

Gender and Religiousness:
Deconstructing Universality, Constructing Complexity

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Abstract

The universality of higher female religiousness and insufficiency of any social explanation have led to proposals that it is a product of psychological or physiological differences. However, the female advantage in religiousness is not universal. Distinguishing Affective (personal piety) from Active (organizational participation) religiousness, in a third of nations (World Values Survey) women are no higher than men in active religiousness. Among Jews and Muslims worldwide, men are more religious than women. Combined, social factors actually explain much of the gender disparity in U.S. religiousness (General Social Survey); with personality, all of it in active religiousness. The author discusses implications for understanding gender.

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Introduction

Among social scientists who pay attention to religion, it is commonly accepted that women are more religious than men. Numerous surveys going back at least a century have repeatedly found this to be the case (For reviews see Beit-Hallahmi and Argyle 1997; Francis 1997; Walter and Davie 1998), evidence made plausible by the traditional relegation of men to the public sphere and of both women and religion to the private sphere. Consequently Walter and Davie's observation (1998:640) that "women are more religious than men on every measure of religiosity" (which is the opening statement, not the conclusion, of their survey of research on women's religiosity) comes as close to a universally accepted truth as may be possible in the social sciences. Stark, more recently, is surely correct when he states (2002: 496): "By now it is so taken for granted that women are more religious than men that every competent quantitative study of religiousness routinely includes sex as a control variable."

In the past decade new interest has developed in explaining this taken-for-granted gender difference, advancing a project that began in earnest in the 1960s. The resulting proposed explanations can be grouped into four types. First, in the 1960s it seemed apparent that women's higher religious devotion reflected both their freedom from the constraints of wage labor and their nurturing role in the family, that is, the **different structural location** of women than men in a gendered social division of labor. Luckmann (1967) theorized that men's commitment to the workforce provides an alternative source of values and meaning that makes religion less necessary. Some (Lenski 1953; Nelson and Potvin 1981) have pointed out that time spent working simply lowers men's opportunity for religious involvement. Others have emphasized the encouragement for religious behavior that attends women's commitment or relegation to the domestic sphere

(Moberg 1962; Glock et al. 1967; Argyle and Beit-Hallahmi 1975; Campiche 1997) and childrearing (Martin 1967). In an empirical assessment of these various proposals, however, DeVaus and McAllister (1987) found using Australian data that neither family focus nor child-rearing had much effect on gender differences in religiousness once work participation was taken into account, concluding that “the predominant effect in explaining the greater religious orientation of women is labor force participation” (1987:479).

Second, the prevailing assumption among sociologists has been that underlying gender differences in both religiousness and social location as adults are broad cultural mechanisms of **differential socialization** that pattern males and females into different sets of values, roles and norms for behavior. Males, for example, are said to be socialized into secular ideals of aggressiveness and accomplishment, females by contrast into the more religiously compatible ideals of nurturance and conflict resolution. The result of role socialization is that “men are assigned roles that are more instrumental than socio-emotional and thus are less concerned with problems of morality” (Nelson and Nelson 1975). These ex post facto speculations are rightly criticized (by Cornwall 1989; Miller and Stark 2003) as vague or tautological. At least, such broad attributions are difficult to measure empirically, particularly by secondary means.

The increasing implausibility of the former easy association of women with domesticity has called these socialization and structural notions into question. Francis (1997) proposed that any gender differentiating effect of structural location is being eroded by the increasing similarity of women’s work participation to that of men. If women today are increasingly in the workforce and having fewer children, why are they still more religious? To the extent that socialization underlies these distinctions, the question can apply more broadly. If women are increasingly attaining formerly male-dominated social roles, why are they still less susceptible to secularity (or

nonreligiousness)? Both religious and gender scholars have been intrigued by the paradox that women continue to be more supportive than men of religious institutions that generally perpetuate patriarchy (Walter and Davie 1998).

With the apparent attenuation of social determinants, the very universality and persistence of the gender gap in religion has led to proposals that the explanation cannot lie in social structure or gender roles, which vary from culture to culture, but rather in more general psychological or even physiological differences between men and women. Although evidence for a connection between **personality** and religious involvement (the third type of explanation), generally attributing higher involvement to deprivation or psychoticism, has been decidedly mixed (Francis 1997), a series of recent studies has provided more consistent support (however see Suziedelis and Potvin 1981) for the idea that gender differences in religiousness are associated with gender-linked personality characteristics. Thompson (1991) correlated religiosity with stereotypical femininity or masculinity, as measured by the Bem Sex Role Inventory (BSRI), showing that higher religiousness is related to the personality dimensions of femininity more strongly than to being female. Subsequent studies (Francis and Wilcox 1996, 1998) have confirmed and broadened this finding. Likewise, investigations of the association of personality and religiousness using the Five Factor Model have found persistent gender differences (Piedmont 1999; Taylor and McDonald 1999; Saraglou 2002). Sherkat (2002) found that religiousness was higher among homosexual males but lower among homosexual females.

Miller and Hoffman (1995) located the difference more narrowly, fourth, in greater **risk-seeking behavior** on the part of males, although they saw this as only a partial explanation. Stark (2002) and Miller and Stark (2002), on the basis of extensive cross-cultural evidence, proposed that a physiological mechanism, specifically the possession of testosterone, underlies both greater risk-

taking and lower religiousness on the part of males. These latter two studies proceed on the argument that, if gender differences in religion are uniform and universal, the cause cannot be variable or intermittent. As Stark explains (2002:496): “. . .any phenomenon that occurs in many and very different social and cultural settings necessitates explanations that are equally general, which tends to rule out most social and cultural factors.” So strong is their perception that the constancy and universality of the gender gap in religiousness precludes any causal role for social factors that Miller and Stark subtitle their study, “Can socialization explanations be saved?”

The essentialism of this argument, which implies that beneath cultural variation lie “natural” gender differences, sits uneasily with the notion, for many fundamental to sociology, that society precedes persons who construct their “nature” (Berger 1960). It also brings to mind the tenuous history of invidious comparisons, now known to be false, of women with men on the basis of “natural” differences (Campiche 1995). Fifty years ago women were thought to be naturally more domestic and fragile than men; a hundred years ago scholars could point to solid evidence that women were naturally less intelligent than men. In this vein, Thompson (2002:521) has criticized the association of masculine irreligiousness with risk-taking as “related to the blueprint of a traditional masculinity that urges men to avoid “sissy stuff”. . .” Yet if the premise is true, then the inescapable conclusion is that women are in some sense “naturally” more religious than men, a matter more for biology than sociology. Stark is himself not comfortable with the implications of this conclusion. Impelled by the logic of his argument to seek biological explanations, he discloses: “I have not done so eagerly or even very willingly. . .I arrived at physiological explanations only after I found every cultural and social alternative to be inadequate (2002:496).”

The logic of this last statement exemplifies another assumption that, though seldom quite as extreme, pervades this area of research, namely that gender differences in religiousness are

susceptible of a unitary explanation. The implicit assumption has been that if social structure, for example, is “right”, then personality is “wrong” as an explanation. Miller and Stark’s argument follows this logic explicitly: if sociobiology is right, then socialization is wrong. For most researchers, on the other hand, this tendency has been an unintended product of the specialization of their concern with the topic and the corresponding limitations of available data, with the result that little progress has been made toward an integrated model of gender differences in religious, and a comprehensive empirical examination of alternative explanations has not yet been attempted. There is no a priori reason why the proposed explanations must be mutually exclusive, however. It may well be that physiology, culture and society all affect these gender differences to some degree.

In this paper I present evidence both that the gender difference in religiousness is not so universal as to obviate the possibility of social causes, and that such social causes provide an empirically sufficient explanation for it in the United States. First, I show that comparing religions, rather than nations, on this religious difference reveals obvious counter-examples to the assertion of a universal gender gap: among Jews and Muslims, men are significantly more religious than women. Second, I develop the distinction in religiosity between interior personal piety (“Affective Religiousness”) and ritual or organizational participation (“Active Religiousness”), and show that gender differences are much larger for the former than the latter in a wide variety of cultures. In up to a third of the cultures examined there is no gender gap, or men are higher, in active religiousness. In the U.S., the gender gap in religiousness is attributable in part to the fact that men and women construct their religious self-identity in different ways relative to affectivity and participation. Third, I consider the conclusion that social explanations are ineffective by testing them in a combined multivariate model. I demonstrate that, while none of these factors alone account adequately for the sex difference in religiousness, together social factors explain most and in some

contexts all of the gender differences in religiousness. In so doing, I further challenge the conclusion that women are universally more religious than men. I conclude by proposing an outline and some characteristics of an integrated model of gender differences in religiousness, some avenues of further research to flesh out this model, and some general reflections on the changing social context of nature/nurture and gender questions.

Universality Questioned

Although recent research on religion and gender has tended to claim that higher female religiousness is an undisputed finding (Walter and Davie 1998; Miller and Hoffman 1995; Stark 2002; but see Francis 1998), this is not quite the case. Occasional voices have dissented or raised caution about overstating the case since the phenomenon was first observed, and in recent years the evidence for it has become somewhat more tentative and qualified. Deconchy (1973), in a sociometric analysis of children's choices for academic, religious and friendship tasks, found that "girls' specific 'religiousness' should not be seen as an identifying characteristic or as a built-in quality (1973:294)," but that "this conclusion depends on the socio-cultural environment in which it is made." He concluded that: "In the final analysis, the idea that women are 'more religious' than men is as unsoundly based, philosophically and empirically, as it is apparently self-evident to some people (1973:284)." Cornwall (1989), in an empirical study of male and female religiousness over the life course, found that after including appropriate controls women were only "slightly more religious than men", concluding that "the differences may be exaggerated" for theoretical or stereotypical reasons in the common sociological perception. Likewise, Feltey and Poloma (1991) observed that "stereotypes about women being more religious are misleading". Steggarda (1993) found that controlling for workforce participation and family structure accounted for most of the gender differences in religiousness; Campiche (1993), in a similar analysis, argued that a close

analysis of intervening variables explained all of the gender difference on most religious indicators.² In a later study of European religiosity, Campiche (1996:94) summarizes this point: “the fact that men and women coming from similar social backgrounds tend to have similar religious attitudes and behavior. . . .puts into question the claim that women have a privileged relationship. . .with religion.” Thompson (2002) has also recently suggested (incorrectly, I think) that the gender gap in religiousness may not apply among African-Americans.

