

# The Relation Between Sexual Behavior and Religiosity Subtypes: A Test of the Secularization Hypothesis

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Received: 11 October 2006 / Revised: 1 May 2008 / Accepted: 9 May 2008 / Published online: 7 October 2008  
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**Abstract** Previous literature on religion and sexual behavior has focused on narrow definitions of religiosity, including religious affiliation, religious participation, or forms of religiousness (e.g., intrinsic religiosity). Trends toward more permissive premarital sexual activity in the North American Christian-Judeo religion support the secularization hypothesis of religion, which posits an increasing gap between religious doctrine and behavior. However, the recent rise of fundamentalist and new age religious movements calls for a reexamination of the current link between religion and sexual behavior. The use of dual definitions of religiosity, including religious affiliation and dimensional subtypes, may further characterize this link. The present cross-sectional study evaluated patterns of sexual behavior in a young adult sample ( $N = 1302$ ,  $M$  age = 18.77 years) in the context of the secularization hypothesis using religious affiliation and a liberal-conservative continuum of religious subtypes: paranormal belief, spirituality, intrinsic religiosity, and fundamentalism. Results indicated few affiliation differences in sexual behavior in men or women. Sexual behaviors were statistically predicted by spirituality, fundamentalism, and paranormal belief, and the endorsement of fundamentalism in particular was correlated with lower

levels of female sexual behavior. The secularization hypothesis was supported by consistent levels of sexual activity across affiliations and is contradicted by the differential impact of religiosity subtypes on sexual behavior. Findings suggested that the use of religious subtypes to evaluate religious differences, rather than solely affiliation, may yield useful insights into the link between religion and sexual behavior.

**Keywords** Sexual behavior · Religiosity · Spirituality · Fundamentalism · Paranormal belief · Secularization

## Introduction

Sexual practices have been regulated by the prescriptive power of religion throughout modern history (DeLamater, 1981). However, the contemporary relation between religion and sexuality is less clear. Two competing theories have been posed to explain the relation between religion and sexuality. The first theory is the secularization hypothesis, which is a prominent theory of religious change that was developed throughout the 19th and 20th centuries by philosophers and later by sociologists of religion. The secularization hypothesis suggests that the modern reliance on reason has resulted in a lack of faith in religion and has dampened the impact of religion on daily life at an individual, social, and institutional level (Berger, 1967; Sommerville, 1998). Ultimately, the secularization hypothesis would predict the demise of religious involvement in modern secular life. The second theory, which challenges the secularization hypothesis, was proposed by Stark and Bainbridge (1985) as the market theory of religion. The market theory of religion assumes that the demand for religion has not diminished with secularization, but rather it has adapted to a highly secular society by generating

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new religious movements (cults) and leading revivals of traditional religions (sects). The result is a market of competing religious groups that drives a cultural renewal of religion and maintains the influence of religion on daily life. These competing market religious groups are thought to reflect a continuum of religious demand, including religiosity that is ultra-liberal, liberal, moderate, conservative, strict, and ultra-strict (Finke & Stark, 2001). The current study was designed to evaluate whether the secularization hypothesis or the market theory best characterizes the current relation between religion and adult premarital sexual behavior across a variety of religious affiliations. For the sake of simplicity, we will limit our discussion to Judeo-Christian religious trends and recent literature on religion in adult populations.

Much of our knowledge about the influence of religion on adult premarital sexual behavior is based on studies that define religiosity in terms of religious affiliation. However, the measurement of religious affiliation is problematic due to the ideological variation within religious affiliations and the increasing number of affiliations that span the liberal-conservative continuum (Robbins & Dick, 1990). Indeed, Kinsey, Pomeroy, Martin, and Gebhard (1953) first reported that variation in devoutness within religious groups was more important than affiliation in determining patterns of sexual behavior, such as masturbation to orgasm, premarital petting, and premarital coitus. With some exceptions (Studer & Thornton, 1987; Thornton & Camburn, 1989), past research has indicated that religious affiliations may be linked with unique patterns of sexual behavior. In adult populations, Catholics have reported fewer sexual partners than Protestants (Lefkowitz, Gillen, Shearer, & Boone, 2004) yet surprisingly have comparable levels of sexual activity compared to conservative Protestants and fundamentalist Protestants (Bearman & Bruckner, 1999; Beck, Cole, & Hammond, 1991). No difference in sexual experience between Jewish and Christian participants has been consistently supported (Lottes & Kuriloff, 1994; Pluhar, Frongillo, Stycos, & Dempser-McClain, 1998). Nonreligious individuals (who endorse “no religion”) report more sexual experience (Pluhar et al., 1998) and greater frequency of masturbation than conservative Protestants, Catholics, and Jewish individuals (Laumann, Gagnon, Michael, & Michaels, 1994; Leiblum, Wiegel, & Brickle, 2003). Other than the finding that nonreligious individuals are generally more sexually active than other affiliations, the use of religious affiliation has provided inconsistent information about religious differences in sexual behavior. Few solid conclusions can be drawn from the sole use of religious affiliation, indicating that supplementary measures of religiosity are needed.

Like religious affiliation, religious participation has been widely used to evaluate the relation between religion and sexual behavior. Frequent attendance of religious services is related to greater sexual abstinence, less sexual activity, less

frequent sexual intercourse, fewer lifetime sexual partners, and delayed age of first intercourse (Barkan, 2006; Cochran & Beeghley, 1991; Cochran, Chamlin, Beeghley, & Fenwick, 2004; Davidson, Darling, & Norton, 1995; Davidson, Moore, & Ullstrup, 2004; Jensen, Newell, & Holman, 1990; Lefkowitz et al., 2004; Miller & Olson, 1988; Studer & Thornton, 1987; Visser, Smith, Richters, & Rissel, 2007). However, it is unclear whether attendance is an accurate indicator of religiosity across faith groups, as members of religious affiliations differ dramatically in the expectations of religious participation. Furthermore, religious attendance does not reflect specific religious attitudes and motivations that are associated with religiosity, nor does it account for the external influences that determine attendance (e.g., social influence of peers and family). These limitations challenge the assumption that religious attendance reliably reflects religiosity across affiliations.

In an effort to measure religiosity that transcends religious affiliation, religiosity has also been described through dimensional subtypes, including intrinsic religiosity, spirituality, fundamentalism, and paranormal belief. Allport's (1950) intrinsic religiosity, which describes the extent of infusion of religious meaning into daily life, has been conceptually paired with religious commitment and importance (Donahue, 1985). Intrinsic religiosity in men and women is associated with less willingness to engage in casual sex, fewer desired sexual partners, and decreased likelihood of having engaged in a sexual relationship (Rowatt & Schmitt, 2003), and it is negatively correlated with frequency of sexual intercourse in the previous year (Zaleski & Schiaffino, 2000). These findings indicate that intrinsic religiosity is inversely related to a variety of premarital sexual behavior in adults.

