

# The Relationship Among Sexual Attitudes, Sexual Fantasy, and Religiosity

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**Abstract** Recent research on the impact of religiosity on sexuality has highlighted the role of the individual, and suggests that the effects of religious group and sexual attitudes and fantasy may be mediated through individual differences in spirituality. The present study investigated the role of religion in an ethnically diverse young adult sample ( $N = 1413$ , 69% women) using religious group as well as several religiosity domains: spirituality, intrinsic religiosity, paranormal beliefs, and fundamentalism. Differences between religious groups in conservative sexual attitudes were statistically significant but small; as predicted, spirituality mediated these effects. In contrast to the weak effects of religious group, spirituality, intrinsic religiosity, and fundamentalism were strong predictors of women's conservative sexual attitudes; for men, intrinsic religiosity predicted sexual attitude conservatism but spirituality predicted attitudinal liberalism. For women, both religious group and religiosity domains were significant predictors of frequency of sexual fantasies while, for men, only religiosity domains were significant predictors. These results indicate that individual differences in religiosity domains were better predictors of sexual attitudes and fantasy than religious group and that these associations are moderated by gender.

**Keywords** Sexual attitudes · Sexual fantasy · Religiosity · Fundamentalism · Intrinsic religiosity · Spirituality

## Introduction

Religion has historically regulated sexuality. Early research by Kinsey, Pomeroy, and Martin (1948) and Kinsey, Pomeroy, Martin, and Gebhard (1953) provided evidence that religious devoutness predicted sexual behavior and attitudes. However, the relationship between sexuality and contemporary religion is changing: as we enter the information age, in which access to a wide variety of knowledge and opinions has become commonplace, modern religious institutions have a less unique influence in defining individual member's social, cultural, and moral identities (Stark & Bainbridge, 1985). In other words, as religious groups become less unique—both in comparison to one another, and in comparison to other social groups—individual differences in spirituality and religiosity become more important. Religiosity, or the degree to which various aspects of religion play a role in an individual's life, likely mediates the influence of religion on sexuality.

Surprisingly, there is little work on the unique roles of religiosity and spirituality on subjective elements of sexuality, such as sexual attitudes and sexual fantasy (also referred to as erotophilia/erotophobia; Fisher, White, Byrne, & Kelley, 1988). Erotophobia consists of negative affective responses to sexuality that, over time, form stable, conservative sexual attitudes and restricted use of sexual fantasy; erotophilia is the opposite dimension. That is not to say that sexual attitudes and fantasy are equivalent, but rather that both represent an individual's disposition towards sexuality (Fisher et al., 1988). We chose to study sexual attitudes and fantasy as they are psychological aspects of sexuality: as such, they are the most likely sites at which religion might act.

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## Religious Group Versus Religiosity

Previous research has primarily focused on sexual attitudinal differences as a function of religious group. One such study reported more conservative sexual attitudes in fundamentalist Protestant participants but more liberal attitudes in mainline Protestant Christians and Catholics (Thornton & Camburn, 1989). Moreover, denominational differences in level of proscriptiveness mediate the relationship between religiosity and sexual attitudes (e.g., Thornton & Camburn, 1989). These findings highlight the fact that there is as much diversity within a religious group as there is between groups. To understand individual differences within a religious group, one must measure religiosity, or the degree of religiousness.

In studies of sexuality, religiosity has often been measured by assessing religious service attendance. For example, a general measure of conservative sexual attitudes was positively correlated with frequency of religious service attendance in the previous year (Lefkowitz, Gillen, Shearer, & Boone, 2004). More specifically, religious attendance was correlated with more conservative attitudes toward premarital sex (Pluhar, Frongillo, Stykos, & Dempser-McClain, 1998) as well as negative attitudes toward oral and anal sex (Davidson, Moore, & Ullstrup, 2004). However, religious service attendance is a problematic measure of religiosity as many studies query about church attendance only, which is biased towards Christian participants and do not reflect the religious practices of those who regularly pray several times a day (such as Muslims) or those who rarely attend formal services (such as Buddhists). Also, measures of religious service attendance are weighted towards capturing the extrinsic aspect of religiosity, or the degree of importance of religion as a means to another end, such as participation in a social entity or gaining comfort or security (Kirkpatrick & Hood, 1990). While informative, measures that concentrate solely on extrinsic religiosity do not capture other important aspects of religion.

### Intrinsic Religiosity

One such aspect is intrinsic religiosity, or the degree of importance of religion as an end in and of itself (Allport & Ross, 1967). Intrinsic religiosity is often labeled “personal religiosity” or the immersion of religious belief into daily living, as opposed to extrinsic religiosity, which is interpreted as more socially enacted religiosity (Kirkpatrick & Hood, 1990). In women, intrinsic religiosity was negatively correlated with openness toward casual sexual encounters and the motivation to pursue casual short-term and long-term sexual partners (Rowatt & Schmitt, 2003). Barkan (2006) showed that the correlation between intrinsic religiosity and number of sexual partners was mediated by negative attitudes toward premarital sex. Similarly, an index score of intrinsic religiosity was negatively correlated with sexual attitudes condoning sexual permissiveness, casual sexual practices, and the instrumental aspects of sexual

intercourse (Beckwith & Morrow, 2005). Religiosity constructs that conceptually overlap with intrinsic religiosity, such as personal commitment to religious beliefs and religion in daily life, were associated with more conservative sexual attitudes and negative attitudes toward premarital sex (Lefkowitz et al., 2004; Pluhar et al., 1998).

### Spirituality

Another important aspect of belief that has not been often studied in the context of sexual attitudes and fantasy is spirituality. Whereas *religiosity* refers to importance of an organized belief system, *spirituality* refers to the subjective, experiential relationship with or understanding of a divine being or force (Zinnbauer, Pargament, & Scott, 1999). Individuals self-identifying as “spiritual but not religious” differ from those who identify as “spiritual and religious” in level of church attendance, frequency of prayer, religious orthodoxy, and sociopolitical conservatism (Zinnbauer et al., 1999). Measures of spirituality independent from religiosity include “spiritual connectedness,” which is associated with more conservative sexual attitudes in college students (Beckwith & Morrow, 2005; Murray, Ciarrocchi, & Murray-Swank, 2007) and “embodied spirituality,” or spiritual interpretation of sexual experiences, which is associated with more permissive sexual attitudes and increased comfort with sexual fantasy (Horn, Piedmont, Fialkowski, Wicks, & Hunt, 2005).

As modern religious groups become less of a unique influence on shaping individual’s beliefs (Farmer, Trapnell, & Meston, 2009), we would expect that spirituality will come to mediate the role of religion on sexual attitudes and fantasy. That is, individuals are likely to negotiate the traditional influence of religion on sexuality—that is, institutionalized religious belief and dogma—through the lens of personal experience or spirituality. In the present study, we tested spirituality as a mediator between religious group on sexual attitudes and fantasy.

