sociological science

Fast or Slow: Sociological Implications of Measuring Dual-Process Cognition

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Abstract: Dual-process theories of cognition within sociology have received increasing attention from both supporters and critics. One limitation in this debate, however, is the common absence of empirical evidence to back dual-process claims. Here, I provide such evidence for dual-process cognition using measures of response latency in formal data collected in conjunction with an ethnographic study of atheists and evangelicals. I use timed responses to help make sense of evangelicals' language that frames "religion" as negative but "Christ-following" as positive. The data suggests that despite these Christians expressing a concept of the self that rejects "religion," deep dispositions remain associating religion as a positive entity, not a negative one. I further argue that the significance of dual-process theories to sociology is in untangling such complex webs of identity discourse by distinguishing between immediate responses primarily due to fast cognition and those that are further mediated by slower, more deliberate cognition.

Keywords: dual-process; culture; cognition; methods; religion; atheism

THE concepts of fast and slow cognition have recently received increasing attention within the sociology of culture. Several scholars have used dual-process frameworks to back their empirical and theoretical claims (Cerulo 2010; Escher 2013; Lizardo et al. 2016; Martin and Desmond 2010; Miles 2015; Srivastava and Banaji 2011; Vaidyanathan, Hill, and Smith 2011), while others have called the sociological significance of dual-process theories of cognition into question, critiquing their practical application to empirical cases (Berezin 2014; Jerolmack and Khan 2014; Pugh 2013; Wuthnow 2011). One major limitation in this debate, however, is that sociologists making use of dual-process theories in their work often fail to provide empirical evidence from their own data specifically confirming their dual-process claims. Instead, scholars usually rely on theoretical assumptions from psychology, both to infer the existence of different processing modes and to offer guidance as to what type of cognitive processing takes place when. While such borrowing of concepts removed from direct data is an important first step in cross-disciplinary work, it eventually becomes necessary to verify their veracity in sociological settings using sociological data. Doing so is also necessary as the sociological concept of culture moves further away from viewing culture as a static whole located outside of people's minds and more towards the idea that culture is a complex combination of intertwined mental acts and processes (Martin 2010).

In this article, I provide such evidence for dual-process cognition using measures of response latency in formal data collected in conjunction with an ethnographic study of atheists and evangelicals in the Bible Belt. Recording the amount of time it takes someone to respond on a task is a proven method social psychologists employ

Citation: Moore, Rick. 2017. "Fast or Slow: Sociological Implications of Measuring Dual-Process Cognition." Sociological Science 4: 196-223.

Received: October 20, 2016

Accepted: January 28, 2017

Published: February 27, 2017

Editor(s): Jesper Sørensen, Gabriel Rossman

DOI: 10.15195/v4.a9

to measure differences between fast and slow cognition but one that has seldom made its way into sociological research. Such measures move sociology towards treating the influence of the dual processes in various domains as an empirical question and away from considering their impact to be an analytical assumption (Lizardo et al. 2016).

Theoretically, I build upon recent work in sociology exploring the relationship between our dual cognitive processes (Hoffmann 2014; Ignatow 2014; Leschziner and Green 2013; Miles 2015; Vaisey 2009, 2014; Vila-Henninger 2015). Sometimes a person may rely primarily on their faster cognition, while other times they may use a combination of fast and slow cognition. Examining these differences potentially offers insight into how subjects express the self, especially in regards to fluid and situated identities. Identities are complex, multifaceted concepts developed over the life course, which often blend core identities learned early with other identities acquired later in life (Brekhus 2015; Cerulo 1997; Howard 2000); not all identities expressed may be done so with the same strength and/or emerge in all of the same settings. Distinguishing between immediate responses primarily due to fast cognitive processes, and those which are further mediated by slower, more deliberate cognition, thus offers a tool to help untangle the complex web of discourses people use to express their sense of self.

For example, the evangelical Christians in this study—many of whom refer to themselves as "Christ-followers"—distinguished in interviews and observational data between "Christianity," which they considered good, and "religion," which was considered a negative, man-made construct. Timed response data from a survey-like task showed, as expected, that these Christians were quicker to associate positive terms with Christianity and slower to associate negative terms with it, reflecting their deeply ingrained fast cognition that Christianity is a positive entity. However, the same evangelical respondents were also quicker to associate positive over negative terms with "religion," despite this reaction being at odds with their verbal distancing of religion from the true Christian faith. This suggests that despite expressing a self-concept that rejects religion, deep dispositions remain that generally associate religion as being a positive, not a negative, entity for these Christians, at least in some circumstances.

Theoretical Background

Dual-process theories of cognition, while prominent in psychology since the 1980s (see Evans 2008 for a review), have only relatively recently been adopted explicitly within sociology (DiMaggio 1997, 2002). Most sociological dual-process theories draw directly on cognitive science and social psychology to argue that the dual-process aspect of human cognition is critical to understanding the role of culture in motivating action (e.g., Cerulo 2010; Knorr-Cetina 2014; Martin 2010; Vaisey 2009). If the dual-process theory of cognition is true in the way that these studies claim, it has major ramifications for research methodologies and for understanding how culture works more generally. In particular, a consensus has emerged among several sociologists that our fast cognition is a crucial aspect of our moral decision-making process (Hoffmann 2014; Martin 2010; Vaisey 2009; Vaisey and Lizardo 2010).

To briefly review, the most basic version of dual-process theory, as the name implies, asserts that humans have two different types of cognition.[1] One is fast and not available to our conscious awareness, while the other is slower and conscious. The fast process allows us to make immediate snap judgments without much cognitive effort based on pattern recognition and experience. The slower process allows for the careful consideration of problems, is often discursive in practice, and is at times associated with reasoning and/or justifications after the fact. Different scholars name these fast/slow processes differently: for example, heuristic/systematic (Chaiken 1980), associative/rule-based (Sloman 1996; Smith and DeCoster 2000), System 1/System 2 (Evans 2008), or practical/discursive (Vaisey 2009), just to name a few. While there are many nuanced and important differences between the various conceptions of dual-process theory that are beyond the scope of this article—including whether the processes operate sequentially or in parallel to one another (Evans and Stanovich 2013)—the basic idea of the dual processes themselves has become an accepted standard within cognitive and social psychology and is supported by many empirical studies (see Chaiken and Trope 1999; Evans 2008; Fazio and Olson 2003; Smith and DeCoster 2000; Stanovich 2011). It is worth noting that while these dual-process theories stemming directly from cognitive science are new to sociology, implicit sociological dual-process theories, from the work of scholars such as Giddens (1984), Bourdieu (1990) and Dewey (1930), have been influential in our discipline for some time (for partial reviews, see: Vaisey 2009 and Vila-Henninger 2015).

Sociologists drawing on the psychological concepts of fast and slow cognitive processes frequently describe them using the terms "practical" and "discursive," respectively. Following the nomenclature used by Evans (2008) in his review of the dual-process literature within psychology, I use the more common, cross-disciplinary terms System 1 to refer to our fast cognitive processing, and System 2 to refer to our slower processing. As alternatives to System 1 and System 2 processing, I also simply refer to fast and slow processing, or cognition, as well, as those are the most commonly accepted features distinguishing the two cognitive modes.

The Relationship between Fast and Slow Processing

There are several different theories as to the relationship between System 1 and System 2 processing. One position makes a strong argument that our System 1 processing drives most of our daily decision making and virtually all of our decision making regarding questions of morality (Haidt 2001, 2006; Vaisey 2009). Our System 2 processing, in this model, is primarily concerned with developing justifications after the fact for decisions that System 1 processing has already made. This interpretation of the relationship between fast and slow cognition has enormous implications. If most of our decision making stems from unconscious System 1 cognition, then it follows that if we want to understand social interaction, we must find a way to access people's System 1 processing. Simply asking people to explain why they did something, as happens during an in-depth interview, would usually be inadequate under this theory, as an open-ended question would encourage a person to deliberate and thus use slower System 2 processing.[2]

In some of its sociological formulations, this interpretation of dual-process theory appears to imply that in many situations, decisions are made primarily using *either* System 1 *or* System 2 processing and that researchers must simply recognize what kinds of actions (or types of questions) are associated with each system (cf. Brekhus 2015; Leschziner and Green 2013). For example, Vaisey (2009) argues that "interview methods engage with [System 2] consciousness *alone*" and then goes on to assert that fixed response questions, in contrast, mainly involve System 1 processing by their very nature (1687–1689; emphasis mine).[3] Others have also written about the dual processes in a similar fashion, suggesting that certain settings are inherently positioned to activate System 1 processing, such as surveys (Bonikowski 2016; Ignatow 2014; Opfer, Pedder, and Lavicza 2011) and visual cues (Friedman 2016), while in-depth interviews likely only access System 2 processing. These examples point to a trend among some sociologists to talk about the dual processes in a way that, at least on the surface, implies that the processes have clear domains that can be easily mapped on to existing sociological methods. I will refer to this combination of theorizing that System 1 takes precedence in nearly all decision making and effectively positing that only one system at a time determines an outcome (i.e., that System 2 processing determines in-depth interview answers, while System 1 processing determines survey responses) as the "either/or" model.[4]

The either/or model and its implications for interview data has engendered significant critique, even by supporters of a cognitive sociology more generally (Leschziner and Green 2013; McDonnell 2014; Mische 2014; Shepherd 2011; Vaisey 2014; Vila-Henninger 2015). Several sociologists have consistently argued for the value of supposed System 2 settings, such as in-depth interviews, to provide access to motivational issues (Edgell 2012; McDonnell 2014; Mische 2014; Pugh 2013). Vaisey also later moved towards this camp, writing in a response to Pugh (2013) that the relationship between the processing systems is likely more complex than he originally presented (Vaisey 2014).

