

ARTICLE

Supernatural Agency and Forgiveness

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ABSTRACT

The present research² examined the hypothesis that supernatural agency attributions underlie the relation between religion and forgiveness. In two experiments a priming procedure was used to make religious concepts temporarily more salient. In Experiment 1, a religion prime marginally enhanced forgiveness but did not enhance supernatural attributions, compared to a control group. However, correlational support was found for the hypothesis that supernatural attributions were associated with more forgiveness, less punishment and less attributions of responsibility to the offender. In Experiment 2, we attempted to enhance supernatural attributions by first manipulating participants' sense of control (high vs. low) before presenting a religion prime. As expected, in the low control condition, religious priming enhanced the perceived likelihood that a higher power had an influence on violent situations, and enhanced participants' forgiveness towards the offenders. Importantly, mediation analysis further supported the existence of a relation between supernatural agency attributions and participants' ability to forgive.

Keywords

religion, forgiveness, agency, responsibility, supernatural attributions

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During a midnight screening of the Batman movie “The Dark Knight Rises” in Colorado in July 2012, a mass shooting occurred. A man dressed as the Joker shot into the audience, killing 12 and injuring 58 people (Pearson 2012). One survivor, a religious man who was shot three times, said he forgives the shooter with all his heart. “The first thing I want to say to him is ‘I forgive you,’ and the next is, ‘Can I pray for you?’” The victim further stated that what he saw when the offender came in was not “all the way human,” and that he felt a dark presence in the room (Cotton 2012).

Throughout history, we find examples of individuals who have forgiven despite profound injustice. Probably the most well known example in Christianity is that of Jesus who asked for God’s forgiveness of those who crucified him (Luke 23: 34, English Standard Version). Not only in Christianity, but in all major world religions forgiveness is a value that is strongly encouraged (e.g., McCullough and Worthington 1999; Rye *et al.* 2000; Tsang, McCullough, and Hoyt 2005). Survey studies have found that individuals who score high on religiosity also place a high value on forgiveness. For instance, in a study on Christian values, “forgiving” came in second place after “loving” (Shoemaker and Bolt 1977), which illustrates the important position that forgiveness plays in Christian morality and culture. Accordingly, research has found a positive relationship between religiosity and forgiveness³ (Tsang *et al.* 2005) and it is proposed that religion may provide role models and moral values that can help victims to reframe their attitudes towards offenders (Pargament and Rye 1998).

In addition to providing moral guidelines, there may be alternative routes through which religion may contribute to forgiveness. In the present study we investigated one such alternative mechanism: the possibility that when concepts of supernatural agency are activated, part of the responsibility for a violent act (as in the case of the Batman shooter) is ascribed to the supernatural agent instead of to the perpetrator. In the following paragraphs, we explicate this hypothesis in more detail.

Supernatural agents (e.g. God, Gods, Allah) are central to most world religions (e.g. Atran and Norenzayan 2004; Barrett 2000; Barrett and Lanman 2008; Boyer 2003). Supernatural agents are presumed to be capable of acting and intervening in the world (Barrett and Lanman 2008), and are regularly held responsible for major life events such as birth and death, disease and health,

3. Although religious people report themselves to be more forgiving, measures of specific interpersonal transgressions often fail to support this relationship. Tsang, McCullough and Hoyt (2005) give a psychometric explanation for this religion-forgiveness discrepancy and claim that it is in part due to a lack of aggregation in measures of reported behaviors, as well as the presence of encoding and recall biases. They argue that these methodological shortcomings often obscure the relationship between religion and transgression-specific forgiveness.

fortune and misfortune (Bering and Shackelford 2004; Bering 2002a; Baumard and Boyer 2013). According to Gray and Wegner (2009, 2010), people are particularly susceptible to making supernatural attributions in the case of negative life events for which no responsible actor can be identified. Accordingly, natural disasters are often interpreted as divine retribution (Gray and Wegner 2010; Laurin, Shariff, Henrich, and Kay 2012; Sibley and Bulbulia 2012), whereby God is seen as the intentional agent who is responsible for the catastrophe. Interestingly, anecdotal findings suggest that even in cases where a perpetrator can be identified, people are still inclined to attribute responsibility to supernatural agents. For example, after the Sept. 11 attacks in 2001 some people reported seeing the face of the devil emerging out of the clouds of smoke (“Face of Satan” n.d.), and televangelist Jerry Falwell stated that the attacks were “probably deserved” for all of those who had tried to secularize America (Carlson 2007). In the introductory example of the Batman shooting, the forgiving victim appears to ascribe part of the responsibility for the event to a supernatural “dark presence,” and on the Internet one can find a petition called “Don’t Blame God for Colorado Shootings” (Hamilton 2013) illustrating the commonality of supernatural attributions for devastating events even in cases where an immediate perpetrator can be identified.

In cases of natural disasters, the presumed involvement of a supernatural agent may satisfy the human desire for identifying the agent who is causally responsible for the event (Grey and Wegner 2010). However, in the case of a serious transgression by a human actor, God may be held morally responsible as the omnipotent being who is accountable for all the fortunes and misfortunes in the world and who might control the actions of individual men to enforce supernatural justice (Pinnock 1996; Sartorio 2007; Baumard and Boyer 2013). In accordance with this perspective, studies in psychology have found that concepts of a supernatural agent or God may lower the perception of human authorship. Dijksterhuis, Preston, Wegner and Aarts (2008) showed that subliminal priming with the word “God” reduced feelings of personal authorship when subjects were asked to decide whether they or the computer had been responsible for the removal of a letter string on the screen. More recently, Gervais (2014) found that participants attributed less intentionality to performers of good deeds if they knew that these acts were religiously motivated. Recent findings from our own lab furthermore suggest that religious priming may lower the attribution of agency to violent perpetrators. Participants who had been instructed to write about the significance of religion in their lives subsequently attributed less intentionality and free will to perpetrators of moral transgressions, as compared to participants in a control condition. These findings suggest that activating con-

cepts of supernatural agency or God may lower one's personal sense of authorship as well as the perception of authorship in the action of others.

