The Influence of Scientific and Religious Belief On Coping With Moral Uncertainty

Jonathan Teters

Drew University

Abstract

Research has shown that individuals often subscribe to an explanatory belief system to make sense of the world around them. Although the most well-studied explanatory belief system has been religion, for some people, a commitment to science serves some of the same functions as religion such as increasing well-being, reducing anxiety, and providing guidelines for making moral judgments of others. The goal of this study was to determine if belief in science sometimes serves as a functional equivalent to religion in terms of allowing an individual to evaluate the morality of their own actions. If science serves a role similar to religion in terms of providing moral guidance, individuals with a moralized belief in science should feel shame and guilt over moral transgressions when their beliefs are made salient (an effect that has been observed among religious individuals whose beliefs are salient).

This study took was conducted in two waves. In wave 1, participants completed the Santa Clara Strength of Religious Faith Questionnaire, the Moralized Religiosity scale, the Belief in Science scale and the Moralized Rationality Scale in order to assess the strength of their beliefs in religion and science, and how strongly they moralized these beliefs. In wave 2, participants completed a sentence-unscrambling task in either a control condition, a condition with science priming words, or a condition with religious priming words. Participants were then asked to reflect and write about a situation in their past in which they were unsure about the morality of their actions. Finally, participants completed a shortened version of the State Trait Anxiety Inventory and answered questions to assess their state guilt.

The results of the study indicated that religious individuals tended to be less anxious, and individuals high in scientific belief tended to report higher levels of guilt. Contrary to predictions, religious individuals who were exposed to religious primes tended to feel lower levels of guilt. Religious individuals also reported lower levels of anxiety when exposed to scientific primes. These findings indicate that religion and belief in science do not appear to serve equivalent roles as belief systems. Making scientific beliefs salient had no effect on guilt or anxiety in those who moralize scientific belief, but making religious belief salient decreased guilt in religious individuals. The implications of these findings are discussed in detail.

Table of Contents

The Influence of Scientific and Religious Belief on Coping with Moral Uncertainty…....1

Religion……3

Religion as an Explanatory System……..……..3

The Influence of Religion on Well-Being and Moral Identity……..……..6

Science as a Functional Equivalent to Religion……...…..10

Science as an Explanatory System……...….10

The Effects of Scientism and Related Beliefs on Well-Being and Moral Identity…....13

The Current Study……..16

Method…….……..18

Participants……18

Procedure…….….19

Time 1……19

Time 2……19

Time 1 Measures……...20

Santa Clara Strength of Religious Faith Questionnaire…….20

Moralized Religiosity Scale……...21

Belief In Science Scale……..21

Moralized Rationality Scale……..22

Time 2 Measures……...23

State-Trait Anxiety Inventory……...23

State Guilt Questions……23

Results……24

Correlations……..…24

Hypothesis Testing……...25

Analysis Strategy…….25

Guilt…….26

Anxiety…….26

Discussion..……....27

Theoretical Implications for Religion……...29

Theoretical Implications for Scientific Belief……...32

Limitations and Future Directions……...…33

Conclusion……...…37

References……..39

Tables…….....51

Appendices…….56

The Influence of Scientific and Religious Belief In Coping With Moral Uncertainty

People naturally attempt to interpret and make sense of the world around them (Hassin, Bargh & Uleman, 2002; Weiner, 1985). One way that many people do this is by subscribing to an explanatory system, or a system of beliefs that explains the world and, therefore, imbues it with meaning. Among explanatory systems, religion is one of the most influential the world over (Abdel-Kalek & Lester, 2010; Kimhi & Kasher, 2015; Riggio, Uhalt & Matthies, 2014; Winchester, 2008). Over half of Americans say that religion is important in their life (Pew Research Center, 2015a). Nonetheless, religious affiliation has been steadily declining in many Western countries (Office of National Statistics, 2012; Pew Research Center, 2015a). Despite its explanatory power, religion is declining in its popularity and prominence.

While some believe that individuals may begin returning to church out of a need to provide meaning to their life and reinforce the idea that there is life after death (Bibby, 2002), recent studies have found that other explanatory systems may be able to provide guidance and meaning in lieu of religion. Belief in human progress, for example, can provide individuals with a sense of control when they are feeling a lack of it (Rutjens, van Harreveld & van der Pligt, 2010) and is capable of relieving anxiety about death (Rutjens, van Harreveld & van der Pligt, 2010). Other explanatory systems may also be able to provide an alternate set of moral guidelines. Groups such as the "New Atheists," a group that strongly rejects and refuses to tolerate religion in favor of dogmatic belief in science, advocate the idea that morality does not lie solely with religion (Fetterson & Robinson, 2015). Likewise, other strongly held beliefs such as a belief in the value of

rationality, may guide a person's judgments about morality (Stahl, Zaal & Skitka, 2016) in the same way that religion does (Public Religion Research Institute, 2013). In sum, the decline of religion as the preferred explanatory system may lead to other explanatory systems being adopted in its place.

Many non-religious explanatory beliefs center around science and the scientific method, including belief in the value of rationality (Stahl, Zaal & Skitka, 2016), belief in human progress (Rutjens, van Harreveld & van der Pligt, 2010) and belief in technological progress (Stavrova, Ehlebracht & Fetchenhauer, 2016). Because of its ability to explain life on a fundamental level, science has strong explanatory power (Preston & Epley, 2009), and therefore may have the potential to serve as a belief system on par with religion. It is therefore unsurprising that, like religion, those who have a strong belief in science have their own culture and values (Lessl, 2007) and experience numerous psychological benefits that are comparable to those imparted by religion (Alavi, 2007; Farias, Newheiser, Kahane & Toledo, 2013). Furthermore, like religion, belief in science can increase subjective well-being (Aghababei, Sohrabi, Eskandari, Borjali, Farrokhi & Chen, 2016) and help form moral judgments (Ma-Kellams & Blascovich, 2013). Nonetheless, previous research has not explored whether belief in science affects moral self-evaluations as strongly as does religion. Because religion acts as such a strong moral guide, religious individuals feel negative emotions when they do something immoral or have immoral thoughts (Christensen et al., 2014; Inozu, Karanci, and Clark, 2012; Szekely, Opre and Miu, 2015). If belief in science is an explanatory system on par with religion, it should be able to elicit these same strong negative

emotions when it is salient among those committed to science. The purpose of this study is to test whether a belief in scientific rationality can serve as an explanatory system equivalent to religion –specifically in terms of eliciting strong negative emotions in the face of an individual's own moral transgressions. As I will discuss below, there are a number of reasons to believe that science may sometimes function similarly to religion when people are faced with moral challenges. Before turning to the details of the study, I first discuss religion and science as explanatory systems.