The catalogue of empirical findings supporting a universal gender difference in contemporary religiousness usually begins with Argyle and Beit-Hallahmi’s classic (1958; 1975; 1997) discussion in their text on social psychology. Presenting comparative results from a wide range of surveys, in 1975 they succinctly summed up the common wisdom at that time: “It is obvious that women are more religious on every criterion” (1975: 71). The tables they then reported, however, did not fully support such a blanket statement: they show no sex difference in church membership in Britain, and identical rates of belief in God in two surveys in Britain and the United States (1975: 72-73). In the 1997 revision of the text (Beit-Hallahmi and Argyle 1997:139), the above sentence is dropped in favor of the more tentative claim (1997:139): “It is well-known that women are on average more religious than men. Which aspects of religion are most affected?” The status of the gender difference is thus reduced from “obvious” to “well-known” and from “every criterion” to “on average”, and seen, in 1997, as varying across different aspects of religion. In 1997 Beit-Hallahmi and Argyle present fewer overall findings, but a wider range of separate indicators, than in the earlier edition, and note those measures on which sex differences are greater than others, presaging my analysis below. This careful scholarship accurately reflects the progress of research in this area, which has generally confirmed, but also qualified and found exceptions to, the gender gap in religiousness. I will explore further below the basis for this

growing caution. But first let us note a significant counterexample to the finding of higher female religiousness, one that is well known and attested in the sociological literature, yet has been largely ignored to date by those seeking to explain the gender gap in religiousness.

Counterexamples: Jews and Muslims

In 1961 Bernard Lazerwitz reported that, while “Christian women go to church more than Christian men. . . .Jewish men have a greater percentage attending synagogue regularly than do Jewish women.” (1961: 308) This finding was based on three late-1950s national surveys, but the exception of Jews from the generalization of higher female religiousness is just as strong today. On the GSS combined data from 1972-2002, the correlation (gamma) of sex (males are coded higher) with church attendance is $-.16$ (significant at $.01$) for Christians, but $.03$ (not significant) for Jews. Jewish women are also indistinguishable from Jewish men with regard to denominational loyalty, belief in life after death and belief in God, although they do report that they pray more than Jewish men.

Table 1 About Here

Lest one think that the Jewish exceptionalism regarding gender differences in religiousness is a function of American exceptionalism regarding religious participation in general, these differences are even stronger outside of the United States. Table 1 presents aggregate data from 51 nations collected by the 1995-97 World Values Survey. Worldwide, there is no measure of religiousness on which Jewish females score higher than Jewish males. Jewish men report significantly higher rates of synagogue attendance and belief in life after death than do Jewish women; otherwise, there is no sex difference in religiousness among Jews.

Among Muslims men also report much higher mosque membership and attendance than women. This may reflect institutional barriers to women’s participation, since women report

slightly higher levels than men on other measures of religiousness among Muslims. This may well reflect what Westerners tend to regard as restrictive norms on female participation. It is worth noting, however, that the WVS data do not include any Islamic state that enacts such norms into law, and they do not show, moreover, that Muslim women are in general barred from participation. On the contrary, on most measures the religious participation of Muslim women is much higher than that among Christians, or other religious groups in the West.

Table 2 About Here

Table 2 presents global comparisons of men's and women's religiousness in the major world religions, reporting the correlation of gender with four measures of religiosity on the World Values Survey. This statistic provides a more accurate comparison of religiously diverse groups than comparing mean religiousness by gender since, unlike the mean, it does not vary with the overall level of religiousness. Although the first two items presented, reading from left to right, were ordinal, the Pearson correlation was very similar to gamma in all cases, and is presented for simplicity. It can be seen that while women are usually more religious than men, this is not universally the case. The patterns of higher male religiousness among Jews and, on some measures, Muslims already observed in Table 1 are also reflected here. Women exceed men in religiousness the most among Christians and Hindus with regard to the importance of religion and weekly church attendance, and among Christians and Buddhists with regard to being a religious person and religious group membership. There is also no gender gap in church attendance among Orthodox Christians, or in religious membership among Hindus. In general, it appears that the gender gap in religiousness does not apply to the religions of the Middle East. A full exploration of these differences would require an entire paper unto itself; here they serve merely to provide evidence of some exceptions to the rule of higher female religiousness.

Although these findings support the notion that women are generally more religious than men, they stand squarely in opposition to the claim that higher women's religiousness is universal. It is important to grasp the distinction between these two assertions. The premise of the argument for essentialism in religious differences by gender cannot be that women are (on average, and in the absence of selection for religiousness) usually more religious, but that they are always so. Since biological sex differences cannot vary culturally, the existence of a culture or subculture in which male religious participation is the same or higher than female religiosity calls into question the whole basis of a physiological basis for religious differences by sex. Thus Miller and Stark, for example, go to great lengths to document the persistence of higher female religiousness across a large range of cultures worldwide. To show this universal claim to be false, it is not necessary to deny that women are generally and often more religious than men, but only to show that this is not always true.

Jews, and perhaps also Muslims, provide such counterexamples. It may well be the case, of course, that particular attributes of Jews as a group counteract more general tendencies toward sex differentiation in religiousness. Lazerwitz attributes the lack of a gender difference among Jews to the Orthodox Jewish norm that emphasizes male religious attendance. One could argue that such a norm suppresses among Jews the "natural" tendency for greater female religiousness—but this is precisely the kind of social influence that essentialism claims has no effect. Unless one is prepared to argue that Jewish males have different physiology than other males, Jewish exceptionalism cannot be physiological, but must be rooted in social context. Probably even, given the ethnically fused character of Jewish faith and culture, in socialization.

From Affective to Active Religiousness

Part of the difficulty understanding gender differences in religion lies in the possibility that men and women construct or conceive of religiousness quite differently. Research in this area has repeatedly observed that the gender gap varies widely depending on how religiousness is measured. Beit-Hallahmi and Argyle (1997) pointed out that gender differences are consistently higher for prayer and measures of belief than for religious experience and ritual attendance. Likewise, Davie (1990; 1994) noted that statistics on religious practice generally find smaller differences between men and women than those that measure belief. Based on comparative findings of a variety of studies, Walter and Davie generalize that “men engage in religious practices when they are publicly acceptable or even required, but tend not to bother with private devotions when there is no social pressure” (1998:643). Thus contemporary, late modern religion, which is increasingly a matter of “believing not belonging” (Davie 1990), favors the religious motivations of women. In the same vein, Feltey and Poloma concluded, based on a direct comparison of six measures of religiosity, that “women experience a greater intimacy with God than do men” (1991: 188), attributing lower religiousness among men in part to their fear of intimacy with God. DeVaus and McAllister, observing a similar disparity between religious measures, offer a somewhat different interpretation: “it is easier to volunteer a general commitment to religion, and more difficult to give details of that commitment” (1987: 476) such as through church attendance.

While these studies offer different interpretations, they agree in the finding that gender differences are smaller for some types of religiousness than others. Men and women in diverse contexts and data appear to construct their religious experiences and/or engagement in contrasting ways, men being more *active*, that is, oriented to action, and women more *affective* in their expression or understanding of their own religiousness. Since religious indicators have usually

served as dependent variables in this line of research, the relationships among them have seldom been examined at any length (For an exception see Feltey and Poloma 1990).

Table 3 About Here

If the idea of a gendered distinction between affective and active religiousness has any validity, the above review suggests that measures of religiosity that are more likely to tap into the affective dimension--such as frequency of prayer, the subjective experience of comfort and strength in religion, or self-assessed intensity of religious identity--will consistently show a higher difference between men and women than those that express more active aspects of religion--such as church attendance, church membership or volunteerism. Table 3, reporting data from three broadly representative surveys, confirms that this is the case. The first data column shows numbers from the U.S. General Social Survey (GSS). In 1998 the GSS administered a topical panel of questions on religion; most of these were repeated in 2002. The table shows the standardized mean difference between men and women on six measures of religiousness, in descending order of magnitude. The top three items in the table all measure personal piety or devotion, that is, more affective religiousness: frequency of prayer, felt closeness to God, and a self-assessment of religiousness. The bottom three--church membership, attendance, and volunteering--clearly relate to active religious practice. While women are higher than men on all six measures, the differences for the affective items are all larger than those for the active ones. The decline in the gender gap from affective to active measures, moreover, is not small: the mean gender difference for frequency of prayer, at more than half a standard deviation, is over three times as large as that for volunteering in a religious organization, and almost twice as large as for church attendance.

The items in Table 1 are plausibly arranged on a spectrum for which affectivity and activity form the ideal extremes. Since they all express survey responses, not observations, none can

express “pure” participation. In the question “How often do you pray?” prayer, in the absence of any religious reference and with the prompting of categories that range to “Several times a day”, is likely to be understood as private, ejaculatory prayer, particularly on the high end of the response range, rather than formal prayer services. “How close do you feel to God?” invites a direct report of affective spirituality, with no necessary reference to anything religious.

“Would you describe yourself as. . . [extremely religious to extremely non-religious] prompts an entirely subjective self-assessment of religiousness as a personal quality. It implies a response in terms of personal piety, or religious feeling. Church membership, attendance, and volunteerism ask for information on increasing levels of institutional participation. These, of course, are not objective reports—more people, for example, feel that they are members or attend church than institutional counts report—but they are more plausibly related to such actual participation than the items higher on the affectivity end of the scale. In the same way, responses to the more affective items may be based on a certain amount of self-observation, but they are more plausibly related to piety or religious feeling.

The affective/active distinction corresponds generally to the distinction between “spirituality” and “religiosity” in certain theological contexts, and to Luckman’s distinction between “implicit” and “explicit” religiousness as regards secularization. It does not, however, correspond to Allport’s distinction between “intrinsic” and “extrinsic” religious motivations; as Allport points out (Allport and Ross 1967), piety can be strongly extrinsic; and volunteerism can be genuinely altruistic (Bellah et al. 1985).

Some of the 1998 GSS items were replicated in 38 other industrialized nations as part of the International Social Survey Program (ISSP). The item wordings are designed to be as comparable as possible between participating nations. The four items that were available on the ISSP are shown

in the second data column of Table 3. As in the U.S., so among these nations aggregate gender differences are much higher for the more affective items than for the more active ones.

Since gender differences are highest for affective religiosity, it is not inconsequential that research proposing to find a universal gender difference in religiousness has exclusively used affective measures of religion. In fact, the operationalization of religiousness used by Stark (2002) and Miller and Stark (2003) specifically discounts active aspects of religiosity. The item they use for comparison is: “*Whether you go to church or not, would you say you are a religious person (emphasis supplied)?*” The wording of this question (as translated into various languages) directs the respondent to ignore attendance at religious services or ritual—probably the most basic form of participation in almost all religions—in assessing his or her own religiousness. The assumption here seems to be that only affective, personal piety, not institutional participation, ritual practice or the fulfillment of related norms, is what counts as religiousness. This view is clearly at variance with the understanding of religiousness of most religious groups, which encourage inner feelings of righteousness or moral virtue to be congruent with outward behavior. Stark gives evidence of this implicit reductionism when he refers to the above item as “the best single measure of personal piety” (2002:496) and then uses it interchangeably with “religiousness” throughout his argument. Likewise, Miller and Hoffman choose to measure religiousness in their sample of high school seniors by “a subjective rating of religion’s importance in one’s life” rather than church attendance, or a factor combining both items, because “church attendance might reflect family behavioral requirements” (1995:68). Family behavioral requirements, however, would directly reflect socialization factors; by excluding such factors a priori they have assumed in their definition of religiousness the very conclusion that Stark draws (though they do not) from their work, i.e. that socialization cannot explain “religiousness”. In effect, this line of research reduces religiousness to

a report of a psychological state; it is therefore not too surprising that “religiousness” so defined is found to be explained by psychological mechanisms alone.

