

**THE INFLUENCE OF CHRISTIANITY
ON MATING AND PARENTING STRATEGIES**

by

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ABSTRACT

Previous research and theory suggest that religious salience should impact social behaviors. Therefore, it was predicted that making Christianity salient would lead to decreased promiscuity and increased valuation of children. In two experimental studies, results were inconsistent. In study 1, participants were reminded of their religious beliefs in the experimental condition before completing survey measures regarding their sexual attitudes and desire to have children. Results suggested that religious saliency decreased reports of short-term mating desire, but did not affect long-term mating desire. Attitudes towards having children remained unchanged. In study 2, participants underwent a similar manipulation to make their religious beliefs salient before evaluating online dating profiles. Participants viewed four opposite-sex profiles: two depicting a target looking for short-term mating and two looking for long-term mating. Contrary to the hypothesis, participants' evaluations of the targets did not differ depending on the experimental condition they were in. Implications of these results are discussed.

PREFACE

This thesis involves research that was conducted on people. This research required approval of the UBC Behavioral Research Ethics Board. It was approved under certificate number H10-03072.

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1 GENERAL INTRODUCTION

Religions call on us to wage war against our moral adversaries; we fear God's punishment for selfish deeds, and we try to explain events in terms of god's intentions. Evidently, religious belief has a tremendous influence on human behavior. In recent years, research in this area has burgeoned, focusing particularly on the prosocial effects of religion. The present research examines the impact on mating and parenting strategies. More than any other major world religion (e.g., Islam, Hinduism), Christianity regulates sexuality, promoting a high fertility, monogamous mating system, and discouraging promiscuity. In the research contained herein, I examine the effects of religious reminders on values pertaining to sexuality and parenting.

1.1 The relation between Christianity and mating/parenting

A thorough examination of historical and contemporary evidence reveals a strong link between religion and sexuality/parenting attitudes, particularly for Christians. Sociological evidence supports the notion that Christians, at least in the United States, tend to be more sexually restricted and place a greater priority on parenting. Weeden, Cohen, and Kenrick (2008), analyzing data from the US General Social Survey, report that religious attendance correlates positively with number of children ($r = .16$), but negatively with number of sexual partners ($r = -.28$). These factors predict religious attendance more strongly than other moral attitudes or personality variables. More specifically, Rowatt and Schmitt (2003) report survey data suggesting that the strength of deeply held, *intrinsic* religious beliefs correlates negatively ($r = -.41$) with sexual promiscuity. Conversely, *extrinsic* religious belief correlates with *greater* promiscuity. The latter results suggest that it may be

supernatural monitoring (the thought that “God is watching”) that drives the relation between religiosity and mating-related behaviors. If devout religious followers are more sexually restricted, that suggests that these believers consider sexual promiscuity to be discouraged by their religion’s tenets.

Though other large religions have instituted restrictions on sexuality (e.g., Islam’s restriction to only four wives was quite a departure from the harems that existed at the time, [Glasse, 2003]), none of the major religions have such strict regulations as Christianity. The Bible is littered with passages disparaging promiscuity and promoting investment in offspring, (e.g., Deuteronomy 5:18 New Jerusalem Bible; Exodus 20:14; Genesis 1:28; Hosea 4:2; Leviticus 20:10; Matthew 5:27). For example, Matthew 5:27 states “You have heard that it was said, ‘You shall not commit adultery. But I tell you that anyone who looks at a woman lustfully has already committed adultery with her in his heart.’” In this passage Christians are taught that even thinking lustful thoughts is morally wrong. Genesis 1:28 recounts God’s encouragement that Christians reproduce and occupy the entire planet: “God blessed them and said to them, ‘Be fruitful and increase in number; fill the earth and subdue it. Rule over the fish in the sea and the birds in the sky and over every living creature that moves on the ground.’”

Since its inception, the church has promoted norms for monogamy and high fertility. 2nd century Christian author Tertullian, in a note to his wife, writes: “To the servant of God, forsooth, offspring is necessary! For our own salvation, we are secure enough, so that we have leisure for children!” Looking at social policy, male promiscuity, female infanticide, and abortion were common among pagans in the Greco-Roman world, but such practices were forbidden among Christians (Stark, 1996).

Sexuality and family have been core values since the formation of Christianity, and modern evidence suggests that they remain so today.

1.2 Causality in the effects of Christianity on mating and parenting attitudes

This is the first research testing the hypothesis that shifts in parenting psychology may accompany shifts in mating strategy. Multiple pathways exist for the influence between Christianity, mating psychology, and parenting psychology. Perhaps Christian salience impacts only mating psychology, which then in turn affects parenting psychology. In this case, reminding one of Christianity creates increases the preference for long-term, committed romantic relationships. To the extent that one associates these stable relationships with having children, increasing the desire for a long-term mate may increase the desire to have children.

Alternatively, Christian priming may impact only parenting attitudes, which then in turn impact mating attitudes. In this pathway, Christian priming causes participants to want to have children more. Increased desire to have children leads one to change his or her mate preferences. If one intends to have children, then a long-term mating strategy, where both parents invest in the children, would be ideal.

In opposition, Christianity may simultaneously impact both mating and parenting psychology. According to this pathway, shifts in both mating and parenting psychology are attributable directly to a religious reminder. One believes that the church holds positions on both mating and parenting values, and a religious reminder simultaneously impacts both attitudes, leading to aversion to promiscuity and greater desire to have children.

1.3 Mechanism by which Christianity impacts attitudes

As several pieces of evidence reinforce the hypothesis that Christian reminders may shift mating strategies, multiple means of influence are possible. We discuss three possible mechanisms: a) the religious prime may activate one's own values, b) the religious prime may activate stereotype awareness, and c) the religious prime may prepare one to interact with the primed group.