### Religious Fundamentalism

Another domain of religiosity of interest to researchers in sexuality is fundamentalism, or the conviction that attitudes and behaviors must be dictated by formal religious doctrine and tradition (Altemeyer & Hunsberger, 1992). Fundamentalism differs from intrinsic religiosity in that individuals with high intrinsic religiosity may recognize several sources of faith, such as tradition or ritual, personal reasoning or interpretation, or scripture, while individuals with high religious fundamentalism tend to see religious dogma as the only true source of moral authority (Hood, Spilka, Hunsberger, & Gorsuch, 1996). Fundamentalism has been positively correlated with negative attitudes towards premarital sex in a college sample (Bassett, Smith, Newell, & Richards, 1999) as well as traditional feminine/masculine role expectations in female college students (Bang, Hall, Anderson, & Willingham, 2005). Although the effects of fundamentalism on

sexual fantasy have not been directly studied, it has been shown that religiosity in evangelical Christians—who as a group score higher on measures of fundamentalism (Woodberry & Smith, 1998)—was associated with more negative attitudes towards sexual fantasy (Wulf, Prentice, Hansum, Ferrar, & Spilka, 1984).

### Paranormal Belief

Finally, the rising prominence of new-age religious and spiritual groups, as well as the increasing role of ethnocultural folk religions (Hirschman, 2004), has increased the need to study belief in paranormal phenomenon. Paranormal belief consists of belief in the supernatural and uncanny, in both traditionally religious instances, such as belief in life after death, as well as quasi-religious beliefs, such as superstitions (Irwin, 1993). One study examined the relationship between paranormal belief and attitudes about pursuing and maintaining short-term sexual partners. Interest in sexual partners was positively correlated with a sensational interests scale score measuring interest in the strange or macabre, which included an index of paranormal beliefs (Weiss, Egan, & Figueredo, 2004).

Religious individuals of all denominations (as well as the non-religious) would be expected to embody some degree of all four domains of religiosity—*intrinsic religiosity*, *spirituality*, *fundamentalism*, and *paranormal belief*. Due to the limitations inherent in reducing an individual's religious life to a handful of unidimensional questionnaire items, a multidimensional assessment of religiosity was used to better capture these multiple facets of how religion was experienced.

### Sexual Fantasy

One study examined the relationship between religiosity and sexual fantasy. Nicholas (2004) found that in predominantly young Christian sample, those who were more religious reported greater enjoyment of sexual fantasies about heterosexual intercourse (relative to those about oral sex) but less actual experience of sexual intercourse. The current study included a thorough exploration of religiosity differences in sexual fantasy, which has not been empirically studied in depth.

### The Present Study

The goals of the current study were as follows: Firstly, we aimed to evaluate religious group differences in sexual attitudes and sexual fantasy in an ethnically diverse sample. Secondly, we hypothesized that any differences between religious groups (or between the religious and non-religious) would be accounted for by individual differences in spirituality. Thirdly, we aimed to compare the effects of several religiosity domains, including *intrinsic religiosity*, *spirituality*, *fundamentalism*, and *paranormal beliefs* on individual differences in sexual attitudes and sexual fantasy. Based on the previous research cited above, we

predicted that *intrinsic religiosity* would be associated with more conservative sexual attitudes and decreased frequency and range of sexual fantasy; *spirituality* would be associated with more conservative sexual attitudes and greater frequency of sexual fantasies; *fundamentalism* would predict conservatism of sexual attitudes and decreased use of sexual fantasy; and finally that *paranormal belief* would be associated with more liberal sexual attitudes and use of fantasy. And finally, we tried to determine whether there were gender differences in the impact of religious group and religiosity on sexual attitudes and fantasy.

## Method

### Participants

The sample consisted of undergraduates at a large public university in the Southwest, from introductory psychology classes conducted between the fall semester of 2000 and the spring semester of 2006 ( $N = 1413$ , 69% women). Students ( $M$  age = 18.9 years,  $SD = 1.6$ , range 18–42) received course credit in exchange for participation. Students were informed that the purpose of the study was to examine “sexuality, behavior, and attitudes”; furthermore, the sexual nature of the study was made clear during all stages of recruitment. Of the students who chose to participate, none withdrew from participation.

Religious group was assessed using an open-ended question, “What is your religion?” The current sample was classified as Agnostic ( $n = 170$ , 12%), Atheist ( $n = 35$ , 2.5%), Jewish ( $n = 66$ , 4.7%), mainline Christian (including Catholic, Methodist, Lutheran, Presbyterian, and Episcopalian Christians) ( $n = 935$ , 66.2%), conservative Christian (including Baptist, Pentecostal, Jehovah's Witness, and Greek Orthodox) ( $n = 129$ , 9.1%), Hindu ( $n = 50$ , 3.5%), and Buddhist ( $n = 28$ , 2.0%). Table 1 presents a breakdown of each of these groups by ethnicity and gender.

The decision to create the “mainline Christian” and “conservative Christian” categorizations arose from recent work suggesting that these two denominations differ in historic traditions, ideology, and social behaviors (Woodberry & Smith, 1998). “Mainline Christians,” including an increasingly socially liberal Catholic church (Roof & McKinney, 1987), tend to resemble each other on measures of liberal social and political attitudes and conservative economic views (Davis & Robinson, 1999); moreover, mainline Protestants and Catholics did not differ significantly in their endorsement of any of the religiosity domains measured in the present study (Farmer et al., 2009). On the other hand, members of “conservative Christian” denominations share similar response patterns on measures of tolerance and traditionality (Woodberry & Smith, 1998). Thus, there is reason to believe that these groups likewise differ on measures of sexual attitudes and fantasy. Agnostic and atheist/nonreligious participants were analyzed separately as there is much evidence that these

**Table 1** Religious group by ethnicity and gender

	Euro-American	African American	Hispanic	Asian American	Other	Women	Men
Agnostic	117	1	17	29	6	109	61
Atheist	26	0	2	6	1	15	20
Jewish	63	0	1	0	2	47	19
Mainline Christian	590	42	192	98	13	657	278
Conservative Christian	80	22	11	15	1	99	30
Hindu	0	0	0	31	19	35	15
Buddhist	3	0	0	24	1	19	9
<i>N</i>	879	65	223	203	43	981	432

groups have significant differences in sexual behavior, rates of cohabitation, and extent of religious identification (Bainbridge, 2005; Hayes, 2000).

### Measures

Participants were asked to rate their religiosity on a Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). The one exception to this was an item from the intrinsic religiosity scale, “I prefer to attend religious services...” with response options ranging from 1 (a few times a year or less) to 5 (more than once a week).

### *Intrinsic Religiosity*

The Age-Universal Intrinsic Religiosity Scale (IR) of Gorsuch and Venable (1983) was used to assess intrinsic religiosity or the relative role and importance of religion and religious ritual in one’s daily life. Due to mislabeling in the original article (Gorsuch & Venable, 1983), one IR item was omitted (“I enjoy reading about my religion”). There was adequate reliability of the current 8 item IR measure in this sample ( $\alpha = .91$ ).