Many cognitive and social psychologists, meanwhile, have long argued that both cognitive modes operate simultaneously and that one cannot easily distinguish their individual domains (Chaiken 1980; Sloman 1996; Smith and DeCoster 2000; Uleman, Saribay, and Gonzalez 2008). Still, others suggest a "default interventionist" approach, in which System 1 makes an initial decision that can then overridden by System 2 (Evans and Stanovich 2013). Vila-Henninger (2015) summarizes a large body of scholarship from cognitive neuroscience supporting a default interventionist interpretation (e.g., Greene 2007; Moll et al. 2005; Paxton, Ungar, and Greene 2012; Squire 2004). Taken together, these works provide ample evidence that System 2 cognition can, in fact, drive everyday decision making. Vila-Henninger (2015) makes this case persuasively, suggesting that sometimes we let System 1 keep control and sometimes we use System 2 to override or respond to what System 1 comes up with, especially in difficult situations, such as when breaking social norms. In these more comprehensive views based on the broader consensus within cognitive science, there are still two distinct processing systems, but they operate together much more closely than several existing sociological explanations have implied.

This relationship between processing systems has implications for how we are to make sense of the ways people express the self. People perform various identities and roles, which often have a deeply moral character, at different times and in diverse settings (Brekhus 2015; Cerulo 1997; Howard 2000). Some of these expressions of self are performed automatically, while others take various amounts of deliberate work to achieve (Danna Lynch 2009). This suggests that some identity expressions likely draw on System 1 processing and are deeply ingrained into our habitus, while others require additional System 2 processing to enact. It appears unlikely that System 1 processing alone drives most decisions regarding the presentation of situated moral identities. Examining the differences in processing modes—and when each occurs—has the potential to help untangle complex, and often seemingly contradictory, identity performances in everyday life by shedding light on the concrete situations that encourage the use of System 1 and System 2 processing.

How to Measure Fast and Slow Cognition

How do we recognize the results of System 1 and System 2 cognition in sociological research? If we agree that the dual processes matter for sociology, then accurate indicators of their influence are critical. The position that fixed response survey questions potentially offer insight into System 1 processing, while in-depth interviews usually do not, does have its merits. The basic idea is that most of what we do in daily life is more like picking someone out of a lineup (i.e., System 1, intuitive) than describing that person to a sketch artist (i.e., System 2, calculated) (Vaisey 2009, 2014). Upon further thought, however, relying on broad question type alone may not always work because the type of processing someone uses can have less to do with how a question is asked than what a person is asked about. For example, when people are asked about a topic that is of little importance to them, they are more likely to primarily employ their System 1 processing (Chaiken 1980; Smith and DeCoster 2000). Priming effects can also encourage people to rely on an initial decision made by System 1 processing (Bargh 1999), as can having expertise in a topic (Evans 2008; Reyna 2004). Explicit instructions to use reasoning abilities, meanwhile, can encourage the use of System 2 processing (Evans and Stanovich 2013). Importantly, it seems that difficult judgments, such as moral judgments that go against a social norm, require System 2 processing to override an initial System 1 response (Vila-Henninger 2015). In summary, the literature suggests that some kinds of judgments tend to be "easier" and thus more likely to draw heavily on System 1 processing without being supervened by System 2 processing, regardless of the question format. Other judgments are more "difficult" and require additional thought using System 2 processing after any initial System 1 processing, again independent of the format of the question that was asked.

All of this calls into question the strategy of simply relying on survey questions to measure fast cognition. In the end, we do not have any way of knowing whether or not the person who answered a standard survey question did so quickly and intuitively or carefully considered each possible response.[5] This means that survey questions are not necessarily evidence for fast processing even if there are legitimate reasons to believe that fast processing might be more likely in a closed survey ques-

tion than in an open-ended interview. There are, however, existing methodologies from the psychological sciences that can help us deal with this problem.

One of the most accepted properties in practically all dual-process theories is that one process is *fast* and the other process is comparatively *slow*. In psychology, this feature is taken advantage of by timing how long it takes someone to complete a given task, such as answering a question. Quicker response times are generally interpreted as a sign of System 1 processing making the decision with little or no input from System 2, while slower response times are interpreted as some combination of System 1 and System 2 being involved in the decision-making process (Logan 1988; Martin and Desmond 2010). This pattern is expected under both the parallel processing and dual interventionist models. Thus, one solution to begin untangling the combination of cognitive processes someone might be using is to measure the amount of time it takes the person to complete a specially designed task.

Using response latencies to measure System 1 and System 2 processing also allows one to examine how different scenarios might influence cognitive processing. If a series of questions are virtually identical except for the target they are measuring (as in a series of Likert scales), then comparing response times across questions should provide useful information on when people use different combinations of processing. Theoretically, easier questions that align with a respondent's knowledge and worldview would likely be more reliant on System 1 processing without significant intervention by System 2 processing, while more difficult questions that either go beyond respondents' knowledge or challenge their worldview would likely draw on both System 1 and System 2 processing. Response latency therefore offers a proxy providing insight into which situations tend to encourage people to use various combinations of System 1 and System 2 processing. This solution has the potential to help untangle talk expressing complex identities by distinguishing which aspects are activated through mainly System 1 processing—indicating their deeper incorporation into the habitus—and seeing what aspects require additional System 2 processing, suggesting that more conscious thought is required.

Overview of Research

In order to demonstrate empirical evidence for this version of dual-processing theory, I draw on a unique data set measuring the degree to which people associate a list of concepts with religion, atheism, spirituality, and Christianity. The data set was collected as part of a larger, primarily ethnographic project investigating the construction of religion as a social category. This larger project was based on over two years of fieldwork at four different research sites: an atheist organization in Oklahoma, an evangelical church in Oklahoma, a set of atheist organizations in the Chicago metropolitan area, and an evangelical church in Chicago.[6] At all four field sites participant observation and in-depth interviews were used. At the two field sites in Oklahoma, however, these traditional methods were also supplemented with a series of field experiments, one of which was designed to measure the use of fast and slow cognition. Following Coxon and Jones (1978), these experiments produced a rich data set drawn from a small sample of the

target population, prioritizing the depth of the data over sample size. The series of experiments was completed by respondents from the ethnographic fieldsites during a special structured field experiment interview.

Field Experiment: Rating Applicability of Words to Targets

Ethnographic fieldwork and in-depth interviews in the project suggested that there were unexpected points of agreement between atheists and evangelicals on some of the traits associated with "religion." Some evangelicals differentiated Christianity from religion and used "religion" as a pejorative term, even echoing critiques more usually expressed by atheists (e.g., that religion is man-made or that religion is primarily about rules). This finding raised questions about the shape of potential overlaps between the atheists' and evangelicals' conceptions of religion, as well as their conceptions of related categories like Christianity, spirituality, and atheism. A field experiment was therefore designed to explore common features that atheists and evangelicals associated with "religion," "atheism," "spirituality," and "Christianity." During the task, both atheists and evangelicals were asked to rate the degree to which a series of 39 words described these four target concepts. In addition to the rating, the amount of time it took respondents to select an answer on each paring between a word and a target was also measured.

Sample Populations

The field experiments were conducted with the members of an atheist organization and an evangelical church in the same metropolitan area of Oklahoma. The atheist organization is loosely organized, with approximately 2,400 members, although only a small percentage of those attended in-person meetings during the period of fieldwork. Meetings occurred up to 15 times per month and were mostly social occasions in which small groups of atheists met for informal events such as lunch or a bar trivia night. Most attendees were white, although there were occasionally African Americans and Hispanics in attendance as well. The group was approximately 60 percent male and spanned a wide range of ages, from young people in their late teens and early twenties to retired individuals in their sixties and seventies.

