

**My Brother's Keeper? Compassion Predicts Generosity More Among Less Religious Individuals**  
Laura R. Saslow, Robb Willer, Matthew Feinberg, Paul K. Piff, Katharine Clark, Dacher Keltner and Sarina R. Saturn  
*Social Psychological and Personality Science* published online 26 April 2012  
DOI: 10.1177/1948550612444137

The online version of this article can be found at:  
<http://spp.sagepub.com/content/early/2012/04/25/1948550612444137>

---

Published by:



<http://www.sagepublications.com>

On behalf of:

Society for Personality and Social Psychology



Association for Research in Personality  
ASSOCIATION FOR  
RESEARCH IN PERSONALITY

European Association of Social Psychology



Society of Experimental and Social Psychology



**Additional services and information for *Social Psychological and Personality Science* can be found at:**

**Email Alerts:** <http://spp.sagepub.com/cgi/alerts>

**Subscriptions:** <http://spp.sagepub.com/subscriptions>

**Reprints:** <http://www.sagepub.com/journalsReprints.nav>

**Permissions:** <http://www.sagepub.com/journalsPermissions.nav>

>> [OnlineFirst Version of Record](#) - Apr 26, 2012

[What is This?](#)

# My Brother's Keeper? Compassion Predicts Generosity More Among Less Religious Individuals

Social Psychological and  
Personality Science  
00(0) 1-8  
© The Author(s) 2012  
Reprints and permission:  
sagepub.com/journalsPermissions.nav  
DOI: 10.1177/1948550612444137  
http://spps.sagepub.com



Laura R. Saslow<sup>1</sup>, Robb Willer<sup>2</sup>, Matthew Feinberg<sup>2</sup>, Paul K. Piff<sup>2</sup>,  
Katharine Clark<sup>3</sup>, Dacher Keltner<sup>2</sup>, and Sarina R. Saturn<sup>4</sup>

## Abstract

Past research argues that religious commitments shape individuals' prosocial sentiments, including their generosity and solidarity. But what drives the prosociality of less religious people? Three studies tested the hypothesis that, with fewer religious expectations of prosociality, less religious individuals' levels of compassion will play a larger role in their prosocial tendencies. In Study 1, religiosity moderated the relationship between trait compassion and prosocial behavior such that compassion was more critical to the generosity of less religious people. In Study 2, a compassion induction increased generosity among less religious individuals but not among more religious individuals. In Study 3, state feelings of compassion predicted increased generosity across a variety of economic tasks for less religious individuals but not among more religious individuals. These results suggest that the prosociality of less religious individuals is driven to a greater extent by levels of compassion than is the prosociality of the more religious.

## Keywords

religion, emotion, altruism, helping/prosocial behavior, compassion

Social scientists have long claimed that religion is associated with pro-group behaviors and sentiments like cooperation, generosity, and solidarity (Durkheim, 1915). A variety of theoretical arguments have been advanced to explain why. For instance, religion may foster a sense of shared identity (Graham & Haidt, 2010), invoke concerns about one's reputational standing in the eyes of God and one's religious community (Norenzayan & Shariff, 2008; Shariff & Norenzayan, 2007), or establish rule-based prosocial values (Durkheim, 1915). One implication of this line of work is that the factors leading people to behave prosocially or not may vary in important ways based on how religious they are, but research has not yet explored this possibility.

Although religiosity is generally widespread (Stark, 1999), roughly half of the citizens of Japan, Sweden, Denmark, and Germany are atheist (Lynn, Harvey, & Nyborg, 2009), increasing numbers of Americans report having no religious affiliation (Hout & Fischer, 2002), and at least half a billion people worldwide do not believe in God (Zuckerman, 2007). Moreover, although religiosity may predict increased prosociality, nonreligious individuals do demonstrate high levels of prosociality and endorsement of ethical attitudes (for a review see Beit-Hallahmi, 2009). This analysis highlights a critical question: What factors drive the prosocial behavior of less religious individuals?

In the current investigation, we argue that the prosocial behavior of less religious individuals is driven to a great extent

by their level of compassion, more so than among the more religious. Compassion, the "feeling that arises in witnessing another's suffering and that motivates a subsequent desire to help" (Goetz, Keltner, & Simon-Thomas, 2010, p. 351), is linked with a motivation to help others, often at a cost to the self. It increases the desire to soothe another's suffering (Batson & Shaw, 1991) in addition to being related to volunteerism (Omoto, Malsch, & Barraza, 2009) and to supporting policies aimed at assisting the poor or needy (Smith, 2009). In keeping with these findings, we hypothesized that compassion would reliably predict prosocial behavior in the less religious, but less so in more religious individuals.