Religion

Religion may serve many purposes in the life of an individual. One of its most powerful functions is to provide a framework through which to look at the world (McIntosh, 1995). Sharing in this powerful explanatory belief system also serves as a way of bringing people together and forming tightly knit communities (Ruback and Singh, 2007). Furthermore, by providing meaning to an individual's life and creating social opportunities, religion can help individuals make moral judgments (Schieman, 2011) and can have various downstream psychological effects (Abdel-Khalek & Singh, 2014). While many of these psychological effects are positive, many are also negative, and feelings of guilt, shame and anxiety often arise from organized religion's stricter moral standards (Christensen et al., 2014; Cohen, 2014; Inozu, Karanci, and Clark, 2012).

Religion as an Explanatory System

Researchers have defined religion in various ways, and there is not a common consensus on how to properly define the term, especially since religion is often used interchangeably with similar dimensions such as spirituality (Paloutzian & Park, 2014);

however, one of the most important roles of religion is its role as an explanatory system. People naturally search for causal explanations for the unexplained (Hassin, Bargh & Uleman, 2002; Weiner, 1985), and prefer to look for simple, clear explanations (Lombrozo, 2007) that can provide a few causes for a broad range of phenomena (Preston & Epley, 2005). Religion provides clear explanations and beliefs about existence, creation and what happens after death (Preston & Epley, 2005), allowing for its followers to understand and react to the world around them with increased purpose and confidence. Therefore, religion can provide meaning (Pargament, 1997) and serve as a functional schema that allows individuals to organize incoming information about the world and its processes (McIntosh, 1995).

Being an explanatory system that provides meaning and purpose means that religion often is very focused around specific values and norms, not all of which are directly related to the "sacred" aspects of the religion. Religion is often defined as the aspects of faith that are more institutional and related to practicing and abiding by tradition (Byrne, 1999; Paloutzian & Park, 2014) in contrast to spirituality, which usually refers more broadly to the experience, thinking and feeling of searching for the "sacred" without any strong implications of social or institutional norms (Hill et al., 2000). Although both spirituality and religiosity concern searching and revering sacred or divine beings, objects, or truths, religion additionally has "non-sacred" goals. Specifically, religion may include goals such as belonging to a group or providing one's life with meaning, and religion may also include means to achieve those goals such as rules and

rituals (Hill et al., 2000). In other words, religion is distinct from spirituality due to its norms, rules, and methods.

Religions incorporate into their structure a number of common values, practices and traditions. Members of religious groups tend to value faith and obedience to God (Furnham & Proctor, 1989), and values of forgiveness and kindness to others are often seen as important as well (Cohen, 2014). Religious individuals are also more likely to see God as having ultimate control (Lupfer, DePaola, Brock & Clement, 1994), and are more likely to resort to prayer in difficult times (da Rosa et al., 2013). Religious individuals look to God for answers on how to conduct themselves (Schieman, 2011), and are highly defensive of their beliefs and threats to it, often making "God-serving attributions", which attribute successes to God and failures to individuals, to safeguard God's image as a holy protector (Riggio, Uhalt & Matthies, 2014). Despite the differences between specific religions, these recurring values show that modern religious groups have many similar characteristics. These beliefs, organized around tradition and institutional organization, create the broad foundation of religion in the existing psychological literature.

By sharing in the common belief that their particular religion is a valuable explanatory system, religious individuals also find themselves in the company of others who share their beliefs, resulting in a distinct community of like-minded individuals. The creation of this specific ingroup and the feelings resulting from associating with this ingroup are evident in religious individuals and organizations. Religious individuals are more likely to attribute blame to opposing religious communities when a member of that

community commits illegal acts, but are more likely to blame only the individual when that individual is from their own religious community (Ruback & Singh, 2007) – evidence, that individuals have a strong positive regard for their particular religious community. Further, religious individuals are more likely to rate ingroup members as conscientious and agreeable as opposed to outgroup members (Galen, Williams & Wey, 2014) and assert that a belief in God is necessary for a person to be moral (Public Religion Research Institute, 2013). Individuals high in religiosity also generally tend to rate individuals who are a member of their religious group as warmer and more competent (Eriksson & Funcke, 2014) and are more likely to give out punishment when a criminal is from a differing religious group (Ruback and Singh, 2007) than their own. Identification and positive regard is strong among individuals of a religious community, indicating that their shared beliefs and values have led them to unite into a distinctive social group.

In sum, religion is an explanatory system, but this does not mean that it only serves to provide meaning and structure. Religion can also lead to the adherence of norms and traditions, the acceptance of certain values, and participation in a group of individuals who share in the same beliefs. Religion's influence, however, reaches much further, and can cause a number of notable psychological effects that affect an individual's well being and thinking.

