

# Perceived Openness to Experience Accounts for Religious Homogamy

Social Psychological and  
Personality Science  
2015, Vol. 6(6) 630-638  
© The Author(s) 2015  
Reprints and permission:  
sagepub.com/journalsPermissions.nav  
DOI: 10.1177/1948550615574302  
spps.sagepub.com



Joshua Jackson<sup>1</sup>, Jamin Halberstadt<sup>2</sup>, Jonathan Jong<sup>3</sup>, and Hillel Felman

## Abstract

Two studies tested the hypothesis that religious homogamy—assortative mating on the basis of religion—can be partly explained by inferences about religious individuals' openness to experience, rather than attitudes toward religion per se. Results of Study 1 indicated that non-religious participants perceived non-religious targets to be higher in openness and more appealing as romantic partners, with the first effect statistically accounting for the second. Study 2, which manipulated "religious" and "open" behaviors independently, showed that openness guided dating judgments for both non-religious and religious participants, albeit in opposite directions. Thus, regardless of their own religious beliefs, individuals appear to infer the same kind of behaviors from others' religiosity, behaviors that are seen positively by religious individuals, but negatively by non-religious individuals. These inferences, in turn, partially explain all individuals' preferences for partners of the same religious orientation.

## Keywords

religious homogamy, mate selection, personality, social cognition, online dating, openness to experience

When searching for soul mates, we prefer those who share our views on the soul. Assortative mating on the basis of religious belief, also known as "religious homogamy," is one of the most robustly documented findings in the mate selection literature (Buss and Barnes, 1986; Fiore & Donath, 2005; Hitsch, Hortaçsu, & Ariely, 2010; Ortega, Whitt, & Williams, 1988; Sherkat, 2004; see Kalmijn, 1998, for a review of religious and other homogamies). Across a number of religious faiths (Glenn, 1982) and cultures (Hollingshead, 1950), people seek partners who share their religious orientation (Buss, 1989), a trend that is reflected by high rates of same-religion marriage, and by higher levels of marital satisfaction among same-religion couples (e.g., Heaton, 1984; Ortega, Whitt, & William, 1988). Faith-biased mate preference has now even crossed into the world of online dating, with sites like "Christian Connection," "Atheist Passions," and "J-date," catering specifically to people who are single and ready to mingle—but only with those who share their religious point of view.

Like any broadly construed and robust social phenomenon, religious homogamy is likely multiply determined, and a number of social psychological theories have been used to understand it. One simple explanation, for example, treats religious homogamy as an artifact of the propinquity effect (Katz & Hill, 1958): People with common religious beliefs and needs tend to live and work near each other, and individuals tend to affiliate with those in their physical proximity (Buss, 1985; Ellsworth, 1948; McCutcheon, 1988). More complex accounts emphasize the importance of religion to social and self-identity. For example, according to many theories of in-group bias, people prefer

to affiliate with members of their in-groups (especially, perhaps, religious in-groups), with whom cooperation and altruism provide indirect benefits to self-esteem (Messick & Mackie, 1989). In contrast, Self-Verification Theory (Swann, 1983) asserts that affiliation with others of a similar religious orientation reflects not a desire to bolster in-group identity but an opportunity to reinforce individual identity. Indeed, for religious beliefs, a same-minded partner's ability to reinforce one's worldview may be especially valuable, since such beliefs are backed by little objective evidence (Swann, Polzer, Seyle, & Ko, 2004). More controversial theories (e.g., Rushton, 1995; Thiessen & Gregg, 1980) have even proposed that religious homogamy may be a by-product of a search for genetic complementarity in order to maximize reproductive fitness.

These approaches to religious homogamy, however, assume that individuals choose mates based (in part) on their religiosity per se, rather than by other desirable psychological traits that are heuristically signaled by their religious beliefs. In contrast, we ask, for the first time, whether "being religious" serves as a

<sup>1</sup> Department of Psychology, University of Maryland, MD, USA

<sup>2</sup> Department of Psychology, University of Otago, Dunedin, New Zealand

<sup>3</sup> Institute of Cognitive and Evolutionary Anthropology, University of Oxford, Oxford, UK

## Corresponding Author:

Joshua Jackson, Department of Psychology, 3145 Biology-Psychology Building, College Park, MD 20742, USA.

Email: jjackso1@umd.edu

proxy for the presence (or absence) of certain personality traits that individuals find desirable in a mate. After all, personality is itself a critical factor in mate choice (Botwin, Buss, & Shackelford, 1997; Buss et al., 1990; Buss & Barnes, 1986). Large-scale analyses of people's dating preferences have revealed, for example, that both men and women find agreeableness, emotional stability, and intellectual openness attractive in potential partners (Botwin et al., 1997). In this vein, religious faith may communicate one or more of these qualities to someone who is trying to infer a potential dating partner's personality.

This article's investigation into whether personality inferences could account for faith-based partner preference considers the five-factor model of personality, and in particular, the dimension of Openness to Experience—defined broadly as a person's intellectual curiosity, open-mindedness, and preference for variety (Costa & McCrae, 1992). An assumption disseminated in popular culture—if not necessarily borne out by empirical research—is that religious individuals are typically closed-minded. From *Footloose's* parochial Reverend Shaw Moore, who despairs at the “proliferation . . . of obscene rock and roll music with its gospel of easy sexuality and relaxed morality” (Rachmil, Zadan, & Ross, 1984) to *The Simpsons's* overly friendly but entirely dogmatic Ned Flanders, the pious are often portrayed as rigid, conventional, and intolerant. If indeed religiosity is taken as an interpersonal signal that an individual is not open to experience, it could serve as an easy heuristic for selecting a mate with a desirable personality.