<sup>1</sup> University of California, San Francisco, CA, USA

<sup>2</sup> University of California, Berkeley, CA, USA

<sup>3</sup> University of Colorado, Boulder

<sup>4</sup> Oregon State University, Corvallis, OR, USA

## Corresponding Authors:

Laura R. Saslow, Osher Center, University of California, 1545 Divisadero, 4th Floor, San Francisco, CA 94115, USA  
Email: laura.saslow@gmail.com or SaslowL@ocim.ucsf.edu

Robb Willer, Department of Sociology, University of California, 466 Barrows Hall, Berkeley, CA 94720, USA  
Email: willer@berkeley.edu

## The Present Research

Across three studies, we compared the influence of compassion on prosocial tendencies among more and less religious individuals. In Study 1, we examined whether religiosity would moderate the relationship of trait compassion on prosocial behavior. We hypothesized that trait compassion would be more critical to the generosity of the less religious than the more religious. In Study 2, we tested whether a compassion induction (vs. a neutral video) would increase generosity among less religious individuals, but not among more religious individuals. In Study 3, we assessed if momentary feelings of compassion would predict increased generosity across a variety of economic tasks for less religious individuals but not more religious individuals. By measuring and manipulating compassion, and measuring various forms of generous tendencies and behavior, across three studies we test our hypothesis that compassion is more integral to the generosity of the less religious versus the more religious

### Study 1: Especially for the Less Religious, Trait Compassion Predicts Prosocial Behavior

In Study 1, we tested whether trait levels of compassion and religiosity interact in their influence on prosocial tendencies in a nationally representative sample of adults. We expected that for less religious individuals, compassion would be related to higher generosity, but that compassion would be less strongly associated with prosociality among more religious individuals.

#### Method

**Participants and procedure.** We analyzed participants from the 2004 General Social Survey, which is a nationally representative sample of noninstitutionalized adults in the United States over the age of 18 (Davis & Smith, 2005; 624 men, 713 women; ages 18 to over 89,  $M = 45.96$ ,  $SD = 17.08$ ; 1,076 White, 158 Black, 103 Other; 712 were Protestant, 320 were Catholic, 17 were Jewish, 7 were Buddhist, 4 were Hindu, 8 were Muslim, 199 were not religious, 4 did not report their religion, and the rest were some other religion).

**Compassion.** As compassion, sympathy, and empathic concern are typically considered highly interrelated (Batson, 2009), we measured the tendency to feel compassion with the 7-item empathic concern subscale of the Interpersonal Reactivity Index (rated from 1, *does not describe very well*, to 5, *describes very well*;  $\alpha = .72$ ;  $M = 4.43$ ,  $SD = .67$ ; Davis, 1983). Items include, *I often have tender, concerned feelings for people less fortunate than me*, *When I see someone being taken advantage of, I feel kind of protective towards them*, and *Other people's misfortunes do not usually disturb me a great deal* (reverse-scored).

**Prosocial behavior.** A composite of ten items were used to measure prosocial behavior. Participants rated the frequency with which they engaged in a series of prosocial helping acts, including giving food or money to a homeless person, returning money after getting too much change, allowing a stranger to go ahead in line, volunteering time for a charity, giving money to a charity, offering a seat to a stranger, looking after a plant or pet of others while they were away, carrying a stranger's belongings, giving directions to a stranger, and letting someone borrow a item of some value;  $\alpha = .73$ ;  $M = 2.40$ ,  $SD = 1.03$ ). Participants rated the items using the following scale (recoded so that higher values reflect greater prosociality): 1 (*not at all in the past year*), 2 (*once in the past year*), 3 (*at least 2 or 3 times in the past year*), 4 (*once a month*), 5 (*once a week*), and 6 (*more than once a week*).

**Religiosity.** Participants indicated the strength of their religious identity. The scale was recoded so that higher values represent greater religiosity: 1 (*no religion*), 2 (*not very strong religious identity*), 3 (*somewhat strong religious identity*), and 4 (*strong religious identity*),  $M = 2.99$ ,  $SD = 1.03$ . Single-item measures of religiosity have been found to have sufficient reliability and predictive validity in other work (Gorsuch & McFarland, 1972).

**Covariates.** We tested our results with and without the following covariates: gender, political orientation, and educational attainment (Snibbe & Markus, 2005; an indicator of socioeconomic status;  $M = 13.67$ ,  $SD = 2.89$ ). These are variables that have been linked in past research to prosocial behavior or attitudes (Eisenberg & Lennon, 1983; Jost, Glaser, Kruglanski, & Sulloway, 2003; Piff, Kraus, Cote, Cheng, & Keltner, 2010). As a measure of political orientation, participants indicated how liberal or conservative they were on most political and social issues, from 1 (*extremely liberal*), 4 (*moderate*), to 7 (*extremely conservative*),  $M = 4.23$ ,  $SD = 1.41$  (Graham, Haidt, & Nosek, 2009). Education was assessed as highest year of education completed.

