The accessibility of religious beliefs

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ABSTRACT

We used reaction time techniques to study individual differences in accessibility of beliefs about the reality of religious targets. Moderately religious people were slower than religious or irreligious people. Religious people were faster than non-religious people. Reaction times to classify religious stimuli are stable over 8 days. We also found that religious people with accessible beliefs have the highest well-being, and that religious beliefs correspond to greater levels of religious behavior when the reality of religious stimuli is accessible. These results further our understanding on natural individual differences in attitude accessibility and add to our understanding of religious beliefs, including their impact.

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1. Introduction

Religious beliefs are present across all cultures (Atran & Norenzayan, 2004; Boyer, 2001; Norenzayan & Heine, 2005), are critical to many people's self-concept (Emmons, 1999; Tarakeshwar, Stanton, & Pargament, 2003), and have consistent relationships with health and happiness (Hill & Pargament, 2003). Yet, religious beliefs and attitudes have remained understudied in psychological science, leaving us with a singular and untextured view of religious belief. Whereas considerable research has been devoted to individual differences in self-reported religious motivation (Cohen, Hall, Koenig, & Meador, 2005), little is known about the deeper structure of religious beliefs. Here, we examine individual differences in religious belief accessibility and why this matters. We study who has the most accessible beliefs, how belief accessibility moderates the effect of religiousness on well-being, and how belief accessibility moderates the relationship between religious beliefs and religious behavior.

Accessibility is an important aspect of attitudes with important functional implications. Attitude accessibility is often operationally defined in terms of reaction times to make judgments about the attitude object (Fazio, 1986, 1989, 1990, 1995; Fazio & Williams, 1986; Higgins, 1996). Attitude accessibility is determined by factors including frequency of activation, salience or distinctiveness, and linkage with other constructs (Higgins, 1996; Krosnick, 1989). Experimentally asking people to repeatedly express their attitudes enhances speed of responding to attitude probes (Fazio, Chen, McDonel, & Sherman, 1982; Powell & Fazio, 1984), and the likelihood that the attitude will be activated by observing the attitude object (Fazio, Powell, & Herr, 1983; Fazio, Sanbonmatsu, Powell, & Kardes, 1986).

Religious beliefs provide an ideal domain in which to study such issues because people vary widely both in the content and apparent strength of religious beliefs. There are devoutly believing religious people, equally confident atheists, and people who are not certain what to believe. The varying importance of religious beliefs between people offers a strong base from which to explore the complex nature of religious beliefs as well as basic questions about attitude structure (Hill, 1994). Our

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interest here is to examine how accessible religious beliefs are and what might be better predicted by religious belief accessibility. In other work on attitude accessibility, participants are typically asked to make good/bad classifications about attitude objects, and response times are taken to indicate the accessibility of the attitudes. Here, we use a related procedure to measure reaction times to classify objects as real or imaginary. By analogy with other work, we propose and will provide evidence that speed of reaction time indicates the accessibility of the judgment, and is important to know over and above whether a participant rates a religious stimulus as real or imaginary.

Our main interest here is to examine response latencies to categorize stimuli as "real" or "imaginary," with a focus on religious stimuli. Our main questions revolve not around whether participants rate religious stimuli as real or not, but in how long it takes them, what this reflects, and what impact it may have. Specifically, our reaction time task focuses on response latencies to classify the real or imaginary status of four kinds of stimuli: religious stimuli (such as God), patently real stimuli (such as cars), imaginary stimuli (such as the Tooth Fairy), and stimuli that describe real objects which the participant has never personally seen (such as black holes). We dub this last category "secular faith" because it requires processes that may resemble religious faith to say that objects like black holes exist. None of us has ever directly seen a black hole. We must rely on indirect evidence, such as the word of astronomers (or even mathematical models, for those astronomers). Though such objects are not directly experienced, they do not betray natural laws. They require belief, but not belief in supernatural targets.

Studying naturally occurring religious beliefs also allows us to investigate how various individual differences relate to accessibility. Many factors could influence reaction time, including general processing speed and accuracy during the task (Fazio, 1990). We will control for general processing speed, remove data from participants who made any incorrect responses on trials involving clearly real or clearly imaginary stimuli, and examine the stability of latencies over one week (Study 2).