In the present study, we proceeded further along this line of inquiry and investigated if supernatural agency may lower the perceived responsibility of perpetrators and thereby encourage forgiveness. Studies in the field of morality have found that multiple factors contribute to the attribution of responsibility, punishment, and forgiveness such as the (purposeful or accidental) nature of the intent with which a harmful action was initiated (Gonzales, Haugen, and Manning 1994), the perceived severity of the offense (Girard and Mullet 1997), and mitigating and external conditions (e.g. mental illness, self-defense, blackmail) that accompanied the action (Worthington and Wade 1999; Kearns and Fincham 2004). The consideration of supernatural explanations for a violent offense would constitute an external factor that is outside of the perpetrators' control. In line with this reasoning, studies on forgiveness have found that the possibility to attribute a transgression to external circumstances instead of to the perpetrator may enhance people's willingness to forgive an offender (e.g., Fincham 2000; Fincham, Paleari and Regalia 2002; Kearns and Fincham 2005; Worthington and Wade 1999; for similar findings in the domain of self-excuse see Fisher and Exline 2006; Tangney, Boone, and Dearing 2005). Along similar lines, Shariff *et al.* (2014) recently found that reductions in people's belief in free will attenuated their support for retributive punishment. Letting go of retributive punishment is considered an action component of forgiveness that may accompany the emotional relinquishment of anger (cf. Rye *et al.* 2000; Corlet 2006). In accordance with these findings, we predicted that external supernatural attributions would reduce the perceived responsibility of a perpetrator, enhance forgiveness, and lower desire for punishment.

In two experiments, a priming procedure was used to make religious concepts temporarily more salient in one group of participants, whereas no priming, or neutral priming, was administered to a control group. The experiments included direct measures of forgiveness, responsibility, and punishment in Experiment 1, and intentionality, forgiveness and influence of a higher power in Experiment 2, rather than indirect measures of such concepts (e.g. see McCullough *et al.* 1997). Hence, participants' answers reflect laypersons' views (e.g. Kearns and Fincham 2004) of these concepts as they apply in these settings. In Experiment 1, participants received a newspaper article reporting the Colorado shooting. The context of the article was a court setting in which the offender stood trial that day. For Experiment 2, images of violent transgressions were used depicting an offender and a victim.

We expected that religious priming would enhance forgiveness and reduce punishment, and that this effect would be mediated by reduced responsibility of the offender, and the presumed influence of a supernatural agent. Besides the novel perspective on supernatural agency, responsibility, and forgiveness, the current study extends previous research on religion and forgiveness by using an experimental design. This allows us to investigate a possible causal relation between religion and forgiveness which has been suggested by previous research (e.g. Tsang *et al.* 2005).

Experiment 1

Experiment 1 used a newspaper article of the Colorado shooting to examine the effect of religious priming on forgiveness. The newspaper article states that the suspect of the shooting will be brought before court that day, and that the motive for the shooting is still unclear. Before reading the article, half of the participants were asked to answer three open-ended questions that required them to reflect upon their religious or spiritual views. The other half of the participants received the same questions at the end of the experiment and, as a consequence, were not primed with religion when reading the newspaper article. After reading the article, participants were asked to rate the responsibility of the perpetrator, how much they were able to forgive the perpetrator, how severely they thought the perpetrator should be punished, and to what extent supernatural forces may have played a role in the event. Punishment was included as an additional measure of (inverse) forgiveness that matched the juridical content of the newspaper article, in line with the idea that forgiveness may be comprised of an emotional and an action component: the renunciation of anger and the removal of retribution (cf. Rey *et al.* 2000; Corlet 2006).

It was expected that (1) religious priming would enhance forgiveness of the offender, that (2) effects on forgiveness would be mediated by reductions in perceived responsibility of the offender and (3) an increase in the attribution of supernatural agency. Furthermore following the hypothesis that the perception of supernatural agency may take away responsibility of the offender, we predicted that (4) the effect of religion on forgiveness would be mediated by the indirect effect of supernatural agency via responsibility of the offender. That is, priming with religion would enhance the perception of supernatural agency, thereby lowering the perception of responsibility of the offender and enhancing forgiveness towards the offender.

In addition to the experimental effects of religious priming, individual difference measures were analyzed to investigate the relationship between the perception of supernatural agency and participants' forgiveness and perceived respon-

sibility of the offender, using correlation analyses. We expected supernatural attributions to relate positively to levels of forgiveness, and negatively to the perceived responsibility of the offender. Furthermore, it was predicted that the relation between supernatural attributions and forgiveness would be mediated by the perceived responsibility of the offender.

Method

Participants

One-hundred-and-twenty-nine students from Radboud University (109 women), mean age 22.1 (range: 18 to 32) participated in this experiment. All participants received course credits in return. One participant (a Jehovah's Witness) was excluded from analysis because she reported extreme religious views that could preclude the subtle effect of the priming manipulation.⁴ The experiment was run in conjunction with another study in the computer lab of the Behavioural Science Institute at Radboud University, which determined the number of participants.

Stimuli

A newspaper article of the Colorado shootings was used. The article described that the suspect of the shooting (James Eagan Holmes) will be brought before court that day. It further stated that the 24-year-old Holmes is accused of the shooting at the Batman movie "The Dark Knight Rises" that killed 12 and injured 58 people and that the motive of Holmes, who is being held in solitary confinement, is still unclear.

Procedure

Half of the participants received three open-ended questions inquiring about their religious and spiritual views before they received the newspaper article of the Colorado shootings (before condition). In the three open-ended questions participants were asked to describe to what extent they believed there are more things in heaven and earth,⁵ whether they believed that things in life happen with a higher, supernatural reason or purpose, and finally, whether they considered themselves to be religious or spiritual. The other half of participants received these three questions at the end of the experiment (after condition).

4. In line with this reasoning, it was found that the inclusion of this participant with extreme religious views lowered the effect of priming on forgiveness, $F(1,127) = 2.74$, $p = .10$, $\eta^2 = .02$ and caused a significant correlation between forgiveness and believed influence of a higher power, $r = .19$, $p = .03$, to occur.