Despite the apparent negative implications of being “closed-minded,” it is plausible that an openness-driven explanation could underlie homogamy for both religious and non-religious individuals alike. This is because, first, these individuals may hold opposing beliefs about who is closed-minded: The pop-cultural image of the closed-minded religious conservative may be particular to the non-religious observer, with religious individuals holding the opposite belief that *non-religious* people are the ones with the limited worldview. Alternatively, religious and non-religious individuals may agree on the stereotype, but disagree about its valence. Tradition, modesty, and conservatism are cherished values among many religious believers, so for them, closed-mindedness, interpreted in these terms, may not be negative trait at all. In either case, both religious and non-religious individuals could use the religiosity of potential mates as a positive signal of their suitability as a romantic partner. Whether they do so is an open empirical question.

With these considerations in mind, we sought in the current studies to identify how religious and non-religious individuals perceive the openness of religious and non-religious targets, and whether they use these inferences when selecting dating partners. We first conducted a pilot study to examine whether, independent of any particular social context or affiliative goals, religious people are indeed seen as open or closed to experience. This pilot study not only provides a direct test of personality stereotypes about religious individuals but also examines whether these stereotypes differ as a function of participants' own religious identity. We then tested the causal role of

religiosity in mate preferences, as well as the mediating role of personality inferences, in two experimental studies. In Study 1, participants rated the openness (and other personality traits) of targets who differed systematically only in their stated religiosity, as well as their appeal as potential romantic partners. In Study 2, a conceptual replication, target openness to experience was manipulated directly, and independently of religiosity.

## Pilot Study

### Method

#### Participants

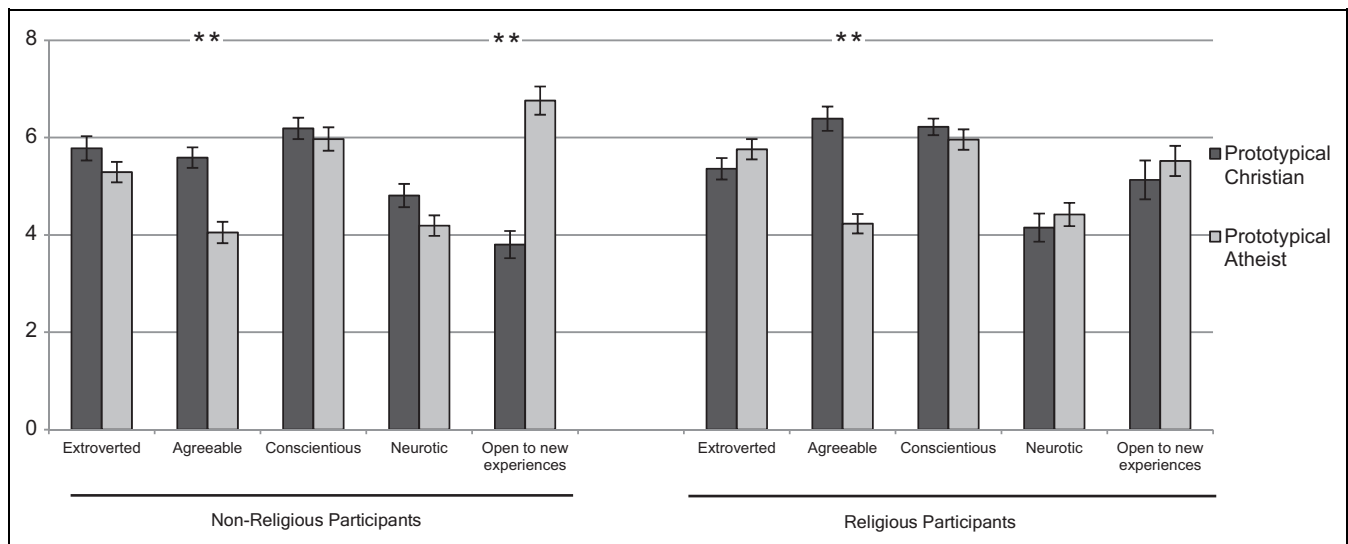
Sixty (19 male, 40 female, 1 “other”;  $M_{\text{age}} = 22.17$ ,  $SD = 3.95$ ) University of Otago students volunteered to participate in a laboratory experiment in return for NZ\$15 to cover their travel expenses. This study was run in conjunction with another unrelated procedure.

#### Procedure

After providing informed consent, participants completed paper-and-pencil questionnaires, which included an item asking them to identify their religion, if any. Participants were then asked to rate the “prototypical Christian”<sup>1</sup> and “prototypical Atheist” (counterbalanced) on the Ten-Item Personality Inventory (TIPI; Gosling, Rentfrow, & Swann, 2003), which includes 2 items for each of the Big Five personality dimensions (Conscientiousness, Openness to new experiences, Agreeableness, Extroversion, and Neuroticism). Ratings were made on a 1 to 10 scale (anchored with *strongly disagree* and *strongly agree*). The TIPI has been found to have high content validity as a representation of the Big Five personality traits and serves as a good substitute for longer five-factor personality inventories (Gosling et al., 2003).

## Results and Discussion

Participants were coded as “religious” ( $n = 30$ : 25 Christians and 5 “Other”)<sup>2</sup> or “non-religious” ( $n = 30$ ), based on their responses to the religion question in the demographics. A 5 (trait)  $\times$  2 (participant religiosity, religious vs. non-religious)  $\times$  2 (target religiosity, Christian vs. Atheist) mixed model analysis of variance (ANOVA) revealed, in addition to a trivial main effect of trait,  $F(1, 58) = 7.65$ ,  $p < .01$ , a Trait  $\times$  Target Religiosity interaction,  $F(1, 58) = 44.42$ ,  $p < .001$ . Paired  $t$ -tests indicated that the prototypical Christian was seen as significantly more agreeable than the prototypical Atheist ( $M = 6.00$ ,  $SE = 0.16$  vs.  $M = 4.14$ ,  $SE = 0.15$ ),  $t(1, 58) = -7.76$ ,  $p < .001$ , but significantly less open to experience ( $M = 4.48$ ,  $SE = 0.22$  vs.  $M = 6.12$ ,  $SE = 0.26$ ),  $t(1, 58) = 4.06$ ,  $p < .001$ . The two-way interaction was qualified, however, by a three-way interaction with participant religiosity,  $F(1, 58) = 12.75$ ,  $p < .001$ . As seen in Figure 1, the interaction was primarily due to differences in perceptions of openness across participant religiosity,  $F(1, 58) = 12.23$ ,  $p < .001$ .



