
RESEARCH

Honesty: One Effect of Primed Religious Representations

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Most demonstrations of the automatic activation of mental representations and resulting behavioral effects have been conducted in the context of specific stereotypes. The main purpose of these studies was to test whether primed religious representations can have automatic influences on relevant (prosocial) behavior (Study 1) regardless of prior religious belief (Study 2). Study 1 found that participants primed with religious representations (religious words) cheated significantly less on a subsequent task. Study 2 replicated the results of Study 1 with subliminal presentations of religious words and further found that participant's intrinsic religiosity had no influence on rates of cheating with the prime received. These results provide the first known demonstration of religious representations automatically influencing behavior. Implications for the psychology of religion are discussed.

We like to believe that we do the things we do because we consciously decide to do them (Wegner, 2005). For example, imagine that you find yourself in the middle of a difficult quantum physics test, when suddenly Professor John

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answers his cell phone and then announces that he must leave immediately to go to the Holy Cross Hospital to see his son who has been in a car accident. When he has left the room some students open their notes to answer questions on their test. You think that it would be wrong for you to cheat, and you finish your test without looking at your notes. Is this a case of you simply deciding not to cheat? Or could more nonconscious processes be driving your decision? For example, could the words *holy* and *cross* have influenced how likely it was that you cheated? Could these same words nonconsciously influence you differently depending on how religious you consider yourself to be? The research presented here explores similar questions.

Automatic thought processes involve reflexive responses to certain triggering conditions. These processes require only that a stimulus event or object be detected by an individual's sensory system. Once that triggering event is detected, the process runs to completion without awareness (Bargh, 1997). There are very few phenomena in social psychology that are not automatic. For example, recent research in areas such as stereotyping, social judgment, attitudes, and attribution increasingly reveals automatic influences on thought processes (see Wegner & Bargh, 1998, for review). Such nonconscious influences on thoughts can, in turn, automatically influence behavior (Dijksterhuis & Bargh, 2001). One frequently cited demonstration of this effect involved the priming of some participants with the concept of the elderly and found that these participants subsequently walked slower than did control participants (Bargh, Chen, & Burrows, 1996).

Most demonstrations of automatic belief activation and resulting behavioral effects typically have been conducted in the context of very specific beliefs (e.g., attitudes, stereotypes, and impressions about the elderly). Is it possible that more general orienting representations (i.e., beliefs that shade the way an individual interprets a variety of situations), such as religious beliefs, could have automatic influences? Research in this area suggests the answer to this question is yes, but only for religious individuals. For example, using a method designed to measure implicit (i.e., automatically activated) evaluations, Hill (1994) found that religious and nonreligious people made similar implicit evaluations toward religiously neutral objects. In contrast, implicit evaluations of religious objects were stronger among religious people than among nonreligious people (see also Weisbuch-Remington, Mendes, Seery, & Blascovich, 2005; Wenger, 2004). Going one step further, recent research has shown that subliminal (i.e., outside of conscious awareness) presentations of the concept of God actually reduce causal attributions to the self for believers of God (see Dijksterhuis, Aarts, & Smith, 2005).

The aforementioned research demonstrates that religious representations can automatically influence religious people. However, no previous research has found that religious representations can have an automatic influence on all types of people. Further, no known research has tested if such automatic influences

can affect actual behavior. The purpose of our studies was to test whether primed religious representations can have automatic influences on relevant (prosocial) behavior (Study 1) regardless of prior religious belief (Study 2).

OVERVIEW AND RATIONALE FOR STUDY 1

Study 1 used a conceptual priming technique to explore the automatic influence of religious representations on behavior. Conceptual priming is the activation of a cognitive representation in one context to nonconsciously influence an unrelated context (see Bargh & Chartrand, 2000). Conceptual priming techniques may be either supraliminal (conscious) or subliminal (nonconscious). A good example of conceptual supraliminal priming is provided by Bargh et al. (1996). In their study, participants were given a "scrambled sentence test." Participants were told that the task had to do with language ability and required them to make grammatically correct sentences out of the string of words given. In this way the participants were exposed to words related to the concept being primed. Following Bargh's approach (Bargh et al., 1996), Study 1 used scrambled sentence tests to prime pretested religious, sports-related, and neutral words. A wide variety of behavioral measures have been used in automaticity research, ranging from participants' walking speed (e.g., Bargh et al., 1996) to scores on general-knowledge tests (e.g., Dijksterhuis et al., 1998). When applied to religious beliefs, honesty becomes a relevant behavioral measure because of the almost universal religious injunction against lying (Kinnier, Kernes, & Dautheribes, 2000).