### *Spirituality*

A Balanced Version Index of Spiritual Belief (Trapnell, 2005) was used to measure spirituality, or the personal experience of the divine or transcendent. The object of spirituality (i.e., the “divine”) was defined for participants as “a superordinate being, or an intelligent energy or force, perceived to have a cosmic scope or significance.” Examples of items include, “I’m completely skeptical toward any type of religious or spiritual belief,” and “I tend to have deeply spiritual beliefs and feelings that are profoundly important to me.” Reliability of this 8 item index of spirituality was acceptable ( $\alpha = .88$ ).

### *Fundamentalism*

The short form version of the Religious Fundamentalism (RF) scale (Altemeyer & Hunsberger, 1992) was used to measure fundamentalism, or faith in religious institutions and dogma. At

the time of data collection, Altemeyer and Hunsberger’s (2004) shortened, revised RF scale was not published; however, the ad hoc RF short-form used in the current study includes 9 items represented in the authors’ revised scale. The RF scale has shown excellent reliability in Christian and non-Christian samples (Altemeyer & Hunsberger, 1992; Hunsberger, 1996), as did the RF scale used in the current study (sample  $\alpha = .87$ ).

### *Paranormal/New Age Beliefs*

A balanced, 10-item Index of Paranormal and New Age beliefs (Trapnell, 2005) was used to measure paranormal religiosity or the belief in supernatural events or experiences. The measure combined paranormal and New Age beliefs as the two variables are strongly correlated (Bainbridge, 2004). Individual items include queries about astrology, extrasensory perception, out of body experiences, past lives, precognition, psychic powers, and a more general belief in the magical or supernatural. Examples of items included “No unexplained phenomenon can be explained by a supernatural force,” and “I am receptive to magical experiences.” Reliability in the current sample was acceptable ( $\alpha = .80$ ).

### *Sexual Attitudes*

The Attitude Scale of the DSFI measured self-reported conservative (15 items) and liberal (15 items) attitudes using a Likert-type response format of strongly agree (1) to strongly disagree (5). A total conservatism score was obtained by reverse-scoring liberal attitude items and summing all items. This conservatism score reflected a single attitudinal dimension, wherein higher scores denoted more conservative sexual attitudes. These were also grouped into six specific face-valid attitudinal categories: attitudes towards masturbation, homosexuality, multiple sexual partners, oral sex, pornography, and premarital sexuality. Reliability coefficients (Cronbach’s alpha) were .87 and .92 for females and males, respectively.

### *Sexual Fantasy*

A variation of the Fantasy Scale, a 20-item subscale of the DSFI (Derogatis, 1979) was used to assess frequency of

sexual fantasy. While the DSFI-Fantasy scale asks participants to simply note whether or not they had fantasized about each statement, our adapted version also asked participants to record the frequency with which they engaged in each of the fantasies using a scale of never (0) to quite often (4). Fantasy categories included gender orientation fantasies (3 items, e.g., “Fantasizing that you are the opposite sex”), intercourse fantasies (6 items, e.g., vaginal intercourse), masochism fantasies (3 items, e.g., “Being forced to submit to sexual acts”), sadism fantasies (3 items, e.g., “Degrading a sexual partner”), and promiscuity fantasies (7 items, e.g., “Mate-swapping fantasies”). Fantasy categories consisted of the mean scores of items that reflected a certain type of fantasy. Individual and category subscores were entered into subsequent analyses to describe how frequently the participants had engaged in these types of fantasies. The present sample demonstrated good reliability (Cronbach’s  $\alpha = .89$  and  $.91$  for females and males, respectively).

### Procedure

Participants were divided into same-sex testing groups and questionnaires were administered by a same-sex research assistant. The questionnaires consisted of the measures listed above as well as additional measures not reported on here (e.g., personality measures; for reports on these measures, see Ahrold & Meston, 2010; Farmer & Meston, 2006, 2007; Meston & Ahrold, 2010). Participants were reminded that their participation was completely voluntary and they could stop at any point without penalty if the sexual nature of the questions made them feel uncomfortable. All participants completed the study. Informed consent was obtained and research assistants gave detailed instructions before testing commenced. Participants were randomly assigned codes to ensure confidentiality; data were gathered and analyzed solely by codes rather than names. Testing lasted for 1 h, and participants deposited their completed questionnaires into a “drop box” as they left the testing room. Questionnaires and consent forms were kept in separate locked file cabinets and all digital data were password protected. The research was approved annually by the University of Texas Institutional Review Board from 2000 to 2006.

### Results

Because the results across genders were obscured by the large number of female participants in this study relative to male participants, results for men and women are reported separately. However, because there was a significant difference in age between women ( $M = 18.8$ ,  $SD = 1.6$ ) and men ( $M = 19.0$ ,  $SD = 1.4$ ), we controlled for age in all analyses. A summary of all significant findings can be found in Table 2.

### Sexual Attitudes

To test for differences between religious groups in the overall measure of conservative sexual attitudes as well as the six specific subcategories of attitudes while controlling for age, we conducted separate analyses of covariance for each gender, using Bonferroni corrections to reduce the chance of Type I errors (i.e., results were considered significant at  $p < .007$ , or  $.05/7$  groups). For significant differences, we performed Tukey HSD post hoc analyses to determine which groups differed and in what direction.

For women, there was a significant effect of religious group on the overall measure of conservative attitudes,  $F(6, 845) = 3.5$ ,  $p < .002$ , but only one other attitudinal measure, namely attitudes towards masturbation,  $F(6, 845) = 4.1$ ,  $p < .001$ . Post hoc analyses indicated that agnostics were significantly less conservative in sexual attitudes overall than the Christian groups (mainline and conservative Christians),  $p < .001$  and  $p < .005$ , respectively; in the case of masturbation attitudes, Buddhists were significantly more conservative than all other religious groups ( $p$  values ranging from  $< .0001$  compared against Jews to  $< .007$  against atheists).

For men, there was a similar significant effect of religious group on the overall measure of conservative attitudes,  $F(6, 286) = 3.5$ ,  $p < .002$ , but no effect in any other attitudinal measure. In this case, agnostics reported significantly less conservative sexual attitudes than mainline Christians, with all other groups non-significantly different from each other.

### Mediation Analyses

Baron and Kenny’s (1986) method for testing the mediation role of one variable in explaining the relationship between two other variables involves four basic steps: establishing an association between the initial variable and the outcome; establishing an association between the initial variable and the proposed mediator; establishing an association between the mediator and the outcome variable (while controlling for the initial variable); and, finally, establishing that the association between the initial variable and the outcome variable drops to non-significance when controlling for the mediator.

