asking respondents to report the exact number. The key measure of religious social resources is the number of close friends in a respondent’s congregation.¹⁰ The survey reported number of friends on an ordinal scale, which we translated into an interval scale and then log-transformed.¹¹

Finally, all analyses reported in this article control for individual characteristics such as age, sex, race, education, income, and marital status (see the Appendix for additional details on these variables).

ANALYTIC STRATEGY

To explore how and why religion affects life satisfaction, we first examine the frequency of religious service attendance, which earlier

studies find to be one of the most consistent correlates of subjective well-being. Because we measure life satisfaction on an ordinal scale from 1 to 10, ordinal logistic regression is a suitable approach.¹²

To investigate selection bias and reverse causality, we employ panel data analysis. A major advantage of panel data is that outcomes are measured before and after intervention so that adjustments can be made for initial differences in outcome between the people who experience intervention (treatment group) and those who do not (control group). We adjust for the pre-intervention level of life satisfaction using an analysis of covariance (ANCOVA) model and a change-score model (Allison 1990). The ANCOVA model includes life satisfaction in the first wave as a control variable; the change-score model uses the difference in life satisfaction between the two waves as outcome and the difference in religiosity as explanatory variable. The two models make different assumptions about how the outcome variable would have unfolded over time in treatment and control groups had there been no intervention (Morgan and Winship 2007). The ANCOVA model assumes that outcome in the two groups would converge in the absence of intervention. On the other hand, the change-score model assumes that the difference in outcome between the groups would remain constant without intervention. Testing these assumptions requires at least two waves of pre-intervention data. Without such data, we examine whether the two models yield similar results.

Given that the two waves of the FM survey were just a year apart, only a small number of respondents reported a substantial change in religious involvement. The short time span may also affect respondents' congregational friendship networks, which are often nurtured through frequent and long-term interactions with fellow churchgoers. A year may also be too short of a time for a change to affect life satisfaction, which is known to be relatively stable over time.

The short interval between the two waves therefore makes it harder to detect any effect of congregational friendship on life satisfaction. Still, were we to find any evidence that change in religious involvement between 2006 and 2007 accompanies a significant change in life satisfaction, we would have stronger support for religion's influence on life satisfaction than cross-sectional analysis can provide.

To explore mechanisms that link religion to life satisfaction, we begin by investigating the mediating role of social resources. Unlike previous studies, we distinguish religious social resources from general social networks and involvement, and we examine whether any distinctive quality in religious social resources is not captured by measures of general social integration. Finally, we examine how private and subjective dimensions of religiosity influence life satisfaction and whether these dimensions account for the relationship between attendance and satisfaction. Because we conduct multiple tests with a single dataset, there is a high risk of erroneously rejecting the null hypothesis. To take this risk into account, we use Bonferroni-adjusted *p*-values to determine statistical significance.

RESULTS

Our first task is to examine whether religious service attendance improves life satisfaction. Table 1 starts with a baseline model that includes only the indicator variables for religious traditions (Model 1). Coefficients indicate the difference between each religious tradition and the reference category ("no religion") in terms of life satisfaction. Except for "other non-Christian traditions," all traditions show a higher level of life satisfaction than does "no religion." Adding control variables reduces the difference between "no religion" and each of the traditions, but many differences remain significant (Model 2). Model 3 adds frequency of religious

service attendance. Consistent with earlier studies' findings, religious service attendance is positively related to life satisfaction. More important, once attendance is taken into account, the difference between those with and without religious affiliation is statistically insignificant for all religious traditions. Frequency of religious service attendance appears to account for most of the differences in life satisfaction between those with and without religious affiliations.¹³ For life satisfaction, what matters is how involved one is with a religious community, not whether that community is Baptist, Catholic, or Mormon.

When all variables in Model 3 are set to their mean values, 28.2 percent of people who attend a service weekly are predicted to be "extremely satisfied" with their lives, compared with only 19.6 percent of those who never attend services. This result is roughly comparable to the difference between someone in "good" health and another in "very good" health, or the difference between someone with family income of \$10,000 and another with \$100,000. Given that health and income are the strongest predictors in the model, this association between attendance and life satisfaction is notable.

The remainder of Table 1 explores the mediating factors between religious service attendance and life satisfaction. Because social resources formed through religious participation are one of the commonly proposed intervening variables, Model 4 examines whether measures of general social involvement explain the relationship between attendance and life satisfaction. People with large networks and active social lives report a high level of satisfaction, and adding these measures to the model somewhat reduces the effect of religious service attendance. Yet, the relationship between attendance and life satisfaction remains substantial and significant. This suggests that social involvement and support networks may not be the primary mediating factor.