Researchers have used many methods to induce lying in participants (e.g., Freedman, Wallington, & Bless, 1967). Bruggeman and Hart (1996) used Harts-horne and May's (1928) circle task to measure honesty. This task required participants to write specific numbers in small circles while alone in a room with their eyes closed. Participants were induced to cheat by being provided with unrealistic expectations of performance and additional extra credit for high performance. The circle task provides a direct way to assess the influence of religious priming on an individual. By priming people with religious, sports-related, or neutral words, and then immediately giving them a chance to cheat in an unrelated task, the automatic influence of the primes may be uncovered. Study 1 implemented a variation of the circle task to measure cheating immediately following the scrambled sentence priming procedure described previously. Consistent with past research showing primed social categories directly activating personality, characteristics, and behavior that are congruent with the primed group, (e.g., Bargh et al., 1996; Kawakami, Dovidio, & Dijksterhuis, 2003), it was predicted that priming participants with religious words right before giving them an opportunity to cheat will automatically lead to more honesty according to the perceived stereotypes of religious people. Such

a finding would provide the first demonstration of a religious representation automatically influencing behavior.

STUDY 1

Method

Participants. A total of 52 undergraduate students (35 female, 16 male)¹ participated for extra credit in their general psychology course. Seven participants were excluded for awareness of either the prime ($n = 4$), or the dependent variable of cheating ($n = 2$), or for not following directions ($n = 1$).²

Materials. Three scrambled sentence tests, adapted from Bargh et al. (1996) were used. These three tests contained religious, sports-related, or neutral words. The religious words were pretested with a group of 43 undergraduate psychology students who rated a list of 152 religious words on a 7-point scale according to the degree to which they considered the word to be religious. The 10 words that were rated the highest were selected as primes.³ The sports words were selected based on common terms and/or objects used in the playing of sports. The sports-word scrambled sentence test group was included to maximize possible differences in cheating behavior with the religious prime group. The neutral-word scrambled sentence test group was used as a control and followed the same pattern as the filler sentences in the other two tests. The same 15 filler sentences were used for all three tests along with the other 10 scrambled sentences that contained the priming words.

The circle test, based on Hartshorne and May's (1928) original conception, was used to measure cheating. The circle figure and instructions were adapted from Leming's (1980) and Bruggeman and Hart's (1996) use of the test. For a description of the task, please see the overview and rationale for the Study 1 section.

¹One participant omitted the demographic items.

²Self-reported gender, religious affiliation (Baptist = 28.9%, Methodists = 20%, Christian = 13.3%, None = 11.1%, Catholic = 8.9%, Episcopalian = 4.4%, Nondenominational = 4.4%, Presbyterian = 2.2%, Church of God = 2.2%, and Lutheran = 2.2%), ethnicity (White = 64%, African American = 27%, Other = 7%, and Latin-American = 2%), academic classification (sophomore = 42.2%, junior = 20%, freshman = 17.8%, and senior = 17.8%), age ($M = 20.05$, $SD = 1.33$), grade point average ($M = 3.02$, $SD = .505$), and time in minutes to complete the circle task ($M = 10.43$, $SD = 2.89$) were found to be uncorrelated with the likelihood of being classified as cheating on the circle task, $r_{pb}(43) < 0.27$, all $ps > .05$, and did not significantly predict the probability of being classified as a cheater, $\chi^2(7, N = 44) = 7.01$, $p = .428$; therefore, these demographic items were omitted from further analyses.

³The 10 religious words selected in order of rank for Study 1 were *heaven*, *bless*, *gospel*, *cross*, *faith*, *prayer*, *salvation*, *saved*, *holy*, and *worship*.

The funnel debriefing form was modeled after Bargh and Chartrand (2000). The funnel debriefing allows participants several opportunities to disclose awareness of the prime, dependent variable, and purpose of the study. Only those participants who showed no awareness were retained for analysis.

Procedure. The experimenter was blind to which scrambled sentence test the participants received. Each participant was tested in a separate room. One of three scrambled sentence tests (religious vs. sports related vs. neutral) was randomly assigned to each participant. Once they finished the first task, all participants received the same circle task and were instructed that it was unrelated to the first task. When participants were done with the circle task, they received the funnel debriefing followed by a short demographics questionnaire, after which they were fully debriefed.