Spirituality is a subtype of religiosity that centers on an internalized subjective experience of belief in a divine or superordinate being that is distinct from beliefs held by specific religions (Hyman & Handal, 2006; Marler & Hadaway, 2002). “Embodied spirituality,” or a spiritual perception of sexual experiences, was found to positively correlate with a general measure of level of comfort with the body, intimacy, and sexual expression (Horn, Piedmont, Fialkowski, Wicks, & Hunt, 2005). Belief in spiritual sexual experiences in heterosexual college students was associated with increased sexual intercourse and a higher frequency and variety of sexual activities (Murray-Swank, Pargament, & Mahoney, 2005). These data suggest that spirituality is an understudied subtype of religiosity that may explain patterns of sexual behavior.

Fundamentalism, or the rigid belief in absolute religious authority and strict adherence to religious texts, has not been studied in relation to sexual behavior. Fundamentalism is a nondenominational trait (Altemeyer & Hunsberger, 1992; Hunsberger, 1996) and is associated with more conservative attitudes about homosexuality and gender roles (e.g., Bang,

Hall, Anderson, & Willingham, 2005; Hunsberger, Owusu, & Duck, 1999). The emphasis on traditional rituals and religiously guided behavior suggests that individuals who endorse fundamentalism would likely use their beliefs to dictate sexual behaviors as well.

A lesser-studied subtype of religiosity is paranormal belief, which includes religious paranormal beliefs (e.g., life after death, belief in angels or devils) and nonreligious paranormal beliefs (e.g., superstitions or “new age” beliefs; see Bainbridge, 2004; Irwin, 1993). Adherents of traditional religions endorse more religious paranormal beliefs compared to nonreligious paranormal beliefs, and females endorse all types of paranormal beliefs more than males (Emmons & Sobal, 1981). A study using structural equation modeling found that the motivation to seek short-term sexual experiences was associated with a latent factor that included paranormal interests (Weiss, Egan, & Figueredo, 2004). No additional research has evaluated the link between a proclivity toward paranormal beliefs and sexual behavior.

In order to address the significance of religion in adult sexual behavior, the current study was designed to evaluate whether the secularization hypothesis or the market theory of religion best characterize the relation between religiosity and sexual behavior. The literature on religion and sexuality has typically interpreted sexual behavior as restricted versus unrestricted (i.e., nonpermissive versus permissive, or conservative versus liberal), and thus we selected to examine religiosity as it maps onto a conservative-liberal continuum. To accomplish this objective, we adopted two methods of analyzing religiosity. First, we evaluated sexual behavior differences in religious affiliation so that our sample could be compared to previous studies that relied on this method of analysis. Second, we examined sexual behavior differences in four subtypes of religiosity—*intrinsic religiosity, fundamentalism, spirituality, and paranormal belief*—across the entire sample to determine whether the patterns of sexual behavior in our sample supported the secularization hypothesis or the market theory of religion.

To categorize religious affiliations along a conservative-liberal continuum, we used Smith’s (1990) classification, which designates affiliations (e.g., “Assembly of God”) as predominantly “liberal” (L), “moderate” (M), or “fundamentalist” (F) based on surveys of denominational members, surveys of denominational clergy, theological beliefs of denominations, and prior related classifications, such as the General Social Survey. To further verify our classifications, we also consulted a number of publications where similar classifications, or denomination characteristics relevant to such classifications, have been reported (e.g., Beck et al., 1991; Laumann et al., 1994; Pluhar et al., 1998; Robbins & Dick, 1990; Studer & Thornton, 1987; Thornton & Camburn, 1989).

The market theory of religion would predict a correspondence between religious beliefs and sexual behavior such that individuals who adhere to conservative religions would report more restricted sexual behavior and individuals who identify with liberal religions would report more unrestricted sexual behavior. Accordingly, the following hypotheses were tested:

1. As the most conservative subtype of religiosity, fundamentalism will be negatively associated with frequency and variety of premarital sexual behavior.
2. As a moderately conservative subtype of religiosity, intrinsic religiosity will also be negatively associated with frequency and variety of premarital sexual behavior.
3. As a moderately liberal subtype of religiosity, spirituality will be positively associated with frequency and variety of premarital sexual behavior.
4. As an ultra-liberal form of spiritual belief, paranormal belief will be positively associated with frequency and variety of premarital sexual behavior.

Whereas the secularization hypothesis would predict a desynchrony between religious beliefs and sexual practices across all religious groups, the market theory would support low correlations between religiosity and sexual behavior. This is the first study we are aware of to represent in a study of religion and sexuality the full range of the Fiske and Stark (2001) liberal-fundamentalist faith continuum.

## Method

### Participants

A total of 1,303 undergraduates (975 females, 470 males) from a large public university participated in this questionnaire study for course credit. Participants were enrolled at the university during either Fall (August–December) or Spring (January–May) semesters between 2000 and 2004. The sample age ranged from 18 to 25 (*M* age, 18.77 years). Married participants were excluded from the sample because the hypotheses were aimed at assessing patterns in premarital sexuality. Demographic characteristics of the current sample are shown in Table 1.

Participants were allowed to write in a response to the question, “What is your religion?” Two levels of analysis were conducted: (1) the evaluation of general religious affiliation differences so that the current sample could be compared to past research, and (2) the examination of religious subtype differences according to our central hypotheses. For general religious affiliation groups, responses were coded according to Smith’s (1990) classification system.

**Table 1** Demographic, religious, and sexual characteristics by gender

Item	Females ( <i>N</i> = 975)		Males ( <i>N</i> = 470)	
	%	<i>n</i>	%	<i>n</i>
<i>Ethnicity</i>				
Caucasian	63.2	621	61.1	287
African American	4.4	43	3.8	18
Hispanic	14.8	143	14.7	69
Asian American	13.8	133	16.6	78
Other	2.8	27	3.8	18
<i>Religious affiliation and ethnicity</i>				
Fundamentalist	38.4	328	38.3	156
Caucasian	65.4	214	64.9	100
African American	11.3	37	9.7	15
Hispanic	8.3	27	9.1	14
Asian American	13.1	43	14.3	22
Other	1.8	6	1.9	3
Monotheist Christian	42.7	365	38.1	155
Caucasian	64.3	234	59.4	92
African American	1.1	4	1.9	3
Hispanic	27.5	100	28.4	44
Asian American	6.6	24	10.3	16
Other	0.5	2	0	0
Jewish	5.3	45	4.7	19
Caucasian	100	45	84.2	16
Hispanic	0	0	5.3	1
Other	0	0	10.5	2
No religion	8.7	74	12.3	50
Caucasian	71.6	53	71.4	35
African American	1.4	1	0	0
Hispanic	6.8	5	6.1	3
Asian American	17.6	13	20.4	10
Other	2.7	2	2.0	1
Atheist	1.9	16	4.2	17
Caucasian	68.8	11	82.4	14
Hispanic	6.3	1	0	0
Asian American	18.8	3	17.6	3
Other	6.3	1	0	0
Agnostic	2.5	21	1.7	7
Caucasian	85.7	18	28.6	2
Hispanic	3	14.3	28.6	2
Asian American	0	0	28.6	2
Other	0	0	14.3	1
Spiritualist	0.7	6	0.7	3
Caucasian	66.7	4	66.7	2
Hispanic	16.7	1	33.3	1
Asian American	16.7	1	0	0
<i>Relationship characteristics</i>				
Long-term relationship in past 12 month?	65.7	631	57.1	269
Living with dating partner?	4.9	46	4.1	19