Model 5 shows, however, that certain social resources may be important mediating factors. This model adds the number of close friends that respondents have in their congregations to capture any effects of religious social resources that may not be reflected in measures of general social involvement. Friendship in a congregation is significantly related to life satisfaction even when the variables measuring general social resources are included. Even among respondents with a similar number of close friends, the results suggest that people who have more close friends in their congregations tend to be more satisfied with their lives. When all other variables are set to their means, the predicted probability of people with more than 10 friends in their congregations being "extremely satisfied" is almost twice as large as among individuals who have no friends in their congregations.

More important, adding number of congregational friends reduces the effect of attendance to a statistically insignificant level. If we compare Models 4 and 5, congregational friendships appear to account for most of the effect of religious service attendance on life satisfaction.¹⁴ People who frequently attend religious services are more satisfied with their lives not because they have more friends overall (when compared with individuals who do not attend services), but because they have more friends in their congregations. Our analysis also suggests that people who belong to a congregation but have no friends there are even less satisfied than individuals who do not attend religious services or who have no congregation.¹⁵ In short, "sitting alone in the pew" does not enhance one's life satisfaction. Only when one forms social networks in a congregation does religious service attendance lead to a higher level of life satisfaction.

Why should friendships in congregations have an extra effect on life satisfaction beyond that captured by measures of general social resources? Answering this question requires more comprehensive data on social networks in different contexts, but the FM survey

Table 1. Ordinal Logistic Regressions of Life Satisfaction on Religiosity and Social Networks

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Religious Traditions (no religion = 0)								
Catholic	.701*** (.113)	.428*** (.117)	.211 (.124)	.187 (.124)	.174 (.124)	.157 (.125)	.219 (.126)	.134 (.129)
Mainline Protestant	.490*** (.119)	.170 (.123)	-.048 (.130)	-.068 (.130)	-.065 (.130)	-.078 (.131)	-.022 (.131)	-.076 (.136)
Evangelical Protestant	.673*** (.110)	.478*** (.114)	.201 (.125)	.177 (.126)	.137 (.126)	.067 (.127)	.129 (.128)	.028 (.131)
Black Protestant	.522*** (.150)	.550*** (.154)	.238 (.165)	.347* (.166)	.315 (.166)	.212 (.167)	.272 (.168)	.181 (.173)
Jewish	.462* (.233)	.302 (.245)	.195 (.245)	.160 (.246)	.160 (.246)	.136 (.246)	.189 (.246)	.128 (.248)
Mormon	.632* (.264)	.524* (.264)	.200 (.271)	.075 (.271)	.040 (.272)	-.051 (.273)	.006 (.275)	-.107 (.276)
Other non-Christian traditions	.168 (.204)	-.024 (.207)	-.215 (.211)	-.252 (.209)	-.234 (.210)	-.267 (.210)	-.186 (.211)	-.225 (.215)
Other Christian traditions	.641*** (.183)	.310 (.187)	.088 (.191)	.057 (.191)	.051 (.191)	-.021 (.193)	.029 (.193)	-.041 (.197)
Religious Service Attendance			.135*** (.026)	.112*** (.026)	.015 (.031)	-.026 (.033)	-.014 (.033)	-.031 (.034)
Social Involvement Index				.105* (.053)	.093 (.054)	.097 (.054)	.096 (.054)	.100 (.055)
Civic Involvement Index				.068 (.048)	.052 (.048)	.054 (.048)	.058 (.048)	.075 (.049)
Number of Close Friends (logged)				.351*** (.064)	.269*** (.066)	.266*** (.066)	.251*** (.066)	.247*** (.069)

(continued)

Table 1. (continued)

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Number of Friends in Congregation (logged) (A)					.290*** (.051)	.271*** (.052)	.087 (.070)	.266*** (.053)
Religious Identity (B)						.356*** (.084)	.030 (.118)	.345*** (.086)
A X B							.325*** (.083)	
Religious Homogeneity of Friendship Networks								.025 (.022)
N	2,746	2,746	2,746	2,746	2,746	2,736	2,736	2,616
Pseudo R-squared	.005	.047	.050	.055	.058	.060	.061	.060

Note: All models except Model 1 include all control variables. Results for control variables are available in the online supplement. * $p < .05$; ** $p < .01$; *** $p < .001$ (two-tailed tests).