Why should it matter who has the most accessible beliefs? We propose that it matters in two important contexts. First, we consider life satisfaction. There is a considerable amount of evidence that religious people report higher life satisfaction (Myers & Diener, 1995). However, because these data are overwhelmingly based on self-reports of both religiousness and life satisfaction, it is unknown how religious belief accessibility could affect the relationship. Fazio and Powell (1997, p. 430) explain that "Theorists have long considered attitudes to be functional constructs that accomplish a great deal for the individual…Attitudes structure one's social universe and, in so doing, ease decision making. They facilitate the individual's 'movement' through the diverse array of objects and people that are encountered daily."

We test this theory by examining whether the relationship between self-reported religiousness and life satisfaction is stronger for religious people with accessible beliefs. When faced with stressful circumstances, a religious person with accessible religious beliefs could probably access religious coping mechanisms without excessive cognitive effort and cope more effectively. In contrast, a religious person with less accessible beliefs would have to exert more effort, and may be less successful to engage such mechanisms. Thus, we expect that religious people with accessible beliefs would have the highest life satisfaction. We test this in Study 3.

Study 3 also examines whether religious beliefs have a greater impact on behavior when the beliefs are accessible. One of the key questions in attitude research is when attitudes predict behavior (Ajzen & Fishbein, 1977). The literature on how self-reported religiousness correlates with religious behavior (such as church attendance) is actually quite mixed, and some studies report large discrepancies. In a study that objectively quantified church attendance, it became apparent that people over-report their church attendance by a factor of two (Hadaway, Marler, & Chaves, 1993). Here, we seek to address this discrepancy by proposing a moderating role of accessibility. Attitude accessibility moderates the impact of attitudes on behaviors and other outcomes, and highly accessible attitudes are more influential, particularly when there is little time to deliberate (Fazio, 1990; Glasman & Albarracín, 2006; Higgins, 1996). Fazio refers to this as the MODE model, for Motivation and Opportunity as DEterminants of which processing mode is used, either deliberate or spontaneous. We predict that religious beliefs will have more impact on behavior when they are accessible.

2. Study 1

In this study, we introduce our reaction time measure, relate reaction time performance to self-rated religiousness, and examine whether reaction time performance to classify religious stimuli is influenced by general tendencies to respond quickly or slowly.

In terms of relations between self-reported religiousness and belief accessibility, three relationships seem plausible. First, it may be that religious people have more accessible beliefs than do less religious people. Hill (1994) proposed that a highly religious person, "…with a strong attitude toward a religious object or issue, may activate that attitude spontaneously and without conscious control upon mere presentation of the object. In contrast, a less religious person…may require a more reflective effort to formulate an assessment upon presentation of a religious object or issue" (p. 309). Hill, Jennings, Haas, and Seybold (1992) found that religious participants, compared to less religious participants, were faster to make good/ bad classifications of religious stimuli.

A second possibility is that religious people would have less accessible beliefs than non-religious people. Belief in supernatural objects requires an individual to in some ways suspend or extend the cognitive apparatus used to subserve belief in objects that are patently real, or even patently not real. If this is the case, religious people would have less accessible beliefs about religious stimuli than would non-religious people.

A third possibility is a curvilinear relationship in which people of moderate religiousness could have less accessible beliefs than those of low or high religiousness. People low or high in religiousness, compared to those of moderate religiousness, likely have more exposure to religious ideas (either as true or not true), more salient religious beliefs, and greater linkage with other constructs. For highly religious people, these factors could all be related to the truth of religious claims, whereas for people very low in religiousness, these factors could be related to the falsity of religious claims. Said another way, an atheist can be very confident that God does not exist, and a highly religious person can be very confident that God does exist. Although the atheist and the religious person have different beliefs about whether God exists, they both might have equally *accessible* beliefs, which would be reflected in fast reaction times to say whether God exists. A person of moderate religiousness may have a less accessible belief, and take longer to respond whether she ultimately claims God is real or imaginary. If this depiction is accurate, we would see a curvilinear relationship among religiousness and reaction times to classify the real or imaginary status of religious targets (an inverted U shaped curve).