5. In the Netherlands people use the phrase "there is more between heaven and earth" to indicate (metaphysical) things exist that cannot be seen.

After reading the newspaper article of the Colorado Shooting, participants were asked to rate on separate 9-point scales to what extent they thought Holmes could be held responsible for his behavior (*1 = not at all, 9 = completely*), how severely they thought Holmes should be punished (*1 = not severe, 9 = very severe*), and to imagine from the perspective of a victim,⁶ to what extent they would be able to forgive Holmes (*1 = not at all, 9 = completely*). Next, to measure supernatural attributions, participants were asked to indicate to what extent they thought that it was possible that the actions of Holmes were influenced by a higher power or force (*1 = not at all, 9 = completely*), and to what extent they thought that events like this shooting could possibly serve a higher, supernatural purpose (*1 = not at all, 9 = completely*). The questions appeared one by one on the screen in a fixed order, and the presentation of questions was self-paced.⁷

Finally, participants filled out ‘The Views of God scale’ (Shariff and Norenzayan 2011). This scale comprises 14 traits, seven of which reflect “positive” qualities (forgiving, loving, compassionate, gentle, kind, comforting, and peaceful), and seven reflect “negative” qualities (vengeful, harsh, fearsome, angry, punishing, jealous, and terrifying). Participants were asked, on a 7-point Likert scale (*1 = not at all, 7 = completely*), to describe how much each trait applied to their God or Gods, or, if the subject was a nonbeliever, how much they felt each trait applied to their culture’s view of God/s.

Results

Experimental effects

Because in Experiment 1 multiple related variables are selected for analysis, we chose an hierarchical approach to control for the problem of multiple comparisons. Two multivariate analyses were run as separate omnibus tests. A first MANOVA included the associated variables forgiveness, punishment, and

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6. For readability, in the remainder of this paper the terms forgiveness and forgiving will imply participants’ expressed level of forgiveness from the imagined perspective of a victim.
 7. Following these questions, participants received four more questions in the following order: “imagine you are one of the victims, to what extent do you think you would be inclined to hold a higher power responsible for the event,” “imagine you are one of the victims, to what extent do you think you would be inclined to seek for a supernatural purpose behind this event,” “to what extent did you feel emotionally touched by the event,” “how much control do you think the people experienced in this situation (the shooting).” We did not address these questions in this research article. We regarded the questions inquiring about higher power and supernatural purpose from the perspective of the victims as redundant with the questions inquiring about higher power and supernatural power from the perspective of the participant him/herself. The last 2 questions (“emotionally touched” and “control”) were included in the questionnaire as possible moderators.

responsibility of the offender. A second MANOVA included the associated variables “influence of a higher power” and “supernatural purpose.”

To test whether participants who were primed with religion were more forgiving towards the offender, thought that he deserved less punishment, and held him less responsible for the action, a Multivariate ANOVA was conducted with prime (before vs. after) as between-subject factor, and the ratings of forgiveness, punishment, and responsibility as dependent variables. The multivariate test did not reach the conventional level for significance, $F(3,124) = 2.47, p = .07, \eta^2 = .07$. The test of between-subjects effects showed a trend of the prime on forgiveness, $F(1,126) = 3.58, p = .06, \eta^2 = .03$. Participants who answered the religion questions before they received the newspaper article were somewhat more forgiving towards the offender ($M = 2.41, SD = 1.42$) than participants who answered the religion questions afterwards ($M = 1.97, SD = 1.17$).⁸ There was no significant difference between the two prime groups on severity of punishment, $F(1,126) = .28, p > .10$, and responsibility, $F(1,126) = 2.53, p > .10$.

Next, we tested whether religious priming enhanced supernatural attributions, and whether these attributions mediated the effect of the religion prime on forgiveness. A Multivariate ANOVA was conducted with prime (before vs. after) as between-subject factor and as dependent variables, participants’ perception of supernatural purpose and influence of a higher power. The Multivariate yielded a significant effect, $F(2,125) = 3.41, p = .04, \eta^2 = .05$. Unexpectedly, participants who answered the religion questions beforehand believed to a *lesser* degree that a higher power could have had an influence on the event ($M = 1.93, SD = 1.41$) than participants who answered the religion questions afterwards ($M = 2.49, SD =$

8. To test whether it made a difference if participants were atheist or not, participants who explicitly answered that they did not believe in any higher power ($n=74$) were compared to the other participants. Thus, we conducted an ANOVA with Forgiveness as dependent variable and Belief (atheists or non-atheists) and Prime (before vs. after) as between-subject factors. Besides the trend of the prime on forgiveness, $F(1,124) = 3.52, p = .06$, the ANOVA yielded no main effect of belief, $F(1,124) = .22, p = .64$, nor an interaction of belief with prime, $F(1,124) = .05, p = .82$. We also conducted a Multivariate ANOVA with the perception that the event served a supernatural purpose and the assumed influence of a higher power on the event as dependent variables and Belief (atheists or non-atheists) and Prime (before vs. after) as between-subject factors. This analysis yielded a main effect of belief, $F(2,123) = 12.32, p < .001, \eta^2 = .17$, indicating that participants who explicitly answered that they do not believe in a higher power attributed less supernatural purpose and influence of a higher power over the event. More importantly, the factor belief did not interact with prime $F(2,123) = 2.37, p = .10$, which suggests that the effects of religious priming were unaffected by pre-existing beliefs of participants. This finding corroborates the idea that religious thought may bias people’s perceptions of supernatural agency, irrespective of explicit self-reported religious or non-religious affiliation (e.g. see Shariff and Norenzayan 2007).

1.75), $F(1,126) = 4.09, p < .05, \eta^2 = .03$. No differences were found between the prime groups in their perception of supernatural purpose, $F(1,126) = .07, p = ns$.

Mediation

To investigate the relation between religious priming and forgiveness, separate mediation analyses were run: (1) mediation by the perceived moral responsibility of the offender, (2) mediation by attribution of supernatural agency, and (3) the combined indirect effect of responsibility and supernatural agency.