#### Results

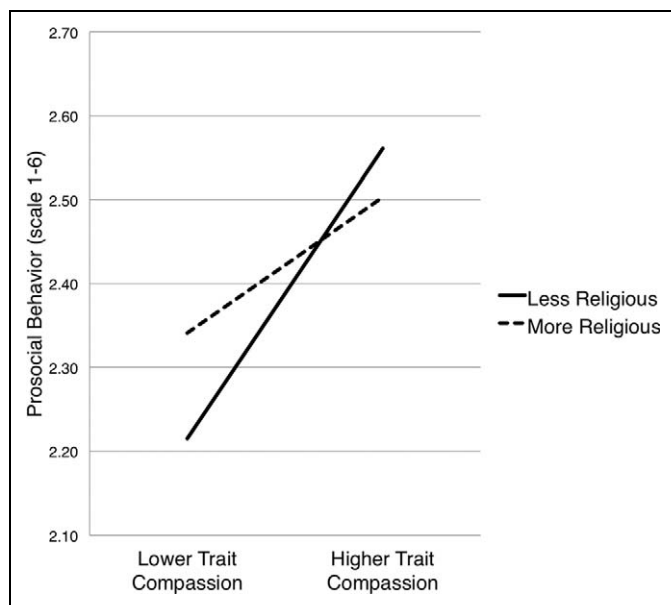
First, we tested for correlations among respondents' reported compassion, prosocial behavior, and strength of religious identity. Trait compassion was related to religious identity ( $r = .12$ ,  $p < .001$ ) and prosocial behavior ( $r = .20$ ,  $p < .001$ ), such that those who reported a greater tendency to feel compassion were more religious individuals and people who reported behaving more prosocially. Religiosity was marginally related to prosocial behavior ( $r = .05$ ,  $p = .077$ ), with more religious individuals reporting greater prosocial behavior.

**Religiosity as a moderator.** Next, we tested our main hypothesis that compassion more strongly predicts prosocial tendencies among the less religious than among the more religious. We tested this by regressing religiosity, compassion, and the interaction of the two. We found evidence for this hypothesis. Below, we describe the results not controlling for the

**Table 1.** Summary of Results for Compassion Predicting Prosocial Outcomes for the Less Versus More Religious

|  | Interaction $\beta$ | Less Religious (1 SD Below Mean: $\beta$ for Simple Slope) | More Religious (1 SD Below Mean: $\beta$ for Simple Slope) |
|--|---------------------|--|--|
| Study 1: Trait compassion                            |                     |  |  |
| Self-reported prosocial behavior                     | -.07* (-.07*)       | .25** (.26**)  | .12** (.12**)  |
| Study 2: Compassion versus neutral mood manipulation |                     |  |  |
| Prosociality on dictator task                        | -.37** (-.35**)     | .58** (.57**)  | .01 (.03)  |
| Prosociality on charity task                         | -.10 (-.07)         | .26* (.24**)   | .11 (.13)  |
| Study 3: State compassion                            |                     |  |  |
| Prosociality on composite of economic tasks          | -.20** (-.20*)      | .36** (.44**)  | -.07 (.05)   |
| Generosity during public goods task                  | -.23* (-.21*)       | .43** (.41**)  | -.003 (.004)   |
| Prosociality on dictator task                        | -.09 (-.09)         | .21* (.31**)   | .02 (.13)  |
| How trustworthy on trust second mover task           | -.20** (-.21*)      | .26** (.30**)  | -.18*** (-.11)   |
| Generosity during indirect reciprocity task          | -.11 (-.07)         | .29** (.29**)  | .05 (.17)  |

\*  $p \leq .05$ . \*\*  $p \leq .01$ . \*\*\*  $p \leq .10$ . (Controls for covariates in parentheses).



**Figure 1.** Study 1: The interaction of religiosity and trait compassion (plus and minus 1 standard deviation from the mean) on prosocial behavior.

covariates. In Table 1, in parentheses, we show the results when controlling for covariates; overall, controlling for covariates had little impact.

We observed a main effect of trait compassion such that greater compassion was related to greater prosocial behavior,  $\beta = .19$ ,  $t(1315) = 6.81$ ,  $p < .001$ . In contrast, we observed no main effect of religiosity on prosocial behavior,  $\beta = .03$ ,  $t(1315) = .93$ ,  $p = .353$ . Most importantly, we observed the predicted interaction between trait compassion and religiosity,  $\beta = -.07$ ,  $t(1315) = -2.46$ ,  $p = .014$ . Among participants who were less religious, greater compassion was related to higher levels of reported prosocial behavior,  $\beta = .25$ ,  $t(1315) = 6.74$ ,  $p < .001$ . Among participants who were more religious, greater compassion was also related to higher levels of reported prosocial behavior,  $\beta = .12$ ,  $t(1315) = 2.99$ ,  $p = .003$ . Because the interaction was significant,

however, although the relationship between compassion and prosociality was robust for the more religious participants, it was smaller than the relationship between compassion and prosociality for the less religious participants. See Figure 1.

## Discussion

Study 1 yielded evidence in support of our main hypothesis: Religiosity moderated the relationship between compassion and prosocial behavior such that the compassion-to-prosociality link was stronger for less religious individuals than it was for more religious individuals. Further, these results held while controlling for gender, political orientation, and educational attainment—variables that might otherwise account for our findings. In sum, these findings indicate that although compassion is associated with prosociality among both less religious and more religious individuals, this relationship is particularly robust for less religious individuals.