2.1. Method

2.1.1. Participants

One hundred eighty-four students (74 men, 110 women) at a large Southwestern research university received course credit for participation. Age ranged from 17 to 31, $M = 19.0$, $SD = 1.85$. Out of 150 people reporting religion by choosing among alternatives, 36 were none/atheist/agnostic, 51 Catholic, 25 Protestant, and 23 other, with small numbers of other religions. Out of 146 people reporting race, 108 were White, 8 Asian/Asian-American, 3 Black, 3 Native American, and 24 other. In a separate item, out of 150 people responding, 29 were Hispanic or Latino/a, and 121 not.

2.2. Measures and procedure

2.2.1. Self-reported religiousness

Our self-report measure of religiousness consisted of nine items: "My personal religious beliefs are very important to me"; "My religion or faith is an important part of my identity"; "If someone wanted to understand who I am as a person, my religion or faith would be very important in that"; "I attend religious services regularly"; "I practice the requirements of my religion or faith"; "I believe strongly in the teachings of my religion or faith"; "I believe in God"; "I consider myself a religious person"; and "I consider myself a spiritual person." Responses were from 1 (*strongly disagree*) to 5 (*strongly agree*). We chose this measure to be applicable to different religious groups, a problem with several common measures (e.g. intrinsic and extrinsic religiosity; Cohen et al., 2005; Cohen & Hill, 2007).

2.2.2. Reaction time procedure

To start, participants were given 20 practice trials with stimuli that were clearly real (e.g. car, water) or clearly imaginary (e.g. Darth Vader, Superman). Instructions for the practice trials were as follows: "In the following screens, words will appear. Your job is to tell us whether they are 'real' or 'imaginary.' Sort each item into its correct category as fast as you can by pressing either the 'd' key or the 'k' key. Important: Press the 'd' key using your left index finger, or 'k' key using your right index finger. The categories associated with the 'd' and 'k' keys will be shown at the top of each screen. This is for practice. If you make an error, an X will appear until you make the correct choice. Please put your fingers on the 'd' and 'k' keys and begin when ready." Key assignment (d and k corresponding to real versus imaginary) was randomly assigned across participants. The intertrial interval was 500 ms. We used Inquisit software for programming and data collection (Draine, 2006).

During the test phase, we had four categories of stimuli: imaginary, secular faith, religious, and patently real (Appendix). Each stimulus was presented twice, with stimuli presented in random order. Instructions for the test phase were "This is the actual data collection. Go along fast. A few errors is ok. You will not get feedback on whether your answers are correct. So, please give only one response (key press) per stimulus. Please put your fingers on the 'd' and 'k' keys and begin when ready." We did not give error feedback during the test (data collection) phase so that participants would not be given feedback about their classifications of the religious stimuli, so that they could respond either "real" or "imaginary."

2.3. Results

2.3.1. Classifications and reaction times

Classifications of the 16 trials of religious stimuli as real or imaginary were internally reliable ($\alpha = .95$). For each stimulus category (patently real, imaginary, secular faith, religious faith), we calculated a proportion of trials on which the stimuli were classified as real and a mean reaction time for each subject (Table 1). First, we examined the pattern of response latencies. Mauchly's test of sphericity showed a violation of that assumption, χ^2 (5 *df*) = 36.01, $p < .001$, perhaps because latencies of responses to the religious faith stimuli were more variable than latencies in other categories. We therefore used a Greenhouse–Geisser correction to a repeated-measures ANOVA, $F(2.625, 480.397) = 75.60$, $p < .001$. Responses to classify patently real stimuli were fastest, followed by imaginary stimuli, secular faith stimuli, and religious faith stimuli took the longest (p's < .001).

Table 1
Proportions of stimulus trials classified as real and latencies to classify in Study 1

	Percent classified real		Latency (ms) to classify	
	M	SD	M	SD
Patently real	0.98	0.04	751.54	194.79
Imaginary	0.04	0.07	796.33	174.63
Secular faith	0.93	0.08	888.28	217.94
Religious faith	0.65	0.35	943.32	269.90

2.3.2. Self-reported religiousness

Our self-report religiousness scale was internally reliable, α = .94. Self-reported religiousness correlated with classifying more religious stimuli as real (r = .58, p < .001) but not with classifications of secular faith stimuli (r = .06, p = .42), imaginary stimuli (r = .10, p = .19), or patently real stimuli (r = .07, p = .35). There were no differences between religious and non-religious people in latencies for patently real (r = − .11, p = .15), imaginary (r = .10, p = .17), or secular faith stimuli (r = − .05, p = .53).