The most intuitive pathway suggests that reminding participants of religious faith reminds them of the values that their faith holds and potential consequences if they do not abide by those values. Much research over the past several years has examined religious influences on social behavior. For example, studies have shown that after inducing religious thoughts, people are temporarily more trusting, generous, and honest (Ahmed & Salas, 2011; Mazar, Amir, & Ariely, 2005; Randolph-Seng & Nielsen, 2007; Shariff & Norenzayan, 2007; Tan & Vogel, 2008). Several scholars (e.g., Mazar, Amir, & Ariely, 2005; Shariff & Norenzayan, 2007) argue that a common theme of prosociality underlies these downstream behaviors. Overcoming selfish human motivation is no simple task, thus religion plays an integral role in strengthening commitment to cooperative norms (Atran & Henrich, 2010). Religious believers may feel greatly dedicated to their values because a) they fear supernatural punishment and b) a set of rituals and costly signaling behavior fosters a strong commitment to the group and its norms. Major religions moralize several behaviors in order to redirect selfish human motivation. Mating and parenting may be such behaviors, as they are targets of Christian moral regulation.

Thus a Christian prime may remind Christians to abstain from premarital sex and have children in long-term stable relationships while simultaneously reinforcing the

presence of an omniscient God who has the power to determine their fate in the afterlife. This may be a very powerful admonition in that it not only reminds followers of the rule, but provides motivation to follow it. Shariff and Norenzayan (2007) report that in one of their two studies, a religious prime had a greater impact on believers than on nonbelievers. Additionally, the data from Rowatt and Schmitt (2003) are consistent with this explanation, finding that intrinsic belief (and presumably, greater awareness of supernatural monitoring) correlates with decreased promiscuity. If religious reminders impact behavior by encouraging one to act in accordance with their religious values, then we would expect that our manipulation would be stronger among religious believers.

The second possible mechanism considers the potential for a priming procedure to increase awareness of stereotypes, resulting in stereotype-consistent behavior. For example, Wheeler and colleagues (2001) report that after being subtly primed with African American stereotypes, non-African American participants performed worse on a math test. Applied to the current hypotheses, this mechanism predicts that the religious prime acts by causing participants to act in accordance with Christian stereotypes. Given the strong correlations presented above, participants may associate Christianity with decreased promiscuity and high fertility. If this is the case, then the prime may operate by causing participants to temporarily change their attitudes to be more consistent with stereotypes of the primed group.

A third possible mechanism is that a Christian reminder activates awareness of the social category “Christians,” and prepares one to interact with this group. Cesario et al., (2006) argue that changes in social behavior may be driven by a preparation to

interact with the primed group member. This explanation for priming effects runs counter to the previous explanation of stereotype activation, but Cesario and colleagues present intriguing evidence to back their argument. They find that, when primed with a social category, participants' behavior shifts in a way that is consistent with how they would act *towards* members of that social category, as opposed to acting in a way that is consistent with how the participant *perceives* that social category.

For example, participants were subliminally exposed to words associated with homosexuals and then put in a situation where they could act hostile or passive towards the experimenter. The researchers hypothesize that to behave aggressively is to act how one would act *towards* that group member. Conversely, to behave passively is to act how one would act if one was *imitating* group stereotypes. Participants acted aggressively, rather than passively, suggesting that the prime promotes behavior consistent with how one would act *towards* the primed group.

Applied to the present research, if we observe that the religious reminder impacts members of all faiths equally, then it seems less plausible that the manipulation primes one's own beliefs. If this is the case, we cannot isolate just one explanation – both the stereotype activation and motivated preparation to interact explanations predict that the prime should affect all participants equally. The only distinction we can make is whether or not the prime works by activating one's own values or not.

In order to determine if the prime activates one's own values, we examine if the prime is stronger among Christians (compared to non-Christians) or among religious believers in general (in comparison to atheists/agnostics). If we do find that the prime is especially powerful among Christians, this lends credence to the hypothesis that

participants' Christian values are being primed. Conversely, if we find that the prime is equally strong for all participants, this suggests that the impact of Christian saliency may be operating by activating awareness of stereotypes, or by preparing participants to interact with the primed group.

1.5 Ancillary hypotheses

1.5.1 Differential impact between men and women

Because men have higher baseline rates of short-term mating interest (cf. Buss & Schmitt, 1993; Clark & Hatfield, 1989; Jackson & Kirkpatrick, 2007), any prime that depresses this motivation may have greater impact among males. This is nothing specific about Christianity – the tenets against promiscuity are directed at women just as much as they are directed towards men. Rather, on average, women tend to seek short-term mates much less than men, so there is less attitude change to be inspired by the prime. Male mating psychology, with much greater variability, has a greater propensity to shift. At least one piece of evidence speaks to our particular research question: Rowatt and Schmitt (2003) find that the correlation between religious belief and sexuality tends to be stronger among men. Thus, we test the hypothesis that Christianity's effects on mating and parenting attitudes may be stronger among male participants.

2 THE PRESENT RESEARCH

The following research tests the hypothesis that Christian saliency impacts mating and parenting psychology, causing participants to become more sexually restricted and more interested in raising children. In our procedure, we ask participants to complete a brief demographics questionnaire before completing the dependent measures. Embedded within this demographics questionnaire is a question asking participants to identify their religious identity. Previous research has found that being reminded of social stereotypes may elicit responses consistent with that stereotype. One example comes from the aforementioned findings that math performance decreases after being exposed to African American stereotypes (Wheeler, Jarvis & Petty, 2001). In a procedure that is more similar to our own, parents act more careful after answering a demographics question about their parental status (Eibach & Moch, 2011). Thus we anticipate that, though subtle, our religious reminder should be sufficient to affect attitudinal and behavioral change on our dependent measures.