**Table 1** continued

Item	Females ( <i>N</i> = 975)		Males ( <i>N</i> = 470)	
	%	<i>n</i>	%	<i>n</i>
Sexually active <sup>a</sup> , by religious affiliation				
Fundamentalist	62.3	607	44.8	214
Monotheist Christian	57.9	190	43.6	68
Jewish	64.9	237	51.6	80
No religion	55.6	25	26.3	5
Atheist	74.3	55	54	27
Agnostic	81.3	13	41.2	7
Spiritualist	71.4	15	28.6	2
Spiritualist	83.3	5	33	1
<i>Sexual Orientation<sup>b</sup></i>				
Heterosexual with no homosexual fantasies	67.7	653	83.8	394
Heterosexual with an occasional homosexual fantasy	23.8	230	11.7	55
Heterosexual with some homosexual experience	7	68	2.3	11
Homosexual with occasional heterosexual fantasies or experience	0.8	8	1.1	5
Homosexual	0.6	6	1.1	5

<sup>a</sup> Sexually active status was based on FSFI scores indicating an individual had engaged in sexual activity in the previous month

<sup>b</sup> Measured with a revised Kinsey Heterosexual–Homosexual Rating Scale (fantasy and experience)

This classification scheme was adopted so that specific affiliations could be grouped into similar groups for analysis of religious subtypes. In order from most conservative to most liberal affiliation, the current sample included Christian fundamentalist (including Christian, Baptist, Pentecostal), Monotheist Christian (Catholic, Protestant, Methodist, Lutheran, Presbyterian, Episcopal), Jewish, and nonreligious (Atheist, Agnostic, and Spiritualist, including Pagans and Wiccans) participants. The decision to collapse Protestants and Catholics into a single “Monotheist Christian” category was based on the growing evidence of interdenominational differences due to an explosion of subgroups within monotheistic religions and, based on past evidence, Protestants and Catholics did not significantly differ in their endorsement of any religiosity subtype we measured. Furthermore, due to the large percentage of Hispanic students in the sample (16.1% of males, 17% of females), we did not want to confound Catholicism with Hispanic ethnicity. Additionally, Agnostic and Atheist/nonreligious data were analyzed separately due to evidence that these groups may differ in sex, rates of cohabitation, sociability, and extent of religious identification (Bainbridge, 2005; Hayes, 2000). In sum, the sample consisted of 1% Spiritualist, 2% Agnostic, 3% Atheist, 10% no religion, 5% Jewish, 41% Monotheistic Christian, and 38% Christian Fundamentalist participants.

## Measures

There is currently no measure of spiritual orientations explicitly designed to represent a full range of liberal-fundamentalist positions along an ultra-left to ultra-right continuum of faith orientations such as that proposed by Finke and Stark (2001). Their theory was not originally developed in a psychological research context, but rather in a sociological one addressing trends in religious affiliations and the emergence and transformations of new religious movements. In the absence of a measure of the Finke–Stark continuum, we administered measures which approximated the liberal to conservative regions of the continuum.

### Fundamentalism

To represent the ultra-right region of the liberal-conservative religious spectrum, we administered a short form version of Altemeyer and Hunsberger's (1992) Religious Fundamentalism scale (RF), consisting of RF items 1, 2, 4, 7, 10, 11, 15, 16, and 19 ( $\alpha = .87$ ), with equal numbers of affirmatively worded items (e.g., "To lead the best, most meaningful life, one must belong to the one, true religion") and negations (e.g., "No single book of religious writings contains all the important truths about life"). The original RF scale has demonstrated excellent reliability in Christian as well as non-Christian Canadian populations (Altemeyer & Hunsberger, 1992; Hunsberger, 1996).

### Intrinsic Religiosity

To represent the center-right region of the Stark–Finke spectrum, we administered the Age-Universal Intrinsic Religiosity Scale (IR) of Gorsuch and Venable (1983). This measure included questions such as, "I have often had a strong sense of God's presence," and, "My whole approach to life is based on religion." One IR item, "I enjoy reading about my religion" was inadvertently omitted due to an apparent mislabeling of this item in Gorsuch and Venable (1983). Reliability of the current eight-item IR measure was adequate ( $\alpha = .91$ ).

### Spirituality

To represent the center-left region of the Stark–Finke continuum, we administered a short index of Spiritual Belief (SP) constructed by Trapnell (2005) to operationalize a minimal definition of SP as "belief in a superordinate being, or an intelligent energy or force, perceived to have a cosmic scope or significance". The measure consists of four affirmations (e.g., "I tend to have deeply spiritual beliefs and feelings that are profoundly important to me") and four negations of

spiritual belief (e.g., "I'm completely skeptical toward any type of religious or spiritual belief"). The natural language referent "spiritual" appears in all but two of the eight items. The expanded referent "religious or spiritual" is used in some negation items where such an expansion properly serves the above definition of SP. Reliability of this eight-item index of spirituality was appropriate ( $\alpha = .88$ ).

### Paranormal/New Age Beliefs

Finke and Stark (2001) refer to New Age beliefs as "Ultra-liberal", and supporting this characterization are numerous studies that link paranormal, New Age, and similarly "esoteric" ontological beliefs with *openness to experience* (Saucier, 2000; Saucier & Skrzypinska, 2006), a broad personality dimension strongly associated with liberal values, beliefs, and political preferences (for a review, see McCrae, 1996). In contrast to New Age beliefs, fundamentalist religious beliefs tend to be strongly negatively correlated with openness (Saroglou, 2002; Saucier & Skrzypinska, 2006). To represent the ultra-left region of the Stark–Finke spectrum, we consequently used a balanced, 10-item index of paranormal/New Age beliefs constructed by Trapnell (2005) that mainly targets the Psi, Precognition, and Spiritualism paranormal belief factors described by Tobacyk and Milford (1983), which includes content similar to "New Age" belief markers commonly administered in public opinion surveys (e.g., Bainbridge, 2004; Orenstein, 2002; Rice, 2003). For example, Bainbridge (2004) refers to telepathy, astrology, precognition, extrasensory perception, and psychic powers as markers of New Age beliefs. Although New Age spirituality can be clearly distinguished from paranormal psychology (Rao, 1984), the paranormal beliefs associated with each are so strongly intercorrelated in practice that we will treat them as equivalent for current purposes. The 10-item paranormal measure used here included items targeting extrasensory perception, psychic powers, astrology, precognition, past lives, out of body experiences, as well as a generalized belief in "supernatural," "magical," and "paranormal" phenomena. Five items were affirmatively worded (e.g., "I am receptive to magical experiences"), and five were negatively worded (e.g., "No unexplained phenomenon can be explained by a supernatural force"). Reliability in the current sample was adequate ( $\alpha = .80$ ). Saucier and Skrzypinska's (2006) operational distinction between "traditional religiousness" (TR) and "subjective spirituality" (SS) closely resembles the operational distinction here between ultra-left (New Age and paranormal beliefs) and ultra-right (fundamentalist beliefs) faith orientations.