Whether one agrees with such an operationalization of religiousness or not, the use of only an affective religious measure consistently overstates the overall religious differences between men and women, and, in a cross-cultural analysis, finds apparent differences where, on other measures, there are none. To justify the assertion that gender differences in religion are universal, Stark (2002) compared men and women in 49 nations, using data from the World Values Survey (WVS). Based on the affective item discussed in the previous paragraph, he reported that “in every instance, a higher percentage of women than men said they were a religious person (2002:496).” Although he also claimed that “these results were fully replicated when based on other measures of religiousness. . . (2002: 496),” this is not the case.

Table 4 About Here

Table 4 replicates and extends Stark’s analysis, comparing religiousness by gender on four measures of religiosity among 71 nations or cultural groups reported on the World Values Survey. In addition to the 49 nations from the 1995-1997 surveys reported by Stark, I also include data from the 1991-1992 surveys. Of the four columns in the table, the two on the left report measures of affective religiousness: the “religious person” item used by Stark, and a rating of “how important [religion] is in your life”. The two rightmost columns report active measures of religiousness: the proportion who report that they attend church or religious services at least once a week, and the proportion who are members of a church or analogous religious institution. For reasons already noted I report the correlation with gender for each country/measure combination rather than the sex ratio.³

Results for the “religious person” item confirm Stark’s findings. A higher proportion of women than men said they were a religious person in every country, with the exception of Montenegro and Bangladesh, two majority-Muslim countries not in the data reported by Stark.⁴ If this were the only measure of religiousness, it would certainly appear that the gender difference is near-universal. However, with each of the other indicators there are more exceptions. In 10 of the 71 countries more women than men did not rate religion as more important to them. These were comprised, again, mostly of majority-Muslim countries—the strongest counterexample to higher female religiousness was in Pakistan—but also included the Netherlands, South Korea, the Philippines and the Czech Republic.

For the active items, the rule of higher female religiousness is simply not observed to be universal. In 20 nations (28% of the total) women do not attend church weekly at a higher rate than men. In four diverse nations—the Netherlands, Turkey, Azerbaijan, and Macedonia—men are significantly higher than women in weekly church attendance. There is no correlation of sex with weekly church attendance in France, Japan, Norway, Iceland, South Korea, Nigeria, East Germany, Taiwan, Moscow, Estonia, Ghana, Serbia, Macedonia, Slovakia and Bosnia. In 31 nations (44% of the total) women are not more likely than men to be church members, and in five nations—the Netherlands, Turkey, Azerbaijan, Bangladesh and Bosnia—men are more likely to be formally affiliated with religion.⁵ Both overall and for most countries, gender differences are much lower and less consistent for active religiousness than for affective religiousness.

The set of countries without a gender difference on active measures seem not to be random, but to have certain qualities in common, such as a high proportion of Muslims or a very low rate of overall religious participation. More detailed analyses reinforce the perception that societal variation affects gendered religiousness, and in ways that contradict the thesis of physiological

essentialism. For example, it is well known that social domains that are considered female tend to have lower status or prestige than male domains, for example, housework, child day care or nursing. Thus the association of higher religiousness among women with lower status for religion is consistent with a sociocultural basis for gender differences in religiousness. On the other hand, the risk aversion thesis suggests that a larger gender gap would be associated with higher status for religion, since the more important religion is considered to be, the greater the risk in irreligiousness. Evidence from these 71 nations strongly supports the sociocultural alternative. The mean value for the reported importance of religion is a plausible indicator of the general status of religion in that culture. While the individual correlation of the importance of religion is positive and strong for both males and females with subjective religiousness (males is .64, females .56) and church attendance (males is .88, females .84), the correlation of religion's mean importance by nation with the *difference* between males and females in that nation is negative: for subjective religiousness it is -.60, for church attendance -.11.⁶ Contrary to the physiological or most psychological theories, in countries where religion is more salient, gender differences in religiousness are much smaller.

It is clear from simple inspection that the worldwide pattern of gender differences in religion in most countries is generally consistent with that observed in the United States, namely that such differences are much smaller for active than affective religious measures (Table 3). At the very least, it appears that the thesis of a universal gender difference should be stated more narrowly: it may apply to affective, but not to active, religiousness. This pattern of self-reports, however, still leaves open the question whether the gender differences observed are due to actual differences in religious behavior or to differences in the construction or understanding of religiousness. To address this question I returned to the more extensive religious measures of the GSS.

Gendered Bias in the Construction of Religiousness

Item response bias “occurs when individuals who are equally [reflective of the dimension being measured]. . .endorse items or options differently (Santor 1994),” thus rendering apparent differences in the dimension artifactual. This possibility is generally considered negligible or at any rate exogenous for most sociological research, but may be significant for the study of gender and religion for two reasons. First, gender bias is commonly observed in the validation of psychodynamic instruments with regard to dispositions that are related to religiousness, such as depression and guilt (Thissen 1986, Lindsey 1994, Santor 1994). Second, the well-known biases of social desirability (the tendency to avoid criticism) and social approval (the tendency to seek praise) (King & Bruner 2000), which tend to overstate conformity with social norms have the effect, where social norms are gendered, of overstating the difference between men and women. For example, epidemiological studies of diet (Hebert et al. 1997) and physical activity (Swann et al. 2005) found that over time men tended to overestimate, but women tended to underestimate, their recalled caloric and fat intake or physical inactivity compared to objective reference measurements, in accord with disparate gender norms for desirable body mass. These biases are also stronger in personal interviews such as are employed in the GSS (Green et al. 2001), rather than anonymous self-administered instruments. In light of this body of knowledge, it is a reasonable hypothesis that gender differences in self-report responses on the GSS reflect some gender bias, due to gender differences in interior reporting bias and/or desirability/approval bias in accord with gendered norms for religiousness, in addition to any actual difference in religious participation by gender. Because the assumption of normal response distributions attenuates the pertinent variance, nonparametric methods are considered optimum for assessing bias in items that are not continuous (Samejima 1993; Teresi 1994).

Since the global observed gender differences were smallest for active religiousness, I hypothesized that item bias would operate in measuring religiousness such that men would be biased toward constructing or perceiving their own religiousness more actively and women more affectively. To examine for such bias, and more generally the conceptual structure of the gender differences in religiousness, I analyzed the cross-classification of frequency of prayer, the strongest affective item on the GSS, with church attendance, the most common measure of religious practice. (Participation in non-worship religious activities, which arguably reflects an even higher level of activism, had more congruence between genders than did church worship attendance; however, this question was asked in only one survey year and so had too low an N to be suitable for this analysis.) The question wording and response categories for these two variables are reported in Table 1.

Due to empty cells, church attendance was reduced from 9 to 6 categories by combining adjacent categories. Excluding the extreme categories (“Never” and “More than once a week”) there were two alternatives for combining 6 of the remaining 7 categories. Using either combination yielded essentially the same results. The following pairs of categories seemed slightly more similar and were thus combined: “Every week” and “Nearly every week”; “Once a month” and “Two to three times a month”; “Once a year” and “Several times a year” (the remaining category was “Less than once a year”).

Table 5 About Here

Table 5 reports the fit of pertinent loglinear models to the resultant 6 by 6 by 2 cross-classification of prayer by attendance by sex. Since my goal in this analysis is to examine gender differences, not explain the general determinants of prayer and church attendance, none of the models shown provides an acceptable fit to the data. Model 1 fits the linear association of prayer and church attendance. If these two variables measured exactly the same thing, this association

would fit the data perfectly; if they were entirely unrelated, this model would not improve upon the independence model. The fit of Model 1, measured by a likelihood-ratio chi-square (L^2) value of 1508, with 59 degrees of freedom, demonstrates that the association of these two variables is between these extremes. Model 1 does not fit the data, but its improvement upon independence is both significant (the difference L^2 of 3301.5, with 1 degree of freedom, is significant at .0001) and substantial, explaining 69% of the variance in church attendance. Prayer and church attendance measure related but distinct dimensions. The Spearman correlation of the two variables, at .53, indicates exactly the same thing.

In the cross-classification of these two variables, if i = the row category of church attendance, j = the column category of prayer frequency, and $F_{i,j}$ = the frequency of the cell i,j , the crude tendency (that is, net of marginal frequencies) to report greater active than affective religiousness can be expressed as

$$F_{i,j} > F_{j,i} \mid i > j \text{ and } i < j$$

In other words, the tendency to be in the lower left off-diagonal of the cross-classification is greater than the tendency to be in the corresponding upper right off-diagonal. Model 2 expresses this global bias toward active religiousness. In the same way, the crude bias toward affective religiousness, that is, the global tendency to be in the upper right off-diagonal of the table, can be expressed as

$$F_{i,j} > F_{j,i} \mid j > i \text{ and } i < j$$

This global affective bias is fit in Model 3.

Surprisingly, I found that there is no overall bias toward the active measure in these data. The L^2 difference between models 1 and 2 is only 0.3, which (with 1 degree of freedom) is not significant. Looking at this comparison among males and females separately (not shown) yields the

same result. On the other hand, there is a significant affective bias both overall (compare models 1 and 3) and separately among both males (1A and 3A) and females (1B and 3B).

These findings indicate that there is not, as I proposed above, a neat correspondence between the distinction between active and affective religiousness and reported gender differences in religious behavior. In these data, it is not the case that men are biased toward external religious practice and women toward greater piety or interiority. Rather, both men and women are biased toward affective religiousness over active. The significance of the bias among men, in fact, is slightly *stronger* (with an L^2 of 137.4) than that among women (L^2 is 121.8). The magnitude of the bias is larger among women, however. Women are 2.1 times as likely to report a higher level of prayer than church attendance; the corresponding odds for men are 1.4. Thus, women are 1.5 (2.1/1.4) times as likely as men to report affective than active religiousness, as measured by prayer and church attendance.

Figure 1 About Here

Why, then, do men typically score lower on prayer frequency relative to attendance, leading to the common perception of their lower religiousness? The direction of the biases by gender, shown in Figure 1, reveals the answer. The affective bias among males is directly (that is, not inversely) related to the active measure; the opposite, however, is true among women. The data points in the chart show the linear trend, by gender, for reporting a higher level of prayer frequency than of church attendance, within the categories of church attendance. “Never” is the reference category. The odds for men reporting each successive category of prayer frequency decrease for men by .95, but increase for women by 1.08. Thus, men who report higher active religiousness also tend to report relatively higher affective religiousness. Among women, however, lower active religiousness is accompanied by relatively higher affective religiousness. Given identical levels of

church attendance, women are 1.14 (1.08/.95) times more likely than men to report higher prayer frequency. These effects are cumulative for successive categories of church attendance; in the lowest level of attendance, then, women are 1.9 times more likely than men to report the highest level of prayer frequency.