2.3.3. Relationship between self-reported religiousness and reaction times

Self-reported religiousness was not significantly correlated with latencies to classify secular faith (r = − .05, p = .53), patently real (r = − .11, p = .15), or imaginary (r = .10, p = .16) stimuli.

To investigate the relationship of self-reported religiousness and reaction times to classify religious stimuli, we predicted mean reaction times to classify religious stimuli from the linear (β = − .17, p = .02) and squared effects (β = − .15, p = .04) of self-reported religiousness, both of which were significant. Fig. 1 shows that people of moderate religiousness were slower than non-religious or highly religious participants, and religious people were faster than non-religious people.

Reaction time data have a tendency to be skewed (Bargh & Chartrand, 2000), though we expect this problem to be attenuated because we averaged reaction times to classify religious stimuli over 16 trials. The distribution of the mean raw reaction times for religious stimuli had a skewness of 1.42 (SE = .18) and a kurtosis of 2.9 (SE = .36), showing some evidence of non-normality. The log transformed mean reaction times distribution had a skewness of .48 (SE = .18) and a kurtosis of .46 (SE = .36), which represents an improvement in normality of the distribution. Further, though people responded very accurately, we wanted to ensure that this pattern did not depend on participants who were prone to making errors. Lastly, participants likely varied in general tendency to respond quickly or slowly.

To address these issues, we restricted the analysis to participants who were accurate on at least 90% of the patently real and imaginary trials, used as our dependent variable the natural log of the mean reaction time to classify religious stimuli, and controlled for latencies to classify real, secular faith, and imaginary stimuli. The linear (β = − .17, p = .004) and squared (β = − .16, p = .003) effects of self-reported religiousness remain significant after these adjustments.
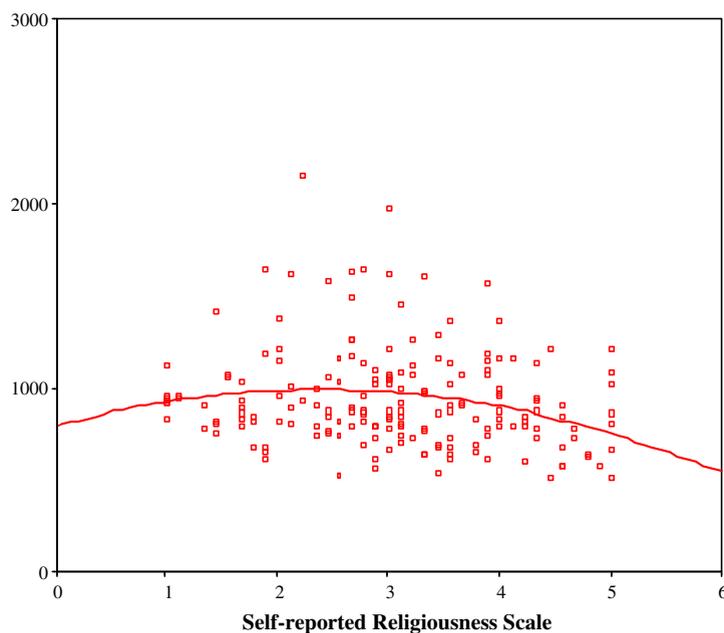

Fig. 1. Latency to classify religious stimuli (in milliseconds) as a function of self-reported religiousness in Study 1.

3. Study 2

In this study, we investigate whether reaction times to classify religious stimuli as real versus imaginary are reliable over time.

3.1. Method

We used a separate sample ($n = 117$) with similar demographic properties and obtained using the same procedures as in Study 1. Participants in this study completed the reaction time task and self-reported religiousness measure, and were emailed after 7 days to ask them to complete the measures again. The tasks was completed an average of 8.5 days ($SD = 2.41$) later.

3.2. Results

Self-reported religiousness ($r = .97$, $p < .001$) was extremely reliable as was the proportion of religious trials which received responses of "real" ($r = .79$, $p < .001$). Mean latencies to classify religious stimuli were highly correlated over the two time points, $r = .63$, $p < .001$. However, this could simply reflect that some individuals perform generally faster on reaction time tasks. When we partialled out mean latencies to classify other categories of stimuli (patently real, imaginary, secular faith), as well as responses (real/imaginary) from both time points, mean reaction times to classify religious stimuli were still significantly related at the two time points, $\beta = .24$, $p = .004$. Despite the fact that small mean reaction time differences of a few hundred milliseconds can be affected by many factors, this task appears to be a stable indicator of the accessibility of religious beliefs.

