



Published in final edited form as:

*J Exp Soc Psychol.* 2010 March 1; 46(2): 428–431. doi:10.1016/j.jesp.2009.10.017.

## Mating Competitors Increase Religious Beliefs

Yexin Jessica Li, Adam B. Cohen, Jason Weeden, and Douglas T. Kenrick

Department of Psychology, Arizona State University

### Abstract

It has been presumed that religiosity has an influence on mating behavior, but here we experimentally investigate the possibility that mating behavior might also influence religiosity. In Experiment 1, people reported higher religiosity after looking at mating pools consisting of attractive people of their own sex compared to attractive opposite sex targets. Experiment 2 replicated the effect with an added control group, and suggested that both men and women become more religious when seeing same sex competitors. We discuss several possible explanations for these effects. Most broadly, the findings contribute to an emerging literature on how cultural phenomena such as religiosity respond to ecological cues in potentially functional ways.

---

Religious beliefs have profound implications for behavior in many psychological domains, influencing what people eat, who they see as enemies, and who they choose as mates (e.g., Kirkpatrick, 2005; Storm & Wilson, 2009; Weeden, Cohen, & Kenrick, 2008). Scientific interest in the psychological significance of religion has increased in recent years (e.g., Kirkpatrick, 1999, 2005; Shariff & Norenzayan, 2007). A number of studies have focused on religiosity as a stable trait resulting from parental, societal and genetic influences (e.g., Koenig, McGue, & Iacono, 2008). Researchers who have studied changes in religious belief have generally considered how such beliefs might shift over the life course in response to major events, such as marriage or childbirth (McCullough et al., 2005). Nevertheless, it has long been realized that there can be rapid and dramatic conversions in religious beliefs (James, 1902).

From a dynamic evolutionary perspective, actions are governed by flexible decision rules. Many apparently fixed traits actually vary with context (Kenrick, Li & Butner, 2003). Indeed, the dichotomy between personality trait and situation can be somewhat misleading (Funder, 2006). Here, we propose that religiosity might be more malleable than previously thought, varying in ways that serve adaptive functions.

### Reproductive Context Influences a Wide Variety of Social Behaviors

Reproductive success has been linked directly and indirectly to a number of social behaviors, as far ranging as political beliefs and creative displays (e.g., Gangestad & Simpson, 2000; Sidanius & Pratto, 1999; Griskevicius, Cialdini, & Kenrick, 2006). Religious individuals are more restricted in their mating behaviors, and it has been assumed that this relationship is due to early religious indoctrination (Weeden, Cohen, & Kenrick, 2008). In the current study, we propose that religiosity may be dynamically responsive to information about the available mating pool.

---

Correspondence to: Yexin Jessica Li, Department of Psychology, Arizona State University, PO Box 871104, Tempe AZ 85287-1104. Yexin.Li@asu.edu.

**Publisher's Disclaimer:** This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Some recent correlational research indicates that attitudes about mating and sexuality are particularly strong correlates of adult religious attendance (Weeden et al., 2008). Weeden et al.'s correlational studies showed that current mating strategies better predict religious attendance than do standard personality variables and other moral values often viewed as central to religious beliefs. Those findings also hinted at the possibility that the presumed causal arrow from religiosity to mating behaviors could sometimes be reversed, with people adjusting their religiosity to support their current mating goals.

There is evidence that several dimensions of social behaviors vary as a function of information about the local mating pool, and one's position in it. For example, exposure to attractive members of one's own sex decreases one's evaluations of own competitiveness on the mating market (Gutierrez, Kenrick, & Partch, 1999). More broadly, archival research indicates that when there is an abundance of available females, sexual promiscuity increases and marriages are delayed. When there is an abundance of available males, on the other hand, people marry earlier, and divorce and promiscuity decreases (Guttentag & Secord, 1983). These sex differences fit with an abundance of data and theory suggesting that females, relative to males, are more inclined toward restricted/monogamous as opposed to unrestricted mating arrangements (Clark & Hatfield, 1989; Gangestad & Simpson, 2000; Kenrick, et al., 1990). With an abundance of men to choose from, women are in a buyer's market, and can demand higher levels of monogamous commitment from males. Conversely, with an abundance of women competing for men's attention, men can more freely engage in unrestricted mating behaviors (Guttentag & Secord, 1983). Given earlier findings that religiosity is linked to mating strategy (Weeden et al., 2008), these findings suggest the possibility that religiosity itself might fluctuate with mating-relevant ecological inputs.