We account for the following moderating variables: a) participants' gender, b) whether participants are religious followers, c) which religion they follow, d) whether participants were raised in a religious tradition, and e) participants' level of intrinsic/extrinsic motivation for their beliefs. The goals of this research are to identify what impact, if any, Christianity has on mating and parenting psychology, and to examine moderating and mediating variables to determine when this impact is most powerful.

2.1 Study 1 method

2.1.1 Participants

153 participants completed the study via Amazon.com's Mechanical Turk (MTurk) worker exchange program. MTurk has been used extensively in psychological research, with findings suggesting that: a) MTurk participants are more representative of the U.S. population than are other Internet samples, and b) MTurk workers are significantly more diverse than the American college students who typically participate in psychological research studies (Burhmester, Kwang, & Gosling, 2011). Participants found the study among a list of possible tasks they could complete as an MTurk worker. The task was labeled "Personality and Life History" and participants were offered \$0.25 for their participation, an amount consistent with typical levels of compensation for similar tasks on MTurk.

For both studies, we restricted participation only to Americans. Christianity may operate differently in different cultures. In order to have as much control as possible, we first sought to test the hypotheses using a sample of Americans, thus eradicating any noise due to cultural differences. Two participants were excluded because they identified that they had managed to circumnavigate MTurk's location filters and they were not from the United States. The final sample consisted of 151 participants (90 women, 61 men; age ranged from 18 to 70).

2.1.2 Design

2.1.2.1 Manipulation

Participants were randomly assigned to one of three conditions. In the experimental ("religious question first") condition, before participants completed the

dependent measures, they were asked to report a) their age, b) their gender, and c) their *religious* identity. The question concerning religion read as “*What is your religious identity*” and options included: *Christian, Jewish, Buddhist, Muslim, Atheist/Agnostic,* and *Other*. In one of the control conditions (ethnicity question first, religion question after), participants were asked the same demographics questions, and were asked these questions before completing the dependent measures, just as in the experimental condition; however, there was one notable difference. Instead of reporting a) their age, b) their gender, and c) their *religious* identity, participants in the ethnic condition were asked to report a) their age, b) their gender, and c) their *ethnic* identity. Thus this condition was identical to the religious question first condition except that the religious identity question was replaced by the ethnic identity question.

In the second control condition (religion and ethnicity question after), participants did not answer any demographic questions before completing the dependent measures. Instead, participants completed the dependent measures first, and answered demographic questions (e.g., age, gender, religious and ethnic identity) at the end of the study.

2.1.2.2 Dependent measures

Next, participants completed the 25 item sociosexuality inventory (Jackson & Kirkpatrick, 2007). This measure consists of three subscales assessing a) short-term mating orientation, b) long-term mating orientation, and c) past sexual experience. In this study we were particularly interested in a) and b). For both a) and b), participants responded by rating the extent of their agreement with the statement on a five-point scale, ranging from “*strongly disagree*” to “*strongly agree*.” Subscale a) consisted of

ten questions, including items such as “*Sex without love is okay.*” Of the ten questions, two were reverse-scored and an overall short-term mating measure was computed by taking the mean of all ten items, $\alpha = .88$. Subscale b) also consisted of ten questions, including items such as “*I am interested in maintaining a long-term romantic relationship.*” Of the ten questions, four were reverse-scored and an overall long-term mating measure was computed for each participant by taking the mean of all ten items, $\alpha = .89$.

After completing the SOI, participants answered three questions assessing their interest in becoming a parent (taken from Griskevicius, et al., 2011). All questions were answered on a nine-point scale. These questions were: “*Would you like to have children in the next few years,*” (response anchors “*definitely no*” to “*definitely yes*”), “*If you were to have a child in the next few years, how would you feel,*” (response anchors “*very negative*” to “*very positive*”), and “*How disappointed would you be if you did NOT have a child in the next few years*” (response anchors “*not at all disappointed*” to “*very disappointed*”). To compute an overall measure of parenting interest for each participant, the mean of the three items was taken, $\alpha = .86$.

Finally, participants completed the Religious Orientation Scale, which assesses both intrinsic and extrinsic religiosity (Allport & Ross, 1967). The extrinsic religiosity subscale consisted of twelve items, for example, “*A primary reason for my interest in religion is that my church is a congenial social activity.*” The intrinsic religiosity subscale consisted of nine items, for example, “*My religious beliefs are really what lie behind my whole approach to life.*” All responses were on a five-point scale ranging from “*strongly disagree*” to “*strongly agree.*” Measures for each scale were computed

by calculating the mean of all items in each subscale, $\alpha = .94$ and $\alpha = .85$ for the intrinsic and extrinsic scales, respectively.

2.2 Results

First, we test to see if there is a significant difference between the two control conditions. As expected, no differences were found for responses on either the short-term mating subscale (STMO), $t(88) = 0.97, p = .337$, or for the long-term mating orientation subscale (LTMO), $t(88) = 0.79, p = .433$. We repeated the process using parenting motivation as the dependent measure, and also found no significant difference between the two control conditions, $t(88) = .788, p = .433$. Thus, we first present analyses with the control conditions combined, then also report analyses comparing the experimental condition to each control condition individually.

