Religious Identification as a Moderator of Evolved Sexual Strategies of Men and Women

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Buss and Schmitt (1993) found empirical support for their Sexual Strategies Theory hypothesis of evolved sex differences in mating attitudes. This study hypothesized that religiosity would moderate those sex differences. Specifically, it was predicted that men high and low in religiosity would differ in mating attitudes, but it was expected that there would be fewer differences between women high and low in religiosity because of evolved preferences for longer term, more committed relationships. In Study 1, 219 college students completed questionnaires that included a single-item indicator of religiosity and short-term and long-term mating desires. Religiosity moderated sex differences in some mating preferences. In Study 2, 234 college student participants (mean age, 19.1 years) completed measures from Study 1 plus a measure of three types of religiosity: intrinsic (religion as a valuable end in itself), extrinsic (religion as a means to an end), and quest (religion as a means of questioning and doubting; Revised Religious Life Inventory—Hills, Francis, & Robbins, 2005). Intrinsic religiosity, but not extrinsic or quest, moderated sex differences in mating attitudes, especially attitudes regarding number of sexual partners in the short term. These results provide evidence that intrinsic religiosity is an individual difference variable that qualifies the differences in mating strategies hypothesized in Sexual Strategies Theory.

Sexual Strategies Theory (Buss & Schmitt, 1993) is an evolutionary theory of human mating that proposes that mechanisms of mating behavior have evolved to include both short-term mating strategies (such as one-night stands) and long-term mating strategies (such as marriage). According to Sexual Strategies Theory, the type of strategy used depends on a number of contextual factors, such as availability of partners and cultural norms. Buss and Schmitt suggested that one determinant of sexual strategy use is parental investment. Trivers (1972), in his Theory of Parental Investment, reasoned that the sex that invests more resources in its offspring should be more discriminating about its choice of mates, seeking a mate who also demonstrates willingness to invest in the offspring. Similar to other mammals, the minimum parental investment of human fathers is the time and effort required for copulation, whereas the minimum parental investment of human mothers is nine months of pregnancy. Buss and Schmitt proposed that the asymmetry between men and women in parental investment results in sex differences in the use of short-term and long-term sexual strategies, with men more likely to prefer short-term strategies and women more likely to prefer long-term strategies.

In line with their expectations, they found that compared to women, men showed greater preferences for short-term mates, expressed desire for more sexual partners, and expressed willingness to engage in intercourse sooner after meeting a potential partner. In addition, Buss and Schmitt (1993) found that men were more distressed than women were by thoughts of a partner’s sexual infidelity. Conversely, women were more distressed than men by thoughts of a mate’s emotional infidelity. The researchers interpreted these results as consistent with the concept of parental investment. Sexual jealousy that prevents a mate’s sexual relationships with other men provides men with greater paternity certainty and helps to ensure that a man is investing his resources in his own offspring. For women, emotional jealousy helps prevent a mate from devoting his resources to another woman and her offspring.

The magnitude of sex differences in attitudes toward the acceptability of short-term mating and casual sex has shown stability over time (Hyde, 2005; Oliver &
Religiosity is an individual difference variable that is predictive of sexual behaviors and attitudes. Consistent with the traditional disapproving views that many major religions hold regarding certain types of sexual activity, religious individuals engage in fewer sexual activities and have more negative attitudes toward premarital sex, nonprocreative sexual activities, and casual sex than do non-religious individuals (Collins, Kanouse, Pantoja, & Golnelli, 2007; Davidson, Moore, & Ullstrup, 2004; Lefkowitz, Gillen, Shearer, & Boone, 2004; Rowatt & Schmitt, 2003; Samuels, 1997; Sheeran, Abrams, Abraham, & Spears, 1993; Whitbeck, Yoder, Hoyt, & Conger, 1999; Zaleski & Schiaffino, 2000). In addition, perceptions of one’s religion as disapproving of sexual activity are positively correlated with conservative sexual attitudes (Lefkowitz et al., 2004). Thus, religiosity could serve as a moderator of the sex differences observed in preferences for short-term and long-term mating strategies.

Rowatt and Schmitt (2003) investigated the relationships between religious orientations and the mating preference variables specified in Sexual Strategies Theory (number of sexual partners desired across different spans of time, willingness to engage in intercourse after having known someone for various lengths of time, etc.). They investigated intrinsic, extrinsic, and quest religious orientations as predictors of sexual desires. Although Rowatt and Schmitt did not test sex differences directly, they did examine the relationship between religious orientation and sexual desires separately for men and women. For both men and women, intrinsic religious orientation (i.e., religion as an end rather than as a means to an end) was negatively associated with the number of sex partners desired across time and with willingness to consider having sex with a desirable person known for a “shorter” period of time (defined as six months or less). Among men (but not women), intrinsic religious orientation was also negatively correlated with considering having sex with a desirable person known for a longer period of time (one year or more). Also among men but not among women, Rowatt and Schmitt found that extrinsic religiosity (i.e., religion as a means to an end) was positively correlated with number of sexual partners desired in the short term and willingness to engage in intercourse with a person after having known them for both short and long periods of time. These results provided support for Rowatt and Schmitt’s two sets of hypotheses, the intrinsic religious orientation–restricted sexuality hypothesis (that intrinsic religiosity would correlate negatively with attitudes toward casual sex) and the extrinsic religious orientation–unrestricted sexuality hypothesis (that extrinsic religious orientation would correlate positively with attitudes toward casual sex). These results also provided evidence that religious identification is an individual difference variable that influences preferred mating strategies.