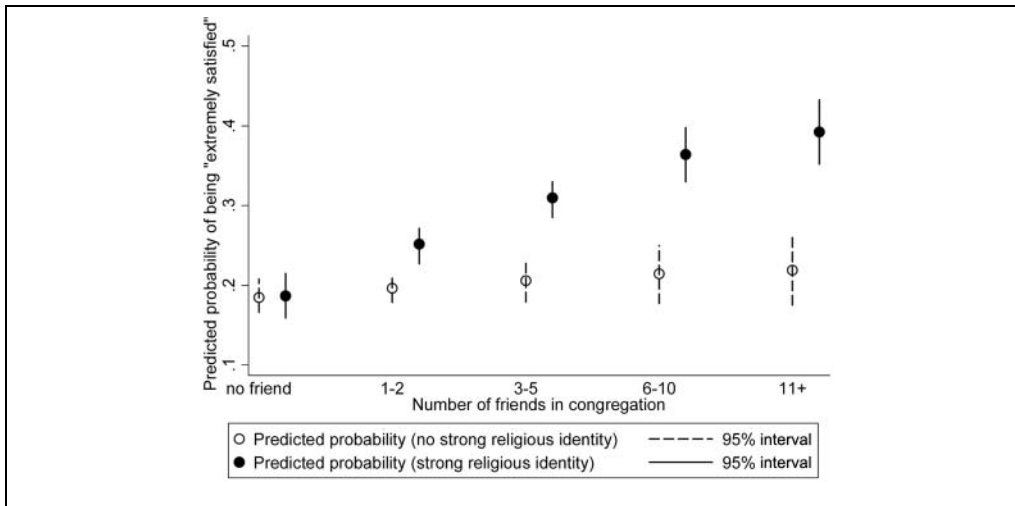


Figure 1. Relationship Among Congregational Friends, Religious Identity, and Life Satisfaction

features some variables that may offer useful insights. As mentioned earlier, studies suggest that people find social support more meaningful when it comes from someone with a shared sense of social identity (Ellison and George 1994). Krause (2008) argues that an important benefit of church-based friendship is that it strengthens a sense of belonging, one of the most basic human needs identified by Maslow. It follows then that the influence of congregational friends on life satisfaction would be stronger for individuals who attach special meaning to religious groups and who consider religion an important part of their identity.

Models 6 and 7 examine this possibility with a variable measuring strength of religious identity. First, we consider the direct effect of religious identity on life satisfaction. We measure religious identity as a dichotomy: whether or not religion is “very important” to a person’s sense of self.¹⁶ Model 6 shows that people with a strong religious identity tend to have a higher level of life satisfaction even when attendance and congregational friendship are controlled. Model 7 adds an interaction term to examine whether the effect of congregational friendship on life satisfaction varies according to the strength of religious identity. As expected, the interaction term is positive

and statistically significant, indicating that religious friendship has a larger effect among individuals who consider religion very important to their sense of self. Figure 1 depicts this interaction effect by computing the predicted probabilities of being “extremely satisfied” by different numbers of congregational friends, separately for respondents with and without a strong religious identity. All other variables are set to their mean values to calculate the predicted probabilities. The figure suggests that congregational friendships have little effect on individuals who do not consider religion very important to their sense of self. By contrast, among individuals with strong religious identities, friendships in a congregation have a dramatic effect on life satisfaction. The figure also shows that strong religious identity makes little difference on life satisfaction unless it is supported by a group of close friends in one’s congregation. Among respondents with large numbers of congregational friends, those with strong religious identities are almost twice as likely to say that they are “extremely” satisfied than are individuals without a strong religious identity. We find little difference among individuals who do not have close friends. In short, only when people have both a strong sense of religious identity

Table 2. Panel Data Regressions of Life Satisfaction on Religious Service Attendance and Congregational Friendship

Variables	Model 1 ^a	Model 2 ^b	Model 3 ^a	Model 4 ^b
	Life Satisfaction 2007	Life Satisfaction (2007 – 2006)	Life Satisfaction 2007	Life Satisfaction (2007 – 2006)
Life Satisfaction in 2006	.644*** (.031)		.632*** (.032)	
Religious Service Attendance in 2006 (logged)	.150*** (.034)	.015 (.027)	.031 (.045)	.017 (.038)
Change in Religious Service Attendance (2007 to 2006)	.151** (.050)	.083 (.045)	.087 (.053)	.043 (.048)
Number of Friends in Congregation in 2006 (logged)			.279*** (.080)	-.008 (.067)
Change in Number of Friends in Congregation (2007 to 2006)			.249*** (.076)	.166* (.067)
Constant	(omitted)	-.057 (.080)	(omitted)	-.058 (.080)
<i>N</i>	1,749	1,895	1,731	1,892
<i>R</i> -squared (pseudo <i>R</i> -squared)	.127	.002	.131	.007

^aWe estimated these models with ordinal logistic regression with all control variables included.