## Study 2: An Experimental Manipulation of Compassion

In Study 1, we examined how religiosity influences the relationship between trait compassion and self-reported prosocial behavior. In Study 2, we experimentally manipulated feelings of compassion, to establish possible causality between felt compassion and prosociality in the less religious. Prior work has found that manipulations of state compassion can significantly alter subsequent prosociality (Piff et al., 2010). In the current study, we predicted that less religious individuals induced to experience greater compassion (vs. those in a neutral condition) would make more prosocial choices. However, we expected that this effect would be less pronounced among religious study participants.

## Method

**Participants.** One hundred and one participants were recruited through Amazon's Mechanical Turk, a nationwide sample of adult participants (Buhrmester, Kwang, & Gosling, 2011; 41 men, 60 women; ages 18 to 68,  $M = 32.54$ ,  $SD = 12.01$ ;

78 were European American, 8 were Asian American, 6 were African American, and the rest were of other or mixed ethnicity; 39 were Christian, 7 were Jewish, 2 were Muslim, 36 were atheist, 12 were agnostic, 8 were spiritual but not religious, and the rest did not report their religion or were of some other religion; participants could choose more than one religion). Participants were paid a small fee for their participation. We required that all participants be registered in the United States and that their Amazon quality rating be greater than or equal to 98%. As we were primarily interested in the less and more religious, we specifically attempted to recruit roughly half of each. We asked participants to indicate their level of religiosity from 1 (*not at all*) to 7 (*deeply*),  $M = 3.43$ ,  $SD = 2.42$ .

**Design and procedure.** The advertisement on Amazon Mechanical Turk included a web address that directed the participants to an online study elsewhere. This study randomly assigned participants to either a compassion-induction or a neutral-prime condition. Next a 46-s video (Piff et al., 2010, study 4) was presented as a memory task. The compassion video presented information about child poverty over a series of photographs of helpless and vulnerable children as evocative, sad music played in the background ( $N = 49$ ). In prior research, this identical video was found to elicit significant increases in state feelings of compassion (Piff et al., 2010). The neutral-prime video was a 46-s clip of two men talking ( $N = 52$ ).

Prosociality was then assessed with two tasks. In a hypothetical dictator task, participants were asked to imagine that they had been paired with a stranger, given \$10, and could give as much or as little as they wanted to the stranger. The amount that they chose to give was the index of their generosity ( $M = 3.95$ ,  $SD = 1.82$ ). (Seven participants failed to answer this question and were thus not included in the analyses for this measure.) Although hypothetical, research shows that people behave similarly when playing for real versus hypothetical earnings (Simpson, 2003). We also measured participants' attitudes toward charitable giving (Piff et al., 2010). Specifically, participants were asked to rate what percentage of people's annual salary should be spent on various categories of items. Their rating of what percentage of people's annual salary people should spend on "charitable donations" was the outcome of interest ( $M = 5.28$ ,  $SD = 4.48$ ).

**Covariates.** We tested our results with and without the following covariates: gender, political orientation, and subjective socioeconomic status. As a measure of political orientation, participants indicated how liberal or conservative they were on most political and social issues, from 1 (*very liberal*), 4 (*moderate*), to 7 (*very conservative*),  $M = 3.42$ ,  $SD = 1.85$  (e.g., Graham et al., 2009). Subjective socioeconomic status was assessed by having participants rate their perceptions of their relative socioeconomic rank vis-à-vis others (Adler, Epel, Castellazzo, & Ickovics, 2000). Participants placed themselves on a ladder relative to others in their community (10 = *top rung*, 1 = *bottom rung*),  $M = 5.44$ ,  $SD = 1.92$ .

## Results

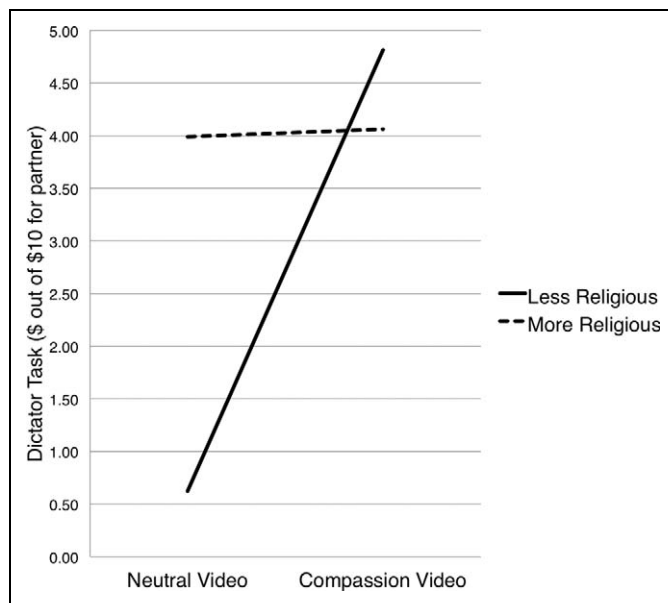
**Religiosity as moderator.** We tested our hypothesis that especially for the less religious participants, those who watched a compassion-inducing versus neutral video would be more likely to show prosociality. In Table 1, in parentheses, we show the results when controlling for covariates. Overall, controlling for covariates had little impact on the results.