**Figure 1.** Mean ratings of target openness to experience as a function of participant religiosity and target religiosity (Pilot Study). \* $p < .05$ . \*\* $p < .005$ .

Specifically, non-religious participants believed non-religious targets to be significantly more open to new experiences than religious targets,  $t(28) = 7.02, p < .001$ , whereas religious participants did not distinguish the two kinds of targets on this dimension,  $t(30) = .65, p = .52$ . Agreeableness was the only other trait to reach significance; regardless of their own religious orientation, all participants judged religious targets to be more agreeable than non-religious targets,  $t(28) = -4.88$ , and  $t(30) = -6.01, ps < .001$ .

In sum, the data suggest that non-religious individuals, in particular, infer openness from others' religious beliefs—an inference that does not reflect a general in-group bias—while religious individuals do not infer a significant religiosity–openness link. This openness-specific discrepancy between religious and non-religious participants' ratings has not been captured by previous research and has implications for religion's role in romantic partner selection.

## Study 1

Using the guise of an online dating study, Study 1 reexamined perceptions of religious and non-religious targets' openness, additionally assessing whether these perceptions predict preferences for the targets as romantic partners. If openness is seen as a romantically attractive quality (Coan, 1974; McCrae & Costa, 1997), then the patterns of perceptions of openness shown in the pilot study should predict dating preferences: Non-religious participants should judge non-religious targets as more suitable dating partners, as well as more open to new experiences, and perceived openness should mediate the in-group preference. As a further improvement on the pilot test, rather than using the potentially value-laden categories “Christian” and “Atheist”, Study 1 operationalized target religiosity behaviorally, as the frequency of targets' religious service attendance, a variable commonly used as a proxy for religious belief (Hood, Hill, & Spilka, 2009).

## Method

### Participants

Sixty-seven (21 men, 46 women;  $M_{age} = 21.97, SD = 3.50$ ) University of Otago students were recruited to participate in an online psychology study in exchange for partial course credit. Participants were coded as single ( $n = 47$ ), in a relationship ( $n = 17$ ), or married ( $n = 3$ ), but since relationship status did not affect results, participants in a relationship were not excluded from analyses.

### Stimuli

Forty target descriptions were created to resemble online dating profiles. With the exception of religiosity (i.e., the frequency of targets' religious service attendance), the information contained in the profiles—gender (half of the targets were male, half female), age, marital status (always “single”), importance of nationality, importance of ethnicity, length of time living in New Zealand, income bracket, whether they were born in their country of origin, and number of older and younger siblings—varied nonsystematically. Religiosity was operationalized as the frequency of religious service attendance (Boyan, 1968), such that eight targets each reported attending services “less than once a year,” “about once a year,” “about once a month,” “about once a week,” or “more than once a week.” Behavior was the only indication of religious belief; the targets' religious identification was not mentioned. Content and order of the profiles were held constant.

### Procedure

Study 1 employed an ostensible online dating paradigm that was hosted on the SurveyMonkey service (SurveyMonkey, 2012). Participants were told that they would be asked to complete a short “Personal Information” form and that they would then be asked to evaluate other participants who had provided

similar information. The form included an item asking them to identify their “religion,” along with many of the items that would later appear on the dating profiles. Participants were then asked to evaluate each of the 40 target profiles on the TIPI, as described in the pilot study. Participants also responded to two questions about each target’s romantic appeal (a) whether they would want to go on a date with the target and (b) whether they saw the target as a potential long-term partner. Participants were instructed to answer the last two questions only when the target was consistent with their sexual orientation.

## Results

Participants were coded as religious ( $n = 29$ , 22 Christian, 7 “other”) or non-religious ( $n = 38$ ) as described in the pilot study. Dateability and suitability as a long-term partner were highly correlated ( $r = .94$ ) and therefore combined into a single index of mate desirability that was analyzed in a 2 (participant religiosity)  $\times$  5 (target religiosity) mixed model ANOVA. This analysis revealed a main effect of participant religiosity,  $F(1, 64) = 4.96, p < .05$  and an interaction,  $F(4, 64) = 13.52, p < .001$ . Non-religious participants rated targets as significantly less desirable in general ( $M = 2.51, SE = 0.18$ ) than did religious participants ( $M = 3.10, SE = 0.20$ ), but the difference between preferences increased linearly with target religiosity. One-way repeated measures ANOVAs conducted separately for non-religious and religious participants revealed that the non-religious participants liked targets significantly less as their service attendance increased,  $F(1, 36) = 12.22, p < .001$ , while religious participants liked targets marginally more,  $F(1, 28) = 3.39, p = .07$ .

The same analysis on perceived openness to experience revealed main effects of both participant religiosity,  $F(1, 64) = 6.43, p < .05$ , and target religiosity,  $F(1, 64) = 6.20, p < .05$ . Overall, non-religious participants rated targets as significantly less open than did religious participants ( $M = 4.12, SE = 0.09$  vs.  $M = 4.50, SE = 0.08$ ), and religious targets were rated as significantly less open than non-religious targets, as a linear function of their service attendance. However, these effects were qualified by an interaction,  $F(1, 64) = 7.31, p < .01$ ; as with desirability, the differences between religious and non-religious participants’ ratings of targets’ openness increased as a function of target religiosity. One-way repeated measures ANOVAs conducted separately for non-religious and religious participants revealed that the non-religious participants judged targets as significantly less open to experience as their service attendance increased,  $F(1, 36) = 19.94, p < .005$ . Religious participants’ judgments of openness were not influenced by target service attendance,  $F(1, 28) = .04, p = .84$ . These ratings of openness and romantic appeal are plotted side by side in Figure 2.