Because religion often involves injunctions about appropriate and inappropriate mating behavior, people could become more religious when competitors are salient. We hypothesize that this effect is more likely to occur among women than among men. Women (more so than men) police the sexual strategies of other women, criticizing other women's mating behaviors (Baumeister & Vohs, 2004). Indeed, preliminary data indicated that women became more inclined to disagree with statements like "Sex without love is OK" after seeing mating pools of attractive, promiscuous women (Li, Cohen, & Kenrick, 2008). As noted above, a surplus of available women may incline men to become less committed to monogamous relationships (Guttentag & Secord, 1983). Hence, one might expect that women, more so than men, will be inclined to be more religious in the face of same sex competitors.

## Experiment 1

### Method

Arizona State University students ( $N = 269$ : 97 men, 172 women) participated for course credit. They were randomly assigned to view 6 dating profiles of either attractive men or attractive women. Participants were told that these people were students at Arizona State University participating in an online dating site. Participants rated the extent to which the person in the profile seemed interesting, attractive and nice (on 7 point scales). These questions were asked to bolster the cover story, which suggested that participants were helping to improve the dating site.

After participants viewed all 6 profiles, they were asked to rate, on a 10 point scale, the extent to which they agreed with the following statements: 'I believe in God', 'We'd be better off if religion played a bigger role in people's lives', and 'Religious beliefs are important to me in my everyday decisions' ( $\alpha = .88$ ). Although more commonly used religiosity scales exist (e.g. Allport & Ross, 1967), we did not use them for two reasons. First, they are considerably longer than our three item measure, and thus may have tipped participants off to the nature of the

experiment. Second, these scales reflect normative religiosity among American Protestants to the exclusion of other groups (Cohen, Hall, Koenig, & Meador, 2005).

## Results and Discussion

There was a significant interaction between participant sex and mating pool sex on religiosity ( $F [1,263] = 4.80, p = .029, \eta_p^2 = .018$ , Figure 1, left). Women were more religious when exposed to a mating pool of attractive women than attractive men; men were more religious when exposed to a mating pool of attractive men than when exposed to a pool of attractive women.

The results of Experiment 1 suggest that religiosity fluctuates in response to perceptions of available mates. Contrary to our initial expectations, the pattern was the same for men and women. The apparent similarity of pattern for males and females in Experiment 1 could mask several underlying possibilities. It might occur because, for example, men seeing attractive women became less religious, whereas women seeing attractive women became more religious. Alternatively, men and women may both be reporting less religiosity after viewing attractive profiles of the opposite sex. Or both men and women might become more religious when exposed to attractive competitors of their own sex. To better understand this pattern, it is necessary to assess baseline levels of religiosity for men and women in our sample. Experiment 2 included a control group for this purpose.

## Experiment 2

Experiment 2 consisted of an experimental group (184 Arizona State University students: 106 men; 78 women), and a control condition with 1493 Arizona State University students (698 men; 795 women). Those in the experimental condition were randomly assigned to view the same set of 6 attractive same sex or opposite sex profiles that participants saw in study 1. Religiosity was measured as in Experiment 1.

Students in the control condition did not see any profiles but were students taking the same course in the same semester as the experimental participants, who completed a mass survey at the start of the semester, prior to any experimental procedures and before students could even have signed up for the experiment. Experimental and control groups were initially comparable on religiosity ( $F < 1$ ).

## Results

Within the experimental conditions, we replicated the interaction between participant sex and mating pool sex seen in Experiment 1 ( $F [1,177] = 5.09, p = .025, \eta_p^2 = .028$ ). We next examined, using planned comparisons with control groups, whether men become more religious when seeing a male mating pool, less religious when seeing a female pool, or both, and whether the results were different for women and for men.