We found support for this hypothesis in the dictator task. We observed a main effect of the video manipulation such that individuals who saw the compassion-inducing instead of the neutral video subsequently showed greater prosocial behavior in the dictator task,  $\beta = .29$ ,  $t(93) = 3.02$ ,  $p = .003$ . We also observed a main effect of religiosity on prosocial behavior,  $\beta = .35$ ,  $t(93) = -2.67$ ,  $p = .009$ . Most importantly, we observed the predicted interaction between the video (compassion-inducing vs. neutral) and religiosity,  $\beta = -.37$ ,  $t(93) = -2.84$ ,  $p = .006$ . As predicted, the observed relationship between compassion and prosociality in the dictator task was robust for the less religious participants,  $\beta = .58$ ,  $t(93) = 4.00$ ,  $p < .001$ , but attenuated for the more religious participants,  $\beta = .01$ ,  $t(93) = .07$ ,  $p = .941$ .

We found limited support for our hypothesis in the charity task. We observed a main effect of the video such that individuals who saw the compassion-inducing instead of the neutral video showed greater prosocial behavior in the charity task,  $\beta = .18$ ,  $t(100) = 2.16$ ,  $p = .034$ . We also observed a main effect of religiosity on prosocial behavior in the charity task,  $\beta = .59$ ,  $t(100) = 5.10$ ,  $p < .001$ . We did not observe the predicted interaction between the video (compassion-inducing vs. neutral) and religiosity,  $\beta = -.10$ ,  $t(100) = -.83$ ,  $p = .408$ . The pattern of the moderation was in the predicted direction but failed to reach statistical significance. However, as predicted, the observed relationship between compassion and prosociality in the charity task was robust for the less religious participants,  $\beta = .26$ ,  $t(100) = 2.06$ ,  $p = .043$ , but not statistically significant for the more religious participants,  $\beta = .11$ ,  $t(100) = .92$ ,  $p = .359$ . See Figure 2.

## Discussion

The results from Study 2 support the hypothesis that compassion more strongly influences prosociality among less religious individuals than more religious individuals. Specifically, we found that for less religious participants, watching a compassion-inducing (versus neutral) video was related to greater prosocial behavior. By contrast, for the more religious participants, the video condition was not linked to prosocial behavior. Results were stronger for the dictator task versus the charity task. Further, these results were not explained by gender, political orientation, or subjective socioeconomic status.



**Figure 2.** Study 2: The interaction of religiosity and mood induction (neutral vs. compassion-inducing video) on prosociality in dictator task.

### Study 3: For the Less Religious, State Compassion Predicts Greater Prosocial Behavior

In Studies 1 and 2, we found that compassion moderated the impact of religiosity on prosociality. A limitation of Studies 1 and 2, however, are that they assess either self-reported (Study 1) or hypothetical (Study 2) prosociality. In Study 3, we expanded upon our previous two studies by examining behavioral outcomes with real stakes. Specifically, we examined whether religiosity would moderate the impact of momentary feelings of compassion across various measures of economic prosociality. We hypothesized that greater state compassion would significantly predict greater generosity for the less religious, but not for the more religious.

#### Method

**Participants.** Eligible participants included 98 men and 112 women, aged 18 to 46 ( $M = 20.28$ ,  $SD = 3.52$ ). Sixty-four were European/European American, 97 were Asian or Asian American, 43 were of other or mixed ethnicity, and 6 did not report their ethnicity; 72 were Christian, 10 were Jewish, 10 were Buddhist, 5 were Hindu, 36 were atheist, 23 were agnostic, 26 were spiritual but not religious, 11 did not report their religion, and the rest were of some other religion). All were college students who participated in exchange for course credit.

**Design and procedure.** Prior to the laboratory session, participants completed an online demographic questionnaire, which included political orientation as measured in Study 2 ( $M = 3.11$ ,  $SD = 1.24$ ), subjective socioeconomic status (Adler et al., 2000; using an image of a ladder that was clicked; the scale

is in x-axis units clicked on the screen,  $M = 1.05$ ,  $SD = .97$ ), and religiosity as measured in Study 2 ( $M = 2.94$ ,  $SD = 1.53$ ). We tested our results with and without the following covariates: gender, political orientation, and subjective socioeconomic status.