The purpose of this investigation was to examine religiosity as a moderator of evolved sexual strategies. Our study differs from previous research in this area in several ways. First, unlike Rowatt and Schmitt (2003), we directly examined both religiosity and sex differences in mating preferences. Second, in addition to investigating short-term and long-term sexual desires, we also assessed religiosity as a possible moderator of sex differences in jealousy over sexual and emotional infidelity. Third, we addressed a data analysis problem observed in some previous studies of mating preferences. A major criticism leveled by Pedersen, Miller, Putcha-Bhagavatula, and Yang (2002) on research on the number of sexual partners desired is that because positive outliers cause sampling distributions to be skewed, the parametric statistics usually employed in studies of mating preferences produce misleading results that overestimate true sex differences (although McBurney, Zapp, & Streeter, 2005, in a reanalysis of Pedersen et al.’s, 2002, data, refuted this contention). Schmitt et al. (2003) addressed this concern at some length by using nonparametric tests, which largely replicated the findings of Buss and Schmitt (1993). In our studies, we used log transformations when necessary to achieve closer approximations to normality.

We had two basic sets of hypotheses. First, we expected to replicate the pattern of results obtained by Buss and Schmitt (1993) and Schmitt et al. (2003) regarding basic differences in sexual strategies between men and women. Specifically, we predicted that men (a) would report desiring more sexual partners than would women; (b) would consider having intercourse with a partner sooner in a relationship than would women; (c) would, relative to women, be more upset by sexual infidelity than by emotional infidelity; and (d) would be more likely than women to be looking for a short-term relationship.

We also predicted sexual strategy differences based on religiosity. Our assumption was that attitudes regarding sexual intercourse are informed, in part, by one’s degree of religious commitment: Those who are highly religious are less likely to have positive views regarding multiple partners and regarding desire to have
intercourse early in a relationship. This would replicate the relationship found by Rowatt and Schmitt (2003). We further predicted, however, that this difference between those high and low in religiosity should be most apparent in men. According to Sexual Strategies Theory, women—whether highly religious or not—have evolved a preference for having fewer, very committed mates. Therefore, it is less adaptive for women, irrespective of religious orientation, to have a short-term sexual strategy. Men, on the other hand, have evolved to prefer shorter term sexual strategies. It is in men, therefore, that we would expect to find the greater difference between those higher and those lower in religiosity. Our expectation in this research, then, was that on all of the measures of mating preferences, we would find greater sexual strategy differences between men higher and lower in religiosity than between women higher and lower on that dimension.

Study 1

The first study tested the hypotheses discussed above using a single-item indicator of religiosity. We chose a single-item index of religiosity—embedded in attitude questions about other topics—to make it less likely that participants would (a) discern the nature of the study and (b) experience increased personal religious salience as they completed the measures regarding sexual behavior. Issues regarding the validity of measuring religiosity with a single item are addressed more fully later.

Method

Participants. Data were collected from 221 students (154 women and 67 men) enrolled in general psychology classes at two liberal arts colleges affiliated with the religiously moderate Evangelical Lutheran Church in America. These students were predominantly first-year ($n = 166$) and second-year ($n = 42$) students drawn from homogeneous, European American student bodies.\(^1\) Participants received extra credit points in their psychology course for their participation. The participants’ answers remained anonymous to encourage openness and honesty, and they were assured anonymity both verbally and in the informed consent. Data from two students were discarded because they were nonsensical, leaving a total of 154 women and 65 men.

Materials. Participants completed two questionnaires. The first questionnaire asked participants the degree to which he or she agreed with the statement, “I am very religious,” on a scale ranging from 1 (strongly disagree) to 7 (strongly agree). As mentioned earlier, this item was embedded in a series of other attitude questions (such as attitudes about family, politics, writing papers, etc.) to reduce possible hypothesis-guessing, as well as the salience of religiosity as participants completed the measures. The validity of such one-item measures of religiosity has been demonstrated by Gorsuch and McFarland (1972), who found a strong correlation between one-item measures and intrinsic religiosity, as well as correlations between one-item measures and a variety of ethical variables (e.g., prejudice, immorality in the workplace) that were comparable to the correlations obtained with multiple-item measures of religiosity.

The second questionnaire asked four sets of questions based on Buss and Schmitt’s (1993) research. The first set of questions asked which would be more distressing: “imagining your partner forming a deep emotional attachment” to another person or “imagining your partner enjoying passionate sexual intercourse with that other person.” Participants placed a checkmark or “X” before the statement they found more distressing. The second set of questions inquired about participants’ mate-seeking. The first of the two questions in this set asked, “To what degree are you currently seeking a short-term mate (defined as a 1-night stand, brief affair, etc.).” Responses were scored on a seven-point scale ranging from 1 (not at all currently seeking) to 7 (strongly currently seeking). The second question, using the same scale, asked participants about long-term mating desires: “To what degree are you currently seeking a long-term mate (defined as a marriage partner).”

The third set of questions pertained to the willingness of participants to have sexual intercourse with a desirable person whom they had known for 10 different time periods (one hour, one night, one day, one week, one month, three months, six months, one year, two years, and five years). Each item asked, “If the conditions were right, would you consider having sexual intercourse with someone you viewed as desirable if you had known that person for: ______,” and was followed by a –3 (definitely not) to 3 (definitely yes) scale.