2.2.1 Sexuality measures

The STMO and LTMO measures were each submitted to a 2 (condition: *experimental vs. control*) x 2 (participant gender: *male vs. female*) ANOVA. Analyses revealed main effects of condition on STMO, $F(1, 149) = 5.57, p = .020$, such that participants in the “religion question first” condition reported significantly lower STMO. No significant differences were found for LTMO, $F(1, 149) = .005, p = .945$. Additional main effects of gender were found for both STMO $F(1, 149) = 37.20, p < .001$ and LTMO $F(1, 149) = 10.74, p = .001$, such that males reported significantly higher STMO and significantly lower LTMO than females. For STMO, condition did not significantly interact with participant gender, $F(1, 149) = 0.97, p = .325$. For LTMO, the interaction between condition and gender was also not significant, $F(1, 149) = 0.171, p = .843$.

Table 2.1. Means and standard deviations for STMO and LTMO across conditions in study 1

	STMO			LTMO		
	Religion and ethnicity questions after	Ethnicity question first, religion question after	Religion question first	Religion and ethnicity question after	Ethnicity question first, religion question after	Religion question first
Male (n=61)	3.64 (.90) n=22	3.43 (.94) n=15	3.06 (.93) n=24	4.20 (.70) n=22	3.81 (1.01) n=15	4.08 (.78) n=24
Female (n=90)	2.46 (.98) n=23	2.52 (.94) n=30	2.30 (.71) n=37	4.55 (.46) n=23	4.35 (.69) n=30	4.42 (.55) n=37
All (n=151)	3.03 (1.10) n=45	2.83 (1.02) n=45	2.60 (.88) n=61	4.37 (.61) n=45	4.11 (.84) n=45	4.24 (.69) n=61

We also report comparisons using each control condition separately. Scores for STMO and LTMO were compared between the experimental conditions and control conditions individually. Comparing the “religion and ethnicity questions after” condition to the “religion question first” condition, there is no significant difference between conditions on LTMO scores, $t(104) = 0.73, p = .466$, but participants report significantly lower STMO scores in the “religious question first” condition, $t(104) = 2.33, p = .022$. Comparing the “ethnicity question first, religion question after” condition to the “religion question first” condition, we observe no significant differences for either STMO $t(104) = 1.25, p = .215$, or LTMO, $t(104) = 0.79, p = .436$.

We note that the amounts of each gender in the two control conditions are not proportional. Of those participants in the two control conditions, more of the men are in the “religion and ethnicity questions after,” but more of the women are in the “ethnicity question first, religion question after” condition. However, this does not impact the

significance of our results due to the fact that there are no differences on the dependent measure between these two control conditions. Thus there is no reason to expect that having more participants in one control condition or another would impact the significance of the results. The meaningful distinction between conditions exists between the experimental condition and the two combined control conditions. In this comparison, the proportions of each gender are approximately equal.

Secondary analyses tested whether the effects of the religious prime on STMO were stronger among a) Christian participants (compared to non-Christians) or b) religious adherents of any affiliation (compared to atheists/agnostics). To test a), we ran a 2 (condition: *experimental vs. control*) x 2 (participant religious identity: *Christian vs. non-Christian*) ANCOVA with participant gender and religious upbringing (raised religious or not) as covariates. We control for gender and religious upbringing to minimize noise from variables that are not directly related to the question we seek to answer. Results suggested that the effects of condition on STMO did not depend on one's status as a Christian, $F(1, 149) = 0.40, p = .528$.

Table 2.2. Means and standard deviations for STMO split by Christians and non-Christians

	Religion and ethnicity questions after	Ethnicity question first, religion question after	Religion question first
Christian (n=82)	2.94 (1.05) n=23	2.43 (.88) n=21	2.50 (.85) n=38 ¹
Non-Christian (n=69)	3.15 (1.16) n=22	3.17 (1.03) n=24	2.75 (.92) n=23

¹ Despite the disproportionate number of Christians in this condition, re-running the initial ANOVA while controlling for whether or not the participant is a Christian or not does not the significance of the result.

To test b), we ran a 2 (condition: *experimental vs. control*) x 2 (participant religious identity: *religious adherent vs. atheist/agnostic*) ANCOVA with participant gender as a covariate. Results suggested that the effects of condition on STMO did not depend on one's status as a religious believer, $F(1, 149) = 0.07, p = .787$. Thus we conclude that the strength of the religious prime did not significantly differ depending on one's religious identity.

Table 2.3. Means and standard deviations for STMO split by theists and non-theists

	Religion and ethnicity questions after	Ethnicity question first, religion question after	Religion question first
Theists (n=101)	2.91 (1.02) n=27	2.58 (.91) n=29	2.49 (.84) n=45
Non-theists (n=50)	3.25 (1.22) n=18	3.28 (1.10) n=16	2.89 (.95) n=16

2.2.2 Measure of parenting motivation

The three parenting questions (articulated above) were combined into one overall measure of parenting motivation ($\alpha = .862$) and submitted to a 2 (condition: *experimental vs. control*) x 2 (participant gender: *male vs. female*) ANCOVA with parental status as a covariate. Analyses revealed no main effects of either condition $F(1, 148) = 0.21, p = .650$ or gender $F(1, 148) = 0.61, p = .437$.