The Influence of Religion on Subjective Well-Being and Moral Identity

Level of religious belief, often referred to as religiosity, is not an entirely negative or positive force on an individual's life. Religion appears to have a number of seemingly

contradictory effects such as increasing general health and happiness, yet eliciting negative emotional states in certain contexts. Some research has found religiosity negatively correlates with anxiety and correlates positively with subjective well being (Abdel-Khalek and Lester, 2012), and traits such as self-esteem, optimism, physical health, mental health, happiness, and satisfaction with life (Abdel-Khalek & Singh, 2014). Many therapists and clinicians have also integrated religious beliefs into certain kinds of psychotherapy, finding that religion can help provide meaning to a person's life (Pargament, 1997). A person's willingness to submit their will to God, such as putting their problems in God's hands instead of trying to find a solution on their own, predicts lower stress in individuals as well (Clements and Ermakova, 2012). Religious individuals also are more likely to act in ways that promote their health, including healthy behaviors such as dieting (Fønnebø, 1984). Many of these benefits may be the result of social participation and stress reduction (Clements & Ermakova, 2012), but regardless, the positive effects of religion extend to many aspects of a person's life.

Although religion and morality are not synonymous or inherently intertwined (Morgan, Skitka & Wisneski, 2010), religion can provide a sense of moral identity and guidance. In particular, religious individuals often depend on their religion for moral guidance and answers on how to do the right thing. Religion can play a key part in the formation of a person's moral identity, or their self-concept as a moral individual, which can motivate a person's decision to act according to their morals (Vitell et al., 2009). People who are intrinsically religious, meaning that they are motivated to practice religion out of an internalization of religious rules and find the practice of religion

rewarding in itself, have a greater internalization of their moral beliefs and a greater understanding of the symbolic consequences of their beliefs. Although people who are more well-educated are less likely to rely on the Bible in making everyday decisions, this effect disappears when individuals display greater church attendance, religious participation, prayer, certainty of faith, and literal interpretation of the Bible (Schieman, 2011). Further, religiously motivated individuals are more likely to make deontological than utilitarian choices in relevant moral dilemmas, and emotional involvement in religion corresponds with increased negative emotional experience in these dilemmas (Szekely, Opre and Miu, 2015). Individuals' religious beliefs can affect not just the degree to which they use their moral beliefs when acting on decisions, but also, on a more fundamental level, how moral they consider their own thoughts to be (Cohen, 2014). For example, some Protestants tend to believe that thinking bad thoughts and holding immoral beliefs is just as immoral as acting on them, as opposed to other religions such as Judaism (Cohen, 2014). Although the role of religion in moral decision-making has been contested (Adamczyk, 2009; Fumagalli et al., 2009; Kroll, 2007), it appears that religion does affect how people view the morality of their thoughts and actions, and therefore may serve as a general moral compass.

Despite the many positive effects of religion, evidence suggests that the psychological effects of religion are oftentimes negative. Various studies have supported the idea that a higher level of religiosity reinforces anxiety and guilt. Higher levels of religiosity in adolescents are associated with higher levels of anxiety (Peterman, Labelle and Steinberg, 2014). Mid-adolescent children are increasingly anxious as they spend

more time in religious service and weekday religious activities. Individuals who are more religious have significantly more feelings of guilt over intrusive thoughts (Hale and Clark, 2013) and similarly tend to have higher levels of obsessional beliefs, including inappropriate interpretations of intrusive thoughts and guilt (Inozu, Karanci, and Clark, 2012). Some of these negative emotional states may be the result of negative evaluations of the self due to the strict standards for moral behavior often implied by religious belief. A worldwide study (Koster, Goudriaan, & van der Schans, 2009) found that more religious countries have a higher condemnation of victimless crimes, indicating a harsher judgment by religious individuals concerning moral standards. Further research has stressed this link between religiosity and harsher condemnation of moral transgressions. Religious individuals are especially likely to judge a morally ambiguous action as more morally wrong when primed with religious images (Cavrak & Kleider-Offutt, 2016), and religious priming can similarly cause religious individuals to feel more anxious when attempting to solve unsolvable tasks (Toburen & Meier, 2010). Additionally, Catholics are slower to make moral judgments, prefer deontological choices, and, when ultimately making utilitarian choices, had greater brain activation in areas involved in moral ambiguity, severe moral dilemmas, and the emotions of shame, guilt and embarrassment over norm violations (Christensen et al., 2014).

Religiosity has been shown to have an enormous impact on an individual's life, affecting decision-making, moral identity, overall well-being and interpretation of thoughts and experiences. The impact it has is not exclusively positive or negative, and its observed effects can be beneficial, harmful, and, at times, conflicting. Despite this,

many religious individuals do tend to relate religion to their sense of morality, and therefore the role of religion as a moral compass for judging the self and others cannot be overlooked. Although one could imagine that these effects are unique to religion, there is growing evidence that alternate systems of belief, such as scientific belief, may cause similar effects.

Science As a Functional Equivalent to Religion

Science has often appeared to be at odds with religion, but the two constructs are similar in a number of key ways. Although not as well-understood as religion, scientific belief and culture have a number of notable effects on individuals that are potentially comparable to religion. Like religion, science possesses great explanatory power (Preston & Epley, 2009), and can therefore provide a person's life with meaning, understanding and a system of values that can be experienced in a community (Lessl, 2007). As is the case with religion, the role of science as an explanatory system also leads to further psychological effects, such as moral guidance (Ma-Kellams & Blascovich, 2013) and increased subjective well-being (Aghababei, Sohrabi, Eskandari, Borjali, Farrokhi & Chen, 2016),

Science as an Explanatory System

Like religion, science can serve as an explanatory system; scientific theories such as the theory of evolution attempt to explain life and physics strives to discover the rules that govern the physical universe. Religion and scientific belief appear to be at odds because of this similarity, as both serve as "ultimate explanations" for the universe, meaning that they explain all things without needing to appeal to any more foundational

explanations (Preston & Epley, 2009). Individuals who feel threatened, for example, will often choose scientific theories, such as the theory of evolution, over intelligent design as the best way to describe the creation of the universe if those theories are framed as orderly and predictable processes (Rutjens, van der Pligt & van Harreveld, 2010). It is not religion, therefore, that solely provides a sense of understanding, but a general set of explanatory beliefs that provide a sense of order.