^bWe estimated these models with OLS.

* $p < .05$; ** $p < .01$; *** $p < .001$ (two-tailed tests).

and within-congregation networks does religion lead to greater life satisfaction.

Another reason for the link between congregational networks and life satisfaction may be that large networks within congregations indicate more homogeneous worldviews and values. Social network scholars suggest that similarities in social ties foster empathetic understanding and mutual support, thus enhancing subjective well-being (Marsden 1988; Wellman and Wortley 1990). To test this proposition, we add a measure of religious homogeneity of friendship networks (i.e., how many of a respondent's five closest friends have the same religious affiliation) (see Model 8). There is little evidence that this measure of network homogeneity increases life satisfaction. While not shown in Table 1, we examined whether there is any interaction between network homogeneity and congregational friendship, but we found none. The effects of religious social networks do not depend on religious similarity among close social ties, but on regular

encounters and shared religious experiences with congregational friends.

The propositions examined here—social identity and religious homogeneity of social networks—are only two of many possible explanations for the findings on congregational social networks. Nevertheless, they shed some light on the relationship between social networks and life satisfaction. In particular, our findings suggest that a strong sense of religious identity may be the key factor setting congregational friendship apart from other social networks. The findings also suggest that effects of a strong religious identity on life satisfaction are reinforced by a close-knit friendship network in a congregation.

While these findings support the proposition that religion enhances life satisfaction, we cannot rule out the possibility that unobserved differences between people who are deeply involved in their congregations and those who are not are responsible for the results in Table 1. To investigate this issue, we turn to panel data analysis (see Table 2).

Model 1 includes life satisfaction in 2006 as a control variable to adjust for initial differences in life satisfaction. The key explanatory variable in this model is the difference in religious service attendance between 2006 and 2007. We include level of attendance in 2006 because the change in attendance could be partly influenced by its initial level. The result shows that the change in attendance has a positive and significant effect on life satisfaction. Among respondents with the same level of life satisfaction in 2006, those who began to attend services more frequently in 2007 reported a higher level of life satisfaction. Model 2 adjusts for the initial differences by subtracting life satisfaction in 2006 from that in 2007. The key advantage of this approach is that it eliminates all unobserved, time-constant, individual-level variables so that the estimator is less vulnerable to unobserved differences between individual respondents. The effect of religious service attendance on life satisfaction in this model is positive and marginally significant ($p = .065$).¹⁷

Models 3 and 4 examine the effect of friendship in a congregation. In ANCOVA and change-score models, the change in number of congregational friends is significantly related to the change in life satisfaction between 2006 and 2007. Among respondents who had a similar level of life satisfaction and an identical number of congregational friends in 2006, those who had more friends in the congregation in 2007 reported higher life satisfaction than those who did not. Consistent with the finding in the cross-sectional models, change in attendance is insignificant when congregational friendship is taken into account.

In summary, our panel data analysis confirms the findings from the cross-sectional analysis on the effects of religious service attendance and friendship within a congregation on life satisfaction. Evidence for within-congregation friendship is especially robust in both models. Because the change-score model eliminates unobserved time-constant

individual characteristics, these results offer strong evidence against selection bias. Even the change-score model, however, does not rule out the possibility that time-varying covariates confound the estimates of religious effects. It is still possible that other changes in respondents' lives between 2006 and 2007 might have led to matching changes in religious service attendance and life satisfaction. Effect heterogeneity is also a possible issue. It is plausible, for example, that people decide to become religious because they expect to find happiness in religion. In other words, individuals may self-select into religion based on the expected effect of religious involvement; the benefit of religion may thus be limited to those who decide to become religious. Furthermore, people may choose to leave religion because they fail to find happiness in it. In this case, leaving religion may even enhance their well-being. Joining and leaving religion may therefore have asymmetric effects on life satisfaction (Lieberman 1985). The panel models in Table 2 estimate the average effect on individuals who experienced religious change and those who did not, and these estimators do not consider potential effect heterogeneity or asymmetric effects of religion. Until these issues are addressed, the evidence in Table 2 should be viewed with caution.¹⁸

Table 3 presents findings on other aspects of religious involvement, including private and subjective dimensions of religiosity. As discussed earlier, previous studies suggest that some of these dimensions not only have independent effects on subjective well-being but also serve as intervening factors between attendance and well-being. To test these propositions, the model includes religious service attendance along with congregational friendship, religious identity, and all of the control variables. Because we conducted multiple tests with a single dataset, we present the Bonferroni-adjusted p -values along with the coefficients and conventional standard errors.¹⁹ Space constraints allow us to present results only for the key explanatory variables from each model.