The main analyses were also run on the other personality traits. The only effect was an interaction on neuroticism,  $F(1, 64) = 15.73, p < .001$ . One-way ANOVAs revealed that non-religious participants rated targets as increasingly neurotic as a function of their religious belief,  $F(1, 36) = 7.76, p < .01$ , but that religious participants rated targets as decreasingly neurotic,  $F(1, 36) = 7.59, p < .01$ .

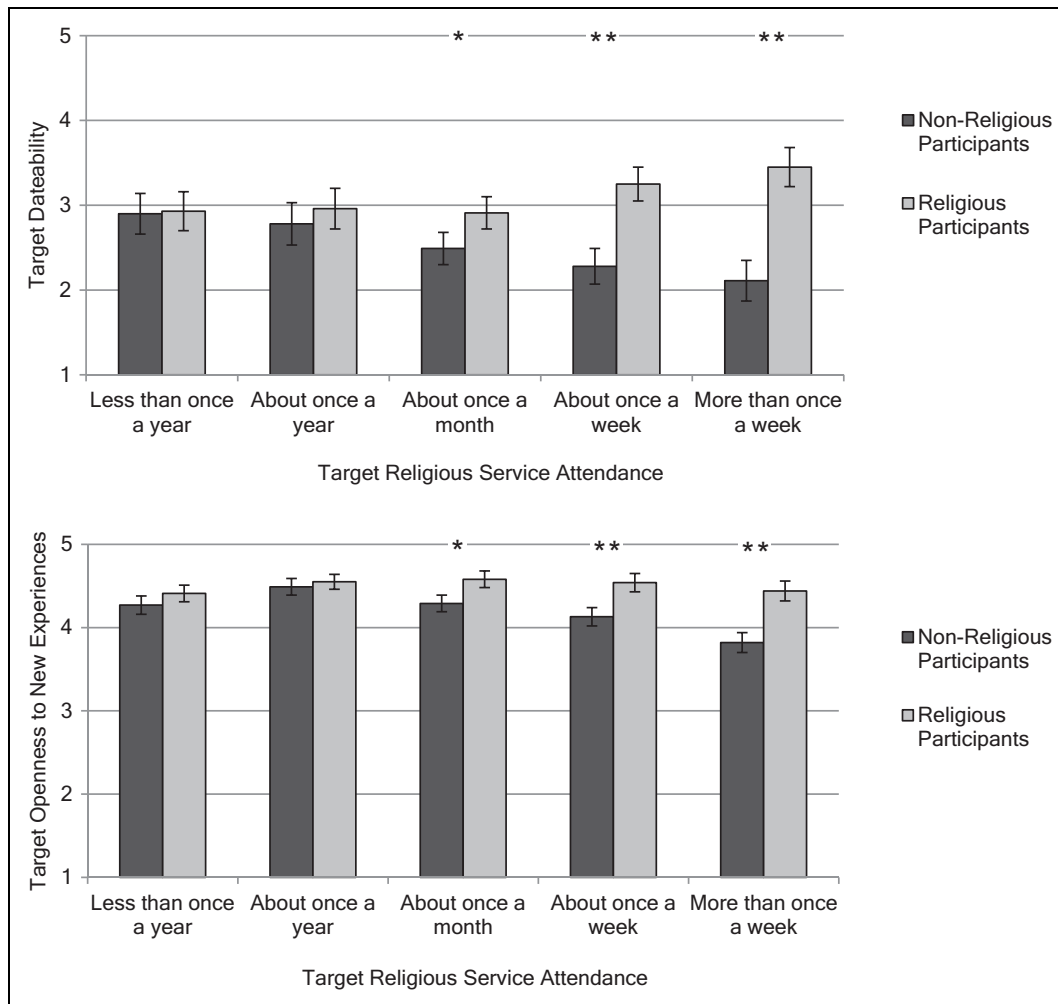
In summary, as targets increased in religiosity, non-religious (but not religious) participants found them increasingly less desirable, and also judged them as increasingly less open to experience (and, unexpectedly, increasingly more neurotic). To determine whether openness inferences could explain the effects on desirability, we tested for moderated mediation using Preacher and Hayes’s (2004) “PROCESS” procedure for SPSS. A bias-corrected bootstrap analysis based on 5,000 samples was run with target religiosity as the independent variable, target openness as the mediator, target desirability as the outcome variable, and participant religiosity as the moderator. This analysis revealed significant moderated mediation ( $\beta = .092, SE = 0.044$ , confidence interval [CI] = [0.011, 0.19]), such that there was a significant indirect effect of target religiosity on attractiveness via target religiosity among non-religious participants ( $\beta = -.097, SE = 0.033, CI [-0.17, -0.039]$ ), but not among religious participants ( $\beta = -.005, SE = 0.029, CI [-0.066, 0.050]$ ). The model is depicted in Figure 3. Importantly, these effects were retained when neuroticism was entered into the model.