It is important to note that although belief in science tends to decrease with religiosity (Farias, Newheiser, Kahane & Toledo, 2013), scientific beliefs are not necessarily in opposition to religion and belief in the supernatural. Belief in science is associated with belief in extraordinary life forms, supernatural belief, and astrology (Williams, Taylor & Hintze, 1989). Many influential scientists throughout history, such as the "father of empiricism," Francis Bacon, saw science as a natural complement to religion instead of a force against it (Lessl, 2007) and as a result some values have crossed over between the two epistemologies. For example, belief in progress and that the world is constantly improving, as opposed to being cyclical, are beliefs that came from religion but are now a large part of secular belief (Gray, 2005). Some have even claimed that because key scientists that influenced the scientific revolution had ties to Christianity, science still retains some of the facets of religious practice and even attempts to emulate it, such as by utilizing symbols like the Darwin fish (Lessl, 2007). Although parodic of the ichthys symbol, some have argued the Darwin fish also serves the function of symbolizing and standing for the beliefs of science, just as a symbol such as the American flag is seen as a symbol for democracy (Lessl, 2007). As such, it is

important to note that although atheists do often hold a reverence for science, they are not the exclusive followers of scientific belief, as the identity of science is not defined by opposition to organized religion or as a collective identity of necessarily nonreligious individuals, as atheism is (Guenther, Mulligan & Papp, 2013).

Science is by no means value-free (Kurtines, Alavarez & Azmitia, 1990) and while faithful believers in science lack an authority figure such as God, they regard empirical thought, rationalism, human progress and nature in a sacred light. Science has traded in the moral standards of the Bible for those of the laws of nature and the scientific method. Accordingly, believers in science often react defensively to threats to their beliefs, meeting opposition to these beliefs with passionate debate and outrage (Lessl, 2007). In many ways, the scientific method and nature serve as the "sacred" aspect of scientific culture, as they are respected above all else and valued by members of the scientific community (Lessl, 2007). This dogmatic reverence for nature and the scientific method has often been referred to as scientism, which can be defined as a belief that the scientific method is nearly perfect and is, therefore, the best fit for explaining the universe (Shults, 2002; Stenmark, 2001).

Science can also be thought of as an explanatory system because it has its own set of ideals and prominent figures that are valued by members of the culture, such as the value of progress and the famous evolutionary biologist Darwin. A community has evolved around the tenets of scientific thought in a way similar to religion, and, with it, a specific ingroup and culture have emerged. While some have argued that the difficulty and lack of simplicity required of scientific thinking naturally prevents a dedicated

following from emerging (Ma-Kellams & Blascovich, 2013), there is evidence of a distinct culture and set of scientific values that people treat as a faith (Farias, Newheiser, Kahane & Toledo, 2013; Lessl, 2007). Individuals with scientism-consistent beliefs tend to associate their beliefs in some capacity with being a good person (Stahl, Zaal & Skitka, 2016), a phenomenon parallel to that observed in many religious individuals (Galen, Willams & Wey, 2014; Public Religion Research Institute, 2013). Individuals with beliefs related to scientism tend to rate those with similar beliefs as more moral and less blameworthy and feel stronger negative emotions towards those with dissimilar beliefs. Those with strong secular beliefs are also more prosocial towards charities that embody their beliefs (Center on Wealth and Philanthropy, 2007; Stahl, Zaal & Skitka, 2016). Belief in scientism therefore can lead to ingroup prosociality and feelings of group identification among those with shared scientific beliefs similar to those observed in religion.

Science does not only share its role as an ultimate explanation with religion, but also its role as an influential system of beliefs. As an explanatory system, science contains its own values, a community bonded by positive regard, and is distinct from other belief systems such as atheism or a simple belief in human progress. Naturally, those who identify strongly with a scientific belief system also are impacted psychologically by their beliefs and the degree to which they integrate them into their lives.

The Effects of Scientism and Related Beliefs on Well-Being and Moral Identity

Many of the psychological effects observed in religious individuals are observed in those who have a strong belief in science, including effects such as increased well-being and sensitivity to actions deemed immoral. Like religiosity, beliefs that are central to scientism can provide buffers to stress. Belief in science tends to spike before stressful events, indicating that one's faith in science may act as a coping mechanism for dealing with life stressors (Farias, Newheiser, Kahane and Toledo, 2013). This effect was also observed when individuals were tasked with thinking about their own death, indicating a possible effect of reassurance in the face of existential threat. Students of natural science have also been found to embrace the theory of evolution when reminded of their death, as opposed to most of the population who tends to endorse intelligent design theory (Tracy, Hart & Martens, 2011). This effect is observed in non-scientists when they are reminded that naturalism, the beliefs underlying evolutionary theory, can provide meaning to a person's life, indicating that a belief in science and scientific theories can be a meaning-providing structure when framed correctly, and, therefore, buffer against existential angst (Tracy, Hart & Martens, 2011). Belief in scientific-technological progress also is associated with greater life-satisfaction and a greater sense of control (Stavrova, Ehlebracht & Fetchenhauer, 2016) and scientific belief increases both happiness and self-esteem, an effect mediated by providing individuals with a hope and purpose in life (Aghababei, Sohrabi, Eskandari, Borjali, Farrokhi & Chen, 2016). University students with greater scientific behavior and positive attitudes towards science show greater happiness (Alavi, 2007) and belief in evolution can also serve as a compensatory control when individuals feel that they lack control of their life (Rutjens, van der Pligt & van

Harreveld, 2010). The positive effects of scientific belief are therefore varied, and the acceptance of these beliefs is often a matter of framing them in a way that is orderly and comforting.