The church studied in the project was a white evangelical congregation affiliated with the Southern Baptist Convention. Weekly attendance at worship services averaged around 1,200 individuals during the study period. Fieldwork at the church was conducted primarily with the members of an adult Sunday school that met before worship on Sundays. This class was mainly composed of married couples in their thirties or forties and served as a de facto evangelical small group for many of its members.[7] Attendance at the class was usually around 15 people any given Sunday, although the total number of people affiliated with the class was much higher. Some participants in the field experiments were also recruited from a similar Sunday school class that split off to focus on married couples in their twenties. There were no substantive differences in the results reported between how members of the two classes completed the field experiments.

Methods

The list of words for respondents to rate was created from an initial free listing exercise completed by members of each field site. Respondents were asked to list as many items as they could that met the listing criteria (Bernard 2011; Borgatti and Halgin 2013; Coxon 1999; Weller and Romney 1988). In other words, instead of assuming that a domain (e.g., religion) has certain characteristics, a free list is one way to explore emic conceptions of the domain in question by simply asking people familiar with it to list examples or characteristics of it. In this case, respondents were asked to list as many words as they could that described "religion." The same question was then repeated for "atheism," "spirituality" and "Christianity."[8] As participant observation and in-depth interviews in the project had indicated that some of the evangelicals did not consider Christianity to be a "religion" (cf. Smith 1998), both "religion" and "Christianity" were included as targets in the free list.

Data collection for the free lists was handled differently for the atheists and evangelicals because of the different structures of their respective organizations. Because the atheist organization studied in Oklahoma has an active private web forum, an online version of the free listing task was created. After securing permission from the group's leadership, an announcement was placed in the forum asking for anonymous participation. In addition to the online announcement, 24 individuals who were well known to the author from fieldwork were sent direct invitations asking them to participate. The survey remained online for one week in May of 2014. This method generated 84 eligible responses. The evangelical church, however, did not have a comparable web forum, so collecting data in a similar fashion was not possible. Instead, a paper version of the same survey was distributed during one session of the adult Sunday school that was the key site in the ethnographic phase of the project. Later, a link was distributed via email by the class's leader to an online version for those who might not have been in class that particular day. The combination of these methods generated 28 evangelical responses, the large majority of which were collected via the paper in-class survey.

The "clean" versions of the combined free list results (i.e., lists in which synonyms were combined) became the basis for the list of words in the word rating exercise.[9] The list of words that respondents rated was created by taking the top five words in the free list from each of eight categories: atheists' and evangelicals' descriptors of religion, atheism, spirituality, and Christianity. If there was a tie for the fifth word in a category, all words that appeared with that same frequency were included. If a word was repeated in more than one category (i.e., used by both atheists and evangelicals to describe targets or used by one group to describe multiple targets), it was only included once in the list of words created for the rating exercise. The procedure resulted in a single list of 39 words that was then rated by both groups. This meant that atheists rated not only words suggested by fellow atheists but also words that were originally suggested by evangelicals. Evangelicals, likewise, rated words that were proposed by atheists as well as evangelicals. Table 1 shows the words that were chosen through this method for the rating exercise.[10]

After the words to be rated were compiled, the actual word rating survey instrument was created in Qualtrics and designed to be completed by respondents in person on a tablet computer. Beyond a short introductory section with instructions

Table 1: Free list words used in timed rating exercise.

Ambiguous	Empty	Holy Spirit	New Age
Antiquated	Faith/Belief	Hypocrisy	Organized
Brainwashing	Fear	Inner	Prayer
Christ followers	False	Intolerant	Practice
Christian	Freedom	Jesus/Christ	Rules
Church	Forgiveness	Knowledge	Science
Close to God	God	Lies	Silly
Control	Godless	Lost	Skeptical
Disbelief	Heart	Love	Works
Emotion	Higher Power	Money	

and practice questions, the survey consisted of four sets of closed questions: one set each on religion, atheism, spirituality, and Christianity. In each set, respondents were asked to what extent each of the 39 words described the target concept of that section. The exact wording was: "To what extent does the following word describe 'x,' " in which x was the term of interest for the particular question (religion, atheism, spirituality, or Christianity). The words to be rated were displayed one at a time, with only one word rated on a given page. Within each section (e.g., "religion"), the 39 words were presented in a random order to each respondent. The section order, however, was fixed with religion first, followed by atheism, spirituality, and finally Christianity. Christianity was presented last to give the evangelical respondents the chance to rate the degree to which words applied to religion before knowing there was to be a later section specifically for Christianity. Participants choose their ratings for words from five categories, arranged horizontally on the tablet screen, that were similar to those used in Likert scales: (1) not at all, (2) a little, (3) moderately, (4) quite a bit, and (5) extremely.[11] After respondents selected their choice by touching the screen with their finger or a stylus, the screen automatically advanced to the next page and displayed a new question. Importantly for the argument here, in addition to recording respondents' rating of how much the word described the target, the survey recorded in milliseconds how long it took for the respondent to select a choice after a word pair was displayed on the screen.

Following the initial set of instructions at the start of the exercise, respondents completed a set of three practice questions to familiarize themselves with the question format and with answering using the tablet computer. After completing the practice section, participants were given an opportunity to ask the interviewer questions before starting the actual exercise. Between the sections of the survey, a page without questions appeared on the screen to alert respondents that a new section was about to begin and that the target word was about to change (e.g., atheism, instead of religion). A progress bar at the top of the screen gave participants an idea of how many questions were left in this particular field experiment.

In total, excluding the practice section, this procedure resulted in 156 separate ratings for each respondent to make (39 words $\times$ 4 targets). Even with this relatively large number of ratings, the mean amount of time required to finish the exercise,

including reading instructions and completing practice questions, was 15.6 minutes (SD = 5.9). The exact instructions given and an example of the survey interface can be found in Appendix A of the online supplement.

After a pretesting phase, which resulted in only minor modifications in the interface and protocol, a combination of convenience and snowball samples of respondents for the experiment was recruited from the atheist and evangelical field sites where I had earlier conducted participant observation and in-depth interviews. As much as possible, I attempted to recruit people who had already completed an in-depth interview, although the final sample did not match the earlier interview phase exactly. The structured field experiment interviews, which included the rating exercise, took place between September 2015 and June 2016. The sessions were usually conducted in public spaces such as coffee shops, although some were completed in respondents' homes or offices. All field experiment interviews were administered by the author. The final sample size for the word rating experiment was N = 40, evenly split between atheists and evangelicals (atheists: N = 20; evangelicals: N = 20).

Results: Ratings of Word Applicability to Targets

Perhaps unsurprisingly, the exercise provided evidence that atheists and evangelicals view their respective ingroup and outgroups very differently from one another and differ on the traits associated with four target categories in the exercise. Figure 1 shows the words that each group, on average, rated as describing Christianity or atheism at least "moderately."[12] The white areas in Figure 1 indicate words that each group alone applied to the respective target. For example, evangelicals, on average, rated "freedom" as applying at least moderately to Christianity, while the atheists did not. The area shaded gray in the center of the figure indicates words that both groups rated as applying to either Christianity or atheism, depending on which side of the center line they are listed. For example, both groups, on average, rated "God" as applying at least moderately to Christianity. Notice that each group tended to attribute negative words to their outgroup but not to themselves. Negative words fitting this pattern included: "ambiguous," "brainwashing," "control," "empty," "fear," "false," "intolerance," "lies," "lost," and "silly." In other words, each group appeared to think that that the other group in the exercise had more to do with these negative words than they did themselves.

In addition to this pattern of attributing negative words more towards outgroups than themselves, there were two positive words for which the opposite pattern held. Atheists and evangelicals, on average, rated "freedom" and "knowledge" as applying more to their own group than to their religious opposite.[13] Freedom, in particular, had a large difference between ingroup and outgroup ratings for atheists. The mean rating by atheists for freedom describing atheism was 4.05, but only 1.40 when describing religion and 1.05 when describing Christianity. The idea that many atheists feel freed by their nonbelief has been reported in other studies (Baker and Smith 2015; Zuckerman 2012) and was a theme that surfaced during participant observation and in-depth interviews with this particular atheist group.