The final set of questions, using an open-ended format, asked, “How many sexual partners would you ideally like to have over the following time intervals: (please write a number next to each time interval).” Each interval (the next month, six months, one year, two years, three years, four years, five years, 10 years, 20 years, 30 years, and “over the span of your life”) included a specific question for that interval, followed by a blank for participants to record their responses (e.g., “How many sexual partners would you ideally like to have over the next month? ______”). Consistent with Rowatt and Schmitt (2003), we created aggregate variables for the last two sets of questions: known shorter
time = (1 hour + 1 night + 1 day + 1 week + 1 month + 3 months + 6 months)/7; known longer time = (1 year + 2 years + 5 years)/3; short-term number = (1 month + 6 months)/2; long-term number = (1 year + 2 years + 3 years + 4 years + 5 years + 10 years + 20 years + 30 years + lifespan)/9).

Procedure. We collected data in group sessions. Participants were informed both verbally and in the informed consent that they would be completing questionnaires that would ask them for information that might be considered personal in nature. They were informed that they could discontinue participation without penalty at any point, and that their responses would be completely anonymous. Approval for the methods and measures we utilized in this study was obtained from the human subjects review boards of both of the institutions from which data were collected.

Results

As mentioned earlier, the measure of religiosity used in this study was a single-item indicator, with possible answers ranging from 1 (strongly disagree) to 7 (strongly agree) to the statement, “I am very religious.” Individual scores ranged from one to seven, and the mean and median for this scale were 4.95 and 5, respectively. The mean score for women participants on this item was 5.06 (SE = .104), and for men the mean and standard error were 4.71 and .199, respectively. The difference between these two means approached the traditional level of statistical significance (p < .05), t(217) = 1.71, p = .089.

Differences in desire for long-term and short-term relationships. A median split on the religiosity item yielded 152 participants (102 women and 50 men). A 2 (Sex) × 2 (Religiosity: high vs. low) analysis of variance (ANOVA) on desire for short-term mate revealed significant main effects for sex, F(1, 148) = 10.01, p = .002 (d = 0.51); and for religiosity, F(1, 148) = 9.41, p = .003 (d = 0.50); and a significant Sex × Religiosity interaction, F(1, 148) = 4.27, p = .044 (d = 0.34). As indicated in Figure 1, men were more desirous than women of having a short-term mate, and low-religiosity participants were more desirous than high-religiosity participants of having a short-term mate. Consistent with our hypotheses, a Tukey honestly significant difference (HSD) test revealed that high-religiosity men had less desire for a short-term mate than did low-religiosity men, whereas no such difference existed for high- and low-religiosity women.

Figure 1 also shows data on the desire for long-term relationships for men and women high and low in religiosity. A 2 (Sex) × 2 (Religiosity: high vs. low) ANOVA performed on these data revealed that women, more than men, desired a long-term relationship, F(1, 148) = 5.05, p = .026 (d = 0.36); and individuals higher in religiosity desired a long-term relationship more than participants lower in religiosity, F(1, 148) = 5.82, p = .017 (d = 0.39). There was no Sex × Religiosity interaction, F(1, 148) = 0.21, p = .65.

Differences in desired number of sexual partners. We next examined the number of sexual partners participants indicated they would like in the short term (time periods six months and less) and long term (time periods from one year through the entire lifespan). Figure 2 displays the short-term sexual partner data for men and women high and low on religiosity.
and women high and low in religiosity. Because these data were positively skewed (skewness = 7.92), we performed a logarithmic transformation—log$_e$(n + 1)—on the data to achieve closer approximations to normality and thus allow us to legitimately use parametric statistics. Transformed and non-transformed means are presented in Table 1. An ANOVA on these transformed data revealed that men desired more partners than did women, $F(1, 148) = 22.45, p < .001$ (d = 0.77); and that low-religiosity participants wanted more partners than those high in religiosity, $F(1, 148) = 20.95, p < .001$ (d = 0.74). The Religiosity × Sex interaction approached traditional levels of significance, $F(1, 148) = 3.05, p = .083$ (d = 0.28). Consistent with our hypotheses, a Tukey HSD post-hoc test revealed that low-religiosity men wanted more partners in the short term than did high-religiosity men, but no such difference existed for high- and low-religiosity women.

Means for the number of partners desired in the long term by men and women high and low in religiosity are also presented in Figure 2. Again, because of the positively skewed nature of the raw data (skewness = 7.52), we analyzed logarithmic-transformed data (see Table 1). An ANOVA performed on these data provided results consistent with the short-term data, and supportive of our hypotheses: Men reported wanting more partners in the long term than did women, $F(1, 145) = 39.89, p < .001$ (d = 1.03); and low-religiosity participants reported wanting more partners in the long term than did high-religiosity participants, $F(1, 145) = 26.56, p < .001$ (d = 0.84). Also supportive of our hypotheses, a Tukey HSD post-hoc test following the significant Sex × Religiosity interaction—$F(1, 145) = 4.34, p = .039$ (d = 0.34)—revealed that the difference between men high and low in religiosity was significant, whereas the difference between high- and low-religiosity women was not.

Differences in attitudes about consenting to intercourse. Our third set of analyses examined participants’ estimations of how likely they would be to have intercourse with someone they found desirable after knowing them either for a short period of time or for a long period of time. Using the same scale Buss and Schmitt (1993) used, −3 (definitely not) to 3 (definitely yes), we found results consistent with theirs. Compared with men, women reported being less willing to engage in intercourse both with partners they had known for a short period of time ($−2.41$ vs. $−1.15$), $F(1, 147) = 43.20, p < .001$ (d = 1.07); and with those that they had known for a long period of time ($0.34$ vs. $1.67$), $F(1, 147) = 16.86, p < .001$ (d = 0.67).