The results of a similar analysis for self-assessed religiousness by church attendance are similar, though the disparity in the linear trend is less pronounced. Women are, in the aggregate, 1.8 times as likely to describe themselves as more religious than the corresponding level of church attendance; men are 1.3 times as likely to do so. As with prayer, therefore, women are 1.5 (1.8/1.3) times more likely to report higher affective than active religiousness, as measured by self-assessed religiousness and church attendance.

Women's advantage in religiousness, then, can be decomposed into two effects: the tendency for women to self-report higher affective religiousness relative to active measures than do men, and the fact that this disparity is highest among those who are the least religious. Since the large majority of both men and women report fairly low religious practice, and since research has generally preferred affective measures, examining mean differences between men and women in affective religiousness overstates the overall sex differences in religiousness. In fact, when the active/affective distinction is taken into account, an important fraction of the alleged differences in religiousness between men and women disappears entirely.

For example, Stark (2002) dismisses the effect of workforce participation by pointing to the fact that on the 1998 GSS, "among those who attended church once a month or more often, only 30 percent of men compared with 47 percent of women prayed more than once a day" (2002: 500). Here, not surprisingly given the findings above, holding active religiosity constant magnifies gender differences on an affective measure. If the indicators are examined the other way, however, the

opposite result is obtained: On the 1998 GSS, among those (17% of men, 31% of women) who reported that they prayed several times a day, 55 percent of the men compared to 53 percent of the women (the difference is not significant) attended religious services more than once a week.

Table 6 About Here

Table 7 About Here

On every measure, when affective religiosity is held constant, gender differences in active religiosity are greatly reduced or disappear entirely. For the six religious indicators shown in Table 1, Table 6 reports the correlation with sex, comparing the zero-order correlation with the partial correlation after controlling for frequency of prayer, the most affective measure. After imposing the control, the sex correlation disappears for 4 of the 5 remaining indicators. It only remains significant for self-assessed religiousness, the most affective of the 5, and here it is reduced by 79%, from .19 to .04. This equalizing effect, moreover, is strongest among those who are the most religious. See Table 7. In combined GSS data from 1988 to 2002, there is no difference in the proportion of men and women who attend church weekly (or more often) among those who: report their denominational affiliation as “strong”, pray “several times a day”, find strength and comfort in religion “many times a day”, or describe themselves as “extremely” religious. Likewise, among Americans with strong denominational affiliation or who pray several times a day, there is no difference in the proportion of men and women who are church members or who participate in church activities in addition to worship services. (The church membership and activities questions were not asked in conjunction with the other affective measures discussed here.) Among these most religious persons, then, the “universal” gender difference in religiousness applies only to affective religiousness. This analysis is consistent with Feltey and Poloma’s (1990) argument that

sex differences in religiousness—by which they mean differences in active religiousness—have been overstated.

Figure 2 About Here

Some may argue, of course, that affective religion is purer or qualitatively superior to active religion. Belief, it can be claimed, is more important to religion than behavior, so that affective, interior religiousness is more essentially *religious* than just going to church or being a formal church member. Much of the psychological research that attempts to explain sex differences in religion on the basis of personality characteristics (for review see Saroglou 2002) tacitly embodies this assumption. Whether interior religion is more “real” or genuine than enacted religion reflects theoretical, even possibly religious, concerns that lie beyond the competence of this study. However, the conditional distribution of affective religiousness by gender does not support this interpretation of religiousness in a general sense. Figure 2 charts the mean gender difference for the three affective measures presented in Table 1 within the categories of church attendance. For all three measures, gender differences in affective religiousness, holding active constant, are the lowest among those who are most religious, becoming progressively larger as religiousness (both active and affective) decreases. Among the most religious, this excess of affective religion could be interpreted as showing a greater interiority or devotion, but such an interpretation is problematic if there is a greater excess among the least religious. On the view that affective religiousness is superior to active, it is not surprising that 96% of women (91% of men) who attend religious services more than once a week report that they pray at least once a day. But how can this view account for the fact that 39% of women (20% of men) who never attend religious services also report that they pray at least once a day? It is more likely, among those who admit to lower levels

of active religious participation, that such self-ascribed interior religiosity reflects a conceptually distinct dimension such as I am proposing.

It may well be the case that women are twice as likely as men to engage in high affective religiousness at low levels of active religiousness. In the absence of any objective assessment of affective religiousness, however, this evidence may also suggest that at least part of the observed gender difference in reported religiousness has to do with gender bias in self-assessment and question response rather than independently observable differences in religiousness. Since being religious is a desirable norm in American culture, respondents who have low levels of active religious participation may be more likely to report greater relative interior religiousness so as to maintain a perception (or self-perception) in accord with that norm. Though this cannot be determined conclusively in the absence of objective reference measures, that women would be more likely to do this than men is consistent with both previous findings regarding desirability/approval biases and with gender disparity in norms regarding religiousness.

These findings may also reflect, in part, the psychodynamic known as overjustification, in which obtaining higher extrinsic rewards for an activity tends to undermine and lead to the underestimation of one's intrinsic motivation for the activity (Deci et al 1999; Lepper and Greene 1978). For example, Greene et al. (1976) found that children with a high interest in math, who then received prizes for playing math games, lost much of their initial interest when the prizes were discontinued. This may also help to shed light on the riddle of higher female than male participation in male-dominated religious institutions. If men receive from religious involvement greater social rewards, such as the affirmation or legitimation of male dominance, overjustification predicts that they would be less likely to attribute their involvement to intrinsic appreciation for

religion. Conversely, women who participate in religion would be more likely to see themselves—in a perception which becomes self-fulfilling—as “a religious person”.

Alternative Theories Assessed

To test alternative theories regarding gender differences in religiousness I employed the GSS to explore a succession of multivariate models assessing the relative and combined effects of the explanations proposed in the literature—socialization, structural location, personality, and risk tolerance—plus one of my own: social network.

Measures and Methods

Data were derived from the General Social Survey (GSS), an omnibus opinion survey administered to a representative sample of the U.S. adult noninstitutionalized population in most years from 1972 to 2004. Beyond certain core variables, the GSS administers topical modules of questions that vary across years and sometimes panels within the same year.

The argument below proceeds in a conventional fashion, comparing a series of ordinary least-squares multiple regression models to assess the effect of variables of interest on the sex difference in church attendance. It should be borne in mind that the goal was a general comparison of relative sex differences, rather than the elaboration of any particular model of religiousness. Missing values were imputed by conventional full information expectation maximization (EM) estimation techniques (Schafer 1997; Allison 2001).

The provenance of some of the variables in this analysis is less conventional, however. While some measure of each of the explanations to be assessed occurred in the GSS, not all of them had been asked in the same year or panel. To the extent that the GSS consists of an iterative replication of items, it is possible, by an extension of the same logic by which missing values are

imputed, to impute variable responses to sample subsets in which the question was not asked. This involves, of course, a certain loss of precision, but the added uncertainty can itself be estimated fairly precisely and incorporated in conventional tests of significance. By this means some of the variables examined below were imputed from other sample years of the GSS to the subsample used for analysis, i.e., the 1998 religion module, which contained the highest proportion of actual cases for the variables of interest. All were imputed by EM using at least the other model variables, as well as region, race and SES, as predictors or covariates. The distribution of standard errors, including an additional random component conformable to asymptotic sampling error, was also imputed.⁷ Table 8 presents descriptive statistics and imputation characteristics for all variables in the analysis. As the table demonstrates, the imputed distributions are in all cases closely similar to those of the actual values.⁸

Table 8 About Here

Whether or not this procedure is useful in most analytical circumstances, the particular logic of this analysis is well served by employing it here. The analysis below turns on, not the direct effect of each predictor on the independent variable, but each predictor's effect on the effect of sex on the independent variable. This secondary effect is itself not a directly measured quantity, but something that is estimated by regression methods identical to those used for imputation. It may (or may not) be otherwise with a direct measurement; but here the estimation of the indirect quantities is no more speculative than the estimation of the indirect relationship of interest, with the related uncertainty specified in each case. Moreover, the added uncertainty generated by imputation, to the extent that it is properly modelled, actually increases confidence in the analysis, since it creates a greater barrier to probative findings. This added uncertainty increases the possibility of Type II error, that is, finding an effect to be statistically significant when in fact it is

not. Unlike most regression analyses, however, what is of interest in this study are conditions in which the sex difference is *not* significant or has a *smaller* magnitude. In considering the argument below, then, it should be borne in mind that the true level of statistical significance may be somewhat lower, thus the findings somewhat stronger, than that reported.

To measure active religiousness, church attendance, recoded to contrast weekly attenders with less frequent attenders, was combined with the two dichotomous measures of church membership and activity (See Tables 3 and 6) to form a four-category additive index of active church participation.

Age, recorded as total years of age; education, as total years in school; and religious affiliation, ranged from Liberal to Fundamentalist⁹ (Smith 1990) were included in all models as controls. The strong positive effect of age on both religiousness and religiousness by gender has been amply demonstrated (Cornwall 1989; Wuthnow 1976; Feltey and Poloma 1991) in previous empirical studies. Education has also been shown to have a strong influence on religious belief and behavior. As additional controls I also tested four other variables--region, income, race and socio-economic status—which have been used in previous studies of this topic. Although each of these had a small independent effect, none were significant in any model in the presence of education. Marital status and number of children, which have strong general effects on religiosity, were not significant in any model that included education and work participation. Fundamentalism or traditionalism is known to have a powerful positive effect on religiosity, and several interesting studies have explored its particular, if paradoxical, appeal to women (Davidman 1991). A good case can be made that education and religious affiliation are better considered socialization mechanisms, however including them only as general controls here makes a stronger, more conservative, case for any socialization effects found.

Socialization is a broad concept that has not been operationalized in terms of specific determinants with regard to gender and religiousness. However, the character and intensity of religious practice in one's family of origin is widely recognized to be one of the strongest influences on adult religious practice. The inheritance of religious affiliation, for example, is one of the strongest and most persistent generational influences in American life (Roof and MacKinney 1987; Sullins 1993). Religious denomination and culture are inherited to such a large extent that religion is routinely considered a component of personal identity. Moreover, whatever more general cultural mechanisms may differentiate religious practice by gender are plausibly mediated through direct religious exposure and practice during the years of early socialization. Two measures of such direct religious socialization are included derived from the GSS religion module in 1998. The first asked about the respondent's own childhood religious practice (ATTEND12), ". . .when you were around 11 or 12, how often did you attend religious services then?" Possible responses included 9 categories ranging from "Never" to "Several times a week". Respondents were also asked about the church attendance of their father and mother using a similar scale. Responses for both parents were added to produce an 18-point scale of parents' church attendance.