Men who saw women were not different from men in the control group ( $p = .44$ ) but men who saw men were more religious than controls ( $p = .006$ ). Women who saw men were not more religious than controls ( $p = .89$ ) but women who saw women were ( $p = .018$ ).

## General Discussion

In line with the view that religiosity can be used as a mating strategy (Weeden et al., 2008), exposure to attractive members of one's own sex led participants to describe themselves as significantly more religious. Clearly, earlier research indicates that societal, familial and genetic influences are important determinants of chronic levels of religiosity. However, the existence of stable individual differences does not preclude the likelihood that a given

characteristic will fluctuate in response to situational cues as well (Funder, 2006; Kenrick et al., 2003).

We hypothesized that women would be more religious after seeing a dating pool full of attractive female competitors. Experiment 1 suggested that this was the case, but we were surprised that men were behaving similarly – they were more religious when seeing attractive men, and less religious when seeing attractive women. It was not clear from Experiment 1 whether men and women were becoming less religious after seeing attractive profiles of the opposite-sex, more religious after seeing attractive profiles of the same-sex, or some combination of the two. In Experiment 2, the findings were replicated and an added control group suggested that, rather than becoming less religious when seeing attractive members of the opposite sex, both men and women became more religious (relative to control) when exposed to attractive, same-sex competitors.

Several caveats are important. First, the current findings do not specify exactly what mechanisms drive the increases in self-reported religiosity. For example, high ratings of religiosity could be the result of self-presentation as religious or an actual change in religiosity. These would reflect different strategies in response to sex ratios. People could, for example, be reporting more religiosity to be more attractive in a context in which there are many same-sex competitors. People might report more religiosity if they seek to exploit a different niche to find mates (e.g. a religious niche rather than a university niche).

As a second caveat, these results do not imply that religious beliefs are only determined by mating goals. Religiosity is linked to multiple psychological mechanisms (e.g., Boyer, 2003; Kirkpatrick, 1999). As a final, it seems likely that there are individual differences in the flexibility of religious inclinations. Individuals who have high levels of chronic religious commitment may not respond to contextual cues at all, whereas other individuals might become more committed when contextual cues threaten their beliefs. These sensitivities to situational cues might also vary across religious groups (c.f., Cohen, et al., 2005; Cohen & Hill, 2007). Many religions favor endogamy and one might theorize a tighter link between religion and mating motivations in such religions. Some religions have ideals of celibacy and others promote reproduction.

More generally, our results support the view that religiosity can be a flexible strategy that changes with relevant ecological inputs. It has been traditionally presumed that religious people are more sexually restricted because of direct religious training (Weeden et al., 2008). The current data suggest alternative causal relationships. Humans are capable of exploiting many types of ecological niches, and religions may represent different niches (Storm & Wilson, in press). People may move between niches (some religious and some not) given which niche would promote the greatest reproductive success. Research with non-human animals yields abundant evidence of alternative mating strategies due to natural and sexual selection (Shuster & Wade, 2003). For example, resource availability triggers alternative mating tactics in other animal species (Kolluru & Grether, 2005). An emerging literature on the evolutionary dynamics of human cultural phenomena suggests that context dependent strategies also exist in humans (e.g. Norenzayan, Schaller, & Heine, 2006), but there is little research on religiosity as a mating strategy for humans. The current study indicates that social context can influence religiosity, suggesting a fertile ground for future research.

## References

- Allport GW, Ross MJ. Personal religious orientation and prejudice. *Journal of Personality and Social Psychology* 1967;5:432–443. [PubMed: 6051769]
- Baumeister RF, Vohs KD. Sexual economics: Sex as female resource for social exchange in heterosexual interactions. *Personality and Social Psychology Review* 2004;8:339–363. [PubMed: 15582858]