These four measures were administered on the same page of the survey using an identical 5-place Likert scale *strongly disagree* (1), *disagree* (2), *neutral or neither* (3), *agree* (4), *strongly agree* (5). The paranormal measure appeared first,

followed by the spirituality measure, the intrinsic religiousness measure, and the fundamentalism measure. Scores for each scale were computed as the mean of item responses for each scale after first reverse scoring responses to reverse keyed items for each scale, if there were any (e.g., Paranormal, Spirituality, and Fundamentalism scales). Scale scores for all four religious measures therefore represent the mean item score for each scale, with an absolute range of 1 to 5.

### *Sexual Behavior*

Six items from the Derogatis Sexual Functioning Inventory (DSFI; Derogatis, 1979) Experience Scale and 10 additional items were used to measure sexual behavior experiences. For each behavior item, participants indicated whether or not they had ever experienced that behavior (e.g., “*kissing or petting with a female*”) by responding *yes* or *no*. Three composite behavior experience scales were constructed by summing responses to subsets of the behavior items representing three levels of sexual involvement petting (6 items;  $\alpha = .86$ ), oral sex (5 items  $\alpha = .87$ ), and intercourse (4 items  $\alpha = .92$ ). A fourth composite was constructed to represent nonvirgin status. Participants who indicated an age at which they first engaged in intercourse and/or endorsed any one of the four intercourse experience items were classified as nonvirgins. Participants having null or “no” responses to all of these items were classified as virgins, whether or not they endorsed any oral experience items. Reliability of the sexual experience subtypes was adequate (Cronbach’s  $\alpha = .86$  and  $.80$  for females and males, respectively).

### *Unrestricted Sexual Behavior*

Due to the Judeo-Christian emphasis on sexual behavior within the context of committed relationships, the Sociosexual Orientation Inventory (SOI; Simpson & Gangestad, 1991) and two additional items were used to measure willingness to participate in uncommitted sexual behavior and fantasy. The SOI consists of a behavior component (number of sexual partners in the past year, and number of one-time sexual encounters), a desire component (desired number of sexual partners in the next 5 years), a fantasy component (frequency of other partner fantasy during sex), and an attitude component measured by strength of endorsement of two attitudes, “*Sex without love is okay*,” and “*I can imagine myself being comfortable and enjoying ‘casual sex’ with different partners*,” on a 5-point scale ranging from strongly disagree (1) to strongly agree (5). The SOI total score is computed as the unit-weighted sum of z-scores representing each of the five components. The two additional SOI-related items were number of foreplay partners during the previous year, and lifetime number of sexual partners. Reliability of

the SOI items was adequate (Cronbach’s  $\alpha = .83$  and  $.84$  for females and males, respectively).

### *Sexual Orientation*

A short form of the Kinsey Heterosexual-Homosexual Rating Scale (Kinsey, Pomeroy, & Martin, 1948) was used to evaluate sexual orientation. This revised scale enables responders to endorse one of five sexual orientation categories that describe gradations in heterosexual-homosexual fantasy and experience. Categories range from exclusively heterosexual (1) to exclusively homosexual (5).

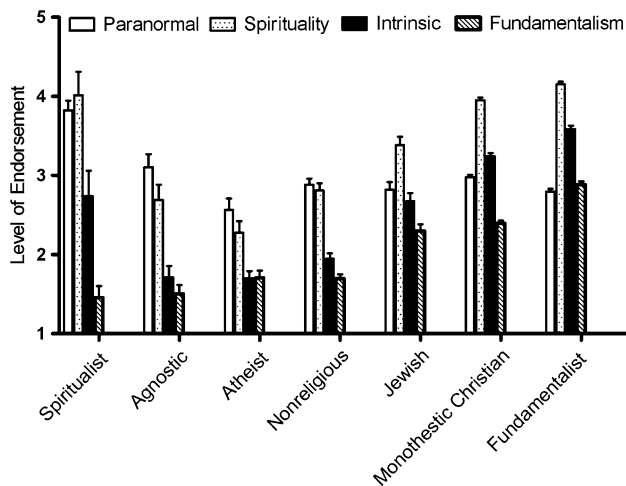
### *Procedure*

All participants completed questionnaires in same-sex groups and were administered questionnaires by a same-sex research assistant. Testing sessions lasted up to 1 h each. Informed consent was obtained and same-sex researchers provided instructions and answered any questions that arose before and during testing. Each participant was randomly assigned a code number to ensure confidentiality, and all data was solely connected to this code. Participants were informed that should they feel uncomfortable with the personal subject matter in the questionnaires, they could discontinue the study. No students declined participation. Questionnaires were inserted into a large “drop box” as participants left the testing room. Collected questionnaires and consent forms were stored separately in locked file cabinets. All data were entered into a password-protected data file. The research was approved by the University of Texas Institutional Review Board each year during the 2000–2004 time intervals. No students declined participation.

### **Results**

To determine whether ethnicity played a role in religious affiliation differences in sexual behavior, we performed a one-way ANOVA. Ethnic differences were found in religious affiliation,  $F(4, 1254) = 8.66, p < .01$ , and thus ethnicity was entered as a covariate into all analyses. Because pronounced gender differences are commonly observed both in sexuality self-reports and on religious and spirituality measures (Miller & Stark, 2002; Stark, 2002), we also report results separately for men and women.

As a check of validity, we mapped religious affiliation against the four religiosity subtypes (paranormal belief, spirituality, intrinsic religiosity, and fundamentalism) in order to gain empirical support for our designations of religiosity subtype as conservative versus liberal in the current sample. Due to unequal group sizes and unequal variances, Games-Howell post-hoc tests were used to discern specific



**Fig 1** A comparison of paranormal belief, spirituality, intrinsic religiosity, and fundamentalism across members of seven religious affiliations. Higher scores indicate stronger endorsement of each religiosity subtype

group differences in all subsequent analyses. As shown in Fig. 1, this assumption was moderately supported. Religious affiliation differences were found in paranormal belief,  $F(6, 1251) = 6.64, p < .01$ , with Spiritualists reporting greater paranormal belief compared to all other affiliations and Monotheist Christians reporting greater paranormal belief than Fundamentalists. These findings suggest that paranormal belief is preferentially endorsed by more liberal religious affiliations (e.g., Spiritualists). Differences in spirituality,  $F(6, 1250) = 86.06, p < .01$ , indicated that Fundamentalist participants endorsed higher spirituality compared to all other affiliations, Spiritualists reported more spirituality than Atheists, Agnostics, and nonreligious participants, Jewish participants reported less spirituality than Monotheist Christians and Fundamentalists and more spirituality than Agnostic, Atheist, and nonreligious participants, and Atheist participants reported less spirituality than nonreligious participants. Therefore, spirituality was more frequently endorsed in more conservative affiliations, with Jewish, Monotheist Christian, and Fundamentalist (e.g., conservative) participants generally more spiritual than Agnostic, Atheist, and nonreligious (e.g., liberal) participants. Religious affiliation differences in intrinsic religiosity,  $F(6, 1247) = 85.34, p < .01$ , indicated that Agnostic, Atheist, and nonreligious participants endorsed less intrinsic religiosity than Jewish, Monotheist Christian, and Fundamentalist participants, and additionally Fundamentalists reported more intrinsic religiosity than all other affiliations expect for Spiritualists. These findings suggest that intrinsic religiosity is highly endorsed in more conservative affiliations (e.g., Jewish, Monotheist Christian, and Fundamentalist participants, with Fundamentalists being most intrinsically religious). Finally, religious differences in fundamentalism,  $F(6,$

1246) = 56.18,  $p < .01$ , indicated that Spiritualist, Agnostic, Atheist, and nonreligious participants reported less fundamentalism compared to Jewish, Monotheist Christian, and Fundamentalist participants, with Fundamentalists reporting the greatest fundamentalism.