4. Study 3

Here, we examine the potential moderating effect of religious belief accessibility on the relationship between religiousness and life satisfaction, hypothesizing that religious people with accessible beliefs would have the most life satisfaction. We also examine whether accessible religious beliefs have a greater impact on religious behaviors.

4.1. Method

4.1.1. Measures

We measured life satisfaction with the 5-item Satisfaction with Life scale (Diener, Emmons, Larsen, & Griffin, 1985). A sample item is "If I had my life to live over again, I would change almost nothing."

To address religious belief and behavior, we took a more fine-grained approach to our self-reported religiousness measure. We identified three items that specifically tapped religious beliefs and created a religious belief subscale (I believe in God; I believe strongly in the teachings of my religion or faith; my personal religious beliefs are important to me; $\alpha = .85$). Similarly, we isolated two items that specifically tapped religious behavior (I practice the requirements of my religion or faith; I attend religious services regularly; $\alpha = .86$).

4.1.2. Participants

Participants were solicited as in Studies 1 and 2. We had 386 participants with complete data on the religiousness self-report measure, the reaction time task, and life satisfaction. Out of 376 participants reporting sex, there were 103 men and 273 women. Out of 370 reporting race, most (268) were White. Seventy-four reported their religion as atheist/agnostic/none, 103 were Catholic, 68 were Protestant (non-Catholic Christian), and 76 chose "Other."

4.2. Results

4.2.1. Life satisfaction

The interaction of self-reported religiousness and latencies to respond significantly predicted satisfaction with life, $\beta = -.11$, $p = .05$ (Fig. 2). We plotted the interaction as recommended by Aiken and West (1991) by solving the regression equation for a person high in religiousness (1 SD above the mean) and for a person low in religiousness (1 SD below the mean). For people high in religiousness, faster responses (lower reaction times) corresponded to higher well-being. In contrast, for people low in religiousness, faster responses (lower reaction times) corresponded to less well-being. The simple slopes equation for people low in religiosity was: Satisfaction with Life = $3.5675 + .00013535 \times$ reaction time (ms). The simple slopes equation for people high in religiosity was: Satisfaction with Life = $3.7925 - 0.0011958 \times$ reaction time (ms). Furthermore, the interaction remained marginally significant when the analysis was restricted to people who were at least 90% accurate in patently real and imaginary trials ($n = 295$), controlling for latencies to classify patently real, imaginary, and secular faith stimuli, and using the log of the mean reaction time to classify religious stimuli, $\beta = -.10$, $p = .08$.
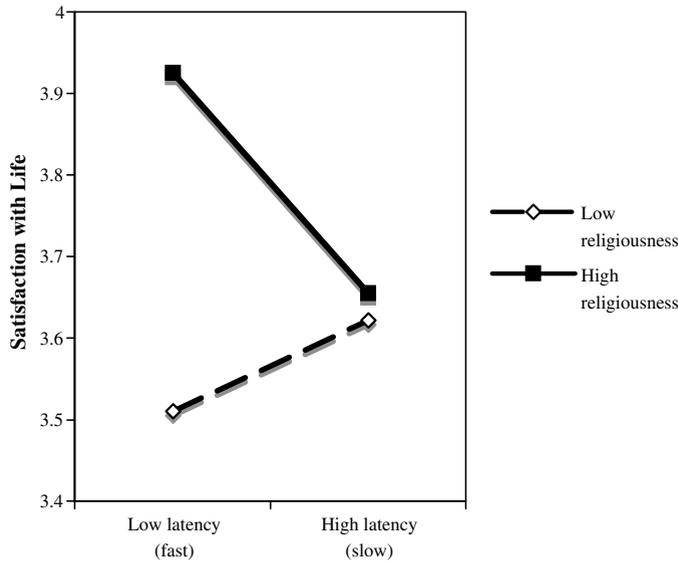
Fig. 2. Predicting life satisfaction from self-reported religiousness and latency to classify religious stimuli. High religiousness corresponds to a z-score of +1 for self-reported religiousness, and low religiousness a z-score of −1. High latency corresponds to a z-score of +1 for latency, and low latency a z-score of −1.