In the case of the overall conservative sexual attitude measure, we had previously reported the findings from this first step when testing for group differences (i.e., religious groups were associated with conservative attitudes). For the second step, we conducted separate ANCOVAs for each gender, with religious group as the predictor (controlling for age) and spirituality as the criterion. This model was significant for women,  $F(6, 976) = 49.80$ ,  $p < .001$ , and for men,  $F(6, 431) = 32.91$ ,  $p < .001$ . In the third step, we conducted separate linear regressions for each gender group, with spirituality as the predictor (controlling for age and dummy-coded religious group) and conservative

**Table 2** Significant predictors of sexual attitudes and fantasy

	Religious group <sup>a</sup>	Religiosity factor <sup>b</sup>
<i>Women</i>		
Attitudes <sup>c</sup>		
Total conservatism score	Agnostics < Christians <sup>d</sup>	Intrinsic religiosity (+) <sup>e</sup>
Masturbation	Buddhists > all other groups	Fundamentalism (+)
Homosexuality	<i>ns</i>	<i>ns</i>
Multiple sexual partners	<i>ns</i>	<i>ns</i>
Oral sex	<i>ns</i>	<i>ns</i>
Pornography	<i>ns</i>	Spirituality (+), Paranormal belief (–)
Premarital sexuality	<i>ns</i>	<i>ns</i>
Fantasy <sup>f</sup>		
Total fantasy score	Agnostics and Atheists > all other groups	Paranormal belief (+) Fundamentalism (–)
Gender orientation	Agnostics > Christians, Jews, Hindus	Paranormal belief (+) Intrinsic religiosity (–)
Intercourse	Agnostics > Hindus	Paranormal belief (+), Spirituality (+), Intrinsic religiosity (–), Fundamentalism (–)
Masochism	Agnostics > Christians, Jews, Hindus	Paranormal belief (+), Fundamentalism (–)
Sadism	Agnostics > Christians, Jews, Hindus	Paranormal belief (+), Intrinsic religiosity (–)
Promiscuity	Agnostics > Christians, Hindus	Paranormal belief (+), Spirituality (+), Intrinsic religiosity (–), Fundamentalism (–)
<i>Men</i>		
Attitudes		
Total conservatism score	Agnostics < Christians	<i>ns</i>
Masturbation	<i>ns</i>	<i>ns</i>
Homosexuality	<i>ns</i>	<i>ns</i>
Multiple sexual partners	<i>ns</i>	<i>ns</i>
Oral sex	<i>ns</i>	Intrinsic (positive), Spirituality (negative)
Pornography	<i>ns</i>	Intrinsic (positive), Spirituality (negative)
Premarital sexuality	<i>ns</i>	<i>ns</i>
Fantasy		
Total fantasy score	<i>ns</i>	Fundamentalism (–)
Gender orientation	Hindus > Conservative Christians	Paranormal belief (+), Fundamentalism (–)
Intercourse	<i>ns</i>	Fundamentalism (–)
Masochism	<i>ns</i>	Fundamentalism (–)
Sadism	<i>ns</i>	Spirituality (–)
Promiscuity	<i>ns</i>	Intrinsic religiosity (–)

*ns* no significant model

<sup>a</sup> Significant difference between groups determined by ANOVA test

<sup>b</sup> Significant predictors identified by stepwise regression

<sup>c</sup> Higher scores on attitudinal measures indicates more conservative attitudes

<sup>d</sup> “Christians” refers to both mainline and conservative Christian groups

<sup>e</sup> Elements in brackets indicate direction of the effect

<sup>f</sup> Higher scores on fantasy measures indicates greater endorsement of that fantasy type

attitudes as the criterion. Spirituality in women predicted conservative attitudes above and beyond religious group,  $\beta = .08$ ,  $R^2 = .02$ ,  $F(8, 972) = 2.26$ ,  $p < .05$ ; however, this was not true for the men,  $\beta = -.10$ ,  $R^2 = .02$ ,  $F(8, 419) = 1.22$ . Thus, we conducted the final step only for women: we again conducted an

ANCOVA, with spirituality as the predictor (controlling for age and dummy-coded religious group) and conservative sexual attitudes as the criterion. Women’s spirituality remained significantly associated with conservative attitudes,  $F(1, 976) = 4.59$ ,  $p < .05$ , but religious group was no longer significant,  $F(6,$

976) = 4.59,  $p < .05$ , suggesting the hypothesized mediation relationship was as proposed.

We repeated this four-step analysis with masturbation attitudes in women. We had previously established an association of religious groups with masturbation attitudes, as well as an association between religious groups and spirituality (completing the first and second steps). For the third step, we conducted a linear regression with spirituality as the predictor (controlling for age and dummy-coded religious group) and masturbation attitudes as the criterion. Spirituality did not significantly predict masturbation attitudes after controlling for religious groups. Therefore, the proposed mediation relationship was not supported in the case of masturbation attitudes.

### Dimensional Models

To test for the best dimensional predictors of sexual attitudes, we conducted separate stepwise linear regressions for each attitudinal measure with domains of religiosity as the potential predictors. Because we did not have specific hypotheses regarding individual attitudinal measures, we chose stepwise regressions, which select the strongest possible model from the data, rather than simply entering in all variables. This procedure is supported by a growing body of literature that suggests that data-driven analysis not only complements traditional hypothesis-driven methods but may actually surpass a priori analyses in creating strong predictive models (Kell & Oliver, 2004; Stephenson, Ahrold, Pujols, & Meston, 2009).

For women, intrinsic religiosity was the strongest predictor of overall conservative sexual attitudes,  $\beta = .119$ ,  $R^2 = .01$ ,  $F(2, 965) = 7.0$ ,  $p < .001$ , such that higher levels of intrinsic religiosity predicted higher levels of sexual attitude conservatism. Fundamentalism was the strongest predictor of attitudes towards masturbation,  $\beta = -.09$ ,  $R^2 = .01$ ,  $F(2, 844) = 4.9$ ,  $p < .01$ , such that higher levels of fundamentalism predicted higher levels of conservatism towards masturbation. Finally, the model that included both spirituality ( $\beta = .01$ ) and paranormal beliefs ( $\beta = -.10$ ) was the best in predicting attitudes towards pornography,  $R = .12$ ,  $R^2 = .02$ ,  $F(3, 965) = 4.9$ ,  $p < .002$ , such that lower levels of paranormal belief but higher levels of spirituality predicted more conservative attitudes towards pornography.

For men, the model that included both intrinsic religiosity ( $\beta = .24$ ) and spirituality ( $\beta = -.18$ ) was the strongest in predicting attitudes towards oral sex,  $R = .22$ ,  $R^2 = .05$ ,  $F(3, 424) = 6.9$ ,  $p < .001$ . In this case, higher levels of intrinsic religiosity but lower levels of spirituality predicted more conservative attitudes towards oral sex. Similarly, the model that best predicted attitudes towards pornography included both intrinsic religiosity ( $\beta = .31$ ) and spirituality ( $\beta = -.23$ ),  $R = .24$ ,  $R^2 = .06$ ,  $F(3, 424) = 8.5$ ,  $p < .0001$ . As before, higher levels of intrinsic religiosity but lower levels of spirituality predicted more conservative attitudes towards pornography.