A bootstrapping analysis (Preacher and Hayes 2008) of 5000 samples indicated that (1) neither responsibility, (2) nor the perception of supernatural agency (supernatural purpose and influence of a higher power) mediated the small effect of prime on forgiveness, 95% CI [-.0029, .2290], CI [-.1869, .0984], and CI [-.0740, .0685], respectively. Supernatural purpose and influence of a higher power together also did not mediate the effect, 95% CI, total model [-.2314, .1483]. Furthermore, (3) the indirect effect of prime on forgiveness was not mediated through higher power and responsibility in series nor through supernatural power and responsibility in series (model 6, Hayes 2013), 95% CI [-.0001, .0916], and CI [-.0261, .0041], respectively.

Views of God

Exploratively, an analysis was conducted to investigate whether participants' God views were influenced by the priming manipulation. Mean scores were calculated for the positive (forgiving, loving, compassionate, gentle, kind, comforting, and peaceful; $\alpha = .93$) and negative (vengeful, harsh, fearsome, angry, punishing, jealous, and terrifying; $\alpha = .84$) qualities. A Repeated Measures ANOVA was performed with Qualities (positive vs. negative) as within subject factor and Prime (before vs. after) as between-subject factor. A strong main effect of qualities was found, $F(1,126) = 2.57, p < .001, \eta^2 = .67$. Participants viewed their (culture's) God as more positive ($M = 5.18, SD = 1.26$) than negative ($M = 2.72, SD = 1.07$). Moreover, an interaction was found between Prime x Qualities, $F(1,126) = 3.95, p = .05, \eta^2 = .03$. Participants who answered the religion questions beforehand viewed their (culture's) God as more positive than participants who answered the religion questions afterward ($M = 5.54, SD = 0.92$ vs. $M = 4.76, SD = 1.46$, respectively), $F(1,126) = 13.47, p < .001, \eta^2 = .10$. There was no difference between the two prime groups on the negative qualities, $F(1,126) < 1$.

Individual differences

Correlations between individual differences in the attribution of supernatural agency and levels of forgiveness, punishment, and responsibility of the offender

Table 1. Correlations among variables of Experiment 1.

	Forgiveness	Punishment	Responsibility	Influence, higher power	Supernatural purpose
Forgiveness	—				
Punishment	-.33***	—			
Responsibility	-.16+	.64***	—		
Influence, higher power	.17+	-.24**	-.26**	—	
Supernatural purpose	.36***	-.29**	-.12	.54***	—

*** $p < .001$; ** $p < .01$; * $p < .05$; + $p < .10$.

are listed in Table 1.⁹ In line with the expectation that supernatural attributions facilitate forgiveness, a positive correlation was found between perception of supernatural purpose and forgiveness, and a trend for a positive relation was found between perceived influence of higher power and forgiveness. Supernatural attributions were also negatively related to punishment. A stronger belief that the event served a supernatural purpose and a stronger belief that a higher power could have influenced the event were associated with lower ratings of punishment. Furthermore, in accordance with the prediction that supernatural attributions may decrease responsibility of the offender, the more participants believed that a higher power could have had an influence on the event, the less responsible they held the offender for the event.

To test whether perceived responsibility of the offender mediated the relation between perceived influence of a higher power on the one hand and forgiveness or punishment of the offender on the other hand, two bootstrapping analyses (Preacher and Hayes 2008) of 5000 samples were performed. Bootstrapping indicated that responsibility of the offender did not mediate the relation between the perceived influence of a higher power and forgiveness, 95% CI [-.0065,

9. A requirement for correlation analyses is that the involved variables do not measure the same construct. Reliability analysis of forgiveness, punishment, and responsibility indicated that internal consistency of these variables is low ($\alpha = .01$) which indicates that these variables measure distinct constructs.

.0945]. However, responsibility of the offender did mediate the relationship between the perceived influence of a higher power and punishment, 99% CI [-.2022, -.0095].

Discussion

The findings of Experiment 1 suggest that priming with religion may facilitate forgiveness. Participants who reflected on their religious and spiritual viewpoints before they received a newspaper article about the Colorado Shooting showed a trend towards expressing more forgiveness of the offender. However, we did not find support for the hypothesis that supernatural attributions mediate this effect. In contrast to what we expected, participants who were primed with religion believed to a lesser extent that a higher power could have had an influence on the situation.

When looking at participants' view of God, we found that participants ascribed far more positive than negative characteristics to God. This effect was enhanced for the group that was primed with religion, suggesting that the religion prime made these positive God concepts more salient. Arguably, this could be the reason why participants who were primed with religion ascribed less influence to a higher power for the shooting as they associated their (culture's) God more with positive events than with negative events. This is an interesting finding as it suggests that attributions of supernatural responsibility may directly depend on different views of God.

Although caution must be taken in interpreting the data of the correlation analyses as the different prime conditions are taken together here, in the correlation analysis we did find tentative support for the hypothesis that supernatural attributions may be associated with forgiveness, punishment, and responsibility of the offender. The more participants believed that the event was part of a supernatural plan, or that a higher power could have had an influence on the event, the more forgiving they were towards the offender, and the less severely they thought the offender should be punished. Also, the belief that a higher power could have had an influence on the situation correlated negatively with perceived responsibility of the offender.

Mediation analyses of individual differences provided some support for the theoretical prediction that supernatural attributions may lower the perceived responsibility of the offender and in turn enhance forgiveness of the offender. That is, participants who perceived a greater influence of a higher power in the event, ascribed less responsibility to the offender and thought the offender deserved less severe punishment. However, responsibility of the offender was not found to mediate the relation between the perceived supernatural influence and forgiveness.