4.2.2. Belief and behavior

Religious beliefs and latencies to classify religious stimuli interacted to predict religious behaviors, $\beta = -.09$, $p = .009$. Belief accessibility (reaction times) had no impact for those individuals low in belief, but those believing people with more accessible beliefs were more behaviorally religious (Fig. 3). The simple slopes equation for those high in belief was $3.66 - 0.0005834 \times$ reaction time (ms). Therefore a one second (1000 ms) reduction in latency (faster response) was associated with a gain of approximately 0.58 points of religious behavior on a five-point scale. The simple slopes equation for those low in belief was $1.72 - 0.000017 \times$ reaction time (ms). Therefore, latency had very little effect on religious behavior for those low in religious belief, only a change of .017 points in religious behavior per second of latency. When we restricted the analysis to people who were at least 90% accurate on the real and imaginary trials, controlled for latencies to classify real, imaginary, and secular faith stimuli, and used the log of the mean reaction time to classify religious stimuli, the interaction was still significant ($\beta = -.10$, $p = .006$).
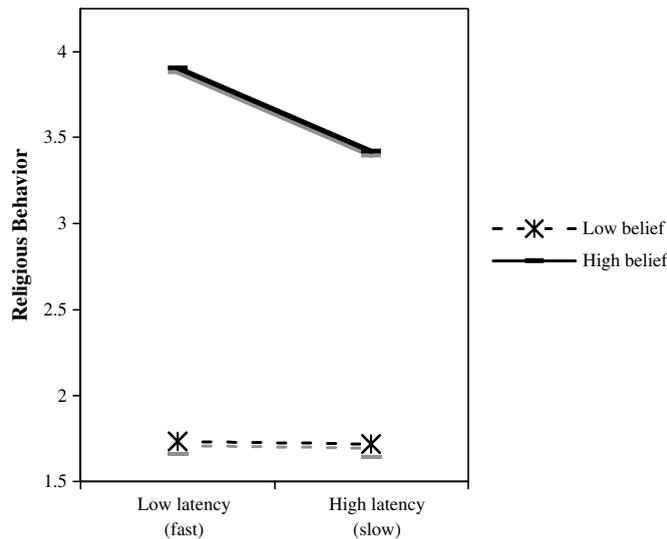

Fig. 3. Predicting religious behavior from religious beliefs and latency to classify religious stimuli. High beliefs corresponds to a z-score of +1, and low beliefs a z-score of −1. High latency corresponds to a z-score of +1 for latency, and low latency a z-score of −1.

5. General discussion

Our goal was to further our understanding of individual differences in religious belief accessibility. Although it is often presumed from laboratory work that we know the determinants of attitude accessibility (e.g. repeating the attitude; Higgins, 1996), little is known about how this operates outside of artificial, laboratory conditions, or what specific factors promote accessible attitudes in different domains. The assumption that the processes that govern accessibility of new attitudes created in the lab are those same processes that determine accessibility of attitudes has not been well tested, and not in a domain specific format. These results give us the opportunity to do so.

A curvilinear pattern emerged for the relationship between self-reported religiousness and reaction times, with those reporting moderate religiosity categorizing religious items slowest. Religious people were faster to categorize religious stimuli, and performance on religious trials is stable over 8 days. We also showed that reaction times to classify religious stimuli moderated the relationship between self-reported religiousness and well-being, as well as the relationship between religious beliefs and religious practices.

Despite the interesting questions that religious beliefs present for social and personality psychology, there is still a lack of understanding about certain aspects of them, including their accessibility. Little is known about religious beliefs because they are complex and difficult to measure apart from self-report methods. People's religious beliefs may differ at different levels of analysis. For example, Barrett and Keil (1996) found that religious people implicitly ascribe human limitations to God, without explicitly being aware of it. When presented with a story about God *simultaneously* answering prayers from multiple people, participants explicitly report that this is sensible because God is omnipotent. However, participants are likely to later recall that God helped one person *and then* the other, indicating that people implicitly imbue God with human limitations. Such findings suggest a disparity between different levels of belief and highlight the need for a deeper understanding of religious beliefs (Cohen, Hill, Shariff, & Rozin, 2008; Hill & Hood, 1999). Studies of accessibility are one way in which science can further our understanding of religious processes, and the scientific study of religion can elucidate a number of important psychological processes (Hill, 1994, 1999; McCrae, 1999).