Table 3. Ordinal Logistic Regressions of Life Satisfaction on Various Measures of Religiosity

Variable	Coef. (SE)	<i>p</i> -value ^a	Variable	Coef. (SE)	<i>p</i> -value ^a
Prayer	-.073 (.037)	.751	Belief in God	.035 (.100)	1.000
Read Scripture	-.149 (.121)	1.000	Belief in Afterlife	-.030 (.029)	1.000
Saying Grace	.022 (.053)	1.000	Belief in Heaven	.007 (.029)	1.000
Religious Service at Home	-.099 (.039)	.169	Experience God's Presence	.001 (.080)	1.000
Talk Religion	.022 (.038)	1.000	Feel God's Love	.140 (.061)	.336
Religion in Daily Life	.013 (.054)	1.000	Feel God's Judgment	-.064 (.054)	1.000
Religion in Decision Making	.065 (.043)	1.000	Inerrancy of Scripture	.210 (.125)	1.000
Strong Believer of Own Religion	.087 (.054)	1.000	Born Again	.052 (.099)	1.000

Note: We estimated these models with ordinal logistic regression with all of the control variables as well as “number of friends in congregation” and “religious identity.”

^aBonferroni-adjusted *p*-value.

Table 3 offers weak and inconsistent evidence that any of the private or subjective aspects of religion have a significant effect on life satisfaction independent of congregational friendship and religious identity. Only one variable (“feel God’s love”) has a positive relationship to life satisfaction that is statistically significant at conventional levels; no variables remain statistically significant after we perform the more conservative Bonferroni adjustment. Spiritual dimensions of religiosity, at least as measured in this study, do not appear to be of great consequence. Neither respondents who “personally experience the presence of God” nor those who often “personally feel God’s love in life” have a significantly higher level of satisfaction than those who do not, although the latter is significant without the Bonferroni adjustment. Strength of religious faith does not appear to be an important factor, either. People who believe in God or heaven with an absolute certainty do not differ significantly from those who have less certain views.

Another interesting finding is that private religious practices, such as prayer and holding

religious services at home, are not significantly related to life satisfaction.²⁰ It is revealing that the collective experience of religion in a congregation is more closely linked to life satisfaction than are private practices and individual experiences of religion. Equally interesting is that among several variables that assess the salience of religion in a respondent’s life, the variable concerning importance to self-identity has a significant effect on life satisfaction and interacts with congregational friendship. Combined with the findings on congregational friendship and private religious practices, this suggests that religious belonging, rather than religious meaning, is central to the religion–life satisfaction nexus.

Finally, the relationship between congregational friendship and life satisfaction is remarkably robust, whatever measures of private or subjective religiosity are controlled for, whereas none of our measures of private or subjective religiosity have a similarly robust relationship with life satisfaction (results for congregational friendship not shown here). The coefficient for religious

networks is almost identical across the models and is significant in all models, even with the Bonferroni adjustment. The relationship between religious identity and life satisfaction is stable across the models as well. In short, our findings suggest that most measures of private and subjective religiosity have little effect independent of social and participatory religiosity, and that the former aspects do not mediate the latter.

SUMMARY AND CONCLUSIONS

The present study addresses two uncertainties about the connection between religion and life satisfaction. First, while numerous studies find that religious people have a higher level of life satisfaction than do non-religious people, those studies do not provide convincing evidence that religion actually improves well-being. Second, the theoretical mechanisms underlying the relationship remain unclear. Using a panel dataset, we demonstrate that religious service attendance has positive effects on life satisfaction. More important, we find that the friendship networks people build in their congregations mediate most of the effects of attendance on life satisfaction. While the findings in this study should not be considered as definitive evidence given the limitations of two-wave panel data with a short lag time, they offer better evidence for social and participatory mechanisms shaping religion's impact on life satisfaction than do previous cross-sectional studies. In addition, these findings from the Faith Matters survey are particularly informative because very few panel surveys with a large national sample focus on religion and Americans' life satisfaction.