## Discussion

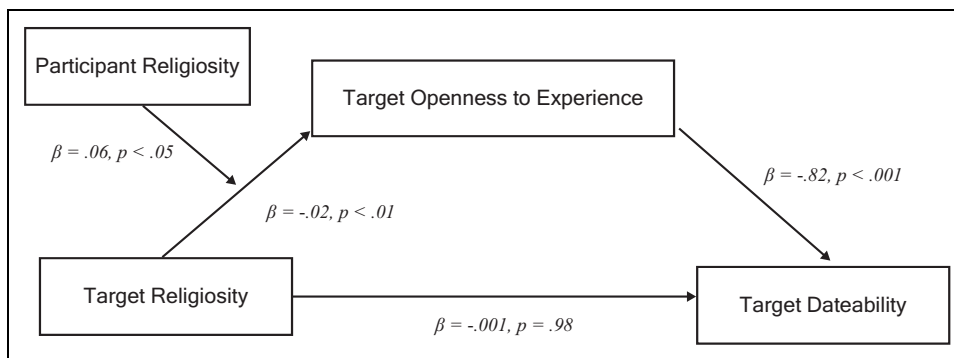
Study 1 replicated the results of the pilot study, such that non-religious (but not religious) participants judged non-religious targets as more open-minded and, furthermore, showed that they prefer these targets as romantic partners. Most importantly, openness mediated the choice of partners, showing that religious homogamy can be explained in part, by the attribution of desirable personality traits to potential mates on the basis of their religious behavior. Although we had no specific hypotheses about other personality traits, an analogous interaction emerged on ratings of neuroticism. However, controlling for neuroticism did not change the moderated mediational model of openness, suggesting that the neuroticism is an independent inference, which we encourage future research to explore.

In sum, Study 1 offered promising correlational support for the explanatory role of openness in religious homogamy, but a number of questions remain. For example, the data suggest that only non-religious participants infer closed-mindedness from religious behavior (or, in the Pilot Study, from religious identification). However, because the concept of “openness” was left abstract in this study, it is not clear whether religious and non-religious participants differ in their inferences about openness or differ in their definition of what it means to be open. For example, the TIPI partly operationalizes openness as “complexity,” a concept that could differ substantially between religious and non-religious individuals in terms of its content and valence. Furthermore, even assuming that participants had identical interpretations of the TIPI, the causal direction of their inferences is open to question; without manipulating openness, we cannot be certain whether mate preferences were inferred from openness, or the other way around.

Study 2, therefore, sought to clarify these issues by conceptually replicating Study 1 with an entirely experimental paradigm, in which religiosity and openness were both



**Figure 2.** Mean desirability (top panel) and perceived openness (bottom panel) as a function of participant religiosity and target religiosity (Study 1). \* $p < .05$ . \*\* $p < .005$ .



**Figure 3.** Study 1 model summary,  $r^2 = .16$ ,  $p < .0001$ . \* $p < .05$ . \*\* $p < .005$ .

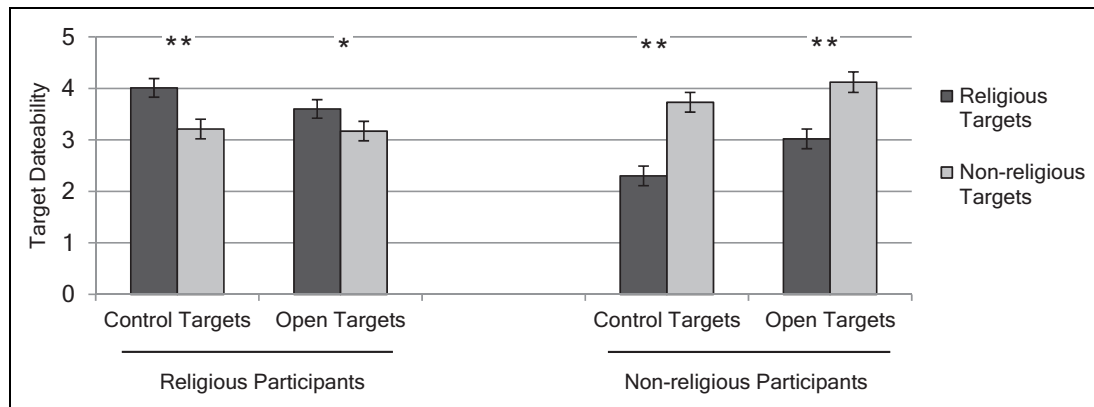
manipulated as independent features of targets’ dating profiles. Perceived openness was manipulated using detailed descriptions from Revised NEO Personality Inventory items on Openness to Experience, thereby constraining the meaning of “openness” to the behavioral trait as studied by personality psychologists, while also providing a richer but more concrete representation of this trait.

## Study 2

### Methods

#### Participants

Ninety participants (50 men, 39 women, 1 “other”;  $M_{age} = 28.22$ ,  $SD = 5.09$ ) from the Amazon Mechanical Turk platform



**Figure 4.** Mean desirability as a function of participant religiosity, target religiosity, and target openness (Study 2).

were used in our final sample. An additional 39 volunteers completed the study, but were screened from data analysis because they failed to meet one or more of several a priori criteria: 32 were more than 40 years old; 2 reported an unclassifiable religious orientation; and 12 participants reported a non-heterosexual orientation.<sup>3</sup> Participants were coded as single ( $n = 42$ ) or in a relationship ( $n = 48$ ), but since relationship status did not affect results, participants were included in analyses regardless of relationship status, as in Study 1.

### Stimuli

Twenty dating profiles were constructed using a modified version of Study 1's procedure. With the exception of religiosity and openness information, the information contained in the profiles—age, marital status (always “single”), sexual orientation (always “heterosexual”), number of older siblings, country of origin, type of accommodation, income bracket, whether they were born in their country of origin, and number of older and younger siblings—varied nonsystematically. All profiles were purportedly from opposite-gender targets, so gender was not included in the profiles. Religious service attendance was manipulated dichotomously, such that half of the targets were described as attending religious services “frequently,” while the other half reported attending religious services “infrequently or never.” Finally, openness to new experiences was manipulated by varying responses to a prompt in the profile, “write something about yourself.” “Open” targets' responses were modified items from the NEO-PI-R (Costa & McCrae, 1992) used to assess openness to experience (e.g., “I don't pretend my ethical perspective is the only one”) and were chosen to provide a fully realized definition of openness. Control targets' responses were instead NEO-PI-R items used to assess conscientiousness (e.g., “I listen to my conscience”), which did not significantly correlate with mate desirability in Study 1 ( $r = .16$  for religious participants and  $r = .09$  for non-religious participants). Both sets of statements can be found in the supplemental materials.