As noted above, the social structural explanation has focused most consistently on labor force participation. If work participation suppresses, or its absence encourages, religious participation through some general cultural mechanism as Luckmann proposes, we would expect that presence or absence in the full-time labor force would account for most of the effect of work participation. On the other hand, if work lowers religious participation simply by reducing the available time for religious involvement, we would expect that that greater amounts of time devoted to work would have an increasing effect on irreligiousness. In each year the GSS interview has asked (variable WRKSTAT), "Last week were you working full time, part time, going to school,

keeping house, or what?” Those who report that they are working full or part time are asked a follow-up question (HRS1), “How many hours did you work last week, at all jobs?”. These variables, both of which had a significant effect on religiousness by gender, were combined to form a variable coded zero if the respondent was not working at all, otherwise recording the number of hours worked last week. Like almost everyone else who has examined the question empirically, after including work status I found no effect on religiousness by gender of the presence, number or ages of children in the home (Roof and Hoge 1980; Christiano 1986) or marital status (DeVaus and McAllister 1987). Also, consistent with Stark’s (2002) findings, but in contrast to Feltey and Poloma (1991), I could find no overall effect of gender ideology on religious participation by gender in these data.

The effect of gender-linked personality was assessed by four items on the GSS that measured personality characteristics similar to those found on the Bem Sex Role Inventory (BSRI). The BSRI asks a respondent to rate how typical of her or him is each of a set of up to 60 adjectives. Twenty of the adjectives are associated with masculine role perceptions, twenty with feminine roles, and twenty are neutral, permitting a measurement of masculinity, femininity or androgyny. The instrument has been widely used in psychology and related fields since 1974. Repeated assessments have found it to have high validity and generally strong psychometric properties (Bem 1975; Wilson and Cook 1984), and to correlate strongly with gender differences in religiousness (Thompson 1991; Francis and Wilcox 1996). Holt (1998) found not only that internal consistency was very high (alpha greater than .90 for all scales) but also that all but two (neither of which are used in this study) of the items individually significantly distinguished masculinity and femininity.

Four items on the GSS generally replicated dimensions of personality measured by the BSRI. Among the adjectives scored masculine on the BSRI are “independent” and “self-

sufficient”. In 1993 the GSS asked respondents to rate the importance to them personally of “being self-sufficient and not having to depend on others.” BSRI adjectives indicating femininity include “tender”, “compassionate”, “sensitive to other’s needs”, and “eager to soothe hurt feelings”. The 2002 GSS asked for a very similar rating¹⁰ regarding, inter alia, the following statements: “I often have tender, concerned feelings for people less fortunate than me,” and “I would describe myself as a pretty soft-hearted person.” Accordingly, these four GSS items were included in the model to assess, if possible, the effect of gender-linked personality differences.

Ridgeway and Smith-Lovin (1999) state well a basic fact of gender differences: “Gender is different from other forms of social inequality in that men and women interact extensively within families and households and in other role relations.” For this reason the differing networks of relationships that characterize men and women have been examined with good effect to help understand a wide range of gender differences, from family structure to academic and occupational outcomes. However, despite the fact that for most Americans religious worship is overwhelmingly a communal activity, no comparable research has yet (to my knowledge) considered the effect of gender differences in friendship patterns on gender differences in religiousness.

Although it was not possible to explore friendships or interactions in detail in this study, I was able to include an overall measure of friendships related to religion. In 1998 the GSS asked a series of questions about the respondent’s five closest friends, including whether each was a member of the respondent’s religious congregation (if any). From this information I computed the percent of close friends that were also members of the respondent’s congregation, providing a measure of how embedded the respondent’s friendship group is in her or his religious congregation.

Risk aversion was operationalized by a general measure of fearfulness or anxiety, in which respondents are asked whether they are afraid to walk alone at night. Men, on this measure, report significantly lower levels of fear than women.

Analysis and Discussion

The variables indicating the proposed causes for gender differences were entered into a series of hierarchical regression models predicting religiousness. The focus was not (or only obliquely) on the determinants of religiousness, however, but on what among the predictors of religiousness affected sex differences. Improvement in accounting for sex differences was assessed

by a reduction in the sex coefficient from corresponding simpler models, consistent with the properties of the pertinent explanatory coefficients and overall model R-square.

Tables 9 and 10 summarize the results. Table 9 compares the effects on sex differences of including the social and non-social factors discussed above separately (Models 2 and 3) and combined (Model 4) in four models predicting frequency of prayer, self-rated religiousness and church involvement. Standardized coefficients are presented for all variables except sex, which is dichotomous. As noted above, church participation is an index comprised of the three strongest indicators of active religiousness. Prayer and church participation were included in Table 9 because they are respectively the most affective and active religious measures on the GSS; self-rated religiousness was included because it has been the most common measure used in studies of gender and religion.

Table 9 About Here

Table 10 About Here

If social factors—in Table 9, socialization, structural location and friends network—are inconsequential, as is claimed, for gender differences in religiousness, we would expect there to be little or no reduction in the sex coefficient from Model 1 to Model 2, little or no increase in model r-square and/or the coefficients for the social factors to be small or nonsignificant. In fact, the opposite is the case for all three dependent religious measures: the sex coefficient is reduced substantially, almost all the social coefficients are significant, and model r-square is increased. For prayer and self-rated religiousness the sex coefficient is reduced by over a third (40% and 35% respectively) and r-square is increased by over 50 percent. For church participation, the more active measure, r-square increases by 81%, with Model 2 explaining just under a third of the variance. On

this evidence, contrary to personality and physiological theories, social factors are emphatically not trivial for understanding gender differences in religiousness.

If the social factors are not trivial but strong, what of the non-social factors? Table 10 decomposes the explanatory factors, permitting a more detailed test of each proposed explanation, in models predicting all six religious measures previously discussed (see Tables 3 and 6). The offset parenthetical numbers in the table report the percentage difference between the coefficients to the left. The results generally confirm the importance of personality in addition to social factors for explaining gender differences. For all six dependent variables, the model that includes the personality measures produces a sizeable reduction in the sex coefficient. For predicting prayer, attendance, membership and participation, personality reduces the sex coefficient more than the demographic, socialization, structural and network factors combined, even though these are added first.

In Table 10 the six dependent religious measures are ranged left to right from more affective to more active religiousness. Note that it is not the case in these models that affective religiousness is affected more by biology and active religiousness more by society. With one exception (the structural model predicting self-rated religiousness) all of the social and personality factors produce reductions in gender differences on all measures of religiousness. Only risk tolerance has a mixed effect, and it is the opposite of what would be expected by its purported link with physiological sex differences: it reduces the sex coefficient for the affective religious measures, but increases it for active religiousness. (Entered as a single explanation, the risk tolerance coefficient is significant for the affective religious measures but not significant for the active measures.) For active religiousness, and in the presence of other explanations, greater fearfulness predicts higher gender similarities, not differences, in religiousness.

Returning to Table 9, Models 2 and 3 compare the independent effects of the social and non-social factors respectively. For all three dependent religious measures in this table, adding personality and risk (Model 3) to the baseline model does reduce the sex coefficient. Moreover, Model 4, which includes both social and non-social factors, produces a smaller gender coefficient than either social (Model 2) or non-social (Model 3) factors alone. These findings indicate that the non-social factors do contribute to an understanding of gender differences in religiousness, both independently of and together with the social factors. Comparing the Model 3 with Model 2, the sex coefficient is smaller for prayer, the same magnitude for self-rated religiousness, and larger for church participation; and for all three measures, r-square is smaller for Model 3 than for Model 2. These results indicate that, considered independently, the non-social factors account for less of the gender difference as religion is measured more actively, and a smaller proportion of the variance, than do the social factors.

Personality and physiology, then, do contribute to an explanation of gender differences in religiousness. This conclusion, however, is subject to two important qualifications. First, far from rendering social factors trivial, the non-social factors are independently generally less powerful than social factors. Second, on every measure of religiousness, personality and/or physiology make a stronger contribution in the presence of social factors than in their absence. In sum, both social and non-social factors contribute to an explanation of gender differences in both affective and active religiousness.

What is most notable about the models in Tables 9 and 10 is that for the most active religious measures, after including sufficient predictors, the sex coefficient is not significantly different than zero. Excluding risk tolerance from Model 4 of Table 9 predicting the church participation index also results in a non-significant gender coefficient. In this sense, each of these

models provides a complete set of empirical determinants for gender differences in church activities and the church participation index. Once demography, social factors and personality are taken into account, religiousness on these more active measures can be predicted equally well with no knowledge of gender.

In sum, all of the extant social and personality explanations contributed to an understanding of gender differences in religiousness, however measured. Risk tolerance also contributed to an explanation of affective, but not active, religiousness. As competing explanations, social factors are more powerful in some respects and measures, and personality factors are more powerful in others; both, however, are far more powerful as complementary explanations contributing to a combined multifactorial model for gender differences in religiousness. Such a model accounted for all of the gender difference in active religiousness in these data. The interaction of the social and non-social factors is complex, and does not suggest that religious tendencies are innately different or innately equal by gender.

Conclusion

The findings of this study strongly support the assertion that women are generally and usually more religious than men, but cast serious doubt on the claim that this is always and universally the case. In two major world religions observed religiousness is higher among men. If affective religiousness (personal piety) and active religiousness (ritual practice) are distinguished, gender differences are observed to be larger and near-universal on the former, but smaller and far from universal on the latter. Part of the increased difference in affective religiousness may be due to social psychological gender differences in responding to the questions. If the religious “gender gap” is not universal, then variable social or psychological factors must account for at least some of

it. A multivariate model demonstrates that such factors are powerful and robust, predicting all the sex difference in active religiousness and much of the difference in affective religiousness.

In response to the claim that innate physiological differences alone account for the gender gap in religion, these findings clearly demonstrate that social factors are not trivial, but are essential to understanding gender differences in religiousness. In the absence of strong social controls, evidence relating gender differences to physiology or even personality are simply misleading. This demonstration does not lead to the opposite claim, however, that biology or physiology can have no effect on gender differences. The one variable representing a physiological theory in this study did also contribute, though weakly, to the prediction of sex differences in affective religiousness. More precise measures may well find a stronger relationship, or none at all. Even if the testosterone-induced risk taking theory is wrong, there is nothing in this analysis, which cannot observe biological factors directly, to suggest that other sex-linked biological determinants of religiousness may not be found. Moreover, given the complex and pervasive interactions of nature/nurture influences in human behavior, it is possible, even likely, that the social and personality factors that here predict gender differences in religiousness so powerfully are themselves influenced by and/or interact with biological factors.