Results

The cheating task was scored using Leming's (1980) criteria. Leming established a baseline for the circle test by finding the mean score of college students with no opportunity to cheat and then used three standard deviations above this mean to represent the upper limit of an honest response. This results in participants receiving a score of 23 or greater being categorized as cheaters and represents a score that could be achieved 1 out of 1,000 times by chance alone. The baseline and score used by Leming are also very similar to that found by Bruggeman and Hart (1996), who used the same procedure with high school students. Using Leming's criteria, 36% of the participants cheated on the circle test.

Analyses did reveal a significant difference in the rates at which participants cheated, with participants in the religious priming condition cheating less frequently than participants in the other conditions, $\chi^2(2, N = 45) = 8.16$, $p = .017$. Specifically, in the neutral priming group 44% met the criterion for cheating, and 50% of the sports priming group met the criterion for cheating. In contrast, none of the participants in the religious priming group were classified as cheaters.

A logistic regression was conducted to further examine the research results. The logistic regression equation modeled the probability of cheating as a function of the priming variable (i.e., religious, sports, or neutral) participants received. The overall equation provided a significant fit for the data, $\chi^2(1, N = 45) = 5.03$, $p = .025$, indicating that the prime reliably separated those classified as cheating or not on the circle task. According to the Wald criterion the prime does significantly predict cheating ($z = 4.38$, $p = .036$). The prime accounted for 15% of the variance in being classified as a cheater, and the priming measure correctly classified 60% the participants as cheaters. Overall the priming measure

TABLE 1
Logistical Regression Results of Being Classified as a Cheater
as a Function of the Priming Word Participants Received

Variable	Study 1		Study 2	
	B	Wald	B	Wald
Prime	0.959*	4.38	0.949*	4.40
Model X^2 (df)	5.03		7.28	
% correct	60.0		89.8	
R^2	0.15		0.29	

Note. The Wald statistics are distributed chi-squares with one degree of freedom.

* $p < .05$.

in our study does provide a criterion model significantly predictive of cheating (see Table 1).

Discussion

The findings strongly suggest that the religious scrambled sentences influenced participants to be more honest. This provides the first known demonstration of religious representations automatically influencing behavior and not merely attitudes and attributions (e.g., Dijksterhuis et al., 2005; Hill, 1994). Our results suggest that motivational representations are being primed because features of the environment seem to be activating the goals associated with them without a need for shared semantics (i.e., religious words not honesty words were used as primes; see Bargh, 1990). The behavioral consequence of the primes supports research on social category priming (e.g., Dijksterhuis & Bargh, 2001) and is consistent with research showing that social categories can influence individuals without awareness (e.g., Kawakami et al., 2003). Therefore, it may be that the religious words automatically activate participant's stereotypical knowledge of religious people's goals (e.g., Cesario, Plaks, & Higgins, 2006). However, because Study 1 did not include a measure of participant's religiousness, an alternate interpretation is possible: Priming participants with religious words might automatically activate their own religious beliefs rather than a stereotypical knowledge of religious peoples' goals (e.g., Hill, 1994).⁴ Further, despite

⁴A third interpretation may be that the activation of religious representations via religious words simply puts someone in a more positive mood increasing their likelihood of trying harder on the circle task. However, if this were the case, then the sports words should have had a similar effect on cheating behavior as the religious words, which they did not.

participants reporting no conscious awareness of the primes, it is not possible to rule out the involvement of conscious mental processes because a supraliminal priming task was used. To remedy these problems a second study was performed.

OVERVIEW AND RATIONALE FOR STUDY 2

The problem of distinguishing between motivational mechanisms for priming effects has been the focus of a series of studies by Bargh and colleagues. They found, for example, that only men who have a tendency to sexually aggress, and who have been primed with the concept of power, rate the same women to be more attractive than when they had not been primed (Bargh, Raymond, Pryor, & Strack, 1995). Other chronic motivational variables such as need for achievement and self-monitoring have shown similar results (see Bargh & Barndollar, 1996). Thus, chronic motivations can result in different reactions depending on the prime used.

Extending this notion to the area of religion one must consider intrinsic religious orientation, as originally conceived by Allport and Ross (1967). Individuals with an intrinsic religious orientation understand all of life by their religion (Donahue, 1985). In this vein, if the religious primes are automatically activating a personal religious belief and corresponding behavior, then individuals with a highly intrinsic orientation should be more likely to be honest on the circle task (e.g., Hill, 1994). However, if the religious primes are automatically activating a stereotypical representation of religious people's goals (as predicted above), then the level of intrinsic religiosity should not matter; only the prime that is received should affect honesty (e.g., Bargh et al., 1996).

Study 2 featured a direct test of the effects of religious representations on automatic behavior by using a subliminal priming procedure to rule out possible awareness of the prime (Dijksterhuis et al., 2005). The priming task was followed by the same circle task used in Study 1, after which participants received a filler task and measurement of their religious orientation.