Scientism may also provide a core set of beliefs to its followers that influences moral judgments and helps navigate moral dilemmas. While some have argued that the values of science are focused on obtaining truth and are non-moral (Howard, 1985), recent research suggests that this empirical search can be moral in itself. A novel study examined the effect of a dimension known as moralized rationality, meaning the degree to which a person believes it is moral to rely on rational behavior when creating or evaluating beliefs (Stahl, Zaal, & Skitka, 2016). The study found that people higher in moralized rationality tended to exhibit behaviors consistent with other morally charged beliefs, including the tendency to judge individuals who act in a way contrary to their beliefs, such as those who act irrationally, as being less moral. They also were more likely to give to charities that were consistent with their beliefs and more likely to attribute blame for actions to those who shared their beliefs about rationality (Stahl, Zaal & Skitka, 2016). Additionally, priming individuals with scientific concepts increases sensitivity to immoral situations and causes individuals to more harshly judge immoral actions (Ma-Kellams & Blascovich, 2013), particularly by activating ideas of secular authority (Yilmaz & Bahcekapili, 2015). Those with a higher belief in science also reported harsher moral condemnation of immoral acts and priming individuals with scientific ideas (Ma-Kellams & Blascovich, 2013). These studies indicate that science is

far from divorced from morality, and for some groups, rational thought may in fact be so valued that it serves as a basis for moral judgment.

In sum, beliefs in science and rationality can serve many of the functions of religion, including providing meaning, coping with anxiety and serving as a tool for making judgments about morality; however, unlike religion, the negative psychological effects of scientific belief have not been observed or researched extensively. Although both religion and scientific belief provide a method for judging the morality of actions, only in religion has the practice of and exposure to beliefs of the explanatory system been shown to elicit anxiety (Toburen & Meier, 2010), guilt (Inozu, Karanci, and Clark, 2012) and shame, particularly in dilemmas in which the individual is forced to make a moral choice (Christensen et al., 2014). This would imply that religion provides a way for an individual to judge the morality of their own actions, and their emotional reactions indicate to some degree how they perceive their own performance as a moral individual under their belief system. Without observing this effect in believers of scientism, it is not possible to say that science is as influential or key to a person's moral identity as religion is to the religious.

The Current Study

Although both science and religion are value-laden and associated with the concept of morality (Cohen, 2014; Ma-Kellams & Blascovich, 2013), the strong negative emotions associated with moral dilemmas and norm violations in religious individuals (Christensen et al., 2014) have not been documented in believers of scientism. Therefore, there is a gap in the research concerning the influence of scientific belief as a moral

compass to its followers. One issue that may lead to this gap is how religious and science-oriented individuals are operationalized in studies. Often, religiosity in surveys is measured by church attendance, meaning that less devout religious individuals who do not go to church are lumped into a category with secular individuals (Galen, 2015). This would imply that devotion and intensity of belief are sometimes ignored when measuring the effects of belief systems (Galen, 2015), and therefore, devoted and strong believers in scientism may also be strongly influenced by their beliefs if their faith is adequately measured. Difficulty in capturing this scientific faith empirically may be the result of the hesitancy for some researchers to treat scientism as an actual belief system and to conceptualize followers of scientism in the same manner as religious individuals are conceptualized (Ma-Kellams & Blascovich, 2013), but recent studies have shown that it is possible to measure science as a type of faith (Farias, Newheiser, Kahane & Toledo, 2013), as well as the degree to which secular beliefs can influence a person's actions and moral code (Stahl, Zaal & Skitka, 2016). Therefore, this study will treat scientific belief as a distinct explanatory system and measure both strength of belief in science as well as association between rational thinking and morality in order to more clearly capture the specific impact of scientific belief on those who hold the beliefs of scientism in high regard.

Specifically, this study will examine the effect of science as an explanatory system in regard to an individual's moral evaluation of the self and the negative emotions they feel as a result. Previous studies on the effects of scientism on an individual's moral evaluations have been limited to the evaluation of others' moral transgressions (Ma-

Kellams & Blascovich, 2013; Yilmaz & Bahcekapili, 2015), and studies on religion have found that there is clearer emotional impact when an individual is asked to consider the morality of their own actions (Christensen et al., 2014; Szekely, Opre and Miu, 2015). If scientism is an explanatory system as crucial to the actions and beliefs of its followers as religion is, then individuals with a strong belief in scientism should feel guilt and anxiety over their immoral actions when their belief system is made accessible. This study attempts to determine if scientism can provide moral compass for a scientifically faithful individual's own actions and elicit strong emotional reactions in the same way that religion has been found to by testing two competing hypotheses: (1) religion and belief in science serve similar functions in terms of providing a moral compass to their followers, and therefore, religious individuals primed with religious images will feel more guilt and anxiety over moral transgressions, and individuals with a strong belief in scientific rationality primed with science-related images will feel more guilt and anxiety over moral transgressions, and (2) religion and belief in science do not serve equivalent functions in providing moral guidance to their specific followers, and only religious primes will cause increased anxiety and guilt for individuals high in religious belief.

Method

Participants

Participants over the age of 18 were recruited and offered 50 cents to participate in wave 1 of the study through Amazon.com's Mechanical Turk (MTurk), a crowd sourced online survey tool (N=1,225). Up to 360 participants from the first wave were recruited to participate in the second wave, and were compensated 1 dollar. Participants

who completed either wave of the study twice and participants who failed an attention check were removed from the data set. A total of 314 participants provided complete data. Demographic characteristics of the participants in the both waves can be found in Table 1.

Procedure

Time 1. At time 1, participants answered basic demographic questions, completed the Santa Clara Strength of Religious Faith Questionnaire (Plante & Boccaccini, 1997), Moralized Religiosity Scale, Belief in Science Scale (Farias, Newheiser, Kahane & Toledo, 2013) and Moralized Rationality Scale (Stahl, Zaal & Skitka, 2016).

Time 2. Participants were re-contacted one week after the initial measures and completed the time 2 measures. Participants completed a sentence-unscrambling task, in which they were tasked with creating a four to five word sentence using five provided words, in one of three randomly assigned conditions. In the control condition, all of the words in the sentence were neutral. In the religious condition, half of the sentences contained a religious word such as “faith” or “spirit.” In the science condition, half of the sentences contained a word related to science or rationality such as “theory” or “logical” (see Appendix A for full list). The religious and neutral word sentences were obtained from a study by Shariff and Norenzayan (2007) which investigated how religious priming affected prosocial behavior. The science prime sentences were obtained from a study by Yilmaz & Bahçekapil (2015) investigating the effect of scientific priming on moral sensitivity.