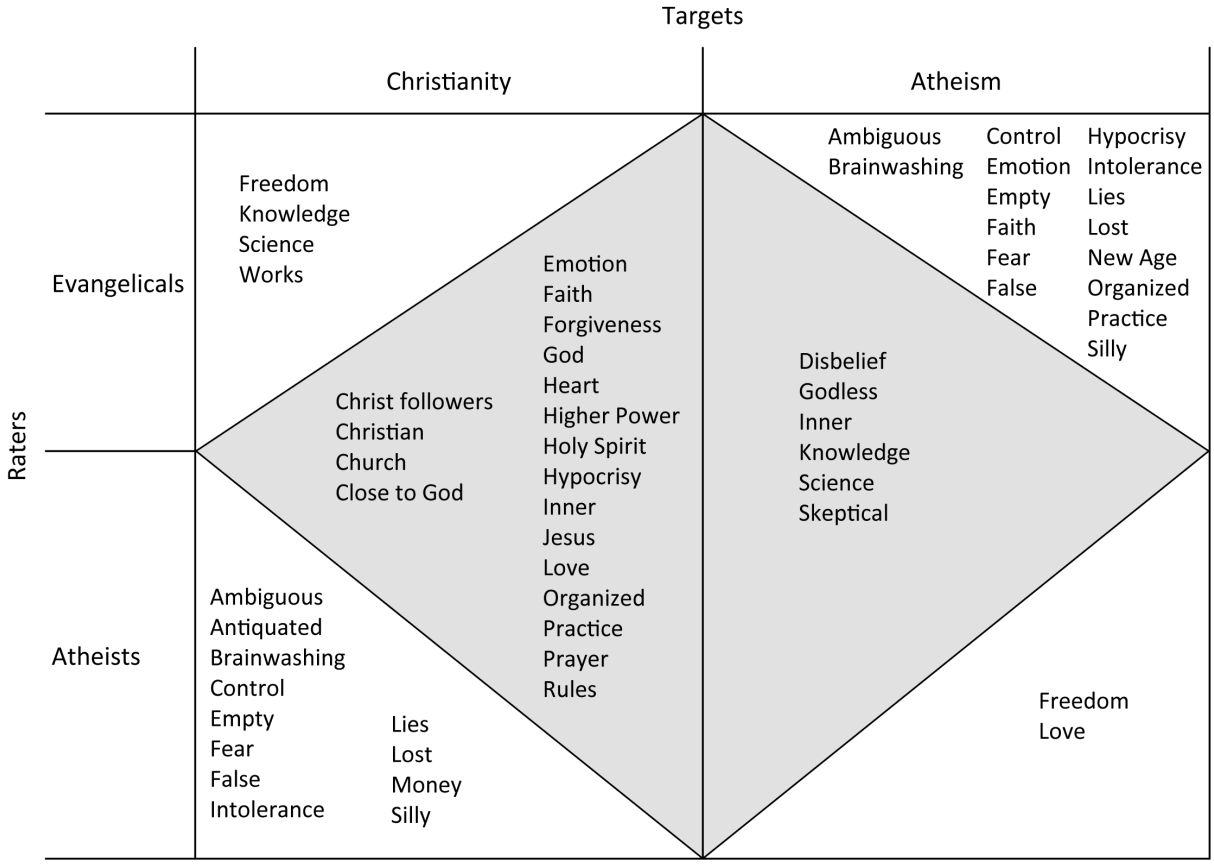

Figure 1: Words evangelicals and atheists rated as at least "moderately" applying to Christianity or atheism (rating $\geq$3, rounded). Areas shaded gray signify words both groups indicated applied at least "moderately" to Christianity or atheism.

Beyond the differences between how atheists and evangelicals rated categories corresponding to their own belief orientation, evangelicals, on average, also tended to distinguish between Christianity and religion more generally. The idea that religion is different from Christianity is common in many evangelical communities (cf. Smith 1998; Smith and Denton 2005) and was a theme that arose frequently in ethnographic fieldwork and in-depth interviews with members of the church community studied in this research. Figure 2 shows the mean ratings on all 39 words rated by the evangelicals when applied to religion and Christianity, sorted by their difference. Words for which the difference between religion and Christianity was statistically significant using t-tests at $p < 0.05$ are marked with an asterisk. Words towards the left side of the graph are those that were rated, on average, as describing religion more than describing Christianity, while words towards the right side of the graph were rated, on average, as describing Christianity more than religion. Those in roughly the middle portion of the graph were applied roughly equally to both Christianity and religion. As can be seen in the figure, the evangelicals rated most positive words as applying less to religion than Christianity

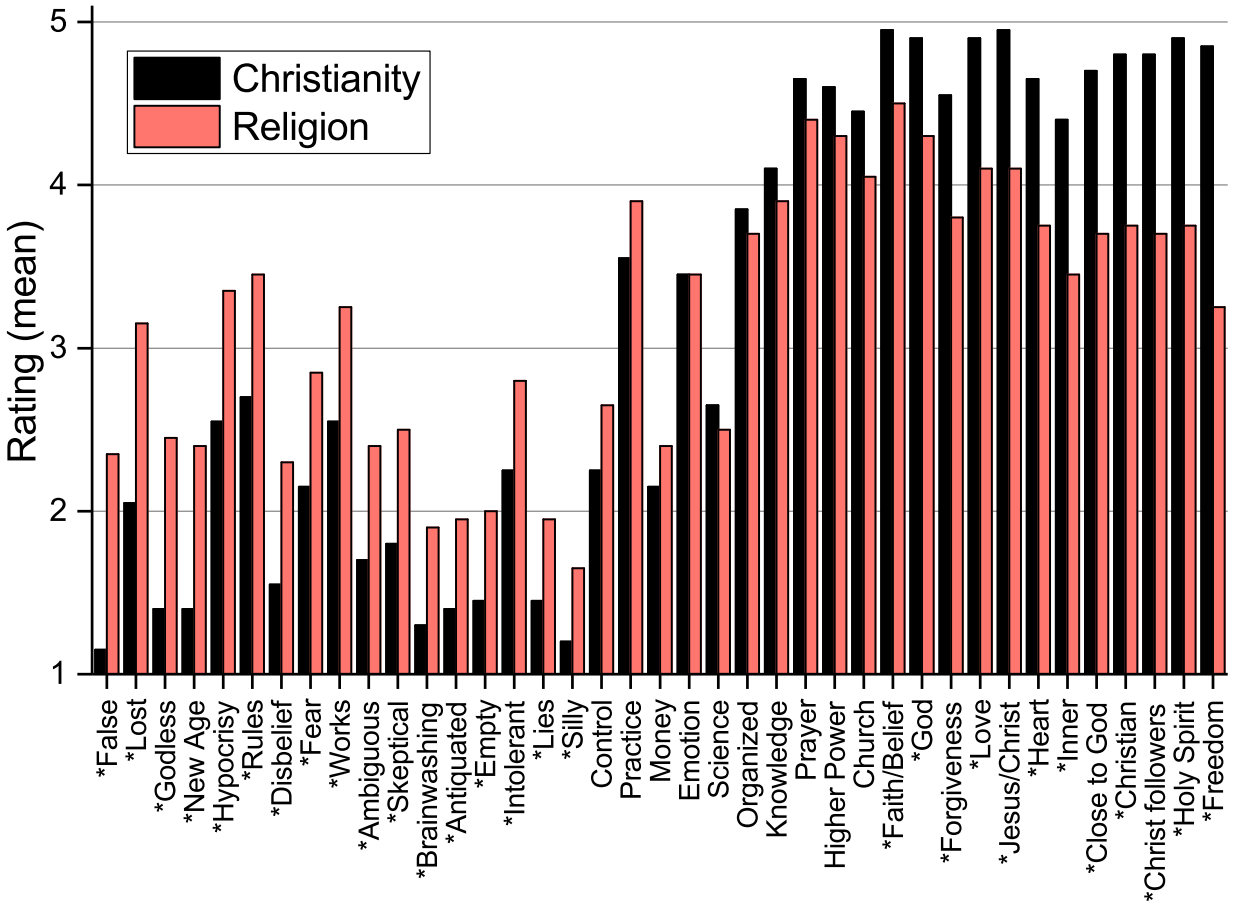

Figure 2: Evangelicals' mean ratings of words describing "Christianity" and "religion." * $p < 0.05$ (two-tailed), from t-test on difference between "Christianity" and "religion."

(right side of the graph). Conversely, they rated many potentially negative words as applying more to religion than Christianity (left side of the graph).