STUDY 2

Method

Participants. A total of 54 undergraduate students (40 female, 12 male)⁵ participated for extra credit in their general psychology course. Five participants

⁵Two participants omitted gender demographic items.

were excluded for awareness of either the prime ($n = 4$) or the dependent variable of cheating ($n = 1$).⁶

Materials. The priming procedure was similar to that used by Devine (1989, Experiment 2). Twenty religious word primes were used in Study 2. The words were taken from the same pretest used for Study 1, with the first 10 words being identical to Study 1.⁷ Twenty neutral words, matched for length and frequency of use to the religious words, were selected as the control group. The circle task was identical to Study 1. The funnel debriefing form was also identical to Study 1, except the last question probed for awareness of the words being flashed in the first task.

The filler task was a number operations test requiring the participants to transform six decimals into fractions, and vice versa. This test was given to participants to clear out the possible influences of the primes on later tasks. Similar procedures have been used by other researchers (e.g., Newman & Uleman, 1990).

Religious orientation was measured using Gorsuch and McPherson's (1989) I/E-R scale. This scale was intermixed among a series of 42 other questions concerning attitudes on math, driving, job, and academic performance, with ascending and descending order being counterbalanced between participants. Only the 8 questions measuring intrinsic religious orientation were analyzed, with all other types of questions acting as distracters.

Procedure. Participants were first introduced to the "vigilance task." A series of flashes presented to the participants began with a fixation point of a + in the center of a computer monitor, followed by a word presented for 80 msec, which was immediately followed by a mask (XXX) for another 100 msec. The words flashed randomly in one of four locations on the screen for varying intervals between flashes of 2 to 7 sec. Each word flashed approximately 3.6 cm from the fixation point, with participants seated so that the words would fall in

⁶As in Study 1, self-reported gender, ethnicity (White = 59.2%, African American = 34.7%, Asian American = 2%, and Latin American = 2%), academic classification (freshman = 40.8%, sophomore = 36.7%, junior = 18.4%, and senior = 2%), age ($M = 20.00$, $SD = 3.35$), and grade point average ($M = 3.02$, $SD = .524$) were found to be uncorrelated with the likelihood of being classified as cheating on the circle task, $r_{pb}(41) < 0.21$, all $ps > .05$ (one person omitted all demographic information and five more omitted their grade point average; religious affiliation and time to complete the circle task were not measured) and did not significantly predict the probability of being classified as a cheater, $\chi^2(5, N = 42) = 8.328$, $p = .215$; therefore, as in Study 1, these demographic items were omitted from further analyses.

⁷The 10 additional religious words selected in order of rank for Study 2 were *baptism*, *amen*, *church*, *resurrection*, *commandments*, *communion*, *saint*, *prophet*, *sabbath*, and *preacher*.

the parafoveal region of the eye. Participants were to judge each flash by which side of the fixation point the flash appeared. They responded by pressing either L for left or R for right on a keyboard. Participants judged 100 flashes that were distributed evenly over the four locations on the computer screen. Twenty religious words or 20 neutral words were randomly repeated five times in each participant's session.

Directly after participants completed the priming task, they were given the circle task as before. Following the circle task, participants completed the funnel debriefing form. Participants were then told that the remainder of the experiment was for a separate study and were given the filler task and religious orientation measure followed by a demographic questionnaire. Finally, participants were fully debriefed.

Results and Discussion

Using Leming's (1980) criteria as in Study 1, 10.2% of the participants were classified as cheaters in Study 2. Consistent with past research (see Bargh & Chartrand, 2000), the subliminal presentations did not have as strong of an effect as the supraliminal presentations did in Study 1. Nevertheless, further analyses once again revealed a significant difference in the rates at which participants cheated, with none of the participants in the religious priming condition being classified as cheaters and 20% of participants in the control condition being classified as cheaters, replicating the pattern found in Study 1, $\chi^2(1, N = 49) = 5.35, p = .021$.