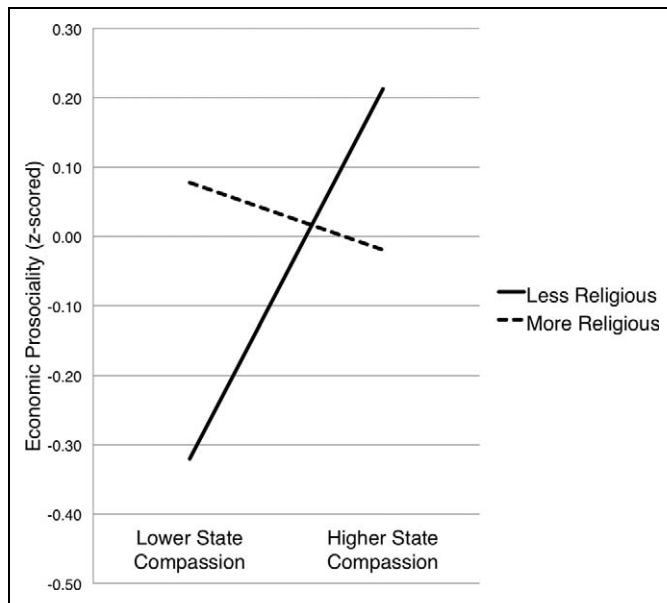
**Compassion.** Upon arriving in the laboratory, participants were seated at a cubicle and asked to rate their current feelings of compassion by answering how much they felt “compassion/sympathy” at the present time from 1 (*do not feel at all*) to 7 (*feel very strongly*),  $M = 3.10$ ,  $SD = 1.60$ . This was an adaptation of the Differential Emotions scale (Fredrickson, Tugade, Waugh, & Larkin, 2003) using the two words most associated with compassion (Goetz, et al., 2010).

**Prosocial behavior.** Participants next took part in a series of economic exercises designed to measure their generosity, trust, trustworthiness, and motivation to reward others’ generosity. Exercises used points which were exchanged for money at the end of the study (1 U.S. dollar for every 10 points). The points were real (no deception was used), but we did not reveal the conversion rate from points to dollars before the end of the study. Participants’ behavior in studies using such payment systems has shown effects parallel with 1:1 payment schemes (e.g., Barclay & Willer, 2007).

As measures of generosity, participants took part in a “Public Goods” game and a “Dictator” game (Ledyard, 1995). In the public goods game, a group of four participants could contribute any amount of a 10-point endowment to a public pool, which was then doubled and split evenly between them ( $M = 6.65$ ,  $SD = 3.65$ ). In the dictator game, participants divided a pool of 10 points between themselves and another participant ( $M = 3.61$ ,  $SD = 2.41$ ). In both cases, the selfish decision would be to not give any resources to the other participant or public pool. The public goods task was added later in the protocol, so only some participants were able to take part.

Participants also took part in a “Trust game” as second movers (Berg, Dickhaut, & McCabe, 1995). First movers were allocated 10 points and were given the opportunity to send any portion to the second mover. Whatever amount the first mover sent was tripled and second movers, in turn, decided what portion (if any) of the points they wished to send back to the first mover. When playing as the second mover, participants received the full 30 points from the first mover ( $M = 13.38$ ,  $SD = 5.67$ ). Participants’ behavior as second mover offered behavioral measures of their trustworthiness.

Finally, participants also took part in an “Indirect Reciprocity game” (Simpson & Willer, 2008). First, participants were told the result of another participant’s behavior in an earlier Dictator game with a third participant. After being told that the participant had split the pool evenly (a relatively generous behavior in the game), participants were then allocated 10 points that they could share with the dictator they had just observed ( $M = 3.74$ ,  $SD = 1.94$ ). The game offered a measure of the extent to which participants would expend resources to reward the generosity of others.



**Figure 3.** Study 3: The interaction of religiosity and state compassion (plus and minus 1 standard deviation from the mean) on prosociality across the economic tasks.

Because these measures were highly correlated we grouped them into a single index (composite of z-scored tasks;  $\alpha = .69$ ;  $M = -.01$ ,  $SD = .73$ ).

## Results

First, we assessed the relationships between momentary feelings of compassion, prosocial behavior, and strength of religious identity. Feelings of compassion were not related to religious identity ( $r = -.01$ ,  $p = .926$ ) but were related to prosocial behavior on the tasks ( $r = .23$ ,  $p = .005$ ), such that individuals who reported feeling greater compassion behaved more prosocially. Religiosity was not related to prosociality across the economic tasks ( $r = .12$ ,  $p = .153$ ).

**Religiosity as a moderator.** We tested our hypothesis that especially for the less religious, those who felt more compassion would behave more prosocially. Below, we describe the results not controlling for the covariates. In Table 1, in parentheses, we show the results when controlling for covariates; overall, controlling for covariates had little impact. Moreover, although results for all economic tasks are shown in Table 1, here we will focus on the overall results when assessing prosociality in all of the economic tasks combined. We found support for our hypothesis. We observed a main effect of compassion such that individuals who felt more compassion showed greater prosocial behavior in all of the economic tasks combined,  $\beta = .15$ ,  $t(209) = 2.21$ ,  $p = .028$ . In contrast, we observed no main effect of religiosity on prosocial behavior overall,  $\beta = .06$ ,  $t(209) = .83$ ,  $p = .407$ .

Most importantly, we observed the predicted interaction between compassion and religiosity,  $\beta = -.20$ ,  $t(209) =$

$-2.92$ ,  $p = .004$ . As predicted, the observed relationship between compassion and prosociality was robust for the less religious participants,  $\beta = .36$ ,  $t(209) = 3.77$ ,  $p < .001$ , but attenuated for the more religious participants,  $\beta = -.07$ ,  $t(209) = -.64$ ,  $p = .522$ . See Figure 3.