This trend resulted in several interesting points of agreement between the atheists and evangelicals: both groups tended to agree that a number of potentially negative words were related to religion either "moderately" (3) or "quite a bit" (4).[14] These words included "control," "fear," "hypocrisy," "intolerant," "lost," and "rules." Evangelicals also associated religion at the "quite a bit" level with "works." Works in the evangelical community is a pejorative term referring to the (for evangelicals) theologically deviant practice of believing salvation can be earned through one's actions instead of it being an undeserved gift from Jesus Christ (Long 2007). With the exception of "control," all of these potentially negative words were rated by the evangelical respondents as applying more to religion than to Christianity.[15] This means that although the evangelicals saw their primary outgroup of atheists as generally more negative than themselves, they also applied some of these same negative terms to what appears to be a secondary outgroup, namely religion itself.

This separation of Christianity from religion can also be seen in the difference between the two ratings evangelicals applied to "false" (located on the far left of Figure 2), which received the lowest rating of any word when applied to Christianity. While virtually no evangelicals rated false as applying to Christianity to any degree, the mean of false applied to religion suggests that some respondents believed that false applied, at least somewhat, to religion. Examining this difference more closely, the idea of religion being to some extent false is spread out over a large portion, although not all, of evangelical respondents. Figure 3 shows the distribution of the number of evangelical respondents rating false as applying to Christianity and religion at each of the five response levels. The black bar corresponds to Christianity while the red bar represents religion. While by far the majority of respondents (18/20) said that false applies to Christianity "not at all," only 4/20 said the same thing when false was applied to religion. Although no evangelical respondents agreed that religion was "extremely" false, four did report that it was "quite a bit" false and another three called it "moderately" false.

One possible explanation for this difference is that the term religion in this exercise may have been understood to be more general than Christianity in that it also includes "false," non-Christian belief systems as well (e.g., Islam). While this may contribute to the differences seen in ratings, ethnographic fieldwork and interviews suggest that something more is at work. "Religion" at this church was frequently associated with Christianity but usually in a very negative way. It was common for people to critique as "religious" Christian practices that were deemed incorrect. Calling something religious meant that it was considered to be closer to simple rule following, i.e., works, than to building a proper relationship with Jesus Christ. As one woman explained in an in-depth interview conducted several months before these field experiments, "I almost hate the word *religion*. I love the word relationship, because to me, that relationship is with God. I just hate the organized structured aspect that goes along with so many things that fall under that word 'religion' in general." Several people even went so far as to say that *Christianity is not a religion*. As one participant in the field experiments phrased it before equating religion with "works," "there's definitely a distinction between practicing religion and our beliefs in Christianity."

Often, these same individuals critical of "religion" would refer to themselves as "Christ-followers." This term was used by some in addition to more common labels such as "Christian," "Baptist," or "evangelical," while others claimed the identity of Christ-follower instead of traditional labels. One member of the adult Sunday school explained, "I think there are probably a lot of people that would say they're Christian, *that's their religion*, and I think Christ-follower is probably more descriptive of who I am and what I'm trying to be." This identity of Christ-following and the accompanying discourse on the differences between religion and Christianity surfaced in everyday conversations between church members, in sermons, and in most of the in-depth interviews that preceded the field experiments. It seems likely that it was this stated difference between Christianity and religion that was most reflected in the evangelicals' word ratings, thus helping to explain why many evangelicals rated words like they did.

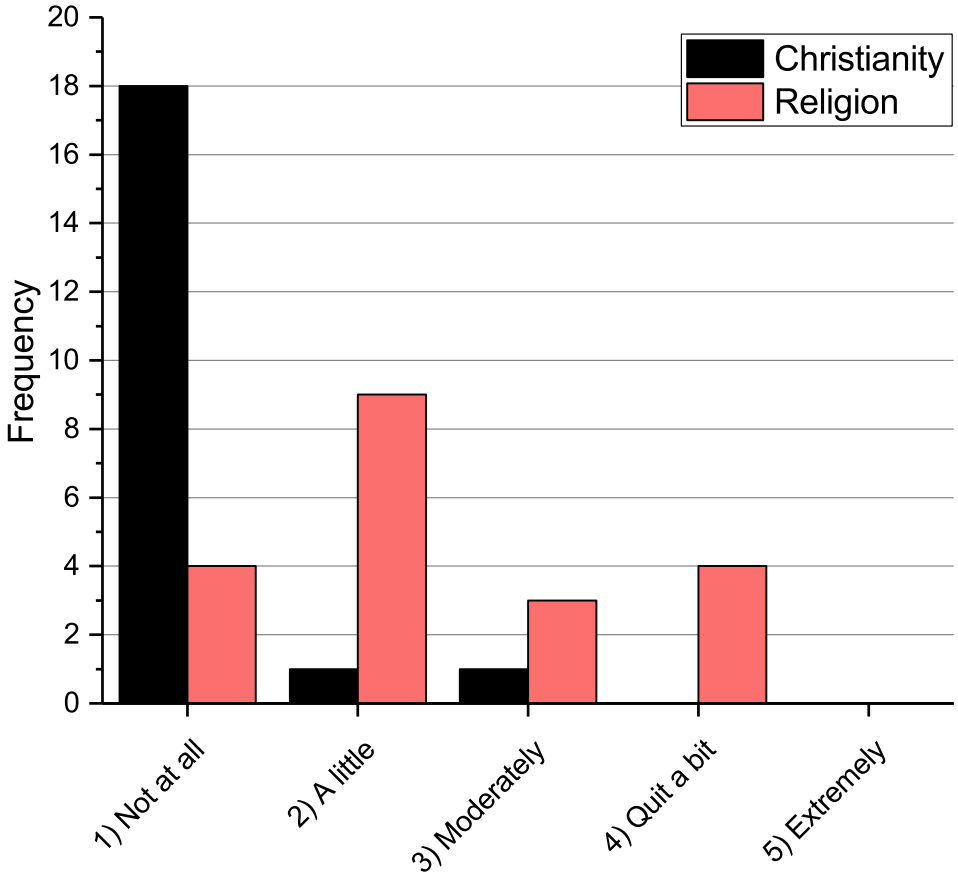

Figure 3: Evangelical distribution of "false" applied to Christianity and religion. N = 20.

To summarize, the word ratings demonstrate some of the ways in which atheists and evangelicals view each other, and their corresponding categories, as different. Ingroups were associated with freedom and knowledge, while outgroups were associated with a variety of mainly negative words. Furthermore, the evangelicals also differentiated within their own ingroup between Christianity, which was viewed extremely positively, and religion, which was associated to various degrees with some negative traits. Both of these findings will be used in combination with the amount of time it took respondents to answer these questions to explore issues of dual-process cognition in the following section.

Results: Measuring System 1 and System 2 Processing

Besides data on the numerical ratings that respondents gave the 156 word parings, data were also collected on the time it took the respondents to make a selection in each case. This allows judgments to be made as to what processing systems

respondents used when they made their decisions, in a way similar to the many versions of the widely used Implicit Association Test (IAT) (Greenwald et al. 2009; Greenwald, McGhee, and Schwarz 1998). As previously discussed, the faster a response is made, the more one is able to infer that System 1 processing has been used with minimal input from System 2 processing.[16] Judgments that correspond to a respondent's worldview (i.e., easier judgments) should rely mainly on System 1 processing and be made relatively quickly, while more difficult judgments relying on both System 1 and System 2 are expected to take longer to make.

One way to estimate the difficulty in making a particular judgment is to look at the interaction between a respondent's decision regarding whether or not a word applies to a target and whether or not the word being rated has a positive connotation for that person. For example, if the target word in a word rating experiment were "puppies" (a positive word), we would expect that it would take most people some System 2 processing to associate "disgusting" (a negative word) with puppies in a word experiment and override puppies' initial cuteness factor that causes them to generally be seen as positive. Thus, if we designed such a "puppy experiment," we would expect to find that it would take people longer to rate "disgusting" as being associated with even ugly puppies than a more positive word, such as "cute." Thus, response latency in combination with a given situation (applicability and positivity) potentially provide measurable insight into basic cognitive processes.

Following this reasoning creates two expectations concerning the data set generated from atheists and evangelicals. First, if different processing systems come into play at different times, one would expect systematic variation in response latencies. This variation would be dependent on group membership and the situation itself—in this case, the word paring being rated. For example, consider an atheist who was asked to rate the degree to which a positive word describes "religion." If she responded that the positive word did, in fact, describe religion, we would expect this response to be slower than if the positive word were paired with "atheism." This is because her automatic reaction (System 1) as an atheist is to associate religion with being negative. To override this initial judgment, further System 2 processing is necessary and is associated with a longer response time. Conversely, if a negative word were paired with "atheism," one would expect a decision by the same respondent agreeing that the word described atheism to also be made more slowly, as she would have to override the initial judgment of atheism being seen as positive.