There were also main effects for religiosity on self-reported willingness to have intercourse after knowing a partner for both short and long periods of time. As anticipated, high-religiosity participants were less willing than were low-religiosity participants to have intercourse in both instances: short time period ($−2.10$ vs. $−1.46$), $F(1, 147) = 11.37, p = .001$ (d = 0.55); and long time period, ($0.46$ vs. $1.55$), $F(1, 147) = 11.39, p = .001$ (d = 0.55). Contrary to predictions, however, there were no Sex × Religiosity interactions for either time period: short time period, $F(1, 147) = 0.98, p = .32$; and long time period, $F(1, 147) = 1.45, p = .23$.

Distress caused by infidelity. Buss and Schmitt (1993) provided evidence of sex differences in distress caused by infidelity—men were more disturbed by thoughts of their partner’s sexual infidelity and women by thoughts of their partner’s emotional infidelity. Consistent with this, we found that 58.5% of men in our sample expressed more distress at the thought of their partner being sexually unfaithful as opposed to emotionally unfaithful, but only 28.1% of women in our sample felt the same way, $\chi^2(1, N = 218) = 18.00, p < .001$. Chi-square analyses conducted separately on women’s and men’s data indicated that religiosity was unrelated to the distress caused by infidelity: Men both high and low on religiosity indicated they would be more disturbed by sexual infidelity (56% vs. 56%), $\chi^2(1, N = 50) = 0.0, p = 1.00$; and women both high and low on religiosity indicated they would be more disturbed by emotional infidelity (77.2% vs. 63.6%), $\chi^2(1, N = 101) = 2.23, p = .135$.

<table>
<thead>
<tr>
<th>Time Period</th>
<th>High Religiosity</th>
<th>Low Religiosity</th>
<th>High Religiosity</th>
<th>Low Religiosity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.54 (0.11)</td>
<td>1.22 (0.18)</td>
<td>0.28 (0.057)</td>
<td>0.51 (0.072)</td>
</tr>
<tr>
<td></td>
<td>0.370 (0.072)</td>
<td>0.731 (0.073)</td>
<td>0.199 (0.040)</td>
<td>0.361 (0.049)</td>
</tr>
<tr>
<td>Short term</td>
<td>n = 25</td>
<td>n = 25</td>
<td>n = 57</td>
<td>n = 45</td>
</tr>
<tr>
<td></td>
<td>2.40 (0.78)</td>
<td>5.54 (1.24)</td>
<td>0.80 (0.056)</td>
<td>1.46 (0.17)</td>
</tr>
<tr>
<td></td>
<td>0.923b (0.135)</td>
<td>1.54b (0.159)</td>
<td>0.562 (0.030)</td>
<td>0.824 (0.058)</td>
</tr>
<tr>
<td></td>
<td>n = 25</td>
<td>n = 25</td>
<td>n = 57</td>
<td>n = 42</td>
</tr>
</tbody>
</table>

Note. Standard errors are in parentheses. Log-transformed means within gender with common subscripts differ from each other at the $p < .05$ level of statistical significance.
Study 1 replicated previous research (e.g., Buss & Schmitt, 1993; Schmitt et al., 2003) demonstrating sex differences in mating strategies, differences hypothesized in Buss and Schmitt’s Sexual Strategies Theory to have evolved to maximize reproductive success. Study 1 also provided partial support for the moderating effect of religiosity on those differences in mating strategies between men and women. Specifically, and as hypothesized, men high and low in religiosity differed in their desire for a short-term mate, whereas women high and low in religiosity did not. In addition, men high and low in religiosity differed in the ideal number of sexual partners they wanted in the long term and in the short term (although the interaction for the short term only approached traditional levels of statistical significance), whereas these differences were not significant for women.

We did not find a moderating effect of religiosity on evolved sex differences in the desire for a long-term relationship, in the willingness to engage in intercourse with potential partners known for either short or long periods of time, or in the type of infidelity (sexual vs. emotional) that was most distressful to men and women. In light of these nonsignificant findings, an important question is whether religiosity does in fact moderate some evolved sex differences in mating strategies and not others or whether the nonsignificance was a function of the measure of religiosity we used. Although, as discussed earlier, single-item indicators of religiosity have been used in the past, and have been demonstrated to correlate highly with measures of intrinsic religiosity, there is still a legitimate question about what specifically that single item is and is not measuring. Study 2 addressed these issues.

Study 2

Study 2 replicates Study 1 using a standard measure of religiosity: Hills, Francis, and Robbins’s (2005) Revised Religious Life Inventory (RLI–R). The RLI–R is an empirically validated measure that assesses three dimensions of religiosity (intrinsic, extrinsic, and quest; discussed later), and thus allows for a more complete analysis than is possible using a single-item indicator. Because previous research (Gorsuch & McFarland, 1972) has indicated that single-item measures of religiosity are closely correlated with intrinsic religiosity, it would be reasonable to expect scores on the intrinsic religiosity scale of the RLI–R to exert a moderating effect on sex differences in mating preferences similar to that found in Study 1. Because Study 2 also incorporated the single-item indicator used in Study 1, we were also able to examine the relation between that single item and the scales of the RLI–R.