More importantly, these results imply that greater insight into gender differences in religiousness lies not in a search for universality but in the acceptance of complexity. Many disparate factors, rather than one simple cause, appear to affect gender differences in this area. This suggests that, regardless of the theory proposed, a better understanding of religion's relationship with gender will continue to elude those who reduce the question to a single explanation.

This study was designed to assess current theories, not propose new ones. The data and measures employed in the regression analysis are too limited and crude to support theorizing too

closely about the gender-differentiating mechanisms examined. They may permit some general observations, however, by way of guidance for a more precise general model of gender differences in religiousness. As noted, such a model should include a variety of influences, both social and non-social, and distinguish between affective and active religiousness or a similar construct. The model should employ independently observed variables in addition to self-reports, and partition gender self-report differences from observed differences in religiousness.

The global differences in gender participation among major religions found in this study suggests that much of the gender difference in religiousness may be due to, well, religion. Men, we observed, are more religious, and more actively religious than women, in two of the most patriarchal religions—Judaism (particularly Orthodox Judaism) and Islam. It would not be implausible to suspect that the greater male participation in these is in part due to the gender-differentiating effects of the organization, norms, rituals or beliefs of these religious institutions or cultures themselves. Both of these religions, for example, practice sex segregation in religious practice and ritual, exclude women from leadership, and promote strong norms of masculine religious identity and ideals; which all may have direct and differential effects by gender. Apart from ethnographic studies of women’s experiences, the search to explain gender differences has largely ignored the role of institutional differences. This is somewhat surprising in light of the current emphasis in the sociology of religion on “supply-side” explanations for religious involvement, by some of the same scholars who insist that gender differences in religious participation must be innate. Sociologists studying other social settings—for example, higher education faculties or business status hierarchies—typically credit gender disparity to institutional rather than personal factors, and rarely to gendered differences in competence or personality.

Podles' (1999) thoughtful study of the rise of a feminized sensibility in Christianity argues at length that centuries-old institutional mechanisms have worked to dampen male involvement in Western (though not Eastern) Christianity. Also suggestive in this regard is the history and reasoning of the "muscular Christianity" movement of a century ago, which led to the founding by churches of specific agencies designed to attract men, such as the YMCA and the Boy Scouts. At that time the conclusion from lack of male involvement in religion was not that men were not religious but that religion was not manly.

Cross-cultural variation also suggests, of course, the presence of cultural influence on gender differences in religiousness. If men are, relative to women, more prone to active than affective religiousness, then they are likely to be relatively more religious in institutional and cultural settings where religion itself is more public, exterior and objective. Further study could determine whether the assimilation of religion to the private, domestic, interior—i.e., affective—sphere which secularization has brought about in Western Christian cultures is less pronounced where religions with higher male involvement are dominant, or is ameliorated by them. Gilmore's (1990) cross-cultural study of manhood suggests, further, that men are more engaged and defined by agonistic rather than affective activities and ideals than are women. Likewise, studies of male-dominant settings both secular (Kandiyoti 1988) and religious, such as fundamentalism (Peek et al. 1991; Brasher 1998), Catholicism (Dillon 1999) and Orthodox Judaism (Davidman 1991), generally suggest that gender is subject to active negotiation in institutions which induce greater subjectivity on the part of females. These literatures provide a rich base of theoretical insights for addressing these questions.

Insofar as religion is a central component of culture, the features of gender differences in religiousness may also suggest some more general observations about gender differences in society.

As this paper has attested with regard to religion, nature/nurture questions regarding human behavior or distinctions seldom resolve into a wholly biological or wholly social explanation. This may be especially the case with regard to gender distinctions, where sex differences which are wholly genetic are moderated by phenotype and culture to become the set of social distinctions we identify as gender.

If the possible determinants of human behavior are ranged on a continuum from biological to social, four classes of mechanisms can be analytically distinguished: genetic, physiological, psychological, and social. Social class partakes of only the last two factors; race of the last three; and only gender distinctions partake of all four. In producing gender, sex is understood fundamentally as a genetic distinction: the presence/absence of a y chromosome. This dichotomy is expressed in numerous physiological differences between the sexes, which introduces a great deal of variation due to genetic variation, development and random chance. Psychological and social causes reflect the familiar mechanisms of internalization and social norms that operate in all social distinctions.

All of these factors, as this paper has shown with regard to religion, act and interact in complex ways. It is tempting to resolve this complexity in favor of a conception of biology and society interacting as distal and proximal determinants of gender (Feingold 1994; D'Onofrio et al. 1999). With regard to religiousness, such a theory would explore how social structure, norms and statuses reinforce or inhibit more innate biological or physical propensities. This project is not without merit, but is ultimately too simple¹¹, because what is "biological" is no longer simply given, and the meaning of gender itself is changing.

It is a truism that in late/post modern industrial society physiological differences are increasingly being made less salient by technology and subject to personal alteration . As the

material basis of society increasingly becomes a technological basis, bodily distinctions of all sorts are in the process of being reduced from irrefragable constraints on human well-being to mere social markers. Post-modern society is accordingly increasingly post-functional: for functionalism, society was a body writ large; today, bodies are becoming society writ small. The relation of gender and religion reflects this change of focus. The onset of secularization has been accompanied (perhaps in part precipitated) by the near-disappearance of class in the construction of religion, with a corresponding rise in the importance of race and gender. Religio-moral civic discourse, which a generation ago was animated by race, today centers on sexuality, soon to be replaced by genomics—matters which increasingly have to do with the expanding realm of possibilities regarding the physical differentiations of human bodies.

With the widening of bodily possibilities, even the most hard-wired determinants of gender are susceptible to social choice, thereby opening up dichotomous constraints to a wide variety of alternative constructions of gender. Although we tend to perceive or construct gender differences as disjunctive, among the determinants of gender only the genetic factor—the most distal cause—is truly dichotomous. Moreover, although most assume that genetic sex must be an independent variable, for larger populations and over time the influence among the causal classes is not unidirectional, as, at minimum, the psychosocial mechanisms of mate selection and child selection recursively influence the biophysiological factors. (Consider, for example, the interaction of the preference for male children with family planning efforts, population gender imbalance, and the development of women in traditional cultures.) The progress of modernity, as just noted, has and will continue to vastly increase this reversal.

The implications of the results of this paper—that physiology is not determinative and gender differences are not invariant—portend this transition. As has occurred with other areas of

social life—religion, occupation and ethnicity, for example—gender may increasingly become a voluntary component of, rather than a prescribed constraint upon, personal identity. This is likely to strengthen, not weaken, the connection between religion and gender, but in a radically changed way. From religious identity being a choice constrained by gender, gender identity may increasingly become a choice informed by religion.

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TABLES AND CHARTS

Table 1: Gender Differences in Religiousness among Jews and Muslims in 51 nations: WVS 1995-97

	Men	Women	Ratio of Women n/Men
Jews (1,183)			
% who are a church/religious organization member	63.2	62.2	0.98
% who attend services weekly or more often	68.8	52.9	0.77**
% who say religion is important in their life	87.1	86.7	1.00
% who believe in God	93.6	94.0	1.00
% who believe in life after death	78.2	70.9	0.91*
% who are “a religious person”	91.0	92.9	1.02
Muslims (4,435)			
% who are a church/religious organization member	18.5	11.7	0.63**
% who attend services weekly or more often	37.3	20.2	0.54**
% who say religion is important in their life	84.9	88.7	1.04**
% who believe in God	97.1	98.7	1.02**
% who believe in life after death	68.0	72.5	1.07*
% who are “a religious person”	83.0	87.7	1.06**

* p < 0.050; ** p < 0.001.

Table 2
Worldwide Gender Differences in Religiousness by Religion
 Showing correlation with gender (female = high)

Country (N)	Religious person	Religion is important	Weekly church attendance	Church member
Catholic (903)	0.108**	0.108**	0.110**	0.031**
Protestant (20,953)	0.144**	0.149**	0.056**	0.039**
Orthodox (11,688)	0.111**	0.079**	0.019	0.039**
Jew (1,321)	0.047	0.045	-0.138**	0.000
Muslim (6,699)	0.082**	0.066**	-0.228**	-0.094**
Hindu (3,218)	0.086**	0.105**	0.127**	0.039
Buddhist (1,612)	0.161**	0.059*	0.066**	0.054*
None (26,346)	0.092**	0.067**	0.016*	0.005

* $p < 0.050$ ** $p < 0.001$

Source: World Values Surveys 1991-1992, 1995-1997.

Table 3: Mean difference (standardized) between men and women on selected religiosity items: GSS 1998-2002

Item	GSS 1998-2002	ISSP 1998
1. Frequency of Prayer	.510**	.363**
2. Felt Closeness to God	.396**	NA
3. Self-assessed religiousness	.313**	.236**
4. Church membership	.290**	NA
5. Church attendance	.273**	.172**
6. Church Activities	.143**	.021*

GSS item wordings are:

1: “About how often do you pray?”. 6 categories of response are: Never, Less than once a week, Once a week, Several times a week, Once a day, Several times a day.

2: “How close do you feel to God most of the time? Would you say extremely close, somewhat close, not very close, or not close at all?”

3: “Would you describe yourself as. . .”. 7 categories of response are: Extremely religious, Very religious, Somewhat religious, Neither religious nor non-religious, Somewhat non-religious, Very non-religious, Extremely non-religious.

4: “Are you, yourself, a member of a church or synagogue?” Responses are: Yes, No.

5: “How often do you attend religious services?” 6 categories of response are: Never, Less than once a year, About once or twice a year, Several times a year, About once a month, 2-3 times a month, Nearly every week, Every week, Several times a week.

6: “Do you take part in any of the activities or organizations of your church (synagogue) other than attending service?” Responses are: Yes, No.

ISSP wordings are similar (by design) for available items.