## Sexual Fantasy

### Group Differences

We conducted separate analyses of covariance for each gender to test for overall differences between religious groups in the overall measure of frequency of sexual fantasies, using Bonferroni corrections to reduce the chance of Type I errors (results were considered significant at  $p < .007$ ). For those differences that were statistically significant, we used Tukey HSD post hoc analyses to determine how groups differed.

For women, there were significant religious group differences in all categories of sexual fantasies (see Table 3). In general, agnostics and atheists reported significantly more sexual fantasies across all categories. Specifically, agnostics reported significantly more sadism, masochism, and gender orientation fantasies than Christians, Jews, or Hindus; significantly more promiscuity fantasies than Christians or Hindus; and significantly more intercourse fantasies than Hindus ( $p$  values ranging from  $< .0001$  to  $< .006$ ). There were no significant differences in sexual fantasies between the religious groups (i.e., between mainline and conservative Christians, Jews, Buddhists, or Hindus). For men, there was only one statistically significant difference between religious groups in sexual fantasies, namely in frequency of gender orientation fantasies,  $F(6, 429) = 3.05$ ,  $p < .006$ . In contrast to the above results, post hoc analyses revealed that Hindu participants reported significantly *more* gender orientation fantasies than conservative Christians.

### Mediation Analyses

We previously established the first criterion of a mediation relationship when testing for group differences: religious groups were associated with sexual fantasies. We also previously established that the initial variable (religious groups) was associated with the proposed mediator (spirituality). For the third step in the mediation analyses, we conducted separate linear regressions by gender for each sexual fantasy category that had shown a significant group difference (all categories for women, gender orientation fantasies for men), with spirituality as the predictor (controlling for age and dummy-coded religious group) and sexual fantasy as the criterion. None of the fantasy categories were significant in this step when controlling for religious groups. Therefore, unlike the case for sexual attitudes, it seems spirituality was *not* mediating the relationship between religious group and frequency of sexual fantasies.

### Dimensional Models

To test which religiosity domains were the best predictors of sexual fantasy, we conducted separate stepwise linear regressions for each fantasy measure with domains of religiosity as the potential predictors (Tables 4, 5). For women, paranormal

**Table 3** Sexual fantasies by religious group

	Agnostic		Atheist		Jewish		Mainline Christian		Conservative Christian		Hindu		Buddhist		F	$\eta_p^2$
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD		
<b>Women</b>																
Total fantasy score	1.4	.6	1.5	.5	1.1	.5	1.1	.6	1.0	.7	.9	.7	.9	.7	6.5**	.04
Intercourse	1.6	.7	1.8	.6	1.2	.6	1.4	.8	1.3	.9	1.1	.9	1.1	.9	3.6*	.02
Promiscuity	1.2	.9	1.5	.6	.9	.6	.8	.7	.7	.7	.7	.8	.8	.8	5.6**	.03
Masochism	1.2	.9	1.4	.8	.6	.8	.8	.8	.7	.8	.5	.7	.8	1.0	5.5**	.03
Sadism	.6	.7	.8	.4	.3	.4	.4	.5	.3	.5	.2	.5	.5	.8	6.0**	.04
Gender orientation	.7	.7	.7	.4	.3	.4	.4	.6	.4	.5	.2	.4	.5	.6	8.2**	.05
<b>Men</b>																
Total fantasy score	1.5	.7	1.5	.6	1.4	.6	1.4	.6	1.2	.6	1.5	.7	1.2	.6	1.2	.02
Intercourse	2.1	.9	2.0	.7	2.0	.6	2.0	.7	1.7	.8	1.8	.9	1.6	.7	1.1	.02
Promiscuity	1.5	.8	1.5	.9	1.5	.8	1.4	.8	1.2	.9	1.2	.8	.9	.9	1.2	.02
Masochism	1.2	1.0	.8	.9	.9	.9	.9	.9	.6	.8	1.3	1.3	.7	.7	1.9	.03
Sadism	.9	.8	.9	.9	.7	.8	.6	.8	.4	.8	.9	.9	.3	.6	2.2	.03
Gender orientation	.5	.6	.2	.2	.5	1.0	.4	.6	.1	.3	.8	1.1	.0	.1	3.1*	.04

Note: Response options ranged from 0 (never) to 4 (quite often)

\*  $p < .001$ , \*\*  $p < .0001$

**Table 4** Religiosity as a predictor of women's sexual fantasies

	Paranormal belief			Spirituality			Intrinsic religiosity			Religious fundamentalism			R	R <sup>2</sup>
	$\beta$	B	SE	$\beta$	B	SE	$\beta$	B	SE	$\beta$	B	SE		
Total fantasy score	.20**	.17	.03	– <sup>a</sup>	–	–	–	–	–	–.18**	–.13	.02	.31	.09
Intercourse	.09*	.09	.04	.14*	.13	.04	–.21**	–.16	.04	–.09*	–.08	.04	.28	.08
Promiscuity	.17**	.17	.04	.11*	.10	.04	–.19**	–.14	.04	–.09*	–.08	.04	.31	.10
Masochism	.15**	.17	.04	–	–	–	–	–	–	–.15**	–.15	.04	.25	.06
Sadism	.19**	.15	.03	–	–	–	–.12**	–.06	.02	–	–	–	.24	.06
Gender orientation	.20**	.16	.03	–	–	–	–.13**	–.07	.02	–	–	–	.26	.07

<sup>a</sup> Cells without entries represent non-significant predictors and are thus not reported

\*  $p < .001$ , \*\*  $p < .0001$

religiosity was a consistent and positive predictor of sexual fantasies, both in general and in every domain of fantasy assessed. Level of spirituality was also a positive predictor of sexual fantasy in women, although only for two types of fantasies, namely intercourse and promiscuity fantasies. Intrinsic religiosity and fundamentalism were both negative predictors such that higher levels of either resulted in lower levels of several domains of sexual fantasy. In each case, at least two different domains of religiosity arose as significant predictors of sexual fantasy, accounting for 6–10% of the total variance in frequency of sexual fantasies.

As in women, men's endorsement of fundamentalism was a negative predictor across several domains of sexual fantasy. However, the other domains of religiosity arose as significant predictors to a lesser degree than for women: paranormal belief, spirituality, and intrinsic religiosity were significantly associated with only one domain of sexual fantasy each. These models also

accounted for less variance in frequency of sexual fantasies (2–5%) than for the women.