Unfortunately, religious beliefs are often assessed via self-report items that assess strength of belief or attendance at religious services (for exceptions, see Barrett & Keil, 1996; Gibson, 2006; Shariff & Norenzayan, 2007). There are established biases in responding to such questions. For example, Hadaway et al. (1993) showed that people report about twice their actual attendance. It would be interesting to know if this tendency is explainable or moderated by belief accessibility. Furthermore, for many people, religious beliefs are much more subtly textured than self-report data can adequately address. Self-report questions can only go so far in addressing such complex belief structure. There is currently a dearth of alternative, validated methods to study religion, perhaps because of a dominant view—particularly in the United States—of religion as personal, emotion based, and subjective (Bellah, Madsen, Sullivan, Swidler, & Tipton, 1985; Cohen et al., 2005; Hunter, 1983; Stark & Bainbridge, 1996).

The use of reaction time tasks to study religion is an exciting new direction. Wenger (2003, 2004) showed that priming religion can make intrinsically religious people identify religious events more quickly as religious. Wenger and Yarbrough (2005) have produced some evidence that among Christian participants, intrinsic or extrinsic religious motivations correlate with an IAT procedure on identification of self or others with intrinsic (seeking God, learning about religious beliefs) and extrinsic (social religion, comfort) religiousness. Gibson (2006) performed a series of studies on attention, memory, and judgment speed for tasks related to religion, including the development of a religious Stroop test.

One advantage to using reaction time based measures while investigating individual differences is that such tasks are relatively immune to confounds related to self-presentation, self-deception, and other confounds. Though we did not present the data here, in Study 3, we also had measures of a variety of individual difference variables, including Impression management and self-deceptive enhancement (subscales from Paulhus, 1988), fear of invalidity (Thompson, Naccarato, Parker, & Moskowitz, 2001), self-monitoring (Lennox & Wolfe, 1984), intolerance of ambiguity (Budner, 1962), and need for cognition (Cacioppo, Petty, & Kao, 1984).

In our dataset (Cohen, Shariff, & Hill, unpublished data), self-reported religiousness was negatively related to self-deceptive enhancement and need for cognition, and positively related with impression management, fear of invalidity, and intolerance of ambiguity. Latencies to classify religious stimuli, however, were unrelated to impression management, fear of invalidity, need for cognition, or intolerance of ambiguity, and showed only a marginally negatively correlation with self-deceptive enhancement. Neither self-reported religiousness nor reaction times correlated with self-monitoring.

It is important to show that these personality variables do not relate to reaction times because self-reports of religiousness often do not comport with objective measures. For example, people report going to church about twice as often as they actually do (Hadaway et al., 1993). Motivations to delude even oneself about one's religiousness can be strong, because many individuals perceive the welfare of their souls as depending on faith (Edwards & Hall, 2003). Dennett (2006) has argued that people may guard religious beliefs from disconfirmation by making beliefs vague or incapable of being refuted, such as believing that God is the goodness in people. As Dennett puts it, some people believe in believing in God, more than they actually do believe in God. Further, religious beliefs are often maintained in a social context in which people are expected to profess certain beliefs (Burris & Navara, 2002). Because of motivations among some people to confirm to others or to

oneself a high level of religiousness, it is important to show that the accessibility of religious beliefs can be measured in a way that does not reflect tendencies to be afraid of giving wrong answers, to present certain impressions to others, or to delude oneself.

Fazio's MODE model predicts that attitudes have greater impact when the attitudes are accessible. Like prior findings on the buffering effects of accessible attitudes when it comes to stress, we predicted that religiousness would promote well-being more successfully for those people with accessible beliefs because accessible beliefs can be accessed and exert their effects without overtaxing cognitive and emotional resources (Fazio & Powell, 1997). In Study 3, we investigated the impact of accessibility on the relationship between religiousness and life satisfaction, and the impact of religious beliefs on religious behavior. For both domains, it makes a difference to know not just a person's self-reported religiousness, but also how accessible their religious beliefs are.