In sum, the first experiment provided only preliminary support for the hypothesis that the relation between religion and forgiveness is mediated by the presumed influence of a higher power. On a correlational level, this hypothesis did seem to be supported for punishment but not for forgiveness. On an experimental level, priming had an unexpected reverse effect on the perception of supernatural influence. One reason for this reversed effect of religious priming on the belief in supernatural involvement might be that the questions that were used for the religion prime activated views of a loving and supporting God instead of a controlling God. The findings on the View of God scale supports this explanation as priming enhanced positive views of God. In accordance with this idea Webb, Chickering, Colburn, Heisler, and Call (2005) found that dispositional forgiveness is positively correlated with positive God concepts but negatively with concepts of a controlling God. Hence, religious priming might have led to more forgiveness by direct associations with positive God concepts such as forgiveness, compassion, and kindness.

In Experiment 1, the effect of religious priming on forgiveness was not mediated by supernatural influence, most likely because participants did not wish to associate their positive God concepts with the negative consequences of the shooting. Interestingly, and relevant for our hypothesis, is that Laurin *et al.* (2012) recently found that only participants who believe in controlling Gods engage in making supernatural attributions. In other words, people may only activate concepts of supernatural agency when (negative) concepts of a controlling God are activated. In Experiment 2, we attempted to indirectly induce the concept of a controlling God in two ways. First, to activate the concept of a controlling God, one of the questions in the religion prime questionnaire specifically inquired about participants' belief in controlling God/s. Second, previous research has shown that lowered perceptions of control increase belief in the existence of a controlling God (Kay, Gaucher, Napier, Callan and Laurin, 2008). Therefore, in Experiment 2, we manipulated participants' sense of control before presenting the religion prime.

Experiment 2

As supernatural agency attributions may be enhanced when people experience low control (Kay *et al.* 2008), in the second experiment we first manipulated participants' perceived control. We expected that participants in a low control condition would be more susceptible to making supernatural attributions after receiving a religion prime.

Feelings of control were manipulated by letting participants think back on a negative event in which they experienced high control or in which they experienced low control. Previous research has demonstrated a causal relation between lowered perceptions of personal control and increased beliefs in the existence of

a controlling God (e.g. Kay *et al.* 2008; Laurin *et al.* 2012). Within each group, half of the participants subsequently received a religion prime, whereas the other half received a neutral prime. Following the manipulation of control and the religion prime, all participants were presented with 25 images of offenders threatening a victim. They were asked to rate for every image to what extent they thought the offender acted in accordance with his own will, whether they were able to forgive the offender, and to what extent they thought a higher power could have had an influence on the situation. The question to what extent the offender acted in accordance with his own will provided a measure of intentionality (Haggard 2005). Intentionality is closely related to responsibility and judgments of cause and blame. That is, when transgressions are committed intentionally, perpetrators are held more accountable and responsible for their behavior as compared to transgressions that are committed unintentionally (Lagnado and Channon 2008).

In accordance with the hypothesis that low control may enhance supernatural attributions, we expected effects of religious priming on forgiveness to be strongest in the low control condition. Furthermore, we expected the effect of religious priming on forgiveness to be mediated by the perceived influence of a higher power on the event, and the intentionality attributed to the offender.

Method

Participants

Sixty-seven students from the Radboud University Nijmegen (55 women), mean age 19.9 (ranging from 18 to 28) participated in the experiment. All received course credits in return. One participant was excluded from the analysis because of incomplete data. Participants were randomly assigned to one of the four conditions of a 2 (Control: low vs. high) x 2 (Prime: religion vs. neutral) factorial between-subject design. The amount of participants in this second experiment was determined by the maximal number of participants that could be tested in one week in the computer lab.

Stimuli

Twenty-five pictures were used: 23 were gathered from the Internet, and two were from the International Affective Picture System (IAPS; Lang, Bradley and Cuthbert 2008). On every picture, one offender and one victim were depicted. To avoid using the explicit term “offender” in the questions, an arrow pointing to the offender was placed in the image.

Procedure

To manipulate perceived control, participants were randomly assigned to a condition in which they were asked to recall a negative situation over which they

lacked / or had control: the low- and high-control condition, respectively (Kay *et al.* 2008). Subsequently, half of the participants in the low- and high-control condition received a religion prime, whereas the other half received a neutral prime. In the religion prime condition, participants filled out a questionnaire that consisted of eight items of which four required religious and spiritual reflections (e.g. “Do you consider yourself religious?”; “Do you believe in a higher power?”). The other four items were filler questions (e.g. “How often do you play sports?”; “What is your political affiliation?”). In the neutral prime condition, the four religion questions were replaced by four neutral questions unrelated to religion (see Appendix). After participants filled in the religion questionnaire or the neutral questionnaire, they were presented with twenty-five images depicting victims and offenders in random order. For each picture, participants were asked to rate on a 9-point scale to what extent they thought the indicated person (the offender) acted in accordance with his own will ($1 = \textit{not at all}$, $9 = \textit{completely}$). This measure of intentionality was administered first as it is a candidate mediating variable in the relation between religion and forgiveness. After this first block on intentionality, participants received all images for a second time and a third time, in the same order as the first block. In the second block, they were asked to take the perspective of the victim, and to rate for each image on a 9-point scale ($1 = \textit{not at all}$, $9 = \textit{completely}$) to what extent they thought they would be able to forgive the indicated person (the offender). In the third block, they were asked how likely they thought it was that a “higher power” had an influence on the depicted situation. Although the “higher power” question was also a possible mediator, this question was presented after the dependent variable forgiveness to be sure that it would not act as a religion prime. Each image remained on the screen during the time a question was presented. The experiment was self-paced. After the picture rating task, all participants were asked to rate on two separate 6-point scales ($1 = \textit{not at all}$, $6 = \textit{very much}$) how religious they considered themselves to be, and how much they believed in a higher power.