Second, one would expect the evangelicals' negative attitude towards religion to be reflected in response times on pairings in which religion was the target. Remember that many of the evangelicals rated religion as being at least somewhat negative, as was seen in Figure 3, in which four-fifths of respondents referred to religion as being at least somewhat false. If this negative attitude towards religion has become an entrenched part of the evangelicals' habitus, then we would expect the response latencies when religion is the target to be more similar to those where atheism is the target than to those targeting Christianity (i.e., faster than average when rating negative words). However, if the move to differentiate between religion and Christianity is more deliberately made, then the response

latencies when religion is the target might look more like those of Christianity (i.e., faster than average when rating positive words), as this would reflect an ingrained notion that religion is a positive entity.

To test these possibilities, the timing data on all response items was pooled for analysis. Data generated from response times usually has a pronounced skew (latencies have a lower limit but no upper one), so the timing data was transformed by taking its natural logarithm. It is also common for respondents in timed experiments to occasionally become distracted at some point while completing the exercise, leading to some response latencies being much longer than they would otherwise be (Fazio 1990). Two such cases were removed from the data because I observed the respondent respond to a distraction (e.g., answering a phone call) while answering a particular item. Other times, however, respondents may have become distracted when I could not identify them as such, and respondents sometimes became visibly distracted when I could not see the screen to know which item they were working on. There are no standard methods for dealing with such cases. Often, arbitrary points are defined beyond which outlying data is either removed or converted to a maximum. I ran the models below both with and without such transformations. In particular, I tried removing observations of all times over 20 seconds, 10 seconds, 4 standard deviations from a respondent's mean, and 3 standard deviations from a respondent's mean, as well as converting observed response times above these points to a maximum, among others. The most drastic of these measures eliminated over one-sixth of the available cases. While all of these methods resulted in slightly different coefficients on the models below, none of them changed the substantive interpretation or judgments of statistical significance. Because of this robustness, and as any solution for dealing with outliers is an arbitrary choice made by the researcher, I decided to report the unmodified results.

Table 2 shows basic descriptive statistics for the response latencies in seconds, broken down by group and target. Generally, evangelicals took longer than atheists to answer in all categories and had had greater standard deviations. However, much of this variation is due to one evangelical respondent who took much longer than most others on nearly all questions. Once this respondent is removed from the data set, the two groups' response latencies are closer together, although still significantly different from one another (t-tests, $p < 0.05$, two-tailed), with evangelicals taking longer to answer. The models below were run both with and without including this respondent, with no difference in substantive interpretation or judgments of statistical significance. Because of this, and following the logic used for outliers on individual responses, the outlying respondent is included in all models reported.

In order to investigate the relationships between group membership and a given word pairing, I created a set of proxy variables for whether or not a respondent was likely to view a particular word as positive or negative. Because the overall word list contains several words, such as "Jesus," that one group is likely to view as a positive word (i.e., evangelicals) but the other group is likely to view as a negative word (i.e., atheists), two separate groups of positively codings were needed, one for each group. Ideally, one would have actual positively rating data from atheists and evangelicals on all 39 words in the exercise, but that was not available in this study. To approximate such a rating for each group, a word was considered more positive

Table 2: Descriptive statistics for response latencies in seconds (all respondents included).

	Mean Time	Standard Deviation	Minimum	Maximum
Atheists				
All Categories	3.77	4.44	0.20	66.71
Atheism	3.36	3.43	0.87	53.86
Christianity	3.38	5.31	0.86	66.71
Religion	4.60	3.93	1.14	31.74
Spirituality	3.73	4.46	0.20	64.55
Evangelicals				
All Categories	4.36	5.31	0.37	105.74
Atheism	4.43	5.15	0.37	82.13
Christianity	3.30	4.16	0.84	58.69
Religion	5.50	5.41	0.57	46.55
Spirituality	4.20	6.10	0.86	105.74

the more it applied to the ingroup. This was represented by creating a variable for each word that was simply the mean rating given to it by the respective group when they were rating their own target (i.e., atheists rating atheism; evangelicals rating Christianity). Thus, the most positive word for atheists was "skeptical" (mean rating of 4.5 when applied to atheism) and the most negative words were tied among "Christ followers," "close to God," "God," "Holy Spirit," and "silly" (mean ratings of 1 when applied to atheism). For evangelicals, the most positive words were "Jesus," and "faith" (mean ratings of 4.95 when applied to Christianity), while the most negative word was "false" (mean rating of 1.14 when applied to Christianity). The complete coding of the resulting positivity variables can be found in Appendix B of the online supplement.

Using these positivity variables, I built separate fixed-effect ordinary least squares (OLS) models for each group that were mean centered for each respondent:

$$D_{i_p} = \alpha + \beta_1 applicability_{i_p} + \beta_2 positivity_g + \beta_3 applicability_{i_p} \times positivity_g + \epsilon$$

in which D_{i_p} is the mean centered variable, equivalent to fixed effects, created by taking the difference between the natural logarithm of the time it took for a respondent i to answer word pairing p and the mean of natural logarithms of the response latency for respondent i across all 156 word pairings; $applicability_{i_p}$ is the rating a respondent gave to answer the degree to which a particular word describes the target: (1) not at all, (2) a little, (3) moderately, (4) quite a bit, or (5) extremely; $positivity_g$ is the positivity score for the word being rated based on the respondent's group membership, as described above; $applicability_{i_p} \times positivity_g$ is the product term for applicability and positivity; α is the intercept; and ϵ is an error term. Table 3 shows the regression estimates for atheists, while Table 4 shows the regression estimates for evangelicals. Each table displays separate models for the four targets of religion, atheism, Christianity, and spirituality. The "positivity" variable in each model corresponds to that group's measure for how positive a given word is.

Table 3: Atheists: OLS regression estimates of difference of natural log of response time to natural log of average response time.

	(1) Religion	(2) Atheism	(3) Christianity	(4) Spirituality
Intercept	0.953†	−1.007†	0.583†	−0.034
	(0.103)	(0.080)	(0.122)	(0.084)
Applicability	−0.243†	0.456†	−0.234†	−0.004
	(0.037)	(0.043)	(0.034)	(0.034)
Positivity	−0.156†	0.429†	−0.212†	0.019
	(0.037)	(0.048)	(0.042)	(0.037)
Applicability × Positivity	0.069†	−0.153†	0.084†	0.001
	(0.014)	(0.014)	(0.017)	(0.016)
R^2	0.121	0.164	0.066	0.002

† $p < 0.01$

Notes: The dependent variable in each model is specified under the model number. Unstandardized coefficients. N = 780 for all models. Standard errors in parentheses.

The pattern that emerges is striking. With the exception of atheists rating "spirituality," all of the interaction terms in all models are statistically significant. The direction of these interaction terms represent the effect on response latency as words are rated as applying more to their target and are considered to be more positive. Positive coefficients mean that it took respondents longer than their average to answer on an item, while negative coefficients mean that respondents answered faster than their average response latency. We see in Table 3 that the combination of rating and positivity predicts the atheists to be slower than their average answering positively in models 1 and 3 (religion and Christianity targets) yet faster than their average in model 2 (atheism target). This suggests that the atheists are relying on more System 1 than System 2 processing when they rate a positive word as applying to atheism and the reverse with religion and Christianity. Model 4 (spirituality target) does not lead to any significant results, most likely because the concept of "spirituality" is an extremely fuzzy term in general society (Ammerman 2013) and which therefore varied in meaning greatly among the atheists respondents.

Among evangelicals, as seen in Table 4, the pattern for religion, atheism, and Christianity is reversed. In model 3, in which Christianity is the target, as a word is rated as more applicable to Christianity, and as it is more positive, the answer is faster. This indicates that System 1 processing is likely being used with relatively little input from System 2 processing. Interestingly, this pattern also holds in model 1 when religion is the target as well, suggesting that although it is common in the evangelical community to see Christianity as good and religion as bad, this distinction is not engrained in the habitus to the same extent that, for example, an atheists' rejection of religion is. Instead, model 1 for evangelicals looks much like model 3. Meanwhile, the coefficients are also statistically significant in model 4 (spirituality), unlike for the atheists. The interaction term in model 4 is again

Table 4: Evangelicals: OLS regression estimates of difference of natural log of response time to natural log of average response time.