Table 2.4. Means and standard deviations for parenting motive across conditions in Study 1

	Religion and ethnicity questions after	Ethnicity question first, religion question after	Religion question first
Male (n=61)	4.15 (2.30) n=22	3.64 (2.30) n=15	3.97 (2.07) n=23
Female (n=89)	4.37 (2.30) n=23	3.92 (2.91) n=30	4.37 (3.01) n=36
All (n=149)	4.26 (2.56) n=45	3.83 (2.70) n=45	4.21 (2.67) n=59

Due to the nature of the questions used in our study, this measure is more applicable for some participants than others. A question such as “*How would you feel if you had a child in the next few years?*” only effectively measures parenting interest when answered by participants at a certain stage in their lives. For many participants, either biological (cannot conceive) or practical reasons (cannot make financial and time commitments at current life stage) may make it unfeasible to have a child. If a participant is not in a time in their life where they can have a child, then responses to this question do not necessarily reflect actual attitudes towards parenting.

To address this issue, we run the same analysis again, this time limiting the sample just to those between the ages of 23 and 32. Under this stringent requirement, we can be reasonably certain that the respondents are in their reproductive years. Restricting the sample to these ages, we conduct the same 2 (condition: *experimental vs. control*) x 2 (participant gender: *male vs. female*) ANCOVA with parental status as a covariate as we did with the entire sample. Condition still does not significantly impact parenting motivation, $F(1, 53) = 1.64, p = .204$. The interaction between condition and participant gender shows a trend, but is not significant at the $p < .05$ level, $F(1, 53) = 2.43, p = .125$.

An encouraging trend does emerge among this sample. There is a fairly large mean difference between women in the control and experimental condition ($M_s = 4.51$ and 6.48 , respectively, out of 9), suggesting that among fertile females (but not males), religious salience may lead to an increased motivation to have children. We interpret this finding tentatively, as the sample is so tiny, but it does provide encouraging evidence for future research.

Table 2.5. Means and standard deviations parenting motive among those aged 23-32

	End	Ethnic	Religious
Male (n=26)	5.14 (1.68) n=12	3.67 (2.12) n=6	4.63 (1.89) n=8
Female (n=30)	4.00 (1.94) n=8	4.82 (3.18) n=13	6.48 (2.36) n=9
All (n=56)	4.85 (1.88) n=20	4.46 (2.88) n=19	5.61 (2.27) n=17

2.2.3 Analyses addressing causality

Finally, we report analyses that address the nature of the causal relationship between the manipulation, STMO, and parenting motives. The analyses reported above suggest that religious priming affects STMO, but not parenting motives. The possibility that Christian priming impacts parenting motives directly can be ruled out, given the lack of significance (at least in this sample); however, it remains possible that the manipulation impacts parenting motives via STMO, but this effect is not strong enough to show up as significant. To examine this, we assess the correlation between STMO and parenting interest. This correlation is not significant, $r = -.06$, $n = 151$, $p = .447$.

Additional correlation coefficients are reported below:

Table 2.6. Correlations between dependent measures in Study 1

	STMO	LTMO	Parenting motive
STMO	1	-.252*	.076
LTMO	-.252*	1	-.062
Parenting motive	.076	-.062	1

* Correlation is significant at the .01 level (2-tailed)

2.3 Study 2 introduction

In study 1, we observed that the religious prime significantly decreased STMO, but had no effect on either LTMO or on parenting interest. Additionally, we did not see stronger effects of the prime among either Christians or religious believers in general. Thus, we sought to replicate the effects in study 2, a) using a slightly different prime designed to sharpen our explanatory power, and b) using a different dependent measure to increase the generalizability of our findings. Rating one's sexuality on a survey is not the sort of thing people do very often and there may be a disconnect between survey responses and actual behavior. In study 2, participants evaluated online dating profiles and reported their mate preferences – a task that is much more common in everyday life.

If STMO decreases, one may expect that romantic interest in short-term partners would also decrease, but the effects may be muted – scholars have argued for decades about the extent to which attitudes predict behavior (e.g., LaPiere, 1934, Wicker, 1969). For example, LaPiere visited 250 restaurants with a Chinese couple and received polite service from nearly every establishment. When he later wrote to the owners asking if they would serve Chinese customers, most stated that they would not. More recently, Kawakami and colleagues (2009) found that most participants reported that they would be more upset and would stand up against racism more than they actually do when presented with a real-life situation. This research highlights the possibility that partner preferences will not necessarily adhere to participants' reported mating strategies.

In our model, we hypothesize that religious priming impacts one's own values and attitudes, which then in turn impact behavior. In study 1, we witnessed that the manipulation had a significant impact on mating attitudes, as reported on STMO. In

study 2, we seek to extend this to actual behavior. If we see that the prime impacts partner preferences, then we can make stronger claims about the extent of religion's influence. We thus test to see if religious priming is powerful enough to actually impact behavior.

The overarching hypothesis predicts that after Christian priming, participants may shift their mating strategies to prefer a long-term, committed strategy. However, the implications for our particular procedure are not perfectly clear. Based on the results from study 1, one might predict that participants in the experimental condition would selectively devalue the short-term mates, but exhibit no change in their evaluations of the long-term targets. Conversely, perhaps the Christian prime would increase the desirability of the long-term targets, while not affecting perceptions of the short-term targets. A third possibility is that short-term targets become slightly less appealing and long-term targets become slightly more appealing, and this difference is only elucidated by examining the difference scores between the two. To test all possibilities, we analyze the effects of the prime on both short and long-term profiles individually, then assess the effects on the relative desirability of the two in comparison to each other.

2.4 Study 2 method

2.4.1 Participants and design

122 participants (52 women, 70 men; age ranged from 19 to 80) completed the study via MTurk. As in study 1, availability of the study was restricted to Americans only. As this task was similar in length, participants were again paid \$0.25 for their participation. This task was listed as "Dating profile evaluations."