Results

Experimental effects

To test the prediction that the effects of religious priming on forgiveness would be stronger in the low control condition than in the high control condition, we performed an ANOVA with control (low vs. high) and prime (religion vs. neutral) as between-subject factors, using the ratings of forgiveness as dependent variable. No main effects were found for the factors control and prime on forgiveness, $F(1,62) = 1.75$, $p = .19$ and $F(1,62) = .01$, $p = .99$, respectively. However, the analysis did reveal the predicted interaction between Control x Prime, $F(1,62) =$

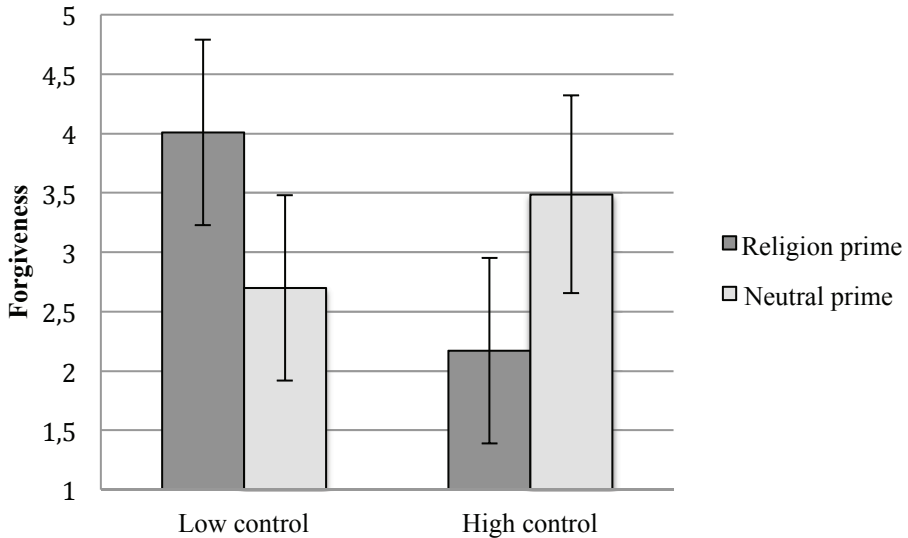


Figure 1. Forgiveness ratings in Experiment 2. Mean forgiveness scores (+ 95% CI) for the low control group (left) and high control group (right) in the religion prime condition (dark grey) and neutral prime condition (light grey).

10.89, $p = .002$, $\eta^2 = .15$ (see Figure 1). Simple main effects showed that, in the low control condition, participants who were primed with religion forgave more ($M = 4.01$, $SD = 2.29$) than participants who were not primed with religion ($M = 2.70$, $SD = 1.12$), $F(1,32) = 4.48$, $p < .05$, $\eta^2 = .12$. There was an unexpected finding in the high control condition, where we found that participants who were primed with religion forgave less ($M = 2.17$, $SD = 0.91$) than participants who were not primed with religion ($M = 3.49$, $SD = 1.77$), $F(1,30) = 7.23$, $p = .012$, $\eta^2 = .19$. Looking at the interaction differently, participants in the low control condition who were primed with religion reported higher levels of forgiveness ($M = 4.01$, $SD = 2.29$) than participants in the high control condition who were primed with religion ($M = 2.17$, $SD = 0.91$), $F(1,32) = 9.43$, $p = .004$, $\eta^2 = .23$. For participants in the neutral prime condition, there was no difference between levels of forgiveness in the low and high control condition, $F(1,30) = 2.32$, $p = .14$.

Mediation

To test whether perceived influence of a higher power mediated the interaction effect of control and prime on forgiveness, we first tested whether the interaction effect of control and prime on influence of a higher power was reliable. Therefore, an ANOVA with control (low vs. high) and prime (religion vs. neutral) as between-subject variables, and influence of a higher power as dependent

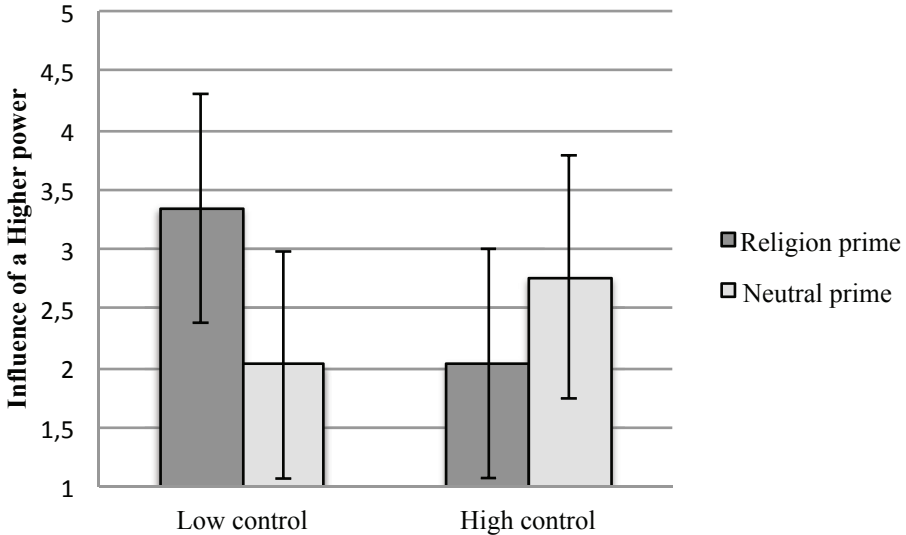


Figure 2. Ratings of perceived influence of a higher power in Experiment 2. Mean higher power scores (+ 95% CI) for the low control group (left) and high control group (right) in the religion prime condition (dark grey) and neutral prime condition (light grey).

variable was conducted. This ANOVA yielded the expected interaction of Control x Prime, $F(1,62) = 4.37, p = .04, \eta^2 = .07$ (See Figure 2). Comparable with the scores on forgiveness, religious priming generated opposite effects in the low and high control conditions. In the low control condition, religious priming enhanced perception of the influence of a higher power. In the high control condition, religious priming lowered the perception of the influence of a higher power, relative to the neutral condition. None of the simple main effects reached significance, all p 's > .10.