## Discussion

In Study 3, we found support for our hypothesis: Religiosity moderated the relationship between compassion and prosociality in the economic tasks such that, for the less religious participants, feeling more compassion was related to greater prosocial behavior. For the more religious participants, feeling compassion was not linked to prosocial behavior. Results were not explained by gender, political orientation, or education.

## General Discussion

Social scientists have tied religion to prosocial sentiments such as generosity and solidarity, but this literature leaves unanswered an important research question: What explains the generosity of less religious individuals? Across three studies, we found evidence that, with fewer or no religious expectations of prosociality, individual levels of compassion are more critical to the generosity of the less religious. (See Table 1) In Study 1, especially for the less religious, greater trait compassion was related to greater self-reported prosociality. In Study 2, the generosity of the less religious (but not the more religious) was influenced by a compassion-inducing versus a neutral video. In Study 3, the generosity on a wide variety of economic tasks of the less religious (but not the more religious) was influenced by higher momentary feelings of compassion. The sum of this evidence suggests that the prosociality of less religious individuals is driven to a greater extent by compassion than is the prosociality of the more religious.

As a side note, in all three studies we found that more conservative individuals were more religious. As an alternative explanation, therefore, it is plausible that political orientation (how politically conservative or liberal someone considers themselves to be), would also serve to influence the impact of compassion on prosociality. In fact, however, none of the tests of moderation were significant,  $ps > .10$ .

An alternative explanation for the significant interaction of religiosity and compassion on generosity is in fact driven by a ceiling effect, with the generosity of those high in religiosity being so high that higher levels of compassion among members of this group cannot lead to detectable increases in generosity. Our results, however, suggest that this is most likely not an issue. For example, across the studies, less religious individuals who were more compassionate actually tended to show more generosity than more religious individuals who were high or low in compassion (see Figures 1–3). This pattern suggests that it was in fact possible for those high in religiosity and compassion to exhibit higher levels of generosity than they did.

Overall, we might conclude that the less religious may be bound to others by emotional connection. These findings are similar to Batson's empathy–altruism hypothesis, in which empathy rather than egocentric motivations determine altruistic behaviors (Batson & Shaw, 1991). The more religious, on the other hand, may ground their generosity less in emotion and more in other factors such as doctrine, a communal identity, or reputational concerns.

Future research might examine how compassion functions for followers of different religions. Are those who believe in a more traditional and stricter religion just as unlikely to be influenced by compassion as followers of less traditional and less strict religions? Are followers of religions that place more of an emphasis on compassion even less likely to be influenced by their own trait or state levels of compassion? In sum, it could be fruitful to explore the boundary conditions of this effect.

Our findings support the idea that compassion shapes other-orientated behavior and attitudes for the less religious, and less so for the more religious, at both trait and state levels. More religious people likely act prosocially based on a variety of influences, compassion being just one of them. Indeed, there are many causes of prosocial behavior (Penner, Dovidio, Piliavin, & Schroeder, 2005). Our results support the idea that the other-oriented emotion of compassion significantly influences prosocial inclinations in the less religious.

### Acknowledgment

The authors gratefully acknowledge their wonderful research assistants.

### 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.

### Financial Disclosure/Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This work was funded by the Greater Good Science Center, Metanexus, and the Center for the Economics and Demography of Aging through the NIA grant P30 AG01283.