Intrinsic religiosity was scored following Gorsuch and McPherson's (1989) instructions resulting in scores ranging from 2 to 14 ($M = 7.41, SD = 2.71$). To test whether participants' intrinsic religiosity scores influenced rates of cheating on the circle task, a hierarchical stepwise logistic regression was used, first entering the priming variable (i.e., religious or neutral) and intrinsic religiosity score, and then entering the dummy coded priming Variable \times Intrinsic Religiosity Score interaction term. Results indicated that the priming variable ($z = 4.40, p = .035$) was retained in the equation, whereas the intrinsic religiosity score ($z = .016, p = .899$) and interaction between prime and intrinsic score ($z = .041, p = .839$) were excluded. The overall equation, including only the priming measure, provided a significant fit for the data, $\chi^2(1, N = 49) = 7.275, p = .007$, indicating that only the prime reliably separated those classified as cheating or not on the circle task. The prime accounted for 29% of the variance in being classified as a cheater, and the priming measure correctly classified 89.8% the participants as cheaters. Overall, then, only the priming measure in our study provided a criterion model significantly predictive of cheating; neither religious orientation, nor its interaction with the prime, predicted cheating behavior (see Table 1).

GENERAL DISCUSSION

Where Study 1 showed that priming people with religious words affected their behavior, Study 2 provided further support by replicating the results with a subliminal rather than supraliminal priming procedure. Further, Study 2 extended the results of Study 1 by providing more direct evidence that religious primes seem to automatically activate a stereotypical representation of religious people rather than one's personal religious beliefs.

The results of Studies 1 and 2 hold some interesting implications for the psychology of religion. First, at the most basic level, our findings provide additional support for the idea that religious cognition is identical to all other forms of cognition (for a review see Ozorak, 2005). Just as priming specific stereotypes (elderly concept) leads to a relevant behavioral outcome (walking slower), so too does priming religious concepts lead to a relevant behavioral outcome (more honesty). Therefore, even religious representations can act similarly to primed traits and stereotypes consistent with the finding that both perceptual and behavioral effects are primed at the same time (Bargh, 1997).

Second, the behavioral consequence of primed religious representations supports recent research on social category priming. For example, Cesario et al. (2006) demonstrated that social behavior may be the result of perceivers preparing to interact with the primed group member(s). Such an interpretation would explain why participants, regardless of their intrinsic religiosity, showed similar behavioral effects when primed with the religious words. One intriguing possibility might be that positive behavioral effects of religious representations exist due to the activation of specific religious groups (e.g., Christian) and that more socially undesirable effects—such as prejudice toward people with different religious affiliations—may also be found depending on the specific participant populations and primes used in a study. The use of religious groups as primes may allow researchers to better tease apart the mechanisms underlying automatic behavior.

Third, as mentioned previously, our results suggest that motivational rather than nonmotivational cognitive representations are being primed. Of interest is research showing that intrinsic religiosity may represent a motivation more than an attitude (e.g., Burris, 1999). Because our study used an explicit measure of intrinsic religiosity, future research using more implicit measures of religiosity (e.g., Ozorak, 2005) may demonstrate that there are indeed automatic differences in the outcome of different primes. For example, Fishbach, Friedman, and Kruglanski (2003) found that priming participants with either temptation words (e.g., drugs, sex) or religious words (e.g., bible, prayer) automatically led to goals involving self-control in participants with certain automatic religious goals (see Higgins, 1996, for other relevant interactions between chronic and primed religious representations). More research will be needed to better

understand how religious beliefs affect actual behavior. It may be that different environmental events trigger different cognitive motivations among beliefs, which, in turn, affect one's efforts to preserve consistencies among beliefs or to defend one's beliefs (e.g., Bargh, 1996). This process may be mediated by such things as implementation intentions (e.g., Bargh & Gollwitzer, 1994) and information accessibility (e.g., Eagly & Chaiken, 1993). Specifically studying the mechanisms of religious goals may provide an effective route for the general mechanisms of automatic goals to be discovered.

Our research suggests that the automatic activation of mental representations may apply to a wide range of targets and settings and that automatic behavior is broader and more varied than previously shown. Therefore, applying social cognitive research to the psychology of religion provides a greater understanding of not only the psychological mechanisms of religion but also the general social cognitive mechanisms involved. Where then does consciousness fit in with nonconscious effects? As Bargh (1997) put it, "Although automaticity keeps us tied to the present, consciousness is floating ahead in time, setting up strategic automatic contingencies for the future. . . , to keep us responding fluently and appropriately in that present when it comes" (p. 244).

ACKNOWLEDGMENTS

Partial reports of these data were presented at the March 2005 conference of the Southwestern Psychological Association, Memphis, and the January 2007 conference of the Society for Personality and Social Psychology, Memphis. Brandon Randolph-Seng's work on this article was completed in partial fulfillment of his master's thesis at Georgia Southern University, which was supervised by Michael E. Nielsen. We thank the other members of the master's committee, Amy Hackney, John D. Murray, and Richard Rogers, for their valuable feedback. We also thank Darcy A. Reich for helpful comments on a draft of this article.

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