After completing a priming task, participants read and responded to the following prompt:

> Reflect on a time in your life in which you were unsure if something you did was right or wrong. Examples include not intervening when a classmate of yours is bullied, ignoring a homeless person who is in need of help, walking past people vandalizing property, finding a wallet and taking the money inside, accidentally killing a deer with your car, and avoiding but not directly picking on unpopular kids in school. Describe this situation in two or three paragraphs, including your thoughts and feelings at the time.

After completing the reflection task, participants completed a state guilt measure and a shortened version of the State-Trait Anxiety Questionnaire (Spielberger, Gorssuch, & Lushene, , 1964).

Time 1 Measures

Santa Clara Strength of Religious Faith Questionnaire. Participants rated 10 statements on a Likert scale from 1 (strongly disagree) to 6 (strongly agree) in order to assess their level of religiosity. Statements include **"**My religious faith is extremely important to me," **"**I pray daily," "I look to my faith as a source of inspiration," **"**I look to my faith as providing meaning and purpose in my life," "I consider myself active in my faith or church," "My faith is an important part of who I am as a person," **"**My relationship with God is extremely important to me," "I enjoy being around others who share my faith," "I look to my faith as a source of comfort," and "My faith impacts many of my decisions." All scales were recoded to be bipolar, with -3 corresponding to strongly

disagree and +3 corresponding to strongly agree. Scores were averaged together to create one religiosity scale. Analyses indicated that the responses on this scale were highly reliable (Cronbach's alpha = .98).

Moralized Religiosity Scale. Participants rated their agreement with 9 statements adapted from the Moralized Rationality Scale (Stahl, Zaal & Skitka, 2016) on a Likert scale from 1 (strongly disagree) to 6 (strongly agree) in order to assess their tendency to moralize religiosity. Statements included **"**Being skeptical about claims that challenge my religious beliefs is a moral virtue," "Holding on to beliefs when they contradict Holy Scripture is immoral," "It is morally wrong to trust your intuitions without prayer and consideration of God's plan," "It is morally wrong to rely on anything else other than religion when deciding what is true and what is not true," "It is a moral imperative that people can justify their beliefs using scripture," "It is immoral to hold beliefs that conflict with my religion," "A person's moral authority depends on their faith," "A person's morality is in no way determined by their faith (reverse-scored)," and "Whether a person can be convinced by Holy Scripture is in no way indicative of their morality (reverse-scored)." All scales were recoded to be bipolar, with -3 corresponding to strongly disagree and +3 corresponding to strongly agree. Scores were averaged together to create one moralized religiosity scale. Analyses indicated that the responses on the moralized religiosity scale were reliable (Cronbach's alpha = .78).

Belief in Science Scale. Participants rated 8 statements on a Likert scale from 1 (strongly disagree) to 6 (strongly agree) in order to assess their belief in science. Two items were removed from the original scale due to their direct reference to religion.

Statements include **"**We can only rationally believe in what is scientifically provable," "Science tells us everything there is to know about what reality consists of," "All the tasks human beings face are soluble by science," "The scientific method is the only reliable path to knowledge," "The only real kind of knowledge we can have is scientific knowledge," "Science is the most valuable part of human culture," "Science is the most efficient means of attaining truth," and "Scientists and science should be given more respect in modern society." All scales were recoded to be bipolar with -3 corresponding to strongly disagree and +3 corresponding to strongly agree. Items that were reverse-scored were then recoded to reflect this change. Scores were averaged together to create one scientific belief scale. Analyses indicated that the responses were highly reliable for the Belief in Science scale (Cronbach's alpha = .95).

Moralized Rationality Scale. Participants rated 9 statements on a Likert scale from 1 (strongly disagree) to 6 (strongly agree) to assess their tendency to moralize rationality. Statements included "Being skeptical about claims that are not backed up by evidence is a moral virtue," "Holding on to beliefs when there is substantial evidence against them is immoral," "It is morally wrong to trust your intuitions without rationally examining them," "It is morally wrong to rely on anything else other than logic and evidence when deciding what is true and what is not true," "It is a moral imperative that people can justify their beliefs using rational arguments and evidence," "It is immoral to hold irrational beliefs," "A person's moral authority depends on their rationality," "A person's morality is in no way determined by their rationality (reverse-scored)," and "Whether a person can be convinced by reason and evidence is in no way indicative of

their morality (reverse-scored).” All items were recoded to be bipolar, with -3 corresponding to strongly disagree and +3 corresponding to strongly agree. Items that were reverse-scored were also recoded to reflect this change. Scores were averaged together to create one moralized rationality scale. Analyses indicated that the responses for this scale were reliable (Cronbach’s alpha = .77).

Time 2 Measures

State-Trait Anxiety Inventory. Participants filled out the state anxiety portion of the State-Trait Anxiety Inventory, consisting of 20 items assessing their state anxiety. Participants rated statements from 1 (not at all) to 4 (very much so). Statements include anxiety absent statements such as “I am calm”, which are reverse scored, and anxiety present statements such as “I am worried” (see Appendix B). Scores were averaged together create one state anxiety scale. Analyses indicated that responses for this scale were highly reliable (Cronbach’s alpha = .96).

State Guilt Questions. Participants rated three statements adapted from the guilt portion of the Differential Emotions scale (Izard, 1977) on a Likert scale from 1 (strongly disagree) to 4 (strongly agree) in order to assess their level of state guilt. Statements include “I feel guilt over my actions in this situation,” “I feel blameworthy for my actions in this situation” and “I feel repentant for my actions in this situation.” All scales were recoded to be bipolar, with -2 corresponding to strongly disagree and +2 corresponding to strongly agree. Scores were averaged together to create one guilt scale. Analyses indicated that the participants’ responses for this scale were highly reliable (Cronbach’s alpha = .85).