### Religious Affiliation

Religious affiliation differences in the sexual behavior of women and men are presented in Tables 2, 3. Bonferroni corrections were calculated for each set of comparisons to reduce chance of Type I error. Sexual activity was categorized as masturbation, petting, oral sex, intercourse, unrestricted sociosexuality, and sexual history behaviors.

Significant differences emerged in sexual behavior across religious affiliation in women for masturbation, petting, oral sex, and intercourse behaviors. Religious differences were found in rates of solitary masturbation,  $F(6, 738) = 4.13, p < .01$ . Agnostics reported greater frequency of masturbation than Jewish participants, and Jewish participants reported less masturbation than Monotheist Christians. No religious differences were found in the composite petting score, but overall affiliation differences were found in the item regarding kissing/petting with a woman,  $F(6, 738) = 2.49, p < .01$ . Post-hoc analyses did not indicate specific group comparisons responsible for this difference. No significant religious differences were found in the composite oral sex score; however, affiliation differences were found in the item regarding mutual oral stimulation of the genitals,  $F(6, 734) = 2.82, p < .01$ . Specifically, nonreligious participants reported more frequent mutual oral stimulation compared to Fundamentalist women. Finally, affiliation differences were found in the composite intercourse score,  $F(6, 739) = 3.73, p < .01$ . Nonreligious participants reported greater frequency of intercourse behaviors compared to Jewish, Monotheist Christian, and Fundamentalist participants. Of the intercourse behavior items, affiliation differences were found in vaginal intercourse (man on top),  $F(6, 739) = 5.63, p < .01$ , vaginal intercourse (woman on top),  $F(6, 739) = 3.71, p < .01$ , and vaginal intercourse (entry from behind),  $F(6, 736) = 4.60, p < .01$ . For each of these items, Jewish, Monotheist Christian, and Fundamentalist women were less likely to report engaging in the vaginal intercourse positions compared to nonreligious women. No significant religious affiliation differences were found in measures of unrestricted sociosexuality or sexual history behaviors. In men, no religious affiliation differences were found for any of the behavioral measures.

### Religiosity Subtypes

Significant gender differences were found for paranormal belief, with women reporting higher paranormal belief as

**Table 2** Differences in female sexual behavior by religious affiliation, controlled for ethnicity

Item	Spiritual		Agnostic		Atheist		None		Jewish		Monotheist christian		Fundamentalist		$\eta^2$	F	df
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD			
Masturbating alone <sup>a</sup>	75	95	88	82	53	62	64	.03	4.13*	738							
Petting subscore <sup>a</sup>	100	95	100	97	98	95	94	.00	<1	739							
Kissing, petting with a female	50	25	38	20	5	15	15	.02	2.49*	738							
Kissing, petting with a male	100	95	81	89	90	88	88	.00	<1	738							
Mutual petting of genitals to orgasm with female	25	35	44	31	24	30	27	.01	<1	736							
Mutual petting of genitals to orgasm with male	75	65	50	58	46	52	50	.01	<1	737							
Finger penetration of vagina	100	90	94	91	88	86	81	.01	1.14	729							
Finger penetration of partner's anus	0	15	6	14	5	9	7	.01	<1	739							
Oral sex subscore <sup>a</sup>	100	90	100	93	83	90	85	.01	1.75	740							
Having genitals orally stimulated by a female	50	40	44	31	27	31	30	.00	<1	740							
Having genitals orally stimulated by a male	75	60	38	65	59	59	50	.01	1.69	738							
Giving oral stimulation to a male	100	80	81	80	76	75	65	.02	2.16	737							
Giving oral stimulation to a female	0	15	19	11	5	7	06	.01	1.16	738							
Mutual oral stimulation of genitals	75	55	33	67	39	51	44	.02	2.82*	734							
Intercourse subscore <sup>a</sup>	75	80	88	89	59	74	68	.03	3.73*	739							
Vaginal intercourse (male on top)	75	75	75	88	54	61	54	.04	5.63*	739							
Vaginal intercourse (female on top)	50	70	69	65	37	52	43	.03	3.71*	739							
Vaginal intercourse (entry from behind)	75	50	69	75	39	50	45	.04	4.60*	736							
Receiving anal intercourse from a male	25	20	19	17	12	14	12	.00	<1	739							

Item	Spiritual		Agnostic		Atheist		None		Jewish		Monotheist christian		Fundamentalist		$\eta^2$	F	df
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD			
Age of first sexual caress (in years)	16.00	1.23	15.67	1.23	15.71	0.76	14.50	2.15	15.03	1.38	15.12	2.13	15.27	2.22	.01	1.23	538
Age of first orgasm (in years)	17.50	0.58	16.73	1.10	17.71	1.25	16.26	1.62	16.40	1.43	16.65	1.61	16.58	1.66	.02	1.08	440
Age of first sexual intercourse (in years)	17.33	1.53	17.11	1.17	17.67	1.37	16.38	1.72	17.25	1.34	16.56	1.50	16.69	1.44	.03	1.66	362
Sexual foreplay partners in past year <sup>b</sup>	2.17	1.94	3.43	2.77	3.69	3.44	3.66	4.21	4.02	3.22	4.03	4.60	3.31	3.62	.01	1.15	843
Intercourse or oral sex partners in past year <sup>b</sup>	1.50	1.76	2.00	1.87	2.13	2.60	1.89	1.94	1.53	1.80	1.93	2.21	1.52	2.01	.01	1.48	837
Anticipated sexual partners next 5 years <sup>b</sup>	2.50	2.17	5.05	4.44	4.60	3.70	3.45	3.23	4.39	4.02	3.43	4.52	2.87	3.79	.01	1.82	826
Intercourse or oral sex partners in lifetime <sup>b</sup>	3.33	2.42	4.29	3.23	4.50	4.86	4.76	4.63	4.30	5.20	3.94	4.53	3.30	4.31	.01	1.47	836
Intercourse or oral sex partners just once <sup>b</sup>	0.67	0.64	1.43	1.75	1.44	2.97	1.52	2.47	1.88	2.54	1.31	2.54	1.11	2.10	.01	<1	830
Times cheated on partner <sup>b</sup>	1.50	0.52	1.62	1.02	1.44	1.46	1.71	1.06	1.37	1.35	1.40	1.16	1.31	1.21	.01	1.29	838
	n = 4–6	n = 20	n = 16	n = 64–67	n = 41	n = 305–309	n = 280–284										