Discussion

Study 2 replicates Study 1 using a standard measure of religiosity: Hills, Francis, and Robbins’s (2005) Revised Religious Life Inventory (RLI–R). The RLI–R is an empirically validated measure that assesses three dimensions of religiosity (intrinsic, extrinsic, and quest; discussed later), and thus allows for a more complete analysis than is possible using a single-item indicator. Because previous research (Gorsuch & McFarland, 1972) has indicated that single-item measures of religiosity are closely correlated with intrinsic religiosity, it would be reasonable to expect scores on the intrinsic religiosity scale of the RLI–R to exert a moderating effect on sex differences in mating preferences similar to that found in Study 1. Because Study 2 also incorporated the single-item indicator used in Study 1, we were also able to examine the relation between that single item and the scales of the RLI–R.

Method

Participants. Data were collected from 234 participants (147 women and 87 men) from the same institutions described in Study 1. The average age of the participants was 19.1 (SD = 1.06), and most were in their first year (n = 145) or second year (n = 61) of college. Consistent with the homogeneous European American student bodies of these institutions, 212 (90.6%) of the participants described their race or ethnicity as White. As with Study 1, participants received extra credit in a psychology course for taking part in the study.

Materials

Participants completed three questionnaires. The first questionnaire included the single-item measure of religiosity used in Study 1, which again was embedded in a series of other attitude questions.

The second questionnaire was the 24-item RLI–R (Hills et al., 2005), which taps three dimensions of religious experience. The first dimension is intrinsic religiosity, which concerns the degree to which participants view religion as a valuable end in itself, as opposed to a means to an end (e.g., “My religious beliefs are what lie behind my whole approach to life”). The second dimension measures extrinsic religiosity, or religion as a means to an end, something “instrumental” or “utilitarian” (e.g., “The purpose of prayer is to secure a happy and peaceful life”). The third dimension of religious experience, the quest dimension, assesses the degree to which religion involves a “constant questioning and entertainment of doubt as a means of spiritual growth” (e.g., “Questions are far more central to religious experience than are answers”). Each item of the RLI–R was measured on a 1 (strongly disagree) to 9 (strongly agree) scale; higher scores on each subscale thus indicate higher levels on each particular dimension of religiosity. The internal consistency reliabilities (Cronbach’s alpha) of the three scales in this study were acceptable (.92 for internal, .77 for extrinsic, and .83 for quest), and nearly identical to the reliabilities reported by Hills et al. (.93, .76, and .83, respectively).

The third questionnaire in Study 2 concerned attitudes toward sexual behavior (distress at partner forming sexual vs. emotional attachment to another, attitudes toward short-term and long-term mate-seeking, willingness to have intercourse with a desirable person whom they had known for various periods of time, and number of sexual partners desired over a number of time periods). This questionnaire was identical to the one used in Study 1.

Procedure

The procedure in Study 2 was identical to the one utilized in Study 1.
Results

Relation between single-item measure of religiosity and RLI–R. Table 2 provides the means and standard errors for men and women on the single-item measure of religiosity and on the three religiosity scales of the RLI–R. Women had statistically significant higher scores on the single-item indicator of religiosity, \( t(230) = 2.40, p = .017 \); the intrinsic religiosity scale, \( t(227) = 2.18, p = .030 \); and the extrinsic religiosity scale, \( t(226) = 2.97, p = .003 \). There was not a significant difference between men and women on the quest religiosity scale, \( t(224) = 0.532, p = .595 \).

Table 3 shows the intercorrelations with the single-item measure and the three subscales of the RLI–R. As Table 3 shows, the single-item measure has some degree of relation to all three scales, although it is clearly most strongly correlated with intrinsic religious expression. Factor analysis using principal factors extraction with varimax rotation was conducted to determine whether the single item used to measure religiosity in Study 1 loaded on any of the subscales of the RLI–R. Rotation was restricted to three factors. The single religiosity item loaded strongly (.89) on the intrinsic religious orientation scale factor and had weak loadings on the extrinsic (.08) and quest (−.08) factors.

Differences in desire for long-term and short-term relationships. Median splits were performed on all three RLI–R scale total scores to dichotomize the data and thus allow the subsequent ANOVAs to be performed. A 2 (Sex) × 2 (Intrinsic Religiosity: high vs. low) ANOVA on desire for short-term mate revealed significant main effects for sex, \( F(1, 223) = 25.85, p < .001 \) \((d = 0.67)\); and for religiosity, \( F(1, 223) = 10.69, p = .001 \) \((d = 0.43)\); and a significant Sex × Religiosity interaction, \( F(1, 223) = 6.64, p = .011 \) \((d = 0.34)\). As indicated in Figure 3, men were more desirous than women of having a short-term mate, and low-religiosity participants were more desirous than high-religiosity participants of having a short-term mate. A Tukey HSD test revealed that high-religiosity men had less desire for a short-term mate than did low-religiosity men, whereas no such significant difference existed for high- and low-religiosity women. A Sex × Intrinsic Religiosity ANOVA on desire for a long-term relationship yielded no significant effects.

A Sex × Extrinsic Religious Orientation ANOVA on desire for a short-term mate revealed a main effect of sex, but no significant effect of extrinsic religiosity and no significant interaction. A Sex × Extrinsic Religiosity ANOVA on the desire for a long-term mate also produced no significant main effects or interactions.