Results

This study tested two competing hypotheses. The first hypothesis was that religion and belief in science serve similar roles in providing a moral guidance to their followers, and therefore, (a) religious individuals primed with religious words will feel more guilt and anxiety over moral transgressions, and (b) individuals with a strong belief in the morality of science primed with science-related words will feel more guilt and anxiety over transgressions. Alternatively, the second hypothesis was that religion and belief in science do not serve equivalent roles in providing moral guidance to their specific followers, and only religious primes will therefore cause religious individuals to feel stronger guilt and anxiety over moral failures. It was not predicted that either religious or scientific primes would decrease guilt or anxiety for religious individuals.

Correlations

Correlations among all key variables were examined and can be found in Table 2. All key variables were mean-centered prior to analysis. As was expected, there was a strong positive correlation between religiosity and moralized religiosity, indicating that those who were high in religiosity also tended to moralize their religious belief. Similarly, moralized rationality was moderately positively correlated with scientific belief, indicating that those who had a higher belief in science tended to moralize those beliefs. Because I was interested in comparing those who hold moralized religious and scientific worldviews, I therefore included moralized religiosity and moralized rationality as key variables in the hypothesis tests. I also found a strong negative correlation between religiosity and scientific belief, and a weak negative correlation between religiosity and

moralized rationality. That is, individuals high in religious belief tended to have weaker belief in science and tended to moralize these beliefs less. Furthermore, moralized religiosity was moderately negatively correlated to scientific belief. A weak negative correlation was also observed between religiosity and anxiety. Anxiety also weakly positively correlated with guilt, indicating individuals higher in state guilt were also somewhat more anxious after the reflection task.

Hypothesis Testing

Analysis Strategy. In order to test the two competing hypotheses, I ran a series of moderated regression analyses. As I describe below and can be ascertained in Tables 3 and 4, I tested four models for each dependent variable. In the first model, I entered moralized religiosity, prime type, and the interaction between moralized religiosity and prime type as predictors. In the second model, I entered moralized rationality, prime type and the interaction between moralized rationality and prime type as predictors. In the third model – the full model – I entered moralized religiosity, moralized rationality, prime type, the interaction of moralized religiosity and prime type, and the interaction between moralized rationality and prime type as predictor variables. In the final model – the full model plus controls – I entered all predictors from the full model as well as religiosity and scientific belief as control variables. For all analyses, continuous predictor variables were mean centered and prime-type was dummy coded as two variables (the first shows the effect of religious prime as compared to the neutral prime, and the second shows the effect of the science prime as compared to the neutral prime).

Results for all models are included in Tables 3 and 4. Because results were largely consistent across models, I focus on the most complete model, model 4, below.

Guilt

Results of the all four regression models examining guilt are displayed in Table 3. There was no main effect of religiosity, prime type, moralized religiosity or moralized rationality on guilt. A significant positive effect of belief in science was observed; the more an individual believed in science, the guiltier they tended to feel. No significant interactions were found between moralized rationality and prime type; individuals with a moralized belief in rationality were not effected by the primes. A negative interaction between moralized religiosity and the religious prime condition on guilt was found. Specifically, individuals who moralized religiosity and were primed with religion reported lower levels of guilt over morally questionable actions. These findings were not consistent with hypothesis one or two, as moralized religiosity did not increase guilt in the religious prime condition, and moralized rationality did not predict guilt in the scientific prime condition. These findings are, however, consistent with the idea that moralized religiosity has a more powerful relationship with guilt than moralized scientific belief.

Anxiety

The results of the four regression models investigating the effect of predictor variables on anxiety are displayed in Table 4. No main effect of belief in science, prime type, moralized rationality or moralized religiosity was observed. A marginal negative effect of religiosity was found, indicating that religious individuals tended to report lower

levels of state anxiety. The interaction between moralized religiosity and religious prime was non-significant, and the interaction between moralized rationality and scientific prime was likewise non-significant. There was, however, an unexpected marginally significant interaction between moralized religiosity and scientific prime; religious individuals who moralized religiosity reported less anxiety when exposed to scientific primes. Again, neither of the hypotheses are supported by these findings, as religious primes did not increase anxiety in individuals who moralized religious belief and scientific primes did not increase anxiety in individuals who moralized scientific thinking.

Discussion

The objective of this study was to determine whether science may serve as a functionally equivalent explanatory system to religion, particularly in regards to how people cope with their own moral wrongdoing. Moral wrongdoing causes strong negative emotions in religious followers when they are reminded of their religion. Thus if science is a functionally equivalent belief system to religion, then moral wrongdoing should cause negative emotions among those committed to science as a belief system when reminded of their beliefs. Consistent with this theorizing, I tested two competing hypotheses. On one hand, science may serve as an explanatory system similar to religion, and therefore those with a moralized belief in both religiosity and science will feel more guilt and anxiety over moral uncertainty when they are reminded of their beliefs. On the other hand, science may not be functionally equivalent to religion and therefore religious

followers, but not scientific followers, will feel more guilt and anxiety when primed with their belief system. Neither hypothesis was fully supported.

The results of the study indicated that religious individuals tended to be less anxious, and individuals high in scientific belief tended to report higher levels of guilt. Contrary to previous research, guilt and anxiety did not increase in religious followers when primed with religion; surprisingly, individuals who moralized their religious belief felt *lower* levels of guilt when primed with religious concepts. In other words, when made salient, an individual's religious beliefs cause them to feel lower levels of guilt over moral transgressions. Further, anxiety and guilt did not increase in those who moralized scientific belief when primed with scientific primes. When people who were committed to science thought of their scientific beliefs, they did not feel more anxiety or guilt about moral transgressions. Although none of these findings were predicted, they have several significant implications regarding the nature of religious and scientific belief.