\*  $p < .01$ <sup>a</sup> Sexual experience items based on a yes/no response format, with percentage of yes responses shown<sup>b</sup> Values represent the number of sexual partners endorsed by participants



**Table 3** Differences in male sexual behavior by religious affiliation, controlled for ethnicity

Item	Spiritual		Agnostic		Atheist		None		Jewish		Monotheist christian		Fundamentalist		$\eta^2$	F	df
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD			
Masturbating alone <sup>a</sup>	100	100	100	100	100	100	100	100	100	100	91	88	88	.03	1.39	278	
Petting subscore <sup>a</sup>	100	100	100	100	87	97	100	98	100	98	94	94	94	.03	1.24	278	
Kissing, petting with a female	100	100	100	100	87	92	91	80	77	77	77	77	77	.02	1.07	277	
Kissing, petting with a male	0	0	0	0	13	11	9	22	15	15	15	15	15	.02	<1	278	
Mutual petting of genitals to orgasm with female	100	100	75	75	64	78	91	78	65	65	65	65	65	.04	1.67	275	
Mutual petting of genitals to orgasm with male	0	0	0	0	13	5	9	10	10	10	10	10	10	.01	<1	278	
Finger penetration of vagina	100	100	75	75	67	92	100	84	75	75	75	75	75	.05	2.16	270	
Finger penetration of partner's anus	50	50	0	0	27	27	0	19	15	15	15	15	15	.03	1.15	277	
Oral sex subscore <sup>a</sup>	100	100	100	100	73	89	73	93	87	87	87	87	87	.04	1.75	278	
Having genitals orally stimulated by a female	50	50	75	75	67	87	73	79	67	67	67	67	67	.03	1.48	277	
Having genitals orally stimulated by a male	0	0	0	0	13	5	0	11	10	10	10	10	10	.01	<1	278	
Giving oral stimulation to a male	0	0	0	0	20	5	9	20	14	14	14	14	14	.02	1.02	278	
Giving oral stimulation to a female	50	50	100	100	67	76	64	65	57	57	57	57	57	.03	1.37	277	
Mutual oral stimulation of genitals	50	50	25	25	27	57	64	49	42	42	42	42	42	.02	1.08	278	
Intercourse subscore <sup>a</sup>	100	100	50	50	53	76	64	74	65	65	65	65	65	.02	<1	278	
Vaginal intercourse (male on top)	50	50	50	50	47	73	64	60	48	48	48	48	48	.03	1.52	278	
Vaginal intercourse (female on top)	50	50	50	50	40	76	64	60	47	47	47	47	47	.05	2.11	278	
Vaginal intercourse (entry from behind)	50	50	25	25	40	57	40	49	40	40	40	40	40	.01	<1	272	
Receiving anal intercourse from a male	0	0	0	0	0	0	0	9	8	8	8	8	8	.02	1.03	278	
Anal intercourse (male penetrating male)	0	0	0	0	0	0	0	4	2	2	2	2	2	.01	<1	242	

Item	Spiritual		Agnostic		Atheist		None		Jewish		Monotheist christian		Fundamentalist		$\eta^2$	F	df
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD			
Age of first sexual caress	13.33	3.22	16.00	1.29	14.87	3.93	14.56	3.27	14.53	1.59	14.75	2.41	14.55	2.61	.01	<1	346
Age of first orgasm	11.50	0.71	16.71	1.38	16.50	1.17	15.85	2.90	16.35	1.41	15.96	1.83	16.02	1.62	.04	2.33	312
Age of first sexual intercourse	15.00	1.41	17.00	1.00	16.56	1.30	16.57	3.31	17.00	1.00	16.43	2.47	16.25	2.29	.01	<1	239
Sexual foreplay partners in past year <sup>b</sup>	1.00	0.00	3.60	3.65	3.12	4.99	3.49	4.19	4.21	4.60	4.14	5.60	4.15	4.94	.01	<1	391
Intercourse or oral sex partners in past year <sup>b</sup>	0.67	0.58	2.40	2.79	1.47	2.53	1.59	1.78	1.58	2.50	2.30	3.82	1.95	3.69	.01	<1	392
Anticipated sexual partners next 5 years <sup>b</sup>	2.33	0.58	5.00	4.73	3.84	4.92	5.58	5.86	8.78	8.39	5.54	6.29	5.20	9.64	.01	<1	389
Intercourse or oral sex partners in lifetime <sup>b</sup>	3.67	3.22	5.83	7.57	4.56	12.24	4.43	5.58	3.21	3.05	3.94	4.53	5.69	11.59	.01	<1	392
Intercourse or oral sex partners just once <sup>b</sup>	1.67	1.53	1.00	1.10	3.63	11.12	1.00	1.49	0.74	0.99	1.64	3.95	1.71	3.21	.02	1.12	392
Times cheated on partner <sup>b</sup>	1.00	0.00	1.67	1.51	1.47	1.18	1.84	1.28	1.26	1.05	1.70	1.33	1.54	1.37	.02	<1	395
	n = 3		n = 4-7		n = 15		n = 37		n = 11		n = 107-111		n = 96-99				

<sup>a</sup> Sexual experience items based on a yes/no response format, with percentage of yes responses shown

<sup>b</sup> Values represent the number of sexual partners endorsed by participants

compared to males,  $F(1, 1433) = 29.45, p < .001$ . Women endorsed significantly more spirituality items than men,  $F(1, 1432) = 43.59, p < .001$ . No gender differences for intrinsic religiosity or fundamentalism were found. Paranormal beliefs showed a weak correlation with spirituality,  $r(1444) = .21, p < .001$ , and fundamentalism,  $r(1439) = -.22, p < .001$ . Intrinsic religiosity and fundamentalism were somewhat strongly correlated,  $r(1435) = .64, p < .001$ . Spirituality was moderately correlated with fundamentalism,  $r(1439) = .41, p < .001$ , and strongly correlated with intrinsic religiosity,  $r(1438) = .75, p < .001$ .

Tables 4 and 5 display correlation and regression results for women and men, respectively. The first three columns list simple Pearson correlations between sexual behaviors and paranormal belief, spirituality, and fundamentalism, whereas the last two columns list the simple and partial correlations between sexual behaviors and intrinsic religiosity and

intrinsic religiosity when fundamentalism was controlled for. Additionally, paranormal belief, spirituality, and fundamentalism were entered into a regression analysis to predict variance in each sexual behavior. Intrinsic religiosity was excluded from the regression due to high collinearity and potential construct overlap with fundamentalism. In Tables 4 and 5, behaviors are listed in order of the magnitude of variance predicted by the regression model.