In study 2, participants were randomly assigned to one of two conditions. The experimental condition was nearly identical to that of study 1, except that this time, the options given for the religious identity question were: *Christian, Atheist/Agnostic, and Other*. Note that participants no longer saw the options: *Buddhist, Muslim, or Jewish*, thus allowing us to isolate the impact of the prime specifically to the salience of Christianity, if indeed an effect was observed. Only one control condition was used in study 2. Participants were asked to complete identical demographics information before completing the dependent measures, just as in the experimental condition, except that the religious identity question was changed to an employment status condition (options: *Employed, Unemployed, Other*).

After completing this demographics information, participants were asked to evaluate online dating profiles. Participants identifying as male viewed four female profiles, likewise, participants identifying as female viewed four male profiles. For all participants, two of the four profiles portrayed a person looking for a short-term relationship and two of the four profiles portrayed a person looking for a long-term, committed relationship. Each profile contained one photograph, listed approximately ten interests, and included a brief spiel of approximately 140 words. A sample spiel for one of the long-term female profiles:

I'm down to earth, responsible, loving, and thoughtful. I can be serious when I need to, but I like to relax as well. An ideal night for me is to have a nice dinner, then enjoy a movie with a glass of wine. I love to read, there's nothing better than getting lost in a good book.

I am looking to take things slow and get to know you. I would like to start as friends and then see where things go. I am a sucker for romance. One of my guilty pleasures is watching sappy romantic movies. I am ultimately looking for someone to start a family with.

The qualities that I think are important in a partner are honesty, loyalty, work ethic, caring, and being family oriented. If you want to know more, send me a message.

Along with this spiel, the long-term target's interests included things associated with family/home life such as *long walks, reading, and family*. The short-term target's interests included things associated with promiscuity such as *drinking, partying, and adventure*. Below is a sample spiel from one of the short-term female profiles:

Hi, I am fun, honest, friendly, smart, open-minded, sweet, understanding, and down to earth. I have a lot of heart. I care about people. I love being happy and want others to be too. I am looking for someone who is the same.

I am just on here because I am looking for cool people to hang out with for friendship and maybe more however. I recently ended a long term relationship and am not looking for anything serious.

I have a thing for athletes so if you are that would be hot but I am interested in someone who is fun, a good listener, fun, thoughtful, funny, fun, honest and open, and did I mention fun and who acts kind of young and who doesn't take their life and themselves too seriously!

The photos used in each profile were pretested to ensure that they did not differ on attractiveness. Before beginning study 2, photos of male and female faces were uploaded to Amazon's MTurk service and rated by 81 participants. Four male faces and four female faces were chosen based upon which four had the most similar attractiveness ratings. The attractiveness of the long-term profile photos did not differ from the average attractiveness ratings of the short-term profile photos ($M_s = 6.27$ and 5.74 , on a 10 point scale ranging from "very unattractive" to "very attractive"). Thus, any differences between the two conditions could be attributed to one's preference for a short-term or long-term mate.

As dependent measures, participants completed three items for each participant: "How romantically desirable do you find this person," (response anchors "very undesirable" to "very desirable"), "How eager would you be to go on a date with this person," (response anchors "very reluctant" to "very eager") and "If you were set up on a date with this person, how well do you think it would go," (response anchors "very poorly" to "very well") All questions were answered on a nine-point scale.

In order to compute an overall desirability score for each target, we aggregated the three desirability questions. Though reliability scores differed depending on the particular target, α 's ranged between .88 and .93.

Next, to compute an overall desirability score for the short-term targets, desirability scores were averaged across the two short-term profiles. The same procedure was done for the long-term targets. Finally, to compute the relative preference for long-term targets over short-term targets, we subtracted the overall short-term score from the overall long-term score from each participant.

After evaluating the desirability of each profile, participants were asked to again review each photo, unaccompanied by the rest of the profile, and answer the question "*How physically attractive do you find this person,*" on a ten-point scale ranging from "*very unattractive*" to "*very attractive.*" Participants then answered demographics questions including a question assessing their relationship status. Participants responded to the question "*Are you in a committed romantic relationship?*" with either "*yes*" or "*no.*" This question is of particular importance, as being single versus being in a committed relationship may impact how participants respond to opposite-sex dating profiles. In later analyses, we control for this variable. Finally, participants completed the Religious Orientation Scale (Allport & Ross, 1967).

2.5 Results

Males and females were analyzed separately, as each gender evaluated different profiles. We also combine male and female ratings and analyze them together. For all

analyses, participant's relationship status (*committed vs. noncommitted*) is controlled for.

2.5.1 Male participants

First, desirability ratings for short-term targets were compared between the experimental and control conditions. Analyses revealed no impact of condition on desirability ratings of short-term female targets, $F(1, 68) = 0.02, p = .895$. Next, we compared desirability ratings for the long-term targets. Again, analyses revealed no main effects, $F(1, 68) = 0.02, p = .889$. Finally, we compared the relative preference for long-term targets over short-term targets. In this analysis, we also control for participant's ratings of the target's physical attractiveness, allowing us to take a purer measure of the construct of interest. This final analysis also revealed no significant main effects, $F(1, 67) = 0.01, p = .923$.

Table 2.7. Dating Profile Desirability Ratings Across Conditions in Study 2: Male Raters

	Condition	
	Neutral (n=39)	Religious (n=31)
Short-term ratings	4.27 (1.87)	4.37 (1.81)
Long-term ratings	6.49 (1.58)	6.49 (1.58)
Preference for long-term targets	2.28 (2.29)	2.12 (2.00)

2.5.2 Female participants

First, desirability ratings for short-term targets were compared between the experimental and control conditions. Analyses revealed no impact of condition on desirability ratings of short-term male targets, $F(1, 50) = 0.78, p = .382$. Next, we compared desirability ratings for the long-term targets. Again, analyses revealed no main effects, $F(1, 50) = 0.87, p = .335$. Finally, we compared the relative preference for long-term targets over short-term targets. In this analysis, we also control for participant's ratings of the target's physical attractiveness. This final analysis also revealed no significant main effects, $F(1, 50) = 0.30, p = .863$.