Two main effects emerged from a Sex × Quest Religious Orientation ANOVA on desire for a short-term mate: Along with the main effect for sex was a

Table 2. Descriptive Statistics for the Three Revised Religious Life Inventory Subscales and the Single-Item Indicator of Religiosity Used in Study 2

<table>
<thead>
<tr>
<th>Variable</th>
<th>Total Scale</th>
<th>Women</th>
<th>Men</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intrinsic</td>
<td>( M )</td>
<td>48.8 (1.19)</td>
<td>50.7a (1.50)</td>
</tr>
<tr>
<td></td>
<td>Mdn</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Range</td>
<td>9–72+</td>
<td></td>
</tr>
<tr>
<td>Extrinsic</td>
<td>( M )</td>
<td>29.2 (0.69)</td>
<td>30.7b (0.86)</td>
</tr>
<tr>
<td></td>
<td>Mdn</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Range</td>
<td>7–56b</td>
<td></td>
</tr>
<tr>
<td>Quest</td>
<td>( M )</td>
<td>41.2 (0.88)</td>
<td>40.9 (1.04)</td>
</tr>
<tr>
<td></td>
<td>Mdn</td>
<td>41.5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Range</td>
<td>8–72c</td>
<td></td>
</tr>
<tr>
<td>Single item</td>
<td>( M )</td>
<td>4.5 (0.12)</td>
<td>4.7c (0.14)</td>
</tr>
<tr>
<td></td>
<td>Mdn</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Range</td>
<td>1–7d</td>
<td></td>
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</tbody>
</table>

Note. Standard errors are in parentheses. Higher scores indicate higher levels of religiosity. Means in the same row with common subscripts differ at the \( p < .05 \) level of significance.

+Scores on the intrinsic subscale have a possible range from 9 to 81.

bScores on the extrinsic subscale have a possible range from 7 to 63.

cScores on the quest subscale have a possible range from 8 to 72.

dScores on the single-item indicator of religiosity have a possible range from 1 to 7.

Table 3. Correlations Among Three Revised Religious Life Inventory Subscales and Single-Item Indicator of Religiosity

<table>
<thead>
<tr>
<th>Variable</th>
<th>Intrinsic</th>
<th>Extrinsic</th>
<th>Quest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intrinsic</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extrinsic</td>
<td>0.27***</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Quest</td>
<td>−0.11*</td>
<td>0.07</td>
<td>1.00</td>
</tr>
<tr>
<td>Single item</td>
<td>0.87***</td>
<td>0.22**</td>
<td>−0.13*</td>
</tr>
</tbody>
</table>

*p < .10. **p < .01. ***p < .001.

Figure 3. Short-term and long-term mate-seeking for men and women high and low on intrinsic religiosity.
Differences in desired number of sexual partners. Figure 4 displays the mean number of sexual partners desired in the short term (six months or less) and long term (one year through “lifetime”) by men and women high and low on the intrinsic dimension of religiosity. As in Study 1, these data were positively skewed (skewness of 3.09 and 6.30 for short-term number and long-term number, respectively), rendering parametric tests on these data inappropriate. Therefore, the data were subjected to the same log transformation used in the first study: loge(n + 1).

Inspection of the transformed means (see Table 4) reveals that in both the short term and the long term, men desired more sexual partners than did women. Both of these differences were statistically significant: short term, \( F(1, 219) = 18.43, p < .001 \) (\( d = 0.57 \)); and long term, \( F(1, 218) = 29.62, p < .001 \) (\( d = 0.73 \)). Further inspection of the means indicates that for both time periods those lower in the intrinsic religiosity orientation desired more sexual partners than those high in that orientation. Again, both of these effects were statistically significant: short term, \( F(1, 219) = 26.59, p < .001 \) (\( d = 0.69 \)); and long term, \( F(1, 218) = 48.77, p < .001 \) (\( d = 0.94 \)).

In addition, both Sex \( \times \) Intrinsic Religious Orientation interactions were significant: short term, \( F(1, 219) = 9.97, p = .002 \) (\( d = 0.42 \)); and long term, \( F(1, 218) = 7.92, p = .005 \) (\( d = 0.38 \)). Follow-up inspection of the interactions using Tukey HSD tests revealed support for our hypotheses: In both the short term and the long term, men high on intrinsic religiosity desired significantly fewer sexual partners than did men low on intrinsic religiosity. Also consistent with our hypotheses, no significant differences in number of partners desired were found for women high and low on intrinsic religiosity in either the short term or the long term.

Sex \( \times \) Extrinsic Religious Orientation ANOVAs performed on transformed data of the desired number of sexual partners in the short term and the long term revealed no significant main effect of extrinsic religiosity and no significant Sex \( \times \) Extrinsic Religiosity interaction. Similarly, a Sex \( \times \) Quest Religious Orientation on the transformed data of desired number of partners in the short term revealed no significant effect for quest orientation and no significant Sex \( \times \) Quest interaction. A Sex \( \times \) Quest Orientation ANOVA on the log-transformed data for long-term number of partners desired, however, revealed a main effect for quest orientation: Those higher on the quest orientation scale were desirous of more sexual partners in the longer term than were those lower on that scale (.97 vs. .82), \( F(1, 215) = 5.00, p = .026 \) (\( d = 0.30 \)). The Sex \( \times \) Quest Orientation interaction was not significant (\( p > .05 \)).