## Discussion

To survive as social entities in the modern Western world, religions must constantly adapt to an ever increasing focus on individualism. As such, understanding the role of religion on intra-personal sexual constructs, researchers must focus on not only differences between religious groups but the individual differences within them. This study found several important effects of religion on sexual attitudes and fantasy. As predicted, individual differences in spirituality mediated the relationship between religious group and conservative sexual attitudes; however, this was not also true for sexual fantasy, as differences between the religious and non-religious remained after controlling for

**Table 5** Religiosity domains as a predictor of men's sexual fantasies

	Paranormal belief			Spirituality			Intrinsic religiosity			Religious fundamentalism			R	R <sup>2</sup>
	$\beta$	B	SE	$\beta$	B	SE	$\beta$	B	SE	$\beta$	B	SE		
Total fantasy score	— <sup>a</sup>	—	—	—	—	—	—	—	—	-.15*	-.10	.03	.16	.03
Intercourse	—	—	—	—	—	—	—	—	—	-.16*	-.14	.04	.21	.05
Promiscuity	—	—	—	—	—	—	-.14*	-.11	.04	—	—	—	.16	.03
Masochism	—	—	—	—	—	—	—	—	—	-.14*	-.14	.05	.14	.02
Sadism	—	—	—	-.22**	-.18	.04	—	—	—	—	—	—	.22	.05
Gender orientation	.13*	.11	.04	—	—	—	—	—	—	-.18**	-.13	.03	.23	.05

<sup>a</sup> Cells without entries represent non-significant predictors and are thus not reported

\*  $p < .001$ , \*\*  $p < .0001$

spirituality. Namely, female atheists and agnostics reported significantly more sexual fantasies than women of all other religious groups in the study. Religious group differences were not as strong in men, for whom there was only one significant difference between religious groups in levels of sexual fantasy. For both men and women, each of the four measures of religiosity (spirituality, intrinsic religiosity, fundamentalism, and paranormal beliefs) had significant but distinct relationships with sexual attitudes and fantasies. These findings are discussed separately below.

#### Effects of Religious Group on Sexual Attitudes and Fantasy

For men and women, agnostics reported significantly less conservative sexual attitudes than all other religious groups. That atheists did not also report more liberal sexual attitudes is of note. It is possible that there were an insufficient number of atheists to power a significant difference; however, this is unlikely as there were significant effects of other groups (e.g., Buddhists) in which representation was even smaller. Another explanation is that although they are often considered together both in society and in research, in the case of sexual attitudes, atheists and agnostics are conceptually different groups. A growing body of research indicates that while agnostics tend to lack religious belief due to less exposure to religion (Heelas, 2002), atheists tend to be apostates who have been exposed to—and explicitly rejected—religion (Froese, 2004). Thus, although atheists consciously object to religious tenets, they may be more likely than agnostics to have been implicitly influenced by these tenets in forming their sexual attitudes. This is not to say that agnostics are not influenced by spirituality: on the contrary, it appears that spirituality explained the difference between the agnostics and other religious groupings.

In the case of sexual fantasy, however, it appears that female atheists and agnostics fall together with greater frequency and type of fantasies than all other groups. It may be that within religion, sexual fantasy, that is, thoughts about, and desires for, sexual activities (Leitenberg & Henning, 1995), is better described as a faith *behavior*, subject to regulation through religious

teachings, than as a purely personal internal event. Christians, and to a lesser extent Jews and Muslims, are instructed that thoughts and actions are irrevocably intertwined such that thoughts are themselves to be restricted and shaped through faith and prayer (Gil, 1990). In this way, sexual fantasy may be more likely to play a role in what is explicitly rejected by atheists. On the other hand, attitudes tend to be formed through interaction with the social and cultural elements of religion: religion tells us how to *act* through direct teachings but how to *feel* through socialization (Hunsberger & Brown, 1984). Thus, it is not surprising that there were differential effects of religious group on sexual fantasies versus sexual attitudes.

Buddhist women were significantly more conservative than all other groups in masturbation attitudes, which in our sample may be more a function of Asian ethnicity than Buddhist religion per se. Many studies have documented the low rates of reported sexual desire (e.g., Brotto, Chik, Ryder, Gorzalka, & Seal, 2005) and more conservative attitudes towards masturbation (Ahrold & Meston, 2010; Meston, Trapnell, & Gorzalka, 1996) in Asian women. This may explain why the effect did not drop out as expected when controlling for spirituality.

#### Differential Effects of Domains of Religiosity

All four measures of religiosity were separately and uniquely related to sexual attitudes and fantasy. In the case of sexual attitudes, fundamentalism and paranormal beliefs were associated with only one set of conservative attitudes each while intrinsic religiosity and spirituality each predicted three different sets of attitudes. Interestingly, higher levels of intrinsic religiosity consistently predicted more conservative sexual attitudes in both men and women, while high levels of spirituality predicted less conservative sexual attitudes in men but more conservative sexual attitudes in women. In the case of sexual fantasy, fundamentalism was a significant predictor with greater strength and frequency for both men and women: higher levels of fundamentalism consistently predicted lower levels of sexual fantasy. The other three measures of religiosity were not consistently associated with sexual fantasy in men while, for women,

high levels of paranormal belief and spirituality and lower levels of intrinsic religiosity consistently predicted greater levels of sexual fantasy. In some cases, spirituality predicted more sexually liberal attitudes and fantasy while, in others, more conservative. That “religiosity” did not consistently predict a more or less liberal sexuality highlights the need for multiple measures of religiosity above and beyond affiliation or service attendance.

Of particular interest was the seemingly split role of spirituality: in some cases, spirituality was associated with more conservative sexual fantasies and attitudes while in others, the opposite was true. However, one must consider the other variables in the predictive model: while spirituality alone predicted more conservative sexual fantasies, in every case in which spirituality was entered into a model that also included intrinsic religiosity, it acted as a predictor of more liberal sexual attitudes and fantasy. Thus, it is possible that, in the context of organized faith, spirituality acted as a liberalizing force while outside of this context it acted as a restrictive force. In any case, it appears that intrinsic religiosity may change the effects of spirituality on sexual attitudes and fantasy.

Intrinsic religiosity was perhaps the best representation of the structure and ritual of organized religion. Thus, it is not surprising that it was associated with conservative sexual attitudes and fantasy. However, it is interesting that this effect was found in a sample comprised of religious groups with widely disparate religious practices, and even level of importance of ritual within the religion. That is, Buddhists, who had little formalized religious service attendance, showed the same effects of intrinsic religiosity as did Christians, who follow many rituals, including weekly church services. This implies that it may be the meaning of rituals which is the important factor in determining the relationship of religiosity to sexuality, not the number of rituals. This, in turn, suggests that measures of religiosity, such as church attendance, may be missing an important factor, namely, the internalized meaning of intrinsic religiosity.

Considering paranormal beliefs have been associated with liberal sexual behavior (Bryan & Freed, 1993; Farmer et al., 2009), it is not surprising that paranormal beliefs were associated with more liberal sexual attitudes. It is perhaps the case that individuals with high levels of paranormal belief are more likely to view expression of sexuality, rather than restriction, to be an important part of their religious faith (Puttick, 1997). As such, they may be more likely to be open to and, indeed, seek out a variety of sexual experiences, as a way to expand their understanding of and communion with the divine (Heelas, 1996).

#### Gender Differences in the Effects of Religiosity on Sexual Attitudes and Fantasy

In men, compared to women, there was a less significant effect of both religious group and individual differences in measures of religiosity: except in the case of a few specific sexual attitudes, religiosity accounted for less variance in men than in women.