Table 2.8. Dating Profile Desirability Ratings Across Conditions in Study 2: Female Raters

	Condition	
	Neutral (n=23)	Religious (n=29)
Short-term ratings	3.29 (1.52)	2.89 (1.88)
Long-term ratings	6.39 (1.64)	5.99 (1.83)
Preference for long-term targets	3.10 (2.29)	3.10 (2.28)

2.5.3 All participants

For the following analyses, we combine both male and female ratings of short and long-term profiles. First, desirability ratings for short-term targets were compared between the experimental and control conditions. Analyses revealed no impact of condition on desirability ratings of short-term male targets, $F(1, 120) = 0.74, p = .392$. Next, we compared desirability ratings for the long-term targets. Again, analyses revealed no main effects, $F(1, 120) = 0.66, p = .418$. Finally, we compared the relative

preference for long-term targets over short-term targets. This analysis also revealed no significant main effects, $F(1, 120) = 0.01, p = .916$.

Table 2.9. Dating profile desirability ratings across conditions in study 2: All participants

	Condition	
	Neutral (n=62)	Religious (n=60)
Short-term ratings	3.90 (1.80)	3.65 (1.97)
Long-term ratings	6.49 (1.68)	6.24 (1.71)
Preference for long-term targets	2.58 (2.31)	2.59 (2.18)

For all participants together, we also examine the interaction between condition and participant religiosity. It may be the case that, though our manipulation did not affect the sample as a whole, there was a significant impact upon Christian participants specifically. We examine this by running a 2 (condition: *experimental vs. control*) x 2 (participant religious identity: *Christian vs. non-Christian*) ANCOVA with relationship status as a covariate. Results suggested that the effect of condition on partner preferences did not depend on one's status as a Christian, $F(1, 118) = .297, p = .587$. Thus we conclude that the strength of the religious prime did not significantly differ depending on one's religious identity.

3 GENERAL DISCUSSION

A subtle reminder of Christianity decreased self-reported short-term mating orientation in study 1, but did not alter partner preferences in study 2. In study 1 we also observed that the prime did not significantly impact parenting motivation or LTMO. Notably, the significant decrease on STMO in study 1 did not depend on participant's gender or religious affiliation. The first study suggests that the effects of Christian priming are equally strong amongst Christians and non-Christians, theists and atheists. We interpret these effects with caution: religious reminders may decrease religious saliency. If so, this evidence buttresses the argument that religion partially spread as a method to encourage prosocial behaviors which increase group harmony. Further investigation is necessary to determine the exact mechanism by which this prime operates, and which factors determine the extent of its influence on mating cognition.

3.1 Inconsistent findings on short-term mating measures

It is interesting that in study 1, a religious prime impacted STMO, but in study 2, it did not impact partner preferences. It certainly seems plausible that participants may endorse a promiscuous mating strategy, but actually prefer long-term mates. It is important to remember that Jackson & Kirkpatrick (2009) report that STMO and LTMO are independent of each other. Perhaps even those with a highly unrestricted mating strategy still prefer to have committed, romantic relationships. Unrestricted people may find promiscuous partners less desirable, but simply have a greater willingness to engage in sexual relations with them. If this is the case, then we may expect that the dependent measure in study 2 is a poor measure of one's mating strategy, as it may not capture the variation present among the population. Perhaps in study 2, the religious prime had a strong impact on attitudes towards sexuality, and greatly depressed

motivations to engage in promiscuous sex, but this did not impact partner preferences. For example, at baseline, a promiscuous participant finds a short-term target somewhat revolting and really desires a long-term partner. If this is the case, decreasing the participants' desire for promiscuous sex may not impact their partner preferences.

The inconsistencies between study 1 and study 2 may also be due to differences in the procedures. As there were changes in both the manipulation and the dependent measure, I discuss the impact that each may have had.

3.1.1 Differences attributable to the manipulation

Given that the actual prime itself differed between studies, it is possible that Christianity alone did not impact participants' STMO scores. In study 1, participants were asked to choose their religious identity from the following: *Christianity*, *Buddhism*, *Islam*, *Hinduism*, *Atheism/Agnosticism*, and *Other*. In study 2, participants were given just three options: *Christianity*, *Atheism/Agnosticism*, and *Other*. In both studies, the prime is quite subtle; including those extra categories may make a crucial difference. As the prime in study 1 had a greater impact on subsequent measures, one cannot rule out the possibility that there was a synergistic effect of exposure to the four faiths that were listed in the study. Perhaps there is something about viewing a collection of religious identities which makes the first prime more powerful.

Srull and Wyer (1979) provide somewhat consistent evidence, finding that in a priming procedure, including a greater number of prime-related words leads to greater impact. This applies to both the absolute number of items (60 versus 30) and the percentage of concept-relevant items (80% versus 20%). Applied to the present research, in study 1, participants saw more religious categories in study 1 than in study

2, both as an absolute number (four versus one) and as a percent of all possible answers (66% versus 33%). Viewing four different religious groups may be a stronger prime because it may lead to the perception that religious folk are everywhere.