Differences in attitudes about consenting to intercourse. The outcome variables in the third set of analyses were participants’ ratings of the likelihood of having intercourse after having known someone for relatively short periods of time (from one hour up to six months) and for longer periods of time (from one year–five years). A 2 (Sex) \( \times \) 2 (Intrinsic Religiosity: high vs. low) ANOVA on reported willingness to have intercourse after knowing someone for a short period of time revealed a main effect for sex, \( F(1, 221) = 49.22, p < .001 \) (\( d = 0.94 \)); a main effect for intrinsic religiosity, \( F(1, 221) = 38.74, p < .001 \) (\( d = 0.83 \)); and a significant Sex \( \times \) Intrinsic Religiosity interaction, \( F(1, 221) = 8.04, p = .005 \) (\( d = 0.38 \)). Inspection of the means presented in Figure 5 reveals that, as anticipated, women indicated less willingness than did men to have intercourse sooner, and participants high in intrinsic religiosity indicated less willingness than did low-intrinsic participants to engage in such behavior. The significant interaction qualified these findings, however, and a Tukey HSD test revealed the hypothesized outcome: Men high in intrinsic religiosity indicated less willingness to have sex in the short term than did men low in intrinsic religiosity.
whereas differences between women high and low in intrinsic religiosity were nonsignificant.

A Sex × Intrinsic Religiosity ANOVA on the willingness to have intercourse after knowing someone for longer periods of time also revealed two main effects. As the means displayed in Figure 5 show, women were less willing than men to have intercourse, \( F(1, 222) = 15.73, p < .001 \) (\( d = 0.53 \)); and participants higher in intrinsic religiosity were less willing than were those lower in intrinsic religiosity to have intercourse, \( F(1, 222) = 29.55, p < .001 \) (\( d = 0.72 \)). As the pattern of means in Figure 5 suggests, however, there was no Sex × Intrinsic Religiosity interaction, \( F(1, 222) = 0.01, p = .941 \).

Consistent with ANOVA results on the other outcome variables reported earlier, Sex × Extrinsic Religiosity ANOVAs on willingness to have intercourse after knowing someone for shorter and longer periods of time did not yield main effects for extrinsic religiosity, nor did they reveal Sex × Extrinsic Religiosity interactions. Sex × Quest Orientation ANOVAs on short-term and long-term willingness to have intercourse similarly yielded no statistically significant interactions, but two quest orientation main effects did emerge. Specifically, those scoring lower on the quest orientation scale were less willing than those scoring higher on the scale to engage in intercourse after knowing a partner for a short period of time (\( -1.92 \) vs. \( 1.52 \) on a \( 3 \) to \( 3 \) scale), \( F(1, 218) = 5.87, p = .016 \) (\( d = 0.33 \)); and after knowing a partner for a longer period of time (\( 0.84 \) vs. \( 1.48 \) on a \( 3 \) to \( 3 \) scale), \( F(1, 219) = 5.62, p = .019 \) (\( d = 0.32 \)).

Distress caused by infidelity. Consistent with Buss and Schmitt (1993) and with the results from Study 1, a majority of men indicated that the thought of a partner’s sexual infidelity was more upsetting than was the thought of a partner’s emotional infidelity, whereas this was the case for only a minority of women (56.1% of men vs. 20.1% of women), \( \chi^2(1, N = 226) = 29.11, p < .001 \). Chi-square analyses of emotional versus sexual distress percentages for men high and low on intrinsic, extrinsic, and quest orientations revealed no significant differences, and the same held true for women high and low on the three religiosity orientations.

Discussion

Results from Study 2 provide evidence that the intrinsic dimension of religiosity—and not the extrinsic or quest dimensions—moderate at least some of the sex differences in mating attitudes. This is consistent with results from Study 1. As discussed earlier, Gorsuch and McFarland (1972) presented evidence that single-item measures of religiosity closely relate to the intrinsic dimension of religiosity, and Study 2 supports that conclusion: The single-item measure we used loaded on the intrinsic scale of the RLI–R, and the pattern of intrinsic religiosity results in Study 2 closely mirrored the results using the single item in Study 1.
Specifically, and consistent with Study 1, men (but not women) high and low in intrinsic religiosity differed in the desire for a short-term mate, in the number of sexual partners desired in the short term, and in the number of sexual partners desired in the long term. Also consistent with Study 1, we found no moderating effect of intrinsic religiosity on the desire for a long-term relationship, on type of infidelity (sexual vs. emotional) that was most distressing to participants, or on desire to engage in intercourse with a potential partner known for a long period of time. Only on one outcome variable—the desire to engage in intercourse with a potential partner known for a short period of time—was there evidence that intrinsic religiosity moderated sex differences differently than was indicated in Study 1: Men high in intrinsic religiosity in Study 2 reported being less willing than men low on that dimension to engage in intercourse with a partner known for a short period of time. Women's levels of intrinsic religiosity, on the other hand, did not affect their (low) desire for intercourse in that circumstance.

General Discussion

The purpose of this research was to test for a moderating effect of religiosity on the differences between men and women in their mating preferences. The data from our two studies strongly support Buss and Schmitt’s (1993) Sexual Strategies Theory, as well as previous research regarding sex differences in mating preferences. Specifically, men reported wanting more sexual partners than did women in both the short term and the long term, indicated that they were more likely than women to have intercourse after knowing a partner for both short and long periods of time, anticipated more distress than women about a partner’s sexual infidelity and less distress about emotional infidelity, and were more likely to be seeking a short-term relationship than were women.