In women, paranormal religiosity was significantly positively correlated with all domains of sexual behavior, including masturbation, petting, oral sex, intercourse, unrestricted sociosexuality, and sexual history behaviors. Spirituality, fundamentalism, and intrinsic religiosity were negatively correlated with the majority of sexual behaviors, although the magnitude of correlations with intrinsic religiosity was somewhat reduced when fundamentalism was controlled for. The regression model containing paranormal

**Table 4** Association of female sexual behavior with paranormal, spiritual, and intrinsic religiosity

	Para	Spir	Fund	Adj. $R^{2b}$	Intrin	Intrin fund <sup>c</sup>
Vaginal intercourse (female on top)	.08*	-.16**	-.22**	.06**	-.25**	-.15**
Vaginal intercourse (male on top)	.05	-.20**	-.19**	.06**	-.26**	-.18**
Vaginal intercourse (entry from behind)	.07*	-.17**	-.20**	.05**	-.24**	-.15**
Masturbating alone	.12*	-.10**	-.18**	.04**	-.19**	-.10**
Giving oral stimulation to a male	.07*	-.10**	-.19**	.04**	-.16**	-.05
Times cheated on partner <sup>a</sup>	.13**	-.12**	-.16**	.04**	-.17**	-.10**
Finger penetration of vagina	.06	-.11**	-.17**	.03**	-.17**	-.08*
Mutual oral stimulation of genitals	.09*	-.10**	-.16**	.03**	-.17**	-.09**
No. anticipated sexual partners in next 5 years <sup>a</sup>	.10**	-.12**	-.16**	.03**	-.19**	-.12**
Age of first sexual intercourse	-.09	.04	.16**	.03**	.13**	-.04
No. intercourse partners in lifetime <sup>a</sup>	.12**	-.10**	-.15**	.03**	-.20**	-.14**
Kissing, petting with a female	.08*	-.07*	-.12**	.02**	-.14**	-.09**
Age of first sexual caress	-.12**	.06	.12**	.02**	.10*	.03
Having genitals orally stimulated by female	.09*	.01	-.12**	.02**	-.08*	-.01
Mutual petting of genitals to orgasm with female	.11**	.02	-.12**	.02**	-.08*	.00
Having genitals orally stimulated by male	-.04	-.13**	-.03	.02**	-.08*	-.08*
No. sexual foreplay partners in past year <sup>a</sup>	.08*	-.07*	-.11**	.02**	-.13**	-.08*
No. sexual intercourse partners just once <sup>a</sup>	.08*	-.06	-.12**	.02**	-.14**	-.08*
No. intercourse or oral sex partners in past year <sup>a</sup>	.07*	-.08*	-.13**	.02**	-.16**	-.10**
Kissing, petting with a male	.02	-.02	-.10**	.01*	-.07*	-.01
Mutual petting of genitals to orgasm with male	-.02	-.11**	-.04	.01*	-.08*	-.07
Receiving anal intercourse from male	.02	-.08*	-.09*	.01*	-.11**	-.07*
Finger penetration of partner's anus	-.01	-.09*	-.10**	.01*	-.10**	-.05
Giving oral stimulation to female	.03	-.08*	-.02	.01	-.07	-.07*
Age of first orgasm	.00	.06	.05	.01	.05	.02

\*  $p < .05$ , \*\*  $p < .01$

<sup>a</sup> Analyses on participants who first engaged in sexual intercourse after age 12. Abbreviations are as follows: Paranormal belief (Para), Spirituality (Spir), Fundamentalism (Fund), Intrinsic religiosity (Intrin)

<sup>b</sup> Refers to a regression model containing only paranormal, spirituality, and fundamentalist beliefs

<sup>c</sup> Intrinsic religiosity, controlling for fundamentalism

**Table 5** Association of male sexual behavior with paranormal, spiritual, fundamentalist, and intrinsic religiosity

	Para	Spir	Fund	Adj. $R^{2b}$	Intrin	Intrin fund <sup>c</sup>
Having genitals orally stimulated by male	.19**	-.02	-.06	.04**	.01	.06
Finger penetration of partner's anus	.09	-.11	-.12*	.03**	-.09	-.03
Mutual petting of genitals to orgasm with male	.16**	-.02	.01	.03*	.03	.03
Age of first sexual caress	-.16**	.00	.03	.03**	.02	.00
Times cheated on partner	.01	-.10*	.01	.02*	-.09	-.12**
Age of first orgasm	-.14**	-.01	.04	.02*	.01	-.02
Masturbating alone	-.03	-.10	-.14*	.02	-.11*	-.03
Kissing, petting with a male	.10	.11*	.04	.02	.07	.06
Giving oral stimulation to a male	.13*	.09	.04	.02	.06	.04
Vaginal intercourse (male on top)	.01	-.07	-.13*	.02	-.11*	-.04
Anal intercourse (male penetrating male)	.09	.00	-.09	.02	-.01	.06
Kissing, petting with a female	.01	-.10	-.10	.02	-.11*	-.07
Mutual petting of genitals to orgasm with female	.08	.07	-.05	.01	.01	.05
Vaginal intercourse (female on top)	-.03	-.08	-.09	.01	-.12*	-.08
Vaginal intercourse (entry from behind)	.01	-.08	-.09	.01	-.14*	-.11*
No. sexual intercourse partners just once <sup>a</sup>	.02	-.08	.00	.01	-.03	-.04
Receiving anal intercourse from male	.07	.08	.07	.01	.08	.05
Giving oral stimulation to female	-.02	-.08	-.04	.01	-.05	-.04
Finger penetration of vagina	.03	.05	-.04	.01	-.02	.01
No. anticipated sexual partners in next 5 years <sup>a</sup>	-.02	-.05	.03	.01	-.02	-.05
Having genitals orally stimulated by female	-.05	-.05	-.07	.01	-.06	-.02
No. intercourse partners in lifetime <sup>a</sup>	-.02	-.04	.03	.01	-.02	-.05
Mutual oral stimulation of genitals	-.03	-.01	-.06	.01	-.04	.00
No. intercourse or oral sex partners in past year <sup>a</sup>	.02	-.04	.02*	.00	-.02	-.02
No. sexual foreplay partners in past year <sup>a</sup>	-.03	.02	.04	.00	.02	-.01
Age of first sexual intercourse	-.04	-.04	-.03	.00	-.08	-.09

\*  $p < .05$ , \*\*  $p < .01$

<sup>a</sup> Analyses on participants who first engaged in sexual intercourse after age 12. Abbreviations are as follows: Paranormal belief (Para), Spirituality (Spir), Fundamentalism (Fund), Intrinsic religiosity (Intrin)

<sup>b</sup> Refers to model containing only paranormal, spirituality, and fundamentalist beliefs

<sup>c</sup> Intrinsic religiosity, controlling for fundamentalism

belief, spirituality, and fundamentalism statistically predicted between one to six percent of the variance in sexual behavior items.