Within the sample of women, although there were significant differences between religious and non-religious women in sexual fantasies, the lack of differentiation between religious groups implies that while faith itself is an influential psychological construct, the structural elements that separate different faith organizations were not. On the other hand, in women, the relationship between sexual fantasy and religious group was not mediated through spirituality, suggesting that the organized and formal aspects of religion do play an influential role in women’s sexuality. A partial explanation for this may be found in the fact that men are increasingly less involved in organized religion, while women tend to be more spiritually and socially involved in religious communities (Miller & Hoffmann, 1995). Thus, even as religion loses uniqueness in informing and defining the self, organized religion has not lost its psychological power in those who continue to participate. In women, it remains a salient organizing construct for aspects of sexuality such as attitudes and fantasy.

In addition, fundamentalism and intrinsic religiosity may affect women more than men due to an increased expectation for women to act as the teachers and keeper of faith: Christian doctrine especially teaches that it is the woman’s responsibility to manage and restrict sexuality both in their own lives and in their social groups (Brasher, 1998). For example, religious doctrine regarding maintaining one’s virginity until marriage (and the subsequent conservative attitudes towards premarital sex) is more often directed towards women (Jones, Darroch, & Singh, 2005). In contrast, even within fundamentalist doctrines, men’s premarital sexual behavior is viewed more leniently, giving rise to more liberal attitudes towards premarital sex (Strasser, 2003). In this case, women are expected to act as the arbiters of religious doctrine, and thus fundamentalism may play a larger role in their sexuality.

#### Implications

Insofar as people who regularly engage in sexual fantasy are more likely to be sexually functional (Leitenberg & Henning, 1995), these findings have a number of clinical implications. Religious group membership predicted sexual fantasy, even when controlling for spirituality. Thus, clinicians working to increase sexual functioning in a religious individual may consider focusing on the systemic aspects of their client’s religion (e.g., the sociopolitical role of that religious group) rather than attempting to appeal to the client’s individual relationship to the divine (i.e., attempting to manipulate spirituality as a method of changing the impact of religion on that individual).

Our results suggest that changing conservative sexual attitudes, often a goal of sex or health education programs, should consider spirituality as a driving force. Indeed, recent work on sex education in young adults suggests that those curricula that use exercises to encourage students to contextualize their attitudes towards sexuality within their spiritual beliefs are more

successful at changing sexual attitudes than those that do not (Hughes, 2008).

### Limitations

There are a few limitations to the present study which warrant consideration. First and foremost, we used a young-adult convenience sample from an undergraduate population, which may have limited generalizability. Secondly, as with all self-report sexuality surveys, there may have been sampling biases in that participants who were uncomfortable with the sexual nature of the study may have chosen not to participate. Finally there were small subsample sizes in some of the denomination categories (e.g., Buddhist), which may have limited the power to detect an effect within those groups.

Despite these weaknesses, the current study was the first to empirically evaluate the mediation of religious group differences by spirituality in sexual attitudes but not fantasy. Furthermore, there is support that the four different constructs of religiosity tested in the present study each provide important and unique information about the effect of religiosity on sexuality.

### References

- Ahrold, T. K., & Meston, C. M. (2010). Ethnic differences in sexual attitudes of U.S. college students: Gender, acculturation, and religiosity factors. *Archives of Sexual Behavior, 39*, 190–202.
- Allport, G. W., & Ross, M. J. (1967). Personal religious orientation and prejudice. *Journal of Personality and Social Psychology, 5*, 432–443.
- Altemeyer, B., & Hunsberger, B. (1992). Authoritarianism, religious fundamentalism, quest, and prejudice. *International Journal for the Psychology of Religion, 2*, 113–133.
- Altemeyer, B., & Hunsberger, B. (2004). A revised Religious Fundamentalism Scale: The short and sweet of it. *International Journal for the Psychology of Religion, 14*, 47–54.
- Bainbridge, W. S. (2004). After the new age. *Journal for the Scientific Study of Religion, 43*, 381–394.
- Bainbridge, W. S. (2005). Atheism. *Interdisciplinary Journal of Research on Religion, 1*, 1–23.
- Bang, E., Hall, M. E. L., Anderson, T. L., & Willingham, M. M. (2005). Ethnicity, acculturation, and religiosity as predictors of female college students role expectations. *Sex Roles, 53*, 231–237.
- Barkan, S. E. (2006). Religiosity and premarital sex in adulthood. *Journal for the Scientific Study of Religion, 45*, 407–417.
- Baron, R., & Kenny, D. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*, 1173–1182.
- Bassett, R. L., Smith, H. L., Newell, R. L., & Richards, A. H. (1999). Thou shalt not like sex: Taking another look at religiousness and sexual attitudes. *Journal of Psychology and Christianity, 18*, 205–216.
- Beckwith, H. D., & Morrow, J. A. (2005). Sexual attitudes of college students: The impact of religiosity and spirituality. *College Student Journal, 39*, 357–367.
- Brasher, B. E. (1998). *Godly women: Fundamentalism and female power*. Piscataway, NJ: Rutgers University Press.
- Brotto, L. A., Chik, H. M., Ryder, A. G., Gorzalka, B. B., & Seal, B. N. (2005). Acculturation and sexual function in Asian women. *Archives of Sexual Behavior, 34*, 613–626.
- Bryan, J., & Freed, F. (1993). Abortion research: Attitudes, sexual behavior, and problems in a community college population. *Journal of Youth and Adolescence, 22*, 1–22.
- Davidson, J. K., Moore, N. B., & Ullstrup, K. M. (2004). Religiosity and sexual responsibility: Relationships of choice. *American Journal of Health Behavior, 28*, 335–346.
- Davis, N. J., & Robinson, R. V. (1999). Their brothers' keepers? Orthodox religionists, modernists, and economic justice in Europe. *American Journal of Sociology, 104*, 1631–1665.
- Derogatis, L. R. (1979). The DSFI: A multidimensional measure of sexual functioning. *Journal of Sex and Marital Therapy, 5*, 244–281.
- Farmer, M., & Meston, C. (2006). Predictors of condom use self-efficacy in an ethnically diverse university sample. *Archives of Sexual Behavior, 35*, 313–326.
- Farmer, M., & Meston, C. (2007). Predictors of genital pain in young women. *Archives of Sexual Behavior, 36*, 831–843.
- Farmer, M., Trapnell, P., & Meston, C. (2009). The relation between sexual behavior and religiosity subtypes: A test of the secularization hypothesis. *Archives of Sexual Behavior, 38*, 852–865.
- Fisher, W., White, L., Byrne, D., & Kelley, K. (1988). Erotophobia-erotophilia as a dimension of personality. *Journal of Sex Research, 25*, 123–151.
- Froese, P. (2004). After atheism: An analysis of religious monopolies in the post-communist world. *Sociology of Religion, 65*, 57–75.
- Gil, V. E. (1990). Sexual fantasy experiences and guilt among conservative Christians: An exploratory study. *Journal of Sex Research, 27*, 629–638.
- Gorsuch, R. L., & Venable, G. D. (1983). Development of an "age universal" I-E scale. *Journal for the Scientific Study of Religion, 22*, 181–187.
- Hayes, B. C. (2000). Religious independents within Western industrialized nations: A socio-demographic profile. *Sociology of Religion, 61*, 191–207.
- Heelas, P. (1996). *The New Age movement: The celebration of the self and the sacralization of modernity*. Boston: Blackwell Publishers.
- Heelas, P. (2002). The spiritual revolution: From 'religion' to 'spirituality'. In L. Woodhead, P. Fletcher, H. Kawanami, & D. Smith (Eds.), *Religions in the modern world* (pp. 357–376). London: Routledge Press.
- Hirschman, C. (2004). The role of religion in the origins and adaptation of immigrant groups in the United States. *International Migration Review, 38*, 1206–1233.
- Hood, R. W., Spilka, B., Hunsberger, B., & Gorsuch, R. (1996). *The psychology of religion: An empirical approach*. New York: Guilford Press.
- Horn, M. J., Piedmont, R. L., Fialkowski, G. M., Wicks, R. J., & Hunt, M. E. (2005). Sexuality and spirituality: The Embodied Spirituality Scale. *Theology & Sexuality, 12*, 81–102.
- Hughes, J. L. (2008). Encouraging students to apply human sexuality material to themselves by using integration papers. *American Journal of Sexuality Education, 3*, 247–253.
- Hunsberger, B. (1996). Religious fundamentalism, right-wing authoritarianism, and hostility toward homosexuals in non-Christian religious groups. *International Journal for the Psychology of Religion, 6*, 39–49.
- Hunsberger, B., & Brown, L. B. (1984). Religious socialization, apostasy, and the impact of family background. *Journal for the Scientific Study of Religion, 23*, 239–251.
- Irwin, H. J. (1993). Belief in the paranormal: A review of the empirical literature. *Journal of the American Society for Psychological Research, 87*, 1–39.
- Jones, R. K., Darroch, J. E., & Singh, S. (2005). Religious differentials in the sexual and reproductive behaviors of young women in the United States. *Journal of Adolescent Health, 36*, 279–288.
- Kell, D. B., & Oliver, S. G. (2004). Here is the evidence, now what is the hypothesis? The complementary roles of inductive and hypothesis-