One final explanation that our research cannot rule out is that perhaps the effects found in study 1 have nothing to do with Christianity. Perhaps one of the other faiths listed is responsible for the impact on STMO, and when participants are no longer exposed to this faith in study 2, their mating cognition goes uninfluenced. Given that our sample was American and almost exclusively Christian or atheist/agnostic, this seems unlikely.

3.1.2 Differences attributable to the dependent measure

Another potential explanation is that, although both tasks were related to mating cognition, participants perceived them in qualitatively different ways. In study 1, participants completed the SOI, which likely fits with participants' schema for a survey. Participants may view a survey as an information exchange with the researcher – surveys are rarely completed for reasons other than providing the administrator with data. In study 2, participants engage in a dating profile evaluation task. This task is much closer to the sort of thing participants may do in their day-to-day lives; indeed, the profiles were designed to emulate real-life online dating profiles, with the descriptions heavily borrowed from actual profiles. Participants often consider romantic partner preferences and evaluate potential mates, but participants do not often quantify their sexuality attitudes on numerical scales. Thus participants may have a more stable script for how to evaluate partners, but their responses to a survey on their sexuality may be more plastic.

With this in mind, there are a number of ways that this different perception may impact the effectiveness of the prime. Perhaps the religious prime in study 1 lead participants to perceive the task administrator as someone concerned with religiosity, and they responded in kind. Perhaps in study 1, participants were more subject to demand characteristics. With that said, such a pattern would be unique to the literature. Previous research has found that religious priming impacts non-survey measures in which participants engage in more typical social cognition (Mazar, Amir, & Ariely, 2005; Shariff & Norenzayan 2007; Tan & Vogel, 2008). It is unclear why sexuality as a dependent measure would be unique. As a value-laden construct, sexuality self-reports are subject to social desirability effects, but the same applies to constructs such as cheating, fairness, and trust.

None of these explanations is very satisfying, and as such, we leave the question open to be further explored by future research.

3.2 Parenting variables in study 1

In study 1, the parenting motivation questions are taken from previous research by Griskevicius et al., (2011). A crucial factor to consider is that these questions are geared towards a particular audience – those for whom having a child in the next few years is a realistic possibility. A question such as “*How would you feel if you had a child in the next few years?*” only effectively measures parenting interest or motivation when answered by participants in their reproductive years. Even then, extraneous factors such as career goals and financial status may obfuscate the psychological motivation we seek to measure. One can easily imagine, for example, a young man or woman who is eager to have a child, but cannot take on that level of responsibility at the

moment. When limited to the ages of 23-32, it appears that a religious reminder may increase women's motivation to have children.

Alternatively, perhaps our measure of parenting, though not perfect, is good enough to capture an effect if it exists, but Christian concepts do not impact parenting motivation. If so, theory needs to be reevaluated. Perhaps Christianity's stance on sexuality is perceived as a more stringent guideline than the church's stance on having children. Or, perhaps both tenets are perceived as being equally essential to the faith, but attitudes towards parenting are less malleable than attitudes towards sexuality. Research by Laurin and colleagues (2011) posits an additional explanation: notions of God tend to increase temptation resistance but not goal pursuit. Restricting one's sexuality fits the temptation resistance side of self-regulation. Perhaps childbearing qualifies as a form of goal pursuit, and thus our prime was ineffective at increasing this desire. As this research is in its infancy, these are the sorts of questions that must be addressed to understand both the impact and the mechanism by which Christianity impacts such motivations.

3.3 Mechanism for effects of Christianity on STMO

One of the main questions in this research concerns *how* a religious prime impacts mating and parenting strategy. It is one thing to say that Christianity has an impact, but a complete understanding of the relation between these variables requires one to understand what drives the effect. Is Christianity's impact on STMO unique, in that it summons thoughts of a supernatural watchdog, or is it just one manifestation of a common prime effect? Based on study 1's findings on STMO, we cautiously deduce that, at least in this research, the findings are likely not unique. Given that the effects of

the prime were not stronger among Christians, we may infer that *any* construct that is associated with restricted sexuality may have had a similar impact on sexual attitudes. This is consistent with work on stereotype threat, where an activated schema impacts one's own behavior in stereotype-consistent ways. For example, if one associates her parents with restricted sexuality, reminding one of her parents may lead to decreased scores on LTMO. This does not preclude the possibility that Christian reminders sometimes act through supernatural monitoring, rather, it suggests that in this particular instance, that may not be the case.

3.4 Conclusion

A Christian prime significantly decreased reports of promiscuity, but did not impact partner preferences or parenting motivation. Future research may focus on the specific primes being used, to continue to discover which facets of religiosity impact social behavior, and under which circumstances. Similar procedures to those in study 2 may be employed, but with more trade-offs. In our study, we assumed that participants would prefer the short-term targets by default and gravitate towards the long-term targets only after religious priming discouraged the proclivity towards promiscuity. In hindsight, this may be a flawed assumption. For a more precise examination of partner preferences, participants may be forced to make trade-offs: for example, if participants are forced to choose between a more attractive partner who displays unethical behavior and a less attractive partner who is a paragon of virtue, mating attitudes may be a bigger factor in determining preferences. Perhaps one who is more concerned with short-term mating will devalue the importance of ethical behavior in favor of physical attractiveness, as this fits better with their interests in a partner.

One final note is that this research was conducted on a sliver of the human population -- a sample of American MTurk workers. Eventually, researchers should aim to describe, explain, and predict the impacts of all religions, not just Christianity, in locations across the world. Demographic forecasts predict that Christianity will continue to rapidly spread in sub-Saharan Africa. To what extent will Christian values function to decrease the promiscuous sexuality that leads to the spread of HIV? Wider samples will be necessary to make useful inferences about such key issues in the future.

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