	(1) Religion	(2) Atheism	(3) Christianity	(4) Spirituality
Intercept	0.081	$0.848^{\dagger}$	$-0.845^{\dagger}$	$-0.525^{\dagger}$
	(0.122)	(0.116)	(0.118)	(0.113)
Applicability	0.110^{*}	$-0.202^{\dagger}$	$0.242^{\dagger}$	$0.190^{\dagger}$
	(0.043)	(0.034)	(0.044)	(0.043)
Positivity	$0.188^{\dagger}$	$-0.230^{\dagger}$	$0.316^{\dagger}$	$0.258^{\dagger}$
	(0.041)	(0.030)	(0.058)	(0.043)
Applicability × Positivity	$-0.069^{\dagger}$	$0.063^{\dagger}$	$-0.097^{\dagger}$	$-0.084^{\dagger}$
	(0.012)	(0.010)	(0.014)	(0.012)
R^2	0.117	0.075	0.080	0.094

† $p < 0.01$ (two-tailed); $*$ $p < 0.05$ (two-tailed).
Notes: The dependent variable in each model is specified under the model number. Unstandardized coefficients. N = 780 for all models. Standard errors in parentheses.

negative, just like the interaction terms in model 3 (Christianity) and model 1 (religion). This is likely because "spirituality," for evangelicals, was probably understood as referring to Christian spirituality, in particular, and not as the fuzzy way spirituality is often understood in the general population. This interpretation is consistent with the way words like "spiritual" and "spirituality" were used by people at the church during the participant observation phase of the project.

The patterns shown in the tables can be more easily seen when represented graphically. Figure 4 shows atheists' predicted response time in seconds when rating the degree to which a word describes religion.[17] The x axis represents the degree that a respondent said a word describes "religion" (applicability), and the y axis represents the degree to which the word being rated is positive or negative (positivity). Darker areas in the graph represent longer predicted response times and lighter areas represent faster response times. The bottom right corner of the graph is white, illustrating that when atheists rate words as applying to religion, the more negative the word, the faster respondents answered. The lower left corner is black, illustrating the opposite: the less a negative word applies to religion, the longer it took respondents to answer.

Figure 5 shows the same situation but for the evangelical respondents: namely, the evangelicals' predicted response time in seconds when rating the degree to which a word describes religion. Here, the upper right corner is white, indicating that the more a positive word applied to religion, the faster the respondents answered. The upper left corner is black, indicating that as a positive word was not applied to religion, it took respondents longer to answer.

In summary, the timing data reveals that there were differences on identical questions, based on group membership, in when fast and slow processing was used. People relied more on System 1 processing when saying positive words applied to their ingroup but needed additional System 2 processing to rate positive

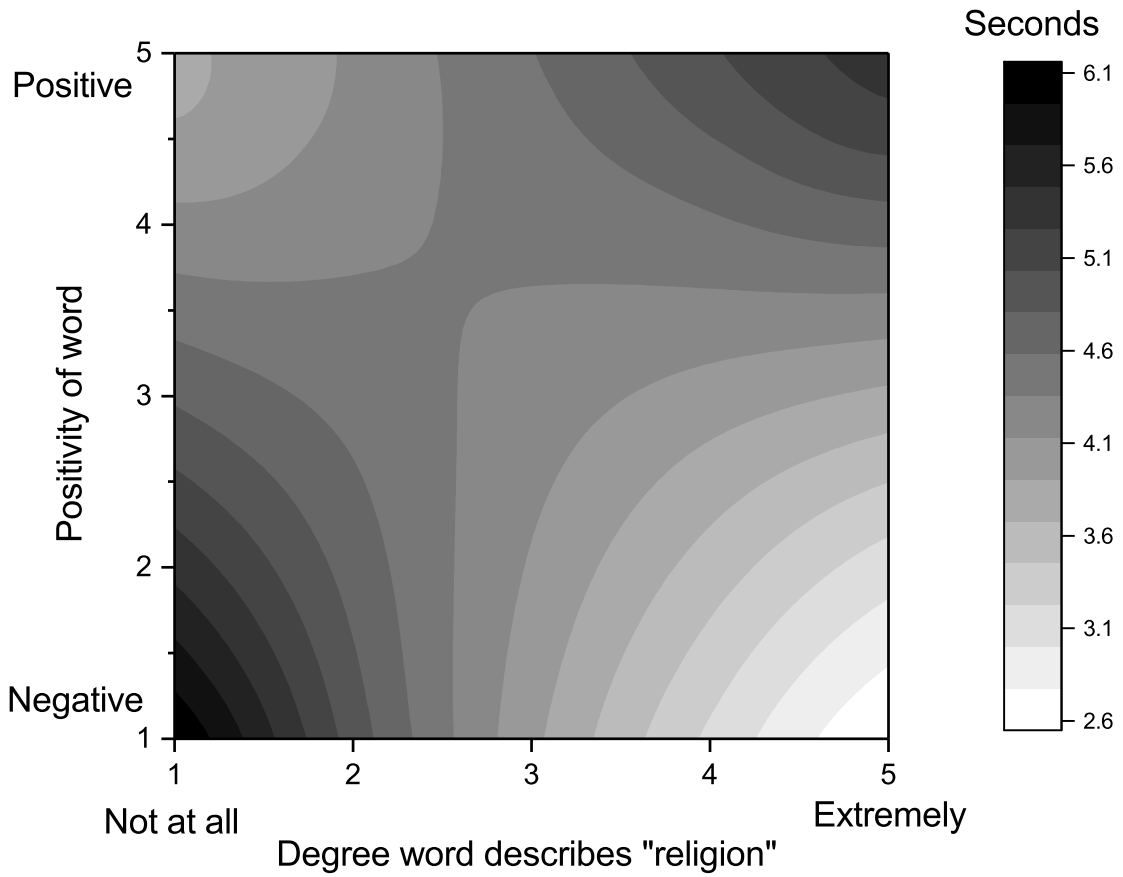

Figure 4: Raters: atheists; target: religion; predicted response latency (seconds).

words as applying to their outgroup. Interestingly, the evangelicals' timing pattern for words applied to religion was similar to the pattern seen in words applied to Christianity, despite differences in the actual ratings given and attitudes expressed during interviews and witnessed during participant observation. This suggests that the Christ-followers' discourse on religion being harmful and different from true Christianity may not be as ingrained into their habitus as the basic idea that religion is good, which they likely have learned since childhood.

Conclusions

Until now, sociologists who have engaged with dual-process theories of cognition have primarily done so on a theoretical level, sidestepping most empirical questions of what processing engages when. As the original psychological literature shows, the interaction between System 1 and System 2 processing is not as simple as the distinction between answering a closed survey question and an open-ended in-

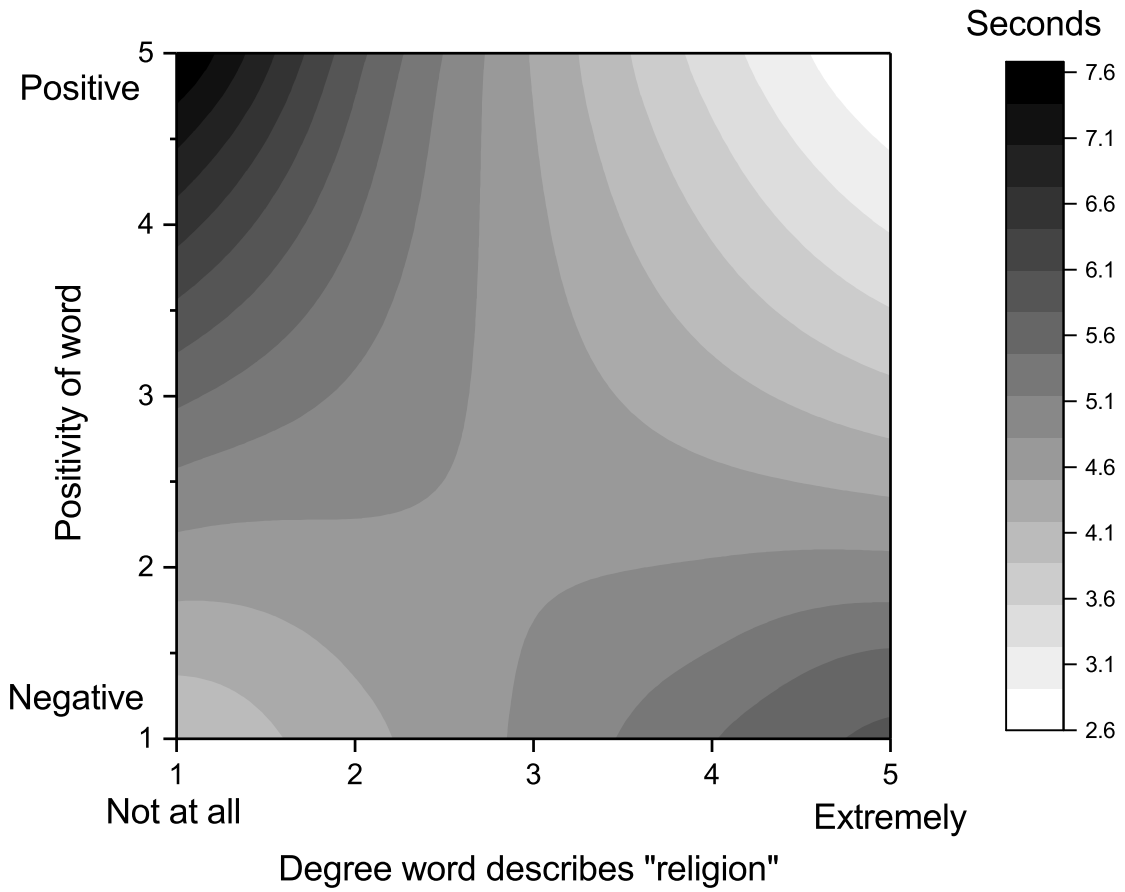

Figure 5: Raters: evangelicals; target: religion; predicted response latency (seconds).