### References

- Adler, N. E., Epel, E. S., Castellazzo, G., & Ickovics, J. R. (2000). Relationship of subjective and objective social status with psychological and physiological functioning: Preliminary data in healthy white women. *Health Psychology, 19*, 586–592.
- Barclay, P., & Willer, R. (2007). Partner choice creates competitive altruism in humans. *Proceedings of the Royal Society B: Biological Sciences, 274*, 749–753.
- Batson, C. D. (2009). These things called empathy: Eight related but distinct phenomena. In J. Decety & W. Ickes (Eds.), *The social neuroscience of empathy* (pp. 3–15). Cambridge: MIT press.
- Batson, C. D., & Shaw, L. L. (1991). Evidence for altruism: Toward a pluralism of prosocial motives. *Psychological Inquiry, 2*, 107–122.
- Beit-Hallahmi, B. (2009). Morality and immorality among the irreligious. In P. Zuckerman (Ed.), *Atheism and secularity: Volume 1: Issues, concepts, and definitions* (pp. 113). Santa Barbara, CA: Praeger.
- Berg, J., Dickhaut, J., & McCabe, K. (1995). Trust, reciprocity, and social history. *Games and Economic Behavior, 10*, 122–142.
- Buhrmester, M., Kwang, T., & Gosling, S. D. (2011). Amazon's mechanical turk. *Perspectives on Psychological Science, 6*, 3.
- Davis, J. A., & Smith, T. W. (2005). *General social surveys, 1972–2004*. Chicago, IL: National Opinion Research Center.
- Davis, M. H. (1983). Measuring individual differences in empathy: Evidence for a multidimensional approach. *Journal of Personality and Social Psychology, 44*, 113.
- Durkheim, E. (1915). *The elementary forms of religious life*. New York, NY: Free Press.
- Eisenberg, N., & Lennon, R. (1983). Sex differences in empathy and related capacities. *Psychological Bulletin, 94*, 100.
- Fredrickson, B. L., Tugade, M. M., Waugh, C. E., & Larkin, G. R. (2003). What good are positive emotions in crises? A prospective study of resilience and emotions following the terrorist attacks on the united states on September 11th, 2001. *Journal of Personality and Social Psychology, 84*, 365–376.
- Goetz, J. L., Keltner, D., & Simon-Thomas, E. (2010). Compassion: An evolutionary analysis and empirical review. *Psychological Bulletin, 136*, 351–374.
- Gorsuch, R. L., & McFarland, S. G. (1972). Single vs. Multiple-item scales for measuring religious values. *Journal for the Scientific Study of Religion, 11*, 53–64.
- Graham, J., & Haidt, J. (2010). Beyond beliefs: Religions bind individuals into moral communities. *Personality and Social Psychology Review, 14*, 140–150.
- Graham, J., Haidt, J., & Nosek, B. A. (2009). Liberals and conservatives rely on different sets of moral foundations. *Journal of Personality and Social Psychology, 96*, 1029–1046.
- Hout, M., & Fischer, C. S. (2002). Why more Americans have no religious preference: Politics and generations. *American Sociological Review, 67*, 165–190.
- Jost, J. T., Glaser, J., Kruglanski, A. W., & Sulloway, F. J. (2003). Political conservatism as motivated social cognition. *Psychological Bulletin, 129*, 339–375.
- Ledyard, J. (1995). Public goods experiments. In J. L. Kagel & A. E. Roth (Eds.), *Handbook of Experimental Economics* (pp. 111–194). Princeton, New Jersey: Princeton University Press.
- Lynn, R., Harvey, J., & Nyborg, H. (2009). Average intelligence predicts atheism rates across 137 nations. *Intelligence, 37*, 11–15.
- Norenzayan, A., & Shariff, A. F. (2008). The origin and evolution of religious prosociality. *Science, 322*, 58.
- Omoto, A. M., Malsch, A. M., & Barraza, J. A. (2009). Compassionate acts: Motivations for and correlates of volunteerism among older adults. In B. Fehr, S. Sprecher & L. G. Underwood (Eds.), *The science of compassionate love: Theory, research, and applications* (pp. 257–282). Malden, MA: Wiley Blackwell.



- Penner, L. A., Dovidio, J. F., Piliavin, J. A., & Schroeder, D. A. (2005). Prosocial behavior: Multilevel perspectives. *Annual Review of Psychology, 56*, 365–392.
- Piff, P. K., Kraus, M. W., Cote, S., Cheng, B. H., & Keltner, D. (2010). Having less, giving more: The influence of social class on prosocial behavior. *Journal of Personality and Social Psychology, 99*, 771.
- Shariff, A. F., & Norenzayan, A. (2007). God is watching you: Priming god concepts increases prosocial behavior in an anonymous economic game. *Psychological Science, 18*, 803–809.
- Simpson, B., & Willer, R. (2008). Altruism and indirect reciprocity: The interaction of person and situation in prosocial behavior. *Social Psychology Quarterly, 71*, 37.
- Simpson, B. T. (2003). Sex, fear, and greed: A social dilemma analysis of gender and cooperation. *Social Forces, 82*, 35–52.
- Smith, T. W. (2009). Loving and caring in the United States: Trends and correlates of empathy, altruism, and related constructs. In B. Fehr, S. Sprecher & L. G. Underwood (Eds.), *The science of compassionate love: Theory, research, and applications* (pp. 81–120). Walden, MA: Wiley-Blackwell.
- Snibbe, A. C., & Markus, H. R. (2005). You can't always get what you want: Educational attainment, agency, and choice. *Journal of Personality and Social Psychology, 88*, 703.
- Stark, R. (1999). Secularization, R.I.P. *Sociology of Religion, 60*, 249–273.
- Zuckerman, P. (2007). Atheism: Contemporary rates and patterns. In M. Martin (Ed.), *Cambridge companion to atheism* (pp. 47–68): New York, NY: Cambridge University Press.

## Bios

**Laura R. Saslow** received her BA from Princeton University, her MS from Vanderbilt University, and her PhD from University of California, Berkeley. She is currently a postdoctoral research scholar at the University of California, San Francisco.

**Robb Willer** received his BA from the University of Iowa and his MA and PhD from Cornell University. He is an assistant professor of sociology at the University of California, Berkeley.

**Matthew Feinberg** received his BA from Whittier College and his MEd from Framingham State College. He is currently a graduate student in psychology at the University of California, Berkeley.

**Paul K. Piff** received his BA from Reed College and his MA from the University of California, Berkeley. He is currently a graduate student in psychology at the University of California, Berkeley.

**Katharine Clark** received her BA from the University of California, Berkeley. She has been a graduate student in psychology at the University of Colorado, Boulder.

**Dacher Keltner** received his BA from the University of California, Santa Barbara and his PhD from Stanford University. He is a full professor of psychology at the University of California, Berkeley.

**Sarina R. Saturn** received her BS from the University of Oregon and her PhD from New York University. She is an assistant professor of psychology at Oregon State University.