Table 4
Worldwide Gender Differences in Religiousness
 Showing correlation with gender (female = high)

Country (N)	Religious person	Religion is important	Weekly church attendance	Church member
France (1,002)	0.062*	0.099**	0.032	0.037
Britain (2,577)	0.184**	0.244**	0.107**	0.097*
W Germany (3,118)	0.164**	0.187**	0.142**	0.094*
Italy (2,018)	0.146**	0.212**	0.172**	0.028
Netherlands (1,017)	0.056*	-0.006	-0.058*	-0.052*
Denmark (1,030)	0.209**	0.223**	0.075**	0.012
Belgium (2,792)	0.158**	0.129**	0.093**	0.029
Spain (5,358)	0.205**	0.235**	0.197**	0.062*
Ireland (1,000)	0.118**	0.150**	0.110**	0.068*
N Ireland (304)	0.150**	0.223**	0.107*	0.185*
USA (3,381)	0.110**	0.157**	0.112**	0.076*
Canada (1,730)	0.137**	0.192**	0.110**	0.112*
Japan (2,065)	0.095**	0.060**	0.033	0.004
Mexico (3,041)	0.102**	0.119**	0.159**	0.061*
S Africa (5,671)	0.158**	0.157**	0.158**	0.132*
Hungary (999)	0.102**	0.181**	0.112**	0.048
Australia (2,048)	0.141**	0.155**	0.073**	0.129*
Norway (2,366)	0.178**	0.194**	0.016	0.060*
Sweden (2,056)	0.146**	0.221**	0.038*	0.061*
Tambov (500)	0.301**	0.353**	0.144**	0.197*
Iceland (702)	0.201**	0.194**	0.029	-0.009
Argentina (2,081)	0.169**	0.189**	0.150**	0.071*
Finland (1,575)	0.166**	0.181**	0.098**	0.055*
S Korea (2,500)	NA	-0.001	0.014	0.020
Poland (2,091)	0.082**	0.122**	0.182**	NA
Switzerland (2,612)	0.146**	0.189**	0.063**	0.018
Puerto Rico (1,164)	0.068**	0.156**	0.149**	0.117*
Brazil (2,931)	0.050**	0.134**	0.152**	0.093*
Nigeria (3,770)	0.097**	0.134**	0.007	-0.007
Chile (2,500)	0.142**	0.186**	0.135**	0.108*
Belarus (3,107)	0.200**	0.175**	0.063**	0.048
India (4,540)	0.084**	0.066**	0.077**	-0.049
Czech (930)	0.107**	0.047	0.065*	NA
E Germany (2,345)	0.100**	0.098**	0.032	0.019
Slovenia (2,042)	0.124**	0.120**	0.080**	0.027
Bulgaria (2,106)	0.184**	0.197**	0.080**	0.036

Romania (1,103)	0.155**	0.181**	0.146**	-0.011
Pakistan (733)	NA	-0.210**	NA	NA
China (2,500)	0.068**	0.095**	0.053*	0.047
Taiwan (1,452)	0.076**	0.088**	0.041	0.096*
Portugal (1,185)	0.209**	0.223**	0.194**	0.083*
Austria (1,460)	0.137**	0.142**	0.114**	-0.001
Turkey (2,937)	0.101**	0.046*	-0.509**	-0.093*
Moscow (1,012)	0.249**	0.178**	0.031	NA
Lithuania (2,009)	0.200**	0.195**	0.180**	0.053*
Latvia (2,103)	0.232**	0.158**	0.088**	0.046*
Estonia (2,029)	0.173**	0.156**	0.013	0.094*
Ukraine (2,811)	0.215**	0.197**	0.095**	0.067*
Russia (4,001)	0.271**	0.219**	0.064**	0.089*
Peru (1,211)	0.073**	0.189**	0.109**	0.018
Venezuela (1,200)	0.116**	0.115**	0.179**	0.066*
Uruguay (1,000)	0.221**	0.173**	0.175**	0.177*
Ghana (96)	0.075**	0.135**	-0.034	NA
Philippines (1,200)	0.104**	0.029	0.229**	-0.040
Moldova (984)	0.111**	0.158**	0.171**	0.120*
Georgia (2,593)	0.111**	0.119**	0.005	0.012
Armenia (2,000)	0.178**	0.170**	0.075**	0.050
Azerbaijan (2,002)	0.063**	0.104**	-0.068*	-0.061*
Dominic Rep (417)	0.026**	0.128**	0.154**	0.147*
Bangladesh (1,525)	-0.006**	0.027	0.342**	-0.404*
Colombia (6,025)	0.091**	0.135**	0.144**	0.082*
Basque (2,205)	0.149**	0.169**	0.151**	0.066*
Andalusia (1,803)	0.232**	0.298**	0.193**	0.032
Galicia (1,200)	0.209**	0.204**	0.177**	0.148*
Valencia (501)	0.255**	0.327**	0.238**	0.198*
Serbia (1,280)	0.084**	0.034	0.023	-0.010
Montenegro (240)	-0.030**	-0.008	-0.060	-0.070
Macedonia (995)	0.044**	0.040	-0.107**	0.010
Croatia(1,196)	0.110**	0.118**	0.174**	0.077*
Slovakia (466)	0.151**	0.129**	0.034	NA
Bosnia (1,200)	0.089**	0.023	-0.007	-0.073*
Women = men	0	9	16	26
Men > women	2	1	4	5
Total: Women not > men	2	10	20	31

* p < 0.050 ** p < 0.001

Source: World Values Surveys 1991-1992, 1995-1997.

Table 5: Fit of Selected Loglinear Models of Church Attendance and Frequency of Prayer: GSS 1988-2002

Model	Effects	L^2	Df
0	Independence	4809.8	60
1	Attendance by Prayer (linear)	1508.3	59
1A	Attendance by Males	393.7	24
1B	Prayer (linear) Females	361.4	24
2	Global Active bias	1508.0	58
3	Global Affective bias	1357.4	58
3A	Global Affective Males	256.3	23
3B	bias Females	239.6	23

Model Comparisons	Difference L^2	Df
0 – 1	3301.5	1
1 – 2	0.3	1
1 – 3	150.9	1
1A – 3A	137.4	1
1B – 3B	121.8	1

Figure 1
Fitted affective bias for Males and Females,
illustrating effects in the observed frequencies

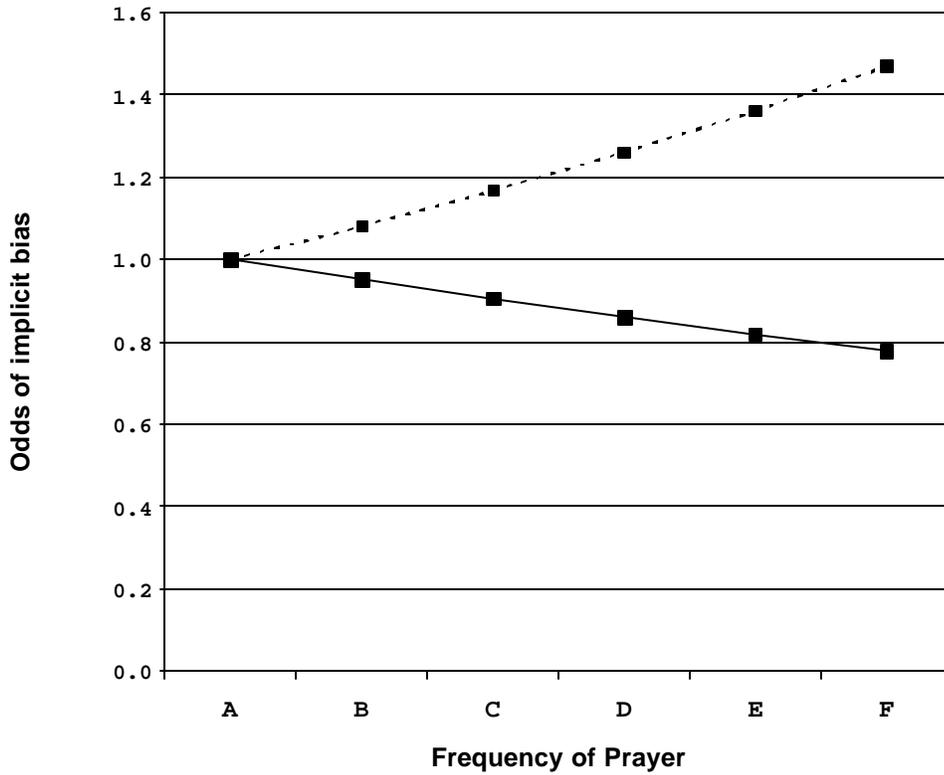


Fig.1.—Frequency of Prayer. Men are represented by a solid line, women by a dotted line. The reported odds values are A = never; B = less than once a week; C = once a week; D = several times a week; E = once a day; F = several times a day.

Table 6: Effect on gender differences of controlling for affective religiousness: GSS 1988-2002

Item	Correlation with sex	
	Zero-order	Controlling for Prayer
Prayer	.253**	--
Close to God	.195**	-.035*
Self-assessed religiousness	.117**	-.005
Church Attendance	.136**	.008
Church membership	.144**	.038
Participate in Church activities	.069*	.000

*** = significant at .001, ** = significant at .01, * = significant at .05.

Item wordings are:

1: "About how often do you pray?". 6 categories of response are: Never, Less than once a week, Once a week, Several times a week, Once a day, Several times a day.

2: "How close do you feel to God most of the time? Would you say extremely close, somewhat close, not very close, or not close at all?"

3: "Would you describe yourself as. . .". 7 categories of response are: Extremely religious, Very religious, Somewhat religious, Neither religious nor non-religious, Somewhat non-religious, Very non-religious, Extremely non-religious.

4: "Are you, yourself, a member of a church or synagogue?" Responses are: Yes, No.

5: "How often do you attend religious services?" 6 categories of response are: Never, Less than once a year, About once or twice a year, Several times a year, About once a month, 2-3 times a month, Nearly every week, Every week, Several times a week.

6: "Do you take part in any of the activities or organizations of your church (synagogue) other than attending service?" Responses are: Yes, No.

Table 7: Gender Differences in Active Religiousness, Comparing Men and Women (by percent) who pray “several times a day”: GSS 1988-2002 (N=21,707)

Item	Men	Women
1. Church attendance? <i>Weekly</i> or more often (N=2,796)	54.9	53.4
2. Participate in Church activities beyond Sunday? <i>Yes</i> (N=344)	71.6	61.3
3. Church member? <i>Yes</i> (N=344)	78.7	83.2
4. How close to God? <i>Extremely</i> (N=1,159)	45.2	48.7
5. How religious are you? <i>Very or extremely</i> (N=662)	58.1	61.6

* Difference is significant at .05.