Data from our two studies also provided evidence that religiosity—intrinsic religiosity in particular—is an individual difference variable related to sexual attitudes. Specifically, our results support Rowatt and Schmitt’s (2003) intrinsic religious orientation—restricted sexuality hypothesis. Individuals high in intrinsic orientation expressed more conservative sexual preferences; they were less likely to be looking for a short-term mate, they wanted fewer sexual partners in both the short term and long term, and they were less willing to engage in intercourse after knowing a partner for both short and long periods of time. We did not find support, on the other hand, for Rowatt and Schmitt’s extrinsic religious orientation—unrestricted sexuality hypothesis, which states extrinsic religiosity should be negatively related to exclusivity in a relationship; there were no main effects for (or interactions with) extrinsic religiosity.

Most important in the context of this research, however, is the evidence we found for our hypothesis of the moderating effect of religiosity on differences between men and women in mating preferences. As discussed in the introduction, Buss and Schmitt (1993) proposed that the asymmetry between men and women in parental investment leads women to be more likely to pursue long-term sexual strategies and men more likely to pursue short-term strategies. Because women—religious or not—are theoretically less likely than men to pursue short-term sexual strategies, we predicted that high levels of religiosity would have a more profound effect on men’s mating preferences than on women’s preferences. Consistent with our hypotheses, on several of the mating preference outcomes the effect of sex was qualified by a Religiosity × Gender interaction. This was the case for a number of outcome variables: desire for a short-term mate; number of sexual partners desired; and in Study 2, willingness to have intercourse with a partner after knowing him or her for a short period of time. These results are particularly meaningful because previous research on the relation between the varieties of sexual experience and religiosity did not directly compare men and women and did not adjust for the heavily skewed nature of some of the mating preference data.

Intrinsic religiosity did not, however, qualify all mating preference differences between men and women. We did not find evidence that sex differences in distress caused by infidelity (sexual or emotional) were qualified by religiosity, perhaps because such distress relates to attitudes about another’s behavior and is not related—as the other outcome variables are—to actual behavioral preferences on the part of participants. Also, although we found that religiosity moderated sex differences for short-term mating strategies, there were no significant interactions for (a) desire for a long-term relationship and (b) willingness to have sexual intercourse with a desirable person whom participants had known for more than one year. This may relate to research that has shown that people perceive short-term and long-term relationships differently. For example, people tend to have different priorities in the criteria they use for short-term versus longer-term mates (Li & Kenrick, 2006). The results from this study indicate that attitudes toward sexual behavior also depend, to some extent, on temporal aspects of the relationship. In general, people tend to perceive more distant future events in ways that are decontextualized and abstract while perceiving near-future events in more contextualized and concrete ways (Trobe & Liberman, 2003). It is likely that, for most college students, long-term relationships have more temporal distance than short-term ones and, therefore, the relation among sex, religiosity, and mating preferences might be different when they consider short-term as opposed to long-term relationships. This is an area that warrants attention in future research.
Finally, although the results of these two studies suggest an important role for religiosity as an individual difference variable that can moderate sex differences in mating preferences, it is important to be cautious in the interpretation of these results. First, and most obvious, this is one pair of studies from two private colleges that have religious affiliations. It is possible that students from these institutions have, on average, a different type of sexual history than students from other kinds of institutions. Although such potential differences do not threaten the internal validity of this research, they do raise the issue of its generalizability. We did find the same basic pattern of sex differences in desire for sexual variety that Buss and Schmitt (1993) and Schmitt et al. (2003) found, which suggests that the student populations from which we collected our data do not dramatically deviate from the norm in one important way, but certainly it is important to replicate these results with other populations of participants.

Second, the non-experimental nature of this research precludes drawing definitive conclusions about cause and effect regarding the differences between men and women in the desire for sexual variety (e.g., that differential evolutionary pressures for men and women lead to differences in sexual variety) or about the relation between religiosity and sexual attitudes (e.g., that higher intrinsic religiosity causes more conservative sexual attitudes). Regarding the differences between men and women, it is theoretically possible that non-evolutionary factors, such as gender socialization (either in actual attitudes about sexual variety or in the willingness to honestly express attitudes) could be the central causal factor. This could certainly be a legitimate alternative explanation were our results the first to find such differences. However, as Schmitt et al. (2003) demonstrated, the same pattern of sex differences has been found around the globe, on all six populated continents, and the likelihood of these differences arising in these varied cultures spontaneously and for non-biological reasons is, at the very least, a less parsimonious explanation than that of universal, evolved sex differences in the desire for sexual variety.

The non-experimental nature of this research also prevents us from drawing absolute conclusions about the relation between religiosity and sexual attitudes (e.g., that higher intrinsic religiosity causes more conservative sexual attitudes). Furthermore, there is no clear consensus about what makes one person more or less religious than another, or even about the precise nature of religiosity. It may be a socially or culturally influenced individual difference variable; it may be a trait-like quality that has its genesis in heredity (Koenig, McGue, Krueger, & Bouchard, 2005); it may itself have evolutionary roots as a by-product of a collection of evolved adaptations (Kirkpatrick, 2005); or, most likely—and like many phenotypic expressions—it may be a combination of these.

Whatever its specific nature, however, the results of this research suggest that religiosity—specifically intrinsic religiosity—relates meaningfully to attitudes about mating strategies. Perhaps more important, this research provides evidence that intrinsic religiosity is an individual difference variable that qualifies evolved sex differences in mating strategies. Buss, in a 1998 article published in this journal, noted that a limitation of Sexual Strategies Theory is its lack of success “in explaining individual differences in human sexuality,” including “ways we differ within sex” (p. 30).

Data presented here, although supporting the central tenets of Sexual Strategies Theory, also provide insight into religiosity as an important individual difference variable that explains—perhaps more for men than for women—some of those differences.

References