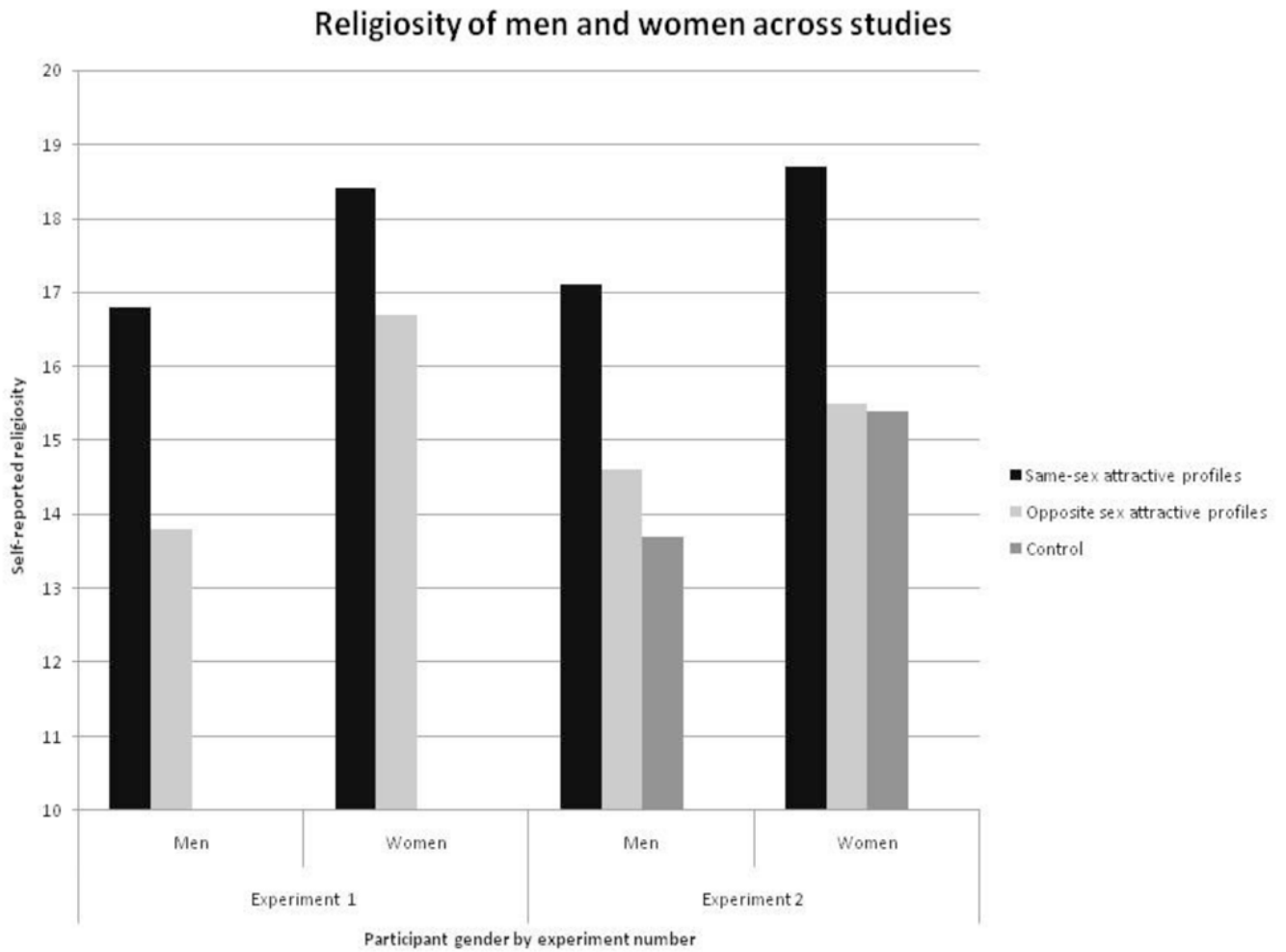
- Boyer P. Religious thought and behaviour as by-products of brain function. *Trends in Cognitive Science* 2003;7:119–124.
- Clark RD, Hatfield E. Gender differences in receptivity to sexual offers. *Journal of Psychology & Human Sexuality* 1989;2:39–55.
- Cohen AB, Hall DE, Koenig HG, Meador KG. Social versus individual motivation: Implications for normative definitions of religious orientation. *Personality & Social Psychology Review* 2005;9:48–61. [PubMed: 15745864]
- Cohen AB, Hill PC. Religion as culture: Religious individualism and collectivism among American Catholics, Jews, and Protestants. *Journal of Personality* 2007;75:709–742. [PubMed: 17576356]
- Daly, M.; Wilson, M. *Sex, evolution, and behavior*. 2. Belmont, CA: Wadsworth; 1983.
- Funder DC. Towards a resolution of the personality triad: Persons, situations, and behaviors. *Journal of Research in Personality* 2006;40:21–34.
- Gangestad SW, Simpson JA. The evolution of human mating: Trade-offs and strategic pluralism. *Behavioral & Brain Sciences* 2000;23:573–644. [PubMed: 11301543]
- Griskevicius V, Cialdini RB, Kenrick DT. Peacocks, Picasso, and parental investment: The effects of romantic motives on creativity. *Journal of Personality and Social Psychology* 2006;91:63–76. [PubMed: 16834480]
- Gutierrez SE, Kenrick DT, Partch JJ. Beauty, dominance, and the mating game: Contrast effects in self-assessment reflect gender differences in mate selection. *Personality & Social Psychology Bulletin* 1999;25:1126–1134.
- Guttentag, M.; Secord, P. *Too many women: The sex ratio question*. Beverly Hills: Sage; 1983.
- James, W. *The varieties of religious experience: A study in human nature*. New York: Longmans, Green and Co; 1902.
- Kenrick DT, Li NP, Butner J. Dynamical evolutionary psychology: Individual decision rules and emergent social norms. *Psychological Review* 2003;110:3–28. [PubMed: 12529056]
- Kirkpatrick LA. Toward an evolutionary psychology of religion and personality. *Journal of Personality* 1999;67:921–952.
- Kirkpatrick, LA. *Attachment, evolution, and the psychology of religion*. New York: Guilford; 2005.
- Koenig LB, McGue M, Iacono WG. Stability and change in religiousness during emerging adulthood. *Developmental Psychology* 2008;44:532–543. [PubMed: 18331142]