Figure 2
Mean Gender Difference on Affective Measures by Church Attendance

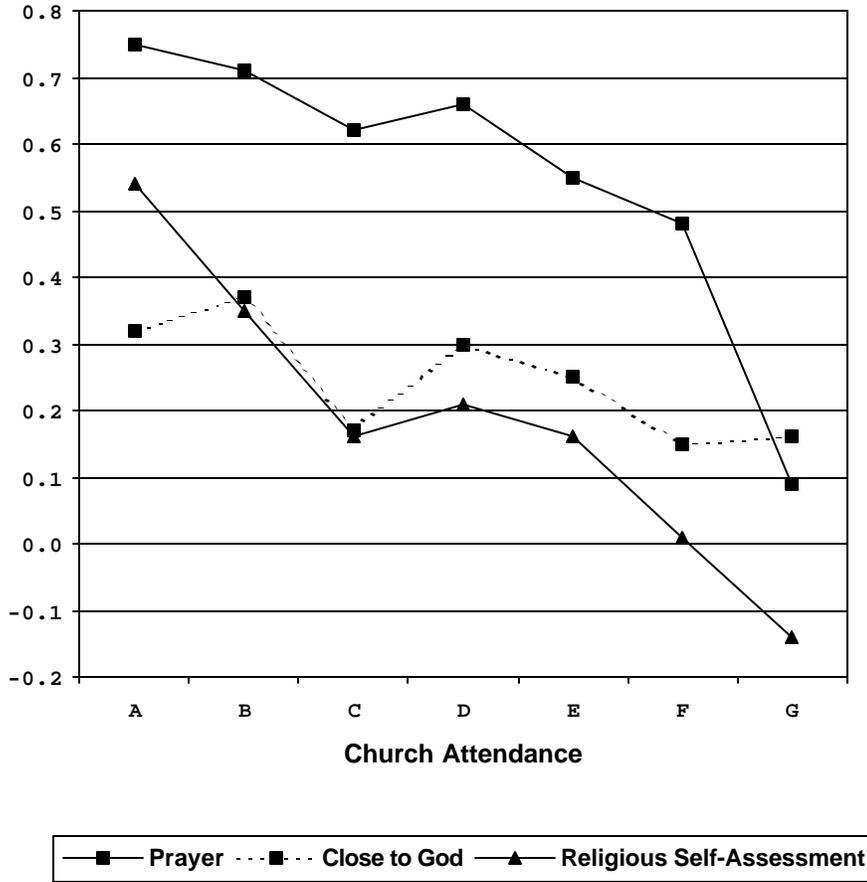


Fig.2.—Church attendance. The reported categories are A = never; B = once a year or less; C = several times a year; D = once a month; E = several times a month or nearly every week; F = every week; G = more than once a week.

Table 8: Descriptives and Imputation Characteristics for GSS Variables in the Regression Models

Variable	Actual Mean (s.d.)	Imputed Mean (s.d.)	Percent imputed
Sex	1.56 (.496)	n.a.	0
Age	45.56 (17.1)	45.56 (17.1)	0.1
Education	13.25 (2.93)	13.25 (2.93)	0.4
Fundamentalism	3.03 (2.08)	3.03 (2.08)	2.5
Weekly hours worked	27.56 (22.8)**	27.59 (22.8)	0.6
Parents' church attendance	11.39 (4.72)	11.28 (4.73)	64.1
Church attendance at age 12	6.43 (2.29)	6.43 (2.29)	57.7
Percent of friends in congregation	.213 (.339)	.214 (.339)	53.4
Self-sufficiency	1.68 (.708)	1.78 (.709)	64.1*
Worthlessness	4.61 (.836)	4.61 (.835)	49.7
Compassion	4.08 (1.08)	4.03 (1.03)	48.7*
Soft-hearted	4.13 (1.04)	4.08 (1.00)	48.7*
Fear	1.58 (.493)	1.58 (.493)	34.6
Frequency of prayer	2.77 (1.53)	2.77 (1.55)	49.6
Nearness to God	1.95 (.893)	1.86 (.912)	43.3*
Self-rated religiousness	3.17 (1.35)	3.17 (1.36)	57.6
Church attendance	3.64 (2.77)	3.63 (2.77)	1.6
Church membership	1.39 (.488)	1.40 (.493)	66.0*
Church activities	1.54 (.496)	1.54 (.499)	66.0*
Church participation index	1.12 (1.10)	1.20 (1.12)	**

* Imputed from multiple years; all 1998 cases are synthetic.

**This is a constructed index combining church attendance, membership and activities.

Table 9: Coefficients of Sex (unstandardized) and Selected Independent Variables (standardized) predicting Frequency of Prayer, Religiousness Self-Rating and Church Involvement: GSS 1998 (N=2,832)

Independent Variables	Frequency of Prayer				Self-rated Religiousness				Church Participation Index			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
<i>Sex (Male low)</i>	.421*** (.055)	.311*** (.054)	.302*** (.055)	.154*** (.052)	.257*** (.049)	.224*** (.048)	.224*** (.050)	.165* (.049)	.212*** (.037)	.132*** (.035)	.157*** (.038)	n.s.
Demographic												
Age	.160***	.106***	.127***	.060**	.088***	.069***	.080***	.053*	.178***	.124***	.151***	.078**
Education	n.s.	n.s.	n.s.	.047**	.040*	n.s.	n.s.	n.s.	.130***	.147***	.122***	.152***
Fundamentalism (Lib - Fund)	.253***	.191***	.232***	.143***	.312***	.243***	.306***	.222***	.343***	.258***	.324***	.205***
Structural												
Hours worked		-.076***		-.056**		.041*		.050**		-.045**		n.s.
Socialization												
Parents' Attendance		.088***		.065***		.095**		.083***		.099***		.073**
Attendance at Age 12		.067***		.059***		.095***		.091***		.067**		.058**
Network												
Percent of friends in congregation*		.222***		.365***		.206***		.278***		.344***		.512***
Personality												
Independence			n.s.	n.s.		.051**	n.s.				.092***	.057***
Low self-esteem			n.s.	n.s.		n.s.	n.s.				.054**	.045**
Tender feeling			.121***	.298***		n.s.	.147***				.096***	.345**
Soft-hearted			.143***	.099***		n.s.	n.s.				.091***	n.s.
Risk tolerance												
Fear			-.049**	n.s.		-.038*	n.s.				n.s.	n.s.
N	2832	2832	2832	2832	2832	2832	2832	2832	2832	2832	2832	2832
Adjusted R-square	.124	.196	.163	.278	.121	.189	.125	.206	.174	.315	.203	.412

*** = significant at .001, ** = significant at .01, * = significant at .05, n.s. = not significant.
Standard errors are reported in parentheses.

Table 10: Sex Coefficients in Successive Hierarchical Regression Models predicting Six Measures of Religiosity: GSS 1998 (N=2,832)

Independent Variables	Prayer	Close to God	Self-Rated Religiosity	Attendance	Church Membership	Church Activities
<i>Zero order R</i>	.516*** (.057) (19.2)	.292*** (.034) (26.4)	.344*** (.052) (25.3)	.835*** (.103) (24.2)	.108*** (.017) (23.1)	.073*** (.017) (11.0)
<i>Demographic</i>	.421*** (.055) (6.2)	.215*** (.030) (6.0)	.257*** (.049) (10.9)	.633*** (.095) (10.6)	.083*** (.016) (9.6)	.065*** (.017) (6.2)
<i>Socialization</i>	.395*** (.054) (15.7)	.202*** (.030) (5.9)	.229*** (.048) (-6.1)	.566*** (.092) (8.7)	.075*** (.016) (9.3)	.061*** (.017) (11.5)
<i>Structural</i>	.333*** (.055) (6.6)	.188*** (.031) (4.8)	.243*** (.050) (7.8)	.517*** (.095) (13.0)	.068*** (.016) (11.8)	.054*** (.017) (11.1)
<i>Network</i>	.311*** (.054) (46.0)	.179*** (.031) (27.4)	.224*** (.048) (21.9)	.450*** (.087) (59.3)	.060*** (.015) (50.0)	.048** (.017)
<i>Personality</i>	.168*** (.052) (8.3)	.130*** (.030) (7.7)	.175*** (.049) (5.7)	.183* (.081) (-7.1)	.030* (.015) (-10.0)	n.s.
<i>Risk tolerance</i>	.154** (.052)	.120*** (.031)	.165*** (.049)	.196* (.082)	.033* (.015)	n.s.

Numbers in parentheses indicate percentage differences between coefficients.

*** = significant at .001, ** = significant at .01, * = significant at .05, n.s. = not significant.

NOTES

1 I thank Roland Campiche, Benjamin Beit-Hallahmi and the anonymous peer reviewers for helpful comments on earlier drafts of this paper.

2 I was unable to obtain this paper. The characterization of its thesis given here is based on electronic mail correspondence with the author.

3 To facilitate comparison the items were coded to be dichotomous, with the more religious alternative high and female high. The exception was the rating of the importance of religious, which was scored on a 4-point Likertized scale from Very Important to Not at all Important. For this item gamma was compared with the Pearson correlation; although the magnitudes of the two statistics varied somewhat, the pattern of significances were identical.

4 In these two countries more men than women said they were a religious person. However, the data for each are arguably not compelling. The number of cases (240) is small for Montenegro, and in Bangladesh the sex difference on this question, while significant, is very small.

5 At the .05 significance level there may be, with 71 cases, 3 or 4 errors in assessing significance due to chance. This, however, works both ways: by the same set of probabilities, women may also be measured as significantly higher than men when in fact they are not. Note, further, that most of the differences reported are significant at the .001 level, i.e., there would be less than one error in a thousand due to chance.

5 All correlations stated are significant at the .001 level.

6 Other predictors included a range of items, mostly related to religious belief and practice, and varied by sample subset and variable modelled. The SPSS Missing Values Analysis (MVA) package was used for imputation. In an analysis generally critical of MVA, Von Hippel (2004) has demonstrated mathematically, and observed in a hypothetical example with 50% missing values, that SPSS's expectation maximization (EM) algorithm produces unbiased parameter estimates (mean, variance and covariance). He also shows, and I confirmed in these data, that the variance of the associated imputed values are biased linearly relative to the variable correlations. Accordingly, adapting von Hippel's formulae, the proper residual variation, using random draws from the affiliated normal distribution, was added to correct the bias in the imputed values. This adjustment simply extends to the missing variance the assumption, necessary for EM, that the values are missing at random (MAR). The resulting adjusted variance of the imputed values was identical (within random variation) to the unbiased variance estimates. More recently, Acock (2005:1024) has shown, using unadjusted values, that SPSS's EM procedure, while overestimating R^2 , produces mean variable estimates that compare favorably with other imputation techniques, including multiple imputation.

7 For all variables, except those imputed across years, the imputed distribution mean does not differ from the mean of the actual values by more than one percent. The larger difference for the cross-year variables probably reflects real trend differences, since year was included as a categorical covariate in these imputation models. Note that the common practice of collapsing variable years to gain sufficient cases for analysis involves more stringent assumptions or greater loss of information regarding (the lack of) trends and trend interactions than does imputing cases across years.

9 Catholics, Jews, Other and None were disaggregated from the GSS FUND variable to form a 7-category typology of increasing liberalism--Fundamentalist (or Conservative) Protestant, Catholic, Moderate Protestant, Liberal Protestant, Jew, Other, None—which was then reverse coded for analysis.

10 The BSRI asks respondents to rate the applicability of each item to him- or herself on a 7-point scale from “never or almost never true” to “almost always true”. The GSS asked respondents to rate each item on a 5-point scale from “does not describe you very well” to “does describe you very well”.

11 As an example, D’Onofrio et al. (1999: 955) assert: “Although differences in *religious affiliation* mainly reflect cultural differences, differences in religious attitudes and practices show a somewhat greater genetic component (emphasis theirs).” This distinction ignores the prevalence of assortative mating by religious affiliation, which has a direct genetic effect.