The study's contribution to the literature of religion and subjective well-being is not limited to stronger evidence for religion's influence on life satisfaction; our findings also shed new light on the specific mechanisms of religion's influence. Our analyses suggest

that social networks forged in congregations and strong religious identities are the key variables that mediate the positive connection between religion and life satisfaction. People with religious affiliations are more satisfied with their lives because they attend religious services frequently and build intimate social networks in their congregations. More important, religious identity and social networks in congregations closely interact. Congregational social networks are distinct from other social networks only when they are accompanied by a strong sense of religious belonging. Conversely, a strong sense of identification enhances life satisfaction only when social networks in a congregation reinforce that identity. Equally important is the suggestion that private and subjective dimensions of religiosity are not significantly related to life satisfaction once religious service attendance and congregational friendship are controlled for. These findings suggest that in terms of life satisfaction, it is neither faith nor communities, *per se*, that are important, but communities of faith. For life satisfaction, praying together seems to be better than either bowling together or praying alone.

The discrepancy between our findings and those in several previous studies—especially those that emphasize subjective or spiritual aspects of religion (e.g., Ellison 1991; Greeley and Hout 2006)—merits closer inspection. First, while we examine a long list of variables that tap different aspects of religion, our study does not include every variable examined by previous studies. This is particularly the case for subjective and spiritual aspects of religion, which tend to be defined and measured in different ways across studies. As our findings for “feel God's love” and “feel God's presence” suggest, even questions that seemingly tap a similar dimension of religion can yield very different outcomes. It is therefore possible that this discrepancy arises from ways in which subjective and spiritual aspects of religion are measured.

Second, our findings are not completely inconsistent with previous studies. For

example, “feel God’s love,” which is significantly related to life satisfaction with the conventional p -value, is one of the variables Greeley and Hout (2006) use to construct the index of “religious feeling.” The real difference lies in the fact that we include measures of religious social networks—rarely examined by previous studies (cf. Krause 2008)—that turn out to be strongly related to life satisfaction and mediate almost all of the effects of religious service attendance. These findings are insensitive to model specification and supported by the panel data analyses. Given this robust evidence for friendship within a congregation and religious identity, and also the relatively weak and inconsistent findings on other dimensions of religion, we reach a different conclusion than do previous studies.

In addition, even though our finding for “feel God’s love” is consistent with some previous studies, this should be viewed with caution. First, as mentioned earlier, other variables that seemingly measure a similar concept (e.g., “feel God’s presence”) are not significantly related to life satisfaction after controlling for religious service attendance. Second, this variable is likely to be deeply confounded with life satisfaction; it thus seems almost impossible to establish a causal relationship between the two variables. In fact, this appears to be a serious challenge to many of the previous studies that focus on subjective or spiritual dimensions of religiosity, as their findings often hinge on measures such as “feeling inner peace and harmony” or “feeling that life really has no meaning.” While it is plausible that certain aspects of subjective or spiritual religiosity have positive effects on life satisfaction, the issue of endogeneity must be addressed in a more rigorous way before we can make any conclusions.

Returning to the key findings of this study, we may ask: Why do congregational friendship and religious identity shape life satisfaction? Why do they do so only when they operate together? One possibility is that friends who attend religious services together give

religious identity a sense of reality. In other words, congregational social networks may serve as the “plausibility structure” for a religious community and thus reinforce the sense of belonging (Berger 1967; Krause 2008; Smith 2003). In this view, religion may enhance life satisfaction because it gives people a sense of belonging to a social group or a community that is beyond the members’ immediate social circles (Greeley 1995). A religious community may feel remote, however, without the personal networks that mediate between individuals and the community. Only when close friends who meet regularly in religious contexts connect individuals to their religious communities does the community become “real” and religious identity achieve salience in one’s life. Furthermore, the sense of community buttressed by close friends within a congregation may also serve as a plausibility structure for other commitments closely attached to religious identity, such as moral values and life style. This could confirm one’s sense that she is making the right choices in her life (Regnerus 2007). Given that life satisfaction is known to reflect one’s global assessment of personal progress toward objectives and life goals, this validation would certainly lead to a higher level of life satisfaction.

Another possibility is that congregational friendships have significance beyond less focused relationships because they are embedded in a specific social context. Although having many friends in general could enhance life satisfaction, close friends may further improve well-being when they meet regularly in a certain context and engage in activities that are meaningful to the group. Moreover, networks embedded in a congregation may be more effective channels of social support because friends in a congregation share cultural practices and meanings of social support. Congregational friends are therefore able to offer more valuable support (Ellison and George 1994).