### Procedure

Study 2 was completed as an online survey on the Qualtrics testing platform (see Snow, 2011). The procedure was same

as in Study 1, with the exception that participants provided only one rating of target desirability (dateability, which in Study 1 correlated highly with suitability as a long-term partner). In addition, following each judgment, participants were asked for an open-ended response justifying their rating of target desirability.

### Results

As in Study 1, participants were coded as either religious ( $n = 50$ , 46 Christians, 4 “Other”) or non-religious ( $n = 35$ ). To validate our target openness manipulation, two hypothesis-blind research assistants coded participants' open-ended justifications for target desirability. These coders agreed at a rate of 89%, and a participant was only coded as mentioning openness when both coders indicated that they had done so. This coding confirmed our experimental manipulation of target openness: 70% of participants mentioned openness in their open-ended dating justifications when evaluating “open” targets, while less than 1% mentioned openness when evaluating control targets.

Mate desirability judgments were analyzed in a 2 (target religiosity)  $\times$  2 (target openness)  $\times$  2 (participant religiosity) mixed model ANOVA. This analysis revealed a significant main effect of target religiosity,  $F(1, 79) = 8.12, p < .01$ , such that non-religious targets ( $M = 3.57, SE = 0.12$ ) were seen as significantly more desirable than religious targets ( $M = 3.21, SE = 0.12$ ). The effect on target religiosity was qualified by an interaction with participant religiosity,  $F(1, 79) = 53.87, p < .001$ , reflecting religious homogamy, such that religious participants found religious targets more desirable than non-religious targets ( $M = 3.77, SE = 0.15$  vs.  $M = 3.20, SE = 0.17$ ),  $t(1, 44) = 2.74, p < .01$ , while the reverse was true for non-religious participants ( $M = 2.66, SE = 0.17$  vs.  $M = 4.12, SE = 0.20$ ),  $t(1, 39) = -8.90, p < .001$ . Openness to experience also interacted with participant religiosity,  $F(1, 79) = 15.05, p < .001$ , such that non-religious participants rated open targets as more desirable than control targets ( $M = 3.57, SE = 0.17$  vs.  $M = 3.00, SE = 0.15$ ),  $t(1, 39) = -4.90, p < .001$ , but religious participants rated open targets as nonsignificantly less

desirable than control targets ( $M = 3.40$ ,  $SE = 0.14$  vs.  $M = 3.58$ ,  $SE = 0.15$ ),  $t(1, 44) = 1.20$ ,  $p > .1$ .

Finally, the results revealed a three-way interaction,  $F(1, 79) = 14.47$ ,  $p < .001$ . To understand this interaction, separate 2 (target openness)  $\times$  2 (target religiosity) ANOVAs were conducted for religious participants and non-religious participants, respectively. As seen in Figure 3, among religious participants, religious targets were always preferred to non-religious targets,  $F(1, 44) = 9.25$ ,  $p < .005$ , but this preference was diminished when the targets were also open to experience, interaction  $F(1, 44) = 6.35$ ,  $p < .05$ , due to a decrease in liking for open religious targets. Non-religious participants showed complementary effects: in this case, non-religious targets were always preferred to religious targets,  $F(1, 39) = 63.97$ ,  $p < .001$ , but the preference was diminished when targets were open to experience, interaction  $F(1, 39) = 5.81$ ,  $p < .05$ , due to an *increase* in liking for open religious targets. See Figure 4 for a depiction of these results.

## Discussion

Study 2 represents, first, a clear empirical demonstration of religious homogamy: All else being equal, non-religious participants preferred partners who were non-religious to those who were religious, whereas religious participants showed the opposite preferences. More importantly, experimentally manipulated openness showed the same pattern: Non-religious participants were more attracted to partners whose self-descriptions revealed openness to experience (relative to an openness-irrelevant trait), whereas religious participants preferred the reverse. Moreover, the three-way interaction suggests that religious and non-religious participants evaluate the same “open” behaviors differently. Although both religious and non-religious participants preferred same-religion partners, these preferences were mitigated when targets revealed the openness of their personality, apparently because open-minded religious targets were judged negatively by religious participants but positively by non-religious participants. The finding also provides an alternative account of Study 1: Religious participants in that study may have made different inferences about openness because they associated different behaviors with the trait, and not because they associated different behaviors with religiosity.

## General Discussion

Taken together, these studies suggest that religious homogamy can be partially attributed to the personality information that religiosity provides to potential mates, although just what religiosity signals may vary as a function of an individuals’ own religious belief. The pilot study provided some evidence that there exists a stereotype of the closed-minded, conservative religious believer, but only among non-religious participants. Study 1 replicated these differential perceptions in a dating paradigm: As potential mates reported more devout religious behavior, non-religious (but not religious) participants judged

them as decreasingly open-minded, and also decreasingly desirable as mates, with the desirability effect statistically explained by ratings of openness. However, when, in Study 2, “openness” was operationalized by the experimenters in terms of consistent and specific behaviors, the trait guided dating judgments for both non-religious and religious participants, albeit in opposite directions. In sum, although religious and non-religious individuals may construe “openness” differently when it is vaguely defined, they appear to infer the same kind of behaviors from others’ religiosity, behaviors that are seen positively by religious individuals, but negatively by non-religious individuals. These inferences, in turn, partially explain all individuals’ preferences for partners of the same religious orientation.

The findings herein represent the first evidence that part of religious homogamy can be explained not by preferences for mates who share one’s religious beliefs and behaviors per se, but by the personality implications—and specifically the openness—that those beliefs and behaviors signal. Under some conditions (e.g., when the meaning of openness is ambiguous), it may be that only non-religious individuals are drawing those inferences, but even this asymmetric situation could be sufficient for assortative mating to develop (Lee, Loewenstein, Ariely, Hong, & Young, 2008). To the extent that non-religious individuals pair off, only religious individuals will remain in the dating pool.