For life satisfaction, we found a marginally significant pattern such that people who were high in religiousness and who had accessible beliefs had the highest life satisfaction. For religious people, faster reaction times correlated with more well-being. Furthermore, for people low in religiousness, faster reaction times corresponded to less well-being. This moderator effect has important implications for understanding how religion relates to well-being. People with accessible beliefs can probably access and utilize their beliefs to cope with stress more effectively than those without accessible beliefs (Fazio & Powell, 1997). This can help to explain why religious people with accessible beliefs report higher life satisfaction than religious people with less accessible beliefs. However, it is also important to note that non-religious people with accessible beliefs reported lower life satisfaction than non-religious people with less accessible beliefs. Perhaps religion is so often invoked as a coping mechanism for dealing with stressors, that if one has accessible beliefs that religious targets are imaginary, one can less effectively deal with stressors relative to someone who is non-religious but is not as confident that religious targets are imaginary.

We also found that accessibility moderated the effect of self-reported religious belief on religious behaviors. For people low in belief, accessibility had almost no impact on religious behaviors, and religious behaviors were low regardless or accessibility. Perhaps we did not see an even lower level of religious practice among those of low self-reported belief and who had fast reaction times because of a floor effect. For people high in belief, however, there was a sizable impact of accessibility on religious behavior. People were most behaviorally religious if they not only reported religious beliefs but also if those beliefs were accessible. This pattern of results suggests that in order to report the highest levels of religious practice and attendance, one must not only have strong religious beliefs, but also rapid access to those beliefs. Perhaps those people who self-report high beliefs but cannot access them quickly, or are less confident in those beliefs, are not as motivated to practice their religions regularly because their beliefs do not come to the fore as easily when presented with religious belief objects. Alternatively, frequent participation in religious behaviors may entrench one's belief, making them more easily accessible—and perhaps making them have greater impact. Researchers have suggested that frequent participation in religious rituals foster prosocial cooperation via the chronic mental activation of religious concepts such as moralizing supernatural agents (Norenzayan & Shariff, 2008).

That all being said, it should be noted that our measure of religious belief and our measure of religious behavior were self-report. It would be interesting in future work to objectively quantify religious behavior to see if belief accessibility moderates the tendency we mentioned above for people to over-report their religious attendance (Hadaway et al., 1993).

Historically, in work on religious motivations in psychology, there has been a tendency to consider certain motivations more genuine, sincere, or authentic than others. The best example of this is Allport's distinction between intrinsic and extrinsic religiosity (Cohen et al., 2005). For Allport, and those following in his theoretical tradition, "intrinsic" religious motivations that expressed a personal importance of religion and relationship with God were seen as more mature than were "extrinsic" motivations, which Allport considered to be less mature or genuine. To avoid this value-laden approach, we caution that neither shorter nor longer reaction times should be taken to indicate more valuable, sincere, mature, or intrinsic belief. There is nothing necessarily more or less valuable or sincere about a less accessible, or more inchoate, belief. Longer reaction times could suggest a more reasoned, nuanced form of belief.

Although some religious communities may see practice as being most valuable and sincere when it is motivated by accessible and confidently held belief, or conversely that belief is most valuable when it results in religious behavior, there are other perspectives. For example, a collectivistic or interdependent viewpoint could be that religious practice is most valuable when it demonstrates that the individual is putting aside whether he or she privately believes, but behaves in accordance with perceptions of God's will or with community norms and traditions (Cohen et al., 2005; Cohen & Hill, 2007; Cohen et al., 2003). In using a reaction task in different religious and cultural groups, it will be important to demonstrate that the items are appropriate given different beliefs. Our task, as it is currently administered, perhaps best fits Western, monotheistic religions. Different religious groups and cultures may differ in belief content, and in other ways.

Appendix

Patently real, imaginary, religious faith, and secular faith stimuli

Patently real	Imaginary	Religious faith	Secular faith
Airplane	Bugs Bunny	Adam & Eve	Abraham Lincoln
Car	Captain Kirk	Angels	Atoms
Chair	Darth Vader	Devil	Black hole
George Bush	Easter Bunny	God	Christopher Columbus
Moon	Homer Simpson	Heaven	Electron
Rain	Leprechaun	Hell	George Washington
Sun	Superman	Miracles	Molecules
Water	Tooth Fairy	Soul	Socrates

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