While these explanations are not necessarily incompatible, they emphasize different

aspects in the interaction between congregational networks and religious identity. The first explanation highlights the role of religious identity as the key factor that enhances life satisfaction. In this line of reasoning, congregational networks matter because they reinforce the sense of attachment to a religious community. The second explanation emphasizes congregational networks and suggests that within-congregation friendship enhances life satisfaction through frequent interactions and shared activities in a social context that is central to one's life or because these friendships are more effective channels of social support.

Our findings on congregational networks and religious identity suggest that the well-known effects of social networks on subjective well-being cannot always be reduced to networks' structural features such as size or strength of ties. The social contexts in which networks are forged and the identities shared in these networks matter. Does this mean there is something unique about social networks formed in religious contexts? Is there something in the effects of religious social networks that cannot be explained in terms of non-religious factors (Smith 2003)? Answering these questions would require comprehensive data on social networks in

different contexts. It is conceivable, however, that networks based on non-religious social identity have a similar effect as long as the members of these networks meet regularly in a certain context and share a strong sense of identity. For example, an influential study on recruitment of movement activists suggests that networks based on collective identities that are pertinent to activism are better channels of mobilization (McAdam and Paulsen 1993). Although this study concerns a different kind of outcome of social network, its findings suggest that friendships forged in certain non-religious contexts may be endowed with special significance.

Even if social networks in non-religious contexts could have a similar effect on life satisfaction as that of congregational friendships, it is difficult to think of any non-religious organizations in the United States that are comparable to congregations in scale and scope of membership base, intensity of member participation in collective rituals, and strength of identity that members share. Even if social networks and identities forged in non-religious organizations could have benefits comparable to those we found here, congregations are nevertheless unique among American voluntary organizations as a source of life satisfaction.

APPENDIX

Table A1. Descriptive Statistics for the Variables Used in the Analysis

Variables	Description	Mean/ Proportion	SD
Control Variables			
Age	Respondent's age	45.93	17.27
Sex	Respondent's sex (female = 0; male = 1)	.48	.50
Race	Respondent's race (White [reference category], Black, Asian, Hispanic, Other)	.73 ^a	.44
Education	Years of education	13.24	2.77
Income	Annual family income in \$1,000	51.53	35.73
Marital status	Respondent's marital status (1 = married; 0 = else)	.53	.50
Children	Have kid(s) under 18 (0 = no; 1 = yes)	.41	.49

(continued)

Table A1. (continued)

Variables	Description	Mean/ Proportion	SD
Health	Self-reported health (1 = poor; 5 = excellent)	3.46	1.17
Work status	Respondent is working (0 = not working; 1 = working)	.61	.49
Region: South	Resident of South (1 = South; 0 = Non-South)	.36	.48
Social Resources			
Number of close friends (logged)	Number of close friends respondents have	1.63	.63
Social involvement index	Factor score: (1) visit family members; (2) have friends visit at home; (3) visit neighbor's home	.00	.70
Civic involvement index	Factor score: (1) attends club meeting; (2) work to solve community problem; (3) number of voluntary group memberships; (4) served as officer in voluntary group	.00	.79
Number of friends in congregation (logged)	Number of close friends respondents have in their congregations	.95	.96
Religious homogeneity of networks	How many of the five closest friends have the same religion as respondents	2.65	1.77
Religious Involvement			
Religious tradition	No religion (reference category); Catholic; Mainline Protestant; Evangelical Protestant; Black Protestant; Jewish; Mormon; other non-Christians; other Christians	.17 ^b	.37
Religious service attendance (logged)	Frequency of attendance per year	2.47	1.61
Religious identity	Religion is very important to your sense of who you are (1 = yes; 0 = no)	.50	.50
Prayer (logged)	Frequency of prayer per week	1.52	1.18
Read scripture (logged)	How often read the scripture (frequency per week)	1.23	.43
Saying grace (logged)	How often say grace (frequency per week)	1.45	1.25
Religious service at home	Participate in religious services at home (1 = yes)	1.01	.41
Talk religion (logged)	How often talk about religion	1.26	1.16
Religion in daily life	Importance of religion in daily life (0 = not at all; 3 = extremely important)	1.75	.97
Religion in decision making	Importance of religion in making decisions regarding career, family, or health	1.90	1.14
Strong believer in religion	Strong believer in your religion (1 = yes; 0 = no)	2.13	1.21
Born again	Have had a born-again experience (1 = yes; 0 = no)	.57	.50
Experience God's presence	Have personally experienced the presence of God (1 = yes; 0 = no)	.55	.50
Feel God's love	How often personally feel God's love (0 = never; 3 = very often)	2.32	1.03
Feel God's judgment	How often personally feel God's judgment (0 = never; 3 = very often)	1.90	1.12
Belief in God	Absolutely sure you believe in God (1 = yes; 0 = no)	3.60	.95