Note that we do not claim that openness entirely—or even largely—explains religious homogamy. That claim is belied by both our data (which indicate only partial mediation) and common sense. No social phenomenon as robust and complex as mate preferences is likely to have a single cause. Indeed, we do not even claim that openness is the most proximate cause of participants’ judgments in our study; openness itself may be a cue to another valued trait or behavior (e.g., the likelihood that a person would be accepting of one’s own religious beliefs), yet to be determined. Our only claim is that openness—and perhaps other inferences—is part of the story and that researchers should look beyond “religious belief” as a causal factor to examine the meaning that such belief has for observers.

Another important and acknowledged limitation of the current studies is their implicit definition of participant “religiosity” as the self-reported commitment to a formal belief system. We did not attempt to distinguish between different religious faiths or between formal and informal belief systems (e.g., “spirituality”). Likewise, we have intentionally restricted our conception of “openness” to the tendency to approach alternative attitudes, behaviors, and value orientations with an open mind (McCrae & Costa, 1997). However, both religiosity and openness are multifaceted constructs; religiosity includes aspects of belief, identification, and behavior, while openness includes additional dimensions of fantasy, aesthetics, feelings, actions, ideas, and values (McCrae & Costa, 1997; McCrae & Sutin, 2009). These alternative and supplementary views of religiosity and openness go beyond the scope of the current studies but are well worth exploring for a fuller understanding of what “religious” people believe and perceive.

Finally, we should also note that, despite popular assumptions, there is no conclusive empirical evidence that religious

individuals *are* in fact more close-minded than their non-religious counterparts. While previous research has associated religiosity with agreeableness (MacDonald, 2000; Saroglou, 2002; Wink, Ciciolla, Dillon, & Tracy, 2007), and conscientiousness (MacDonald, 2000; Saroglou, 2002; Saroglou & Munoz-Garcia, 2008), no evidence has supported a replicable link with openness to experience, although “mature religiosity and spirituality” have been found to relate positively (MacDonald, 2000; Saroglou, 2002; Wink et al., 2007), and religious fundamentalism has been found to relate negatively (Barrett & Roesch, 2009; Galen, Smith, Knapp, & Wyngarden, 2011; Saroglou, 2002) to the construct. Even these latter effects, however, are small and inconsistent (Barrett & Roesch, 2009).

In sum, the current studies provide insight into one possible personality mechanism behind religious in-group dating bias, and illustrate, for the first time, that people’s decision to associate with religious or non-religious individuals can be determined by personality traits that religiosity is believed (rightly or wrongly) to predict, rather than religion itself. Our research thus not only contributes to the literature on religious homogeneity but also demonstrates the importance of research investigating connotations of religiosity, and of how mitigating these connotations can reduce in-group bias in key interpersonal contexts.

### Author Contributions

H.F. developed the study concept. All authors contributed to study design. J.C.J. and J.H. analyzed the data and drafted the manuscript. All authors revised and approved the final manuscript.

### Acknowledgments

The authors would like to thank Nickola Overall and two anonymous reviewers for helpful comments on a previous draft of this manuscript.

### Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

### Funding

This research was supported by the Marsden Fund Council from Government funding, administered by the Royal Society of New Zealand, and by a grant from the John Templeton Foundation (ID# 37624). The opinions expressed in this publication are those of the authors and do not necessarily reflect the views of the John Templeton Foundation.

### Notes

1. New Zealand is a secular country with a comparable, but less religious, demographic to other developed Western countries. The predominant religion is Christianity (44.3%), while 38.5% of New Zealanders identify as having no religion (Central Intelligence Agency [CIA], 2010). We therefore used the “prototypical Christian” as our target for the “religious” condition in this study.
2. The religion category “Other” represents participants who identified with a formal religion other than Christianity (e.g., Islam,

Judaism). Results did not depend on the inclusion of “others” in the model.

3. All profiles were purportedly from opposite-sex targets in Study 2.

### Supplemental Material

The online data supplements are available at <http://spps.sagepub.com/supplemental>.

### References

- Barrett, C. E., & Roesch, S. C. (2009). Evaluating the relationship between the five-factor model of personality and religious orientation. *Journal of Psychology & Christianity, 28*, 195–199.
- Botwin, M. D., Buss, D. M., & Shackelford, T. K. (1997). Personality and mate preferences: Five factors in mate selection and marital satisfaction. *Journal of Personality, 65*, 107–136.
- Boyan, A. S. (1968). Defining religion in operational and institutional terms. *University of Pennsylvania Law Review, 116*, 479–498.
- Buss, D. M. (1985). Human mate selection: Opposites are sometimes said to attract, but in fact we are likely to marry someone who is similar to us in almost every variable. *American Scientist, 73*, 47–51.
- Buss, D. M. (1989). Sex differences in human mate preferences: Evolutionary hypotheses tested in 37 cultures. *Behavioral and Brain Sciences, 12*, 1–14.
- Buss, D. M. (1996). Social adaptation and five major factors of personality. In J. S. Wiggins (Ed.), *The five-factor model of personality: Theoretical perspectives*. New York, NY: Guilford Press.
- Buss, D. M., Abbott, M., Angleitner, A., Asherian, A., Biaggio, A., Blanco-Villasenor, A., . . . Yang, K. S. (1990). International preferences in selecting mates: A study of 37 cultures. *Journal of Cross-Cultural Psychology, 21*, 5–47.
- Buss, D. M., & Barnes, M. (1986). Preferences in human mate selection. *Journal of Personality and Social Psychology, 50*, 559.
- Central Intelligence Agency, A. (2010). *The world factbook*. Washington, DC: Potomac Books.
- Coan, R. W. (1974). *The optimal personality: An empirical and theoretical analysis*. New York, NY: Columbia University Press.
- Costa, P. T., & McCrae, R. R. (1992). *Professional manual: Revised NEO personality inventory (NEO-PI-R) and NEO five-factor inventory (NEO-FFI)*. Odessa, FL: Psychological Assessment Resources.
- Ellsworth, J. S. (1948). The relationship of population density to residential propinquity as a factor in marriage selection. *American Sociological Review, 13*, 444–448.
- Fiore, A. T., & Donath, J. S. (2005). *Homophily in online dating: When do you like someone like yourself?* Paper presented at the CHI’05 Extended Abstracts on Human Factors in Computing Systems, New York.
- Galen, L. W., Smith, C. M., Knapp, N., & Wyngarden, N. (2011). Perceptions of religious and non-religious targets: Exploring the effects of perceivers’ religious fundamentalism. *Journal of Applied Social Psychology, 41*, 2123–2143.
- Glenn, N. D. (1982). Interreligious marriage in the United States: Patterns and recent trends. *Journal of Marriage and the Family, 44*, 555–566.