Next, we tested whether the perceived influence of a higher power mediated the interaction effect of control and prime on forgiveness. We performed a bootstrapping analysis (model 8; Hayes 2013) with Control x Prime as predictor, forgiveness as dependent variable, and influence of a higher power as mediator. A bootstrapping analysis of 5000 samples indicated that the influence of a higher power was indeed a mediator in predicting forgiveness, 95% CI [0.1594, 2.4866]. We also tested the reverse mediation, whether forgiveness mediated the perceived influence of a higher power by performing a bootstrapping analysis with Control x Prime as predictor, perceived influence of a higher power as dependent variable, and forgiveness as a mediator. Bootstrapping analysis of 5000 samples indicated that forgiveness was a mediator in predicting the belief

that a higher power influenced the event, 99% CI [0.7327, 3.7200]. Hence the directionality of the mediation between forgiveness and believed influence of a higher power is ambiguous in this dataset.

To test whether intentionality mediated the interaction effect of control and prime on forgiveness, we first tested whether the interaction effect of control and prime on intentionality was significant. Therefore, an ANOVA with control (low vs. high) and prime (religion vs. neutral) as between-subject factors, and intentionality as dependent variable was performed. The main effect of control did not reach conventional levels of significance, $F(1,62) = 3.49$, $p = .066$, $\eta^2 = .05$. However, participants in the high control condition did seem to attribute somewhat more intentionality to the offender ($M = 7.05$, $SD = 0.92$) than participants in the low control condition ($M = 6.48$, $SD = 1.46$). The ANOVA yielded no other significant effects, all $F_s < 1$. Bootstrapping procedures with 5000 samples with Control x Prime as predictor, forgiveness as dependent variable, and intentionality as mediator further confirmed that intentionality was not a mediator in predicting forgiveness, 95% CI [-0.2292, 0.2494]. Neither was forgiveness a mediator in predicting intentionality 95% CI [-0.7032, 0.6112].

Individual differences

Correlational analyses were run to investigate the relation between individual differences in the perception of supernatural influence and individual levels of forgiveness and attribution of intentionality. In line with the previous findings and the expectation that supernatural attributions facilitate forgiveness, a positive correlation was found between perceived influence of a higher power and forgiveness, $r = .67$, $p < .001$. No correlation was found between perceived influence of a higher power and intentionality attributed to the offender, or between attributed intentionality to the offender and forgiveness, all p 's $> .10$.

Discussion

The second experiment aimed to manipulate the conditions under which concepts of a controlling God are activated to investigate the hypothesis that forgiveness can be facilitated by the attribution of control to a higher power. In line with our prediction, effects of religious priming on forgiveness were found to be moderated by the manipulation of control. In the low control condition, where according to the model of compensatory control (Kay, Gaucher, McGregor, and Nash, 2010) a controlling higher power or God should be maximally activated, religious priming resulted in more forgiveness towards offenders than after neutral priming. Likewise, religious priming in the low control condition was found to enhance forgiveness relative to similar religious priming in the high control condition. These findings are in line with the theoretical model of compensatory

control (Kay *et al.* 2010) and suggest that effects of religious priming, in this case forgiveness of a violent offender, can be enhanced by the manipulation of control.

The hypothesis that priming effects of religion on forgiveness reflect the attribution of responsibility to a higher power was also supported by participants' supernatural attributions. Similar to the pattern of effects on forgiveness, the assumed influence of a higher power was found to be shaped by the interaction between control and religious priming, with the combination of low control and religious priming generating most supernatural attributions. Importantly, mediation analysis confirmed that the interaction effect of the religion prime and control manipulation on forgiveness was mediated by the extent to which participants assumed that a higher power had an influence on the situation. Note that the reverse mediation from forgiveness to influence of a higher power on the situation, was also significant. However, from a functional perspective this model is considered as less plausible.¹⁰

General Discussion

The present research attempted to uncover the functional relation between religion and forgiveness. Specifically, we tested the hypothesis that the attribution of supernatural influence may reduce the perceived responsibility of an offender, and thereby induce forgiveness. Although the evidence was mixed (no mediation in Experiment 1; mediation in Experiment 2), taken together the studies provide tentative evidence in line with our theorizing.

To our knowledge, as yet, no study has tried to manipulate religious thought in order to investigate a possible causal connection between religion and forgiveness. Similar to previous research (e.g., Inzlicht and Tullet 2010), religion was primed by letting participants reflect on the meaning of religion in their lives (in Experiment 1, by means of open-ended questions, in Experiment 2, with a questionnaire). In Experiment 1, participants who had contemplated on the role of religion in their lives were somewhat more inclined to forgive the Batman shooter for his violent transgression, as compared to participants who did not receive a religion prime. In Experiment 2, it was found that when people experience little control, religious thought may reinforce belief in controlling

10. Mediation analysis indicated that the relationship between supernatural attribution and forgiveness was bidirectional. Although in the current research there is no formal way to distinguish between the two alternative mediation models, we consider the reverse mediation explanation (forgiveness as a determinant of supernatural attribution) as less plausible. That is, the assumption that forgiveness of a perpetrator, e.g. through activation of religious morality, would result in the increased perception of supernatural agency over a violent situation, to us seems less likely than the proposed mediational pattern.

supernatural agents and will increase forgiveness of violent offenders. In contrast, when participants experienced a strong sense of control, religious priming lowered their belief in a controlling supernatural agent and attenuated their forgiveness of perpetrators. Thus, these findings suggest that religious thought can either enhance or reduce forgiveness, depending on the sense of control people experience.

The current findings suggest that religious priming does not automatically enhance supernatural agency attributions. More specifically, in Experiment 1, considerations of religious belief at the start of the experiment resulted in an unexpected lower perception of supernatural agency. Most likely, participants did not wish to associate their (activated) positive God concepts with a negative event such as the Colorado Shooting. This interpretation resonates with the rationalization model as proposed by Tsang *et al.* (2005) which states that people are apt to find explanations or change mental perspectives to support their religious morality. In Experiment 2, the manipulation of control was found to have a strong moderating effect on religious priming and the attribution of supernatural agency. In conditions of low control, religious priming resulted in an enhancement of the perceived influence of a higher power. In contrast, in the condition of high control, religious priming lowered the perception of supernatural involvement. These findings corroborate the idea that low feelings of control may increase the belief in the existing of a controlling God (Kay *et al.* 2010; Kay *et al.* 2008; Laurin, Kay, and Moscovitch 2008; Rutjens, van der Pligt, and van Harreveld 2010). Importantly, our findings contribute to this literature by indicating that the induction of feelings of high personal control may actually *reduce* belief in a controlling God. These effects of control on perception of supernatural agency in the laboratory appear to map well onto the prominent relationship that exists between religion and security across the globe. That is, in countries that offer a relatively stable and secure environment, religious views play a much less prominent role than in countries where people experience large personal insecurities (e.g. because of war or economic uncertainty; Ruiter and van Tubergen 2009).