depth interview probe. One way that differences in processing can be observed, however, is by measuring response time. Measuring response time gives us real indications of which processes were likely involved in a decision; faster latencies indicate System 1 processing without much System 2 involvement, while slower latencies indicate some combination of System 1 and System 2 processing. This interpretation of the meaning of response latencies is supported by cognitive science and should hold under both the parallel and default interventionist models of dual-process theory.

Importantly, measuring response latencies can lead to widely different findings than one would obtain by simply assuming that closed questions reveal the System 1 process at work. Without the timing data, it would have been easy to have incorrectly concluded that *all of the responses* to the 156 ratings that each individual completed reflected System 1 processing and that this System 1 processing drove people's actions. That would have in turn indicated that the evangelical respondents' tendency to talk about religion as negative—observed during participant observation, recorded during in-depth interviews, and seen in the survey-like task

ratings—was deeply ingrained in the identity of these Christians and likely driving their moral choices. However, when the response latencies in answering these questions are examined, we find that this is not necessarily the case. While the evangelical respondents in this study often talked about religion in negative terms, their reaction times when answering questions about it appear to show that it took more cognitive effort, and System 2 processing, for them to do so. This fact suggests that the settings in which religion is talked about as being negative are much more nuanced and complex than the either/or approach would have indicated.

These findings further imply that measuring aspects of cognition is a useful and viable tool in sociological research. Such measurements can be used to help untangle complex expressions of cultural identities, such as those involved with religion, but also in other areas like race, gender, sexuality, et cetera. In the words of Shepherd (2011), "Cognitive associations are as much a part of understanding culture as are self-reported attitudes. These associations, and the situations in which they are activated, are a basic feature of meaning" (p. 139). If sociologists take seriously the idea that identities are multifaceted and context specific, it is necessary to look at the ways that different aspects of people's identity are expressed in daily life. Examining the relationship between identity and cognition is one step in this direction, especially as it is not possible, even during participant observation, to be ever-present to observe all situations when certain identities are most salient. Yet, we can make inferences about the situations when identities associated with System 1 and System 2 processing might be more likely to come to the fore. Namely, "easy" situations likely draw mainly on System 1 processing, while more difficult situations most likely require the use of both System 1 and System 2 processing. Hypotheses based on these assumptions can then be tested using timed response data. Exploring the resulting difference can help researchers understand expressions of complex identities, such as evangelicals who identified as Christ-followers' expressed dislike of religion under certain circumstances.

This must not be misinterpreted to mean that cognitive research reveals people's "true" identity, while other methods, such as standard self-reports, in-depth interviews, and ethnography, do not. The fact that the evangelical Christians in this study appeared to require the use of slower cognition to disassociate positive words from religion, for example, does not mean that their talk of religion being negative was false or disingenuous. Differentiating Christ-following from religion is a very real and important expression of identity, as well as a rhetorical move, for the individuals who adopt the term. Yet, "religion" has a different meaning in everyday conversation that clearly includes the Christ-followers as religious. In this quotidian version of the term, religion also has a generally positive connotation in American society, and the Christ-followers have been exposed to it throughout their entire lives. Such dispositions learned over the life course are difficult to entirely escape—and it takes cognitive effort to do so—much in the same way that the IAT has demonstrated lingering latent racial bias in certain aspects of the cultural environment (Shepherd 2011). These latent dispositions can continue to influence people, even those who have explicitly stated opinions at odds with them. But the Christ-followers appear to want to do the work necessary to overcome these initial associations because it fits with the model of who they are striving to be—namely,

biblically based Christians who are focused on Jesus. The information about which aspects of identity are associated with System 1 and System 2 processing simply help us to better understand, in conjunction with more traditional qualitative and quantitative methodologies, the interplay between different aspects of identity, specific interactions, and the cultural environment in which these identities are expressed.

Notes

1 See Lizardo et al. (2016) for a broad review of several dual-process theories from cognitive and social psychology that are especially relevant for the sociological study of culture.

2 See Haidt (2001) for possible exceptions under this model that may cause decision making to be made using System 2 processing.

3 That Vaisey (2009) makes this point is significant; the article has become one of the most well-known sociological pieces addressing dual-process cognition and is thus uniquely poised to shape other sociologists' understanding of dual-process theory (Lizardo et al. 2016; Pugh 2013). One measure of its reach is that it has already been cited over 200 times by entries in ProQuest's Sociological Abstract database.

4 There is a possibility that this does not reflect a model per se but rather a discourse that, for rhetorical purposes, oversimplifies some important points of dual-process theories originating in psychology. Others have, however, noted that the theory as expressed by this discourse has an either/or character to it (Leschziner and Green 2013).

5 It is possible to design specialized survey questions that use variations in cognitive load to separate decisions made between System 1 and System 2 processing (Lizardo et al. 2016; Miles 2015). Standard survey instruments, however, cannot do this.

6 In this article, "evangelical" denotes theologically conservative Christians who focus on the Bible as supreme authority, actively pursue an ongoing relationship with Jesus Christ, believe in salvation only through Christ's sacrifice on the cross, make an effort to convince others of their perspective, and often have had some kind of personal conversion experience (see Balmer 1989; Bebbington 1989; Larsen 2007; Lindsay 2007).

7 An evangelical "small group" is group of people who meet regularly to help each other along their faith journeys.

8 The exact wording of the questions were "What words best describe *x*? Please list as many as you can," in which *x* was the term of interest for the particular question (religion, atheism, spirituality, or Christianity).

9 For example, in the raw atheist combined free list for words describing "religion," 18 people listed "control," eight listed "controlling," another eight wrote "manipulative," one listed "crowd control," and one person wrote "power over others." As all of these descriptors appear to be describing a single concept, all of the words were recoded as "control" for purposes of analysis. The complete record of this recoding is available from the author upon request.

10 The only exception to this procedure was "emotion," which replaced the free list word "woo." Pretesting the word rating exercise reveled that many respondents were confused by "woo," which is used in some atheist and skeptic communities to refer to pseudoscientific explanations. As there is often an emotional component to "woo," "emotion" was used as a substitute.

11 A screenshot of the interface can be found in Appendix A of the online supplement.

12 This translates to a rating of $\geq$3 when mean scores are rounded to the nearest whole number.

13 As seen in Figure 1, both groups agreed that "knowledge" applied to atheism. Evangelicals, however, rated "knowledge" as applying more to Christianity (mean = 4.1) than to atheism (mean = 3.2). This difference is statistically significant at $p < 0.001$ (t-tests, two-tailed).

14 This applies when mean scores are rounded to the nearest whole number.

15 Significance tested using t-tests. $p < 0.05$ (two-tailed).

16 It is of course true that, after System 1 processing, a response can be slow for reasons unrelated to processing (perhaps a temporary distraction, a misalignment of hand and computer, etc.). However, because one would expect these distortions to be unrelated to the content of a word pairing, stimuli that, on average, lead to longer processing times likely do so because they tend to invoke System 2 processes to replace or supervene System 1 processes.

17 Figures 4 and 5 are based on basic OLS models predicting the natural logarithm of response latency when "religion" is the target. Non-fixed effects models were used as the basis of these figures because the transformation of the dependent variable required to estimate fixed effects prevents conversion back to seconds. The results of these models mirror those of the fixed effects models and can be found in Appendix C of the online supplement.

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Acknowledgements: I would like to thank John Levi Martin, Terry McDonnell, Gabe Ignatow, and the editors of *Sociological Science* for their helpful comments on earlier drafts of this article. This research was supported by the National Science Foundation (Award number SES-1333672).

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