- Gosling, S. D., Rentfrow, P. J., & Swann, W. B., Jr. (2003). A very brief measure of the big-five personality domains. *Journal of Research in Personality, 37*, 504–528.
- Heaton, T. B. (1984). Religious homogamy and marital satisfaction reconsidered. *Journal of Marriage and the Family, 46*, 729–733.
- Hitsch, G. J., Hortaçsu, A., & Ariely, D. (2010). What makes you click? Mate preferences in online dating. *Quantitative Marketing and Economics, 8*, 393–427.
- Hollingshead, A. B. (1950). Cultural factors in the selection of marriage mates. *American Sociological Review, 15*, 619–627.
- Hood, R. W., Jr., Hill, P. C., & Spilka, B. (2009). *The psychology of religion* (4th ed.). New York, NY: The Guilford Press.
- Kalmijn, M. (1998). Inter-marriage and homogamy: Causes, patterns, trends. *Annual Review of Sociology, 24*, 395–421.
- Katz, A. M., & Hill, R. (1958). Residential propinquity and marital selection: A review of theory, method, and fact. *Marriage and Family Living, 20*, 27–35.
- Lee, L., Loewenstein, G., Ariely, D., Hong, J., & Young, J. (2008). If I'm not hot, are you hot or not? Physical-attractiveness evaluations and dating preferences as a function of one's own attractiveness. *Psychological Science, 19*, 669–677.
- MacDonald, D. A. (2000). Spirituality: Description, measurement, and relation to the five-factor model of personality. *Journal of Personality, 68*, 153–197.
- McCrae, R. R., & Costa, P. T., Jr. (1997). Conceptions and correlates of openness to experience. In R. Hogan, J. A. Johnson, & S. R. Briggs (Eds.), *Handbook of personality psychology* (pp. 825–847). San Diego, CA: Academic Press.
- McCrae, R. R., & Sutin, A. R. (2009). *Openness to experience*. New York, NY: Guilford Press.
- McCutcheon, A. L. (1988). Denominations and religious intermarriage: Trends among white Americans in the twentieth century. *Review of Religious Research, 29*, 213–227.
- Messick, D. M., & Mackie, D. M. (1989). Intergroup relations. *Annual Review of Psychology, 40*, 45–81.
- Ortega, S. T., Whitt, H. P., & William, J. A. (1988). Religious homogamy and marital happiness. *Journal of Family Issues, 9*, 224–239.
- Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments, and Computers, 36*, 717–731.
- Rachmil, L. J., Zadan, C. (Producers), & Ross, H. (Director). (1984). *Footloose*. California: Paramount Pictures.
- Rushton, J. P. (1995). *Race, evolution, and behavior: A life history perspective*. New Brunswick, NJ: Transaction Publishers.
- Saroglou, V. (2002). Religion and the five factors of personality: A meta-analytic review. *Personality and Individual Differences, 32*, 15–25.
- Saroglou, V., & Munoz-Garcia, A. (2008). Individual differences in religion and spirituality: An issue of personality traits and/or values. *Journal for the Scientific Study of Religion, 47*, 83–101.
- Sherkat, D. E. (2004). Religious intermarriage in the United States: Trends, patterns, and predictors. *Social Science Research, 33*, 606–625.
- Snow, J. (2011). *The complete research suite: A step-by-step guide to using qualtrics*. Provo, UT: Qualtrics.
- SurveyMonkey, LLC. (2012). *SurveyMonkey*<sup>®</sup>. Palo Alto, CA: SurveyMonkey, LLC.
- Swann, W. B., Jr. (1983). Self-verification: Bringing social reality into harmony with the self. *Social Psychological Perspectives on the Self, 2*, 33–66.
- Swann, W. B., Polzer, J. T., Seyle, D. C., & Ko, S. J. (2004). Finding value in diversity: Verification of personal and social self-views in diverse groups. *Academy of Management Review, 29*, 9–27.
- Thiessen, D., & Gregg, B. (1980). Human assortative mating and genetic equilibrium: An evolutionary perspective. *Ethology and Sociobiology, 1*, 111–140.
- Wink, P., Ciciolla, L., Dillon, M., & Tracy, A. (2007). Religiousness, spiritual seeking, and personality: Findings from a longitudinal study. *Journal of Personality, 75*, 1051–1070.

### Author Biographies

**Joshua Jackson** obtained his BA from McGill University in 2013 and is currently a predoctoral researcher at the University of Maryland, College Park. His research concerns the emergence of social groups and cultural values, and the influence of emotion on motivated cognition, among other topics.

**Jamin Halberstadt** is a professor of psychology at the University of Otago in Dunedin, New Zealand. His interests include, among others, the interface of emotion and cognition, social categorization, and issues in religious cognition.

**Jonathan Jong** received his PhD in 2012 from the University of Otago and is currently a postdoctoral researcher at the University of Oxford. His research focuses on the relationship between the role of negative affect in religion and social cohesion.

**Hillel Felman** has done graduate work in philosophy at NYU. He pursues a research interest in philosophy of mind.