- driven science in the post-genomic era. *BioEssays: News and Reviews in Molecular, Cellular and Developmental Biology*, 26, 99–105.
- Kinsey, A. C., Pomeroy, W. B., & Martin, C. E. (1948). *Sexual behavior in the human male*. Philadelphia: W.B. Saunders Co.
- Kinsey, A. C., Pomeroy, W. B., Martin, C. E., & Gebhard, P. H. (1953). *Sexual behavior in the human female*. Philadelphia: W.B. Saunders Co.
- Kirkpatrick, L. A., & Hood, R. W. (1990). Intrinsic-Extrinsic religious orientation: The boon or bane of contemporary psychology of religion? *Journal for the Scientific Study of Religion*, 29, 442–462.
- Lefkowitz, E. S., Gillen, M. M., Shearer, C. L., & Boone, T. L. (2004). Religiosity, sexual behaviors, and sexual attitudes during emerging adulthood. *Journal of Sex Research*, 41, 150–159.
- Leitenberg, H., & Henning, K. (1995). Sexual fantasy. *Psychological Bulletin*, 117, 469–469.
- Meston, C. M., & Ahrold, T. K. (2010). Ethnic, gender, and acculturation influences on sexuality. *Archives of Sexual Behavior*, 39, 179–189.
- Meston, C. M., Trapnell, P. D., & Gorzalka, B. B. (1996). Ethnic and gender differences in sexuality: Variations in sexual behavior between Asian and non-Asian university students. *Archives of Sexual Behavior*, 25, 33–72.
- Miller, A. S., & Hoffmann, J. P. (1995). Risk and religion: An explanation of gender differences in religiosity. *Journal for the Scientific Study of Religion*, 34, 63–75.
- Murray, K. M., Ciarrocchi, J. W., & Murray-Swank, N. A. (2007). Spirituality, religiosity, shame and guilt as predictors of sexual attitudes and experiences. *Journal of Psychology and Theology*, 35, 222–234.
- Nicholas, L. J. (2004). The association between religiosity, sexual fantasy, participation in sexual acts, sexual enjoyment, exposure, and reaction to sexual materials among black South Africans. *Journal of Sex and Marital Therapy*, 30, 37–42.
- Pluhar, E., Frongillo, E. A., Stycos, J. M., & Dempser-McClain, D. (1998). Understanding the relationship between religion and the sexual attitudes and behaviors of college students. *Journal of Sex Education and Therapy*, 23, 288–296.
- Puttick, E. (1997). *Women in new religions: In search of community, sexuality and spiritual power*. New York: St. Martin's Press.
- Roof, W. C., & McKinney, W. (1987). *American mainline religion: Its changing shape and future*. Piscataway, NJ: Rutgers University Press.
- Rowatt, W. C., & Schmitt, D. P. (2003). Associations between religious orientation and varieties of sexual experience. *Journal for the Scientific Study of Religion*, 42, 455–465.
- Stark, R., & Bainbridge, W. S. (1985). *The future of religion: Secularization, revival and cult formation*. Berkeley, CA: University of California Press.
- Stephenson, K. S., Ahrold, T. K., Pujols, Y., & Meston, C. M. (2009, February). *The associations between motivations for sex and sexual satisfaction differ by gender*. Podium presentation at the Annual Meeting of the International Society for the Study of Women's Sexual Health (ISSWSH), Florence, Italy.
- Strasser, U. (2003). *State of virginity: Gender, religion, and politics in an early modern Catholic state*. Ann Arbor: University of Michigan Press.
- Thornton, A., & Camburn, D. (1989). Religious participation and adolescent sexual behavior and attitudes. *Journal of Marriage and the Family*, 51, 641–653.
- Trapnell, P. (2005). *A brief, balanced measure of New Age paranormal beliefs*. Unpublished data, University of Winnipeg. <http://www.paultrapnell.com/measures/Transpersonal&ParanormalBeliefScale-and-SpiritualityScale.rtf>
- Weiss, A., Egan, V., & Figueredo, A. J. (2004). Sensational interests as a form of intrasexual competition. *Personality and Individual Differences*, 36, 563–573.
- Woodberry, R. D., & Smith, C. S. (1998). Fundamentalism et al.: Conservative Protestants in America. *Annual Review of Sociology*, 24, 25–56.
- Wulf, J., Prentice, D., Hansum, D., Ferrar, A., & Spilka, B. (1984). Religiosity and sexual attitudes and behavior among evangelical Christian singles. *Review of Religious Research*, 26, 119–131.
- Zinnbauer, B. J., Pargament, K. I., & Scott, A. B. (1999). The emerging meanings of religiousness and spirituality: Problems and prospects. *Journal of Personality*, 67, 889–919.