- Kolluru GR, Grether GF. The effects of resource availability on alternative mating tactics in guppies (*Poecilia reticulata*). *Behav Ecol* 2005;16:294–300.
- Li, YJ.; Cohen, AB.; Kenrick, DT. Sociosexual orientation: Fixed trait or malleable strategy?. Poster presented at the ninth annual conference of the Society of Personality and Social Psychology; Albuquerque, NM. 2008 Feb.
- McCullough ME, Enders CK, Brion SL, Jain AR. The varieties of religious development in adulthood: A longitudinal investigation of religion and rational choice. *Journal of Personality and Social Psychology* 2005;89:78–89. [PubMed: 16060747]
- Norenzayan, A.; Schaller, M.; Heine, SJ. Evolution and culture. In: Schaller, M.; Simpson, JA.; Kenrick, DT., editors. *Evolution and social psychology*. New York: Psychology Press; 2006. p. 343-366.
- Shariff AF, Norenzayan A. God is watching you: Supernatural agent concepts increase prosocial behavior in an anonymous economic game. *Psychological Science* 2007;18:803–809. [PubMed: 17760777]
- Shuster, SM.; Wade, MJ. *Mating Systems and Strategies*. Princeton, NJ: Princeton University Press; 2003.
- Sidanius, J.; Pratto, F. *Social dominance: An intergroup theory of social hierarchy and oppression*. New York: Cambridge University Press; 1999.
- Sosis R, Ruffle BJ. Religious ritual and cooperation: Testing for a relationship on Israeli religious and secular kibbutzim. *Current Anthropology* 2003;44:713–722.
- Storm I, Wilson DS. Liberal and conservative Protestant denominations as different socio-ecological strategies. *Human Nature* 2009;20:1–24.
- Trivers, RL. Parental investment and sexual selection. In: Campbell, B., editor. *Sexual selection and the descent of man, 1871–1971*. Chicago, IL: Aldine; 1972. p. 136-179.

Weeden J, Cohen AB, Kenrick DT. Religious participation and reproductive strategies. *Evolution and Human Behavior* 2008;29:327–334.

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript



**Figure 1.** Religiosity in women and men after exposure to different mating pools. In two studies, men and women reported higher religiosity after viewing profiles of attractive people of their own sex versus profiles of attractive people of the opposite sex.