For men, fewer significant correlations were found between religiosity subtypes and sexual behavior items. Paranormal belief was negatively correlated with sexual history items, indicating earlier ages of first sexual caresses and orgasm, whereas this religiosity measure was positively correlated with petting with other men and oral sex items. Spirituality, fundamentalism, and intrinsic religiosity showed weak or absent negative correlations with men's sexual behavior items, and significant correlations between intrinsic religiosity and sexual behaviors were reduced or disappeared when fundamentalism was controlled for. The regression model containing paranormal belief, spirituality, and fundamentalism statistically explained between 2% and 4% of the variance in sexual behavior items.

## Discussion

This study aimed to evaluate the relation between religiosity and sexual behavior in the context of two conflicting theories of religious change: the secularization hypothesis and the market theory of religion. This evaluation was first conducted on sexual behavior differences between individuals from varying religious affiliations to facilitate comparison with past research. Next, a determination of sexual behavior differences in individuals endorsing religiosity subtypes was made. In general, sexual behavior differences in individuals from different religious affiliations supported the secularization hypothesis, whereas the analysis of religiosity subtypes supported the market theory of religion.

Differences in sexual behavior as a function of religious affiliation tended to support the secularization hypothesis due to the lack of concordance between religious affiliation and a

broad range of sexual behavior. For women, the affiliation differences that were found in masturbation, petting, and oral sex reflected single items, whereas the affiliation differences in intercourse behaviors (male superior, female superior, rear entry) were more robust. Differences in intercourse behavior were largely found between nonreligious women compared to women from moderate to conservative affiliations (e.g., Jewish, Monotheist Christian, and Fundamentalist participants). These findings suggest that a lack of religious belief may dispose women to engage in more unrestricted premarital intercourse behavior because they are less likely to model their sexual activity after dictates of religious doctrine. In contrast, no significant affiliation differences in any sexual behaviors were found in men. The presence of affiliation differences in female intercourse behavior and the lack of such differences in males is consistent with women's traditional endorsement of more religious influence on sexual behaviors than men (Miller & Stark, 2002). Unlike past studies, no affiliation differences were found in the age of first sexual activity or in the age of sexual debut in women or men (e.g., Davidson et al., 1995).

In further support of the secularization hypothesis, the high rate of sexual behavior reported by individuals from all religious affiliations in our sample indicated a generalized lack of religious regulation of sexuality. The inconsistency between actual levels of sexual behavior and levels of sexual behavior proscribed by more conservative denominations may have indicated "value compartmentalization," or a dissonance between religious beliefs and practice (Dobbelaere, 1999). Similarly, the endorsement of paranormal belief by more conservative denominations may have indicated a "mixing of [religious] codes," which is thought to be an indicator of secularization (Dobbelaere, 1999). Our analysis of the influence of religious affiliation on sexual behavior appears to support the secularization hypothesis.

The patterns of sexual behavior that emerged in the analysis of religiosity subtypes supports the market theory of religion rather than the secularization hypothesis. Similar to Orenstein's (2002) sample, paranormal religiosity was reported in varying degrees across all religious affiliations, including traditionally conservative religious groups. A wide range of female sexual behavior was positively correlated with paranormal beliefs, whereas no strong correlation emerged for men. The endorsement of paranormal belief across all denominations may be evidence of what Stark and Bainbridge (1987) called "supernatural compensators," or generalized explanations of future rewards like those offered by, but not limited to, religion. According to the market theory of religion, a supernatural compensator, such as paranormal belief, acts as a competing ideology that rivals religion.

The market theory of religion was also strongly supported by the intriguing connection between female sexual behavior

and specific religiosity subtypes. In women, fundamentalism and spirituality were consistently negatively correlated with multiple forms of sexual behavior, and paranormal religiosity showed a small but consistent positive correlation with female sexual behavior. Additionally, this was the first report of a direct link between fundamentalism and sexual behavior. The strong pattern of negative correlations between female sexual behavior and fundamentalism supported a continued influence of religious choices on behavior, and this information has not been gleaned from previous operational definitions of religiosity as purely a function of affiliation or participation. However, the conceptual overlap between intrinsic religiosity and fundamentalism suggests that conservative religiosity, rather than religiousness per se, was negatively associated with female sexual behavior. Indeed, past critiques of intrinsic religiosity have focused on its conceptual assumptions that parallel fundamentalism (Donahue, 1985).

The gender differences that emerged appear to be closely linked with the connection between sexual behavior and fundamentalism. Whereas men exhibited negligible differences in religiosity and behavior, women consistently reported a negative correlation between types of sexual behavior and fundamentalism (see also Notzer, Levran, Mashiach, & Soffer, 1984). This finding paralleled previous findings that women report higher levels of religiosity compared to men (Stark, 2002). The strong impact of religiosity on female sexual behavior may be due to multiple factors, including negative social attitudes toward premarital female sexual activity and the communal character of religion, which may naturally complement cross-cultural stereotypes of the universal feminine values: modesty, caring for others, emphasizing social equality, valuing social relationships, having sympathy for the downtrodden, and using intuition (Hofstede, 1997). Alternately, evolutionary theory, which assumes that sexual motivation differs fundamentally for men and women (Buss, 1995), may also explain the increased impact of religiosity on female sexual behavior. Female sexual motivation is defined by selectivity—of mates, of context, of resources—and religious proscriptions against premarital sex may simply validate and complement this sexual selectivity. Importantly, many factors other than religion may directly and indirectly account for the link between female sexual behavior and religiosity.

One of the clearest conclusions that can be formulated from the current study is that the way in which religiosity is defined will determine how the relation between religion and sexual behavior is characterized. The objective of the current study was to pit the secularization hypothesis against the market theory of religion in order to explain religious influence on sexual behavior; however, the outcome of our analyses differed dramatically when religiosity was operationalized as affiliation versus subtype. Both the secularization

hypothesis and the market theory of religion received some empirical support; yet, neither theory was fully supported by the current findings. We propose that the inclusion of multiple religiosity subtypes, in addition to traditional religiosity measures such as affiliation or participation, will yield valuable information in the study of sexuality in the future.

Important limitations of this study include our use of a young adult cross-sectional convenience sample, potential reporting bias from reliance on self-report measures, small subsample sizes in some of the denomination categories, and limited generalizability to community samples. Some individuals may not have participated due to the sexual nature of the study, and this is clearly a drawback of all research on religion and sexuality. It would have been useful to devise a more precise classification scheme to accommodate more intra-denominational variations to ensure adequate representation of diverse religious groups. Finally, the abundance of literature on adolescent religiosity and sexuality is not paralleled in adult populations, and the breadth of our literature review reflected this limited (and sometimes dated) knowledge base. Despite these weaknesses, the current study was the first to empirically evaluate the secularization hypothesis and a primary competing theory of religious change as they relate to sexual behavior. The study consistently showed that female sexual behavior was impacted by religiosity, regardless of religious affiliation. Findings indicated that the definition of religiosity has an important role in the study of sexuality, and we argue that religiosity subtypes are a particularly useful way to operationalize religiousness. Furthermore, the concurrent inclusion of both fundamentalism and paranormal belief has provided valuable information about how liberal and conservative religious extremes may influence the sexual behavior of religious independents and adherents.

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