(continued)

Table A1. (continued)

Variables	Description	Mean/ Proportion	SD
Belief in afterlife	Sure that you believe in life after death (1 = not at all; 4 = absolutely)	2.92	1.37
Belief in heaven	Sure that you believe in heaven (1 = not at all; 4 = absolutely)	3.02	1.45
Inerrancy of scripture	Scripture is the actual words of God (1 = yes; 0 = "Scripture is an ancient book of fables, legends, history, and moral precepts recorded by men")	.34	.47
Good and evil	Absolutely clear guidelines between good and evil (1 = yes; 0 = no)	.59	.49

^aWhite as a proportion of total respondents.

^b"No religion" as a proportion of total respondents.

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Notes

1. This view is echoed in recent works by psychologists who argue that God can be considered a "secure attachment figure" and thus a part of social networks (e.g., Kirkpatrick 2004).
2. The study was introduced to respondents as a survey "on some current events." The interview began with questions on social engagement and included many questions not related to religion. For a fuller account of the Faith Matters study, see Putnam and Campbell (2010).
3. This is based on AAPOR formula 3. The response rate based on AAPOR formula 5 is 69 percent, which is slightly lower than 71 percent of the 2006 GSS.
4. To examine potential bias due to the panel attrition rate, we conducted three different tests and found no evidence for attrition bias (for details of these

- tests, see the online supplement [<http://asr.sagepub.com/supplemental>]).
5. Subjective well-being is usually distinguished from other measures of psychological well-being, such as psychological distress. The findings of this study are not directly applicable to other dimensions of mental health.
 6. We used GSS and FM data to examine whether alternative measures of subjective well-being yield different results with respect to the relationship with religious service attendance. All three measures we examined, including happiness and life satisfaction, yield similar results (results are available in the online supplement).
 7. We slightly revised Steensland and colleagues' (2000) scheme by making Mormon and "other non-Christian traditions" separate categories.
 8. Because some respondents never attend religious services, we add a constant number (one) before log-transformation.
 9. Although this is a commonly used question, it is safe to assume this measure suffers from the same problems associated with other self-reported network measures. The test-retest correlation between 2006 and 2007 is .57. The four-week test-retest correlation of the name generator is known to be above .8 (Marsden 1990).
 10. Respondents who do not attend religious services or have no congregation are coded as 0.
 11. We add a constant number (one) before log-transformation. The test-retest correlation for this variable is .65.
 12. We estimated ordinal logistic regression models using Stata 11.0. We conducted a Brant test to examine whether the proportional odds assumption is valid. We found the assumption was violated for

- several variables. To determine whether our findings are sensitive to the violation of the assumption, we recoded "life satisfaction" with different thresholds and re-estimated the key models. Our findings are insensitive to how the variable is coded.
13. The Wald test for the hypothesis that the coefficients for all traditions are equal to 0 cannot be rejected ($p = .424$). We also examined whether the relationship between attendance and life satisfaction varies across religious traditions by entering the interaction terms between the two variables. We find no statistically significant interaction effect.
 14. A Sobel-Goodman mediation test suggests that friendship in a congregation mediates about 84 percent of the total effect of attendance on life satisfaction.
 15. The result of this analysis is available from the authors on request.
 16. The survey asked the original question on a four-point ordinal scale ranging from "not important at all" to "very important." We dichotomize this variable because more than half the respondents reported that religion was very important.
 17. We also estimated the change-score model with fixed-effect regression. The result is similar to that in Models 2 and 4 in Table 2.
 18. We examined potential effect heterogeneity and asymmetric effects of church attendance by comparing attendance in childhood with current attendance. Using propensity score matching, we found little evidence for effect heterogeneity by treatment status. We also found no evidence that the effects of church attendance might be asymmetric. Details of these analyses are available from the authors on request.
 19. We applied the Bonferroni adjustment to all variables in Table 3, including "number of friends in congregation" and "religious identity."
 20. Some scholars suggest that the effect of prayer may be contingent on the image of God people pray to (Bradshaw, Ellison, and Flannelly 2008; Poloma and Gallup 1991). We examined this proposition by including the interaction term between frequency of prayer and two variables that could tap a respondent's perception of God ("feel God's love" and "feel God's judgment"). We found no statistically significant interaction. We also analyzed the GSS, which contains a list of variables about images of God, but we found no interaction effect between frequency of prayer and those variables on happiness.
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