Although the current findings partly support the hypothesized contribution of supernatural agency in forgiveness, the results of Experiment 1 suggest that this may not be the only mechanism by which religion may foster forgiveness. In Experiment 1, consideration of religious belief was found to *enhance* forgiveness of the perpetrator but to *lower* the belief that a higher power might have had an influence on the Batman shooting. This suggests that effects of religious priming on forgiveness do not necessarily rely on supernatural attribution alone and that other mechanisms might be in play as well. One such mechanism may

be that of Pargament and Rye (1998), who proposed that religion can provide role models that contribute to forgiveness. Religious belief and/or priming may activate roles of moral conduct, and enhancement of forgiveness may reflect the Christian heritage (E.g., “Father, forgive them, for they know not what they do,” Luke 23: 34, English Standard Version) which provided the dominant culture for many of our participants.

Nonetheless, the present study did obtain some preliminary evidence in support of the hypothesis that considerations of supernatural agency may facilitate forgiveness of a perpetrator when the responsibility for negative events is attributed to God. Correlation analyses in Experiment 1 revealed that individual differences in the assumed influence of a higher power over the Batman shooting, or the belief that this violent act served some higher supernatural purpose, related positively to forgiveness of the offender, and negatively to the desired level of punishment of the offender. The assumed influence of a higher power was also negatively related to the amount of responsibility attributed to the Batman shooter for his actions. Furthermore, mediation analysis revealed that attribution of responsibility to the offender mediated the relation between the perceived influence of a higher power and desired punishment of the offender. This mediation supports the idea that concepts of supernatural agency may lower the attribution of responsibility to violent offenders and facilitate their forgiveness. Experiment 2 contributed further evidence on the hypothesized role of supernatural agency by indicating that effects of religious priming on forgiveness were mediated by the perceived influence of a higher power. Together these findings support a model in which forgiveness of offenders is facilitated when people consider possible supernatural influences over events. However, relevant for our theorizing about the relationship between supernatural agency and forgiveness is that the responsibility of the perpetrator in Experiment 1 and the intentionality of offenders in Experiment 2 contributed little to the relationship between religion and forgiveness. This suggests that alternative models must be considered to explain how the consideration of supernatural agency could facilitate forgiveness. One possible alternative could be that supernatural attributions imbue an event with meaning and resignation that “this was meant to be.” Such an explanation would include forgiveness of the offender without the need for a reduction in the perceived responsibility or intentionality of the offender. Another possibility would be that forgiveness becomes easier because people can leave the retribution to a higher power (cf. Laurin *et al.* 2012).

Further research is necessary to determine if the attribution of responsibility to the perpetrator plays a role in the enhancement of forgiveness when people are primed with religion. Research by Knobe (2003) has shown that the severity of

the negative consequences that follow an offence will enhance the attribution of intentionality to an offender. This could curtail the opportunity to shift responsibility to a supernatural level.

In conclusion, the present study investigated the relation between religion and forgiveness and the possible psychological mechanisms that connect religion to forgiveness. Although the reported effects were not strong, taken together they seem to be in line with the notion that religious thought may enhance forgiveness (Experiment 1), and that this effect can be moderated by the level of control that people experience (Experiment 2). In a state of low control, religious priming was found to enhance the perception of supernatural agency in accordance with the model of compensatory control (Kay *et al.* 2010) and to stimulate forgiveness. Interestingly, our results indicate that the experience of high control may actually reduce the perception of supernatural agency and lower forgiveness of a perpetrator. These findings imply that just as with natural disasters, people may intuitively look for supernatural influence when violent offences by human perpetrators are observed. Additional research is required to further understand the relation between supernatural agency and forgiveness. In particular, the hypothesis that forgiveness may be mediated by a reduction in perceived responsibility of the perpetrator requires further attention as well as alternative models that may underlie this relationship. Finally, we encourage broader initiatives to model effects of perceived supernatural agency both within and beyond the domain of person perception as we expect that perceptions of supernatural agency will have a general influence on the attribution of thoughts, emotions, and behaviors to both self and others.

Appendix

Prime questions

1. What is your political preference?
("left," "moderate left," "center," "moderate right," "right")
- *2. Do you consider yourself religious or spiritual?
("yes," "no")
3. Do you often go on a holiday or take a weekend off?
("Often = at least four times a year," "Regularly = at least 2 times a year," "Sometimes = 1 time per year," "Practically never = less than once a year," "Never")
4. Do you still live at home with your parents or on your own?
("With my parents," "on my own," "other ")
- *5. Is death the definitive end or do you think there is life after death?
("No, I think or suspect that there is no life after death," "I have no idea about life after death," "Yes, I think or suspect that there is something like a life after death")
6. On average, how often do you play sports?
("Often = at least 1 time per week," "Regularly = at least 3 times a month," "Fairly regularly = about 2 times a month," "Sometimes = less than 2 times a month but at least six times a year," "Practically never = less than six times a year," "Never")
7. How often do you go out?
("Often = once a week or more often," "Regularly = at least once per month," "Sometimes = at least 6 times a year," "Practically never = less than 6 times a year," "Never")
- *8. Have you ever felt that your life was guided by a higher power or higher being, stronger than any other human being?
("yes," "no")
- *9. Do you believe in a higher power or higher being, something divine or a god?
("No, there is neither a higher power or higher being, nor God," "I do not know if a higher power or higher being or God exists," "Yes, there is a higher power, higher being or God")

*items only used in the religion prime condition

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