This study supports the notion that science is *not* a functionally equivalent belief system to religion (albeit in ways not hypothesized). This claim is backed by a number of the study's findings. Firstly, religious belief tended to reduce anxiety across priming conditions, and scientific belief tended to increase guilt across priming conditions – a pattern that suggests that scientific belief may actually have a comparatively negative impact on well-being as opposed to religion. Second, although religious primes did not increase guilt as predicted, the finding that religious primes decreased guilt in those who moralized religion shows that religious individuals are affected by reminders of their religion. No similar pattern was found when it came to making beliefs salient for those

who moralize scientific belief. This pattern suggests that religious belief may be more crucial to a religious individual's moral compass than scientific beliefs are to a scientifically-oriented individuals' moral compass. Taken together, these findings support the notion that religious belief is different than scientific belief in its psychological effects, and that a belief in science does not serve the same function as religion in regards to informing an individual's moral code. The implications of these findings are further explored below.

Theoretical Implications for Religion

Previous research on religion has attempted to reconcile the sometimes-conflicting findings concerning its effects on individuals. Although a large number of studies emphasize that religion causes increased anxiety and guilt over moral transgressions (Christensen et al., 2014; Hale and Clark, 2013; Toburen & Meier, 2010), some studies have found that religiosity contrarily increases well-being (Abdel-Khalek and Lester, 2012; Peterman, Labelle and Steinberg, 2014; Toburen & Meier, 2010). This study did not predict a main effect of religion on anxiety or guilt, but found a main effect of religious belief on anxiety, such that increased religiosity decreases anxiety. Additionally, this study found that when religious beliefs are made salient, religious individuals report lower levels of guilt after being faced with moral dilemmas. Despite the hypothesis of this study that the opposite effect would occur, there is scattered evidence that documents positive effects of religious priming, with some effects including a reduced anxiety and emotional response to self-generated errors (Good, Inzlicht & Larson, 2015; Inzlicht and Tullett, 2010). Therefore, despite the numerous

studies indicating that making religion salient causes increased anxiety and moral judgment (Cavrak & Kleider-Offutt, 2016;Toburen & Meier, 2010), there is precedent in previous research for this study's findings. Along with these previous studies, the current research suggests that the claim that religion increases anxiety when considering moral transgressions is deserving of a second look.

Take together, a primary finding of this study is that moralized religious belief appears to decrease negative self-evaluations concerning moral behavior, particularly when relevant beliefs are made salient. There are several possible explanations for this phenomenon, and why this effect has been observed so little in previous research. First, this study utilized a novel measure for religious belief that measured how strongly an individual moralized their religious beliefs, thus potentially capturing strength of religious belief and the moral content of religious belief in a way that other studies have not. Studies have often found that individuals who internalize religious belief more strongly often receive more robust affects of religiosity on their well-being (Fehring, Miller & Shaw, 1997). Individuals, for example, who are willing to surrender themselves to God completely have shown decreased levels of stress and anxiety (Clements & Ermakova, 2012). Utilizing measures that more accurately capture depth of religious commitment may therefore show more positive effects of religiosity. Second, it is possible that the positive benefits of religious belief, such as increased optimism, self-esteem and well-being (Abdel-Khalek & Singh, 2014), may be more powerful than any moral dismay caused by the reflection task in individuals who interpret God as a mostly positive being. Previous research has indicated that while focusing on God's punishment

does not have positive outcomes, focusing on God's forgiveness does (Good, Inzlicht & Larson, 2015). In other words, the effects of religion on anxiety may depend on people's conceptualizations of God – something not considered by the current research. It may therefore be useful for future research to look further into the ways in which individuals internalize and conceptualize their faith as opposed to studying religion as one monolithic construct.

In an unexpected turn of events, individuals who moralized religiosity were also found to have decreased anxiety when exposed to scientific primes. Although this finding may initially seem odd, research has found that individuals sometimes strengthen their beliefs when they feel threatened. Routledge, Roylance and Abeyta (2017) found that individuals increase their belief in miracles when they experience a threat to their belief in the meaning of life. Religion is an explanatory system that provides meaning to religious individuals, and if science is perceived as a threat to that belief system, then individuals may have responded by strengthening their religious belief. As previously shown, stronger religious belief correlates with reductions in stress, thus possibly accounting for the observed reductions in anxiety. Furthermore, individuals who are threatened by the possibility that they may do something wrong are more likely to believe in the morality of their actions (Effron, 2014). Therefore, religious individuals in the current study who felt their moral identity was threatened due to the presence of science primes may have been able to assure themselves somewhat during the writing task using qualifiers for their behavior, thus leading to reduced anxiety. Religious individuals who felt threatened by scientific concepts may have strengthened their beliefs as a result,

leading to an increase in the anxiety relieving affect of religiosity observed across all conditions of the current study.

Theoretical Implications for Scientific Belief

Making scientific beliefs salient does not seem to increase anxiety or guilt for those who moralize scientific belief. This finding can be interpreted in a number of ways.

One interpretation of this finding is that science is simply not as powerful an explanatory system as religion. Although science has recently been conceptualized as a belief system that confers its own values and norms (Ma-Kellams & Blascovich, 2013), religion has a deep history of being recognized as a formal belief system. The term "science" is broad, and the closest thing to code or organization for science-oriented individuals who do not actively pursue science as a profession is the recognition of the power of the scientific method. In contrast, religions are structured and formally organized, and many allow for frequent meetings with like-minded others. Most major religions, having existed for thousands of years, have had time to develop these structures. Further, sociologists have recognized the historical role of religion as a tool for maintaining social order in societies (Durkeim, 1912 [1995]), often by creating clear external sanctions for antisocial behavior or encouraging individuals to internalize their religious values, thus leading them to feel shame over antisocial behavior and effectively sanction themselves (Coleman, 1990). Science has explanatory power but its beginnings as a distinct belief system that seriously challenges religion are commonly traced back to the seventeenth century at the earliest (Lessl, 2007), and the notion that science may function similarly to religion has only recently been researched in the psychological

literature.. Religion therefore has significantly more historical precedent for eliciting strong reactions from individuals, especially if their followers are more devoted and have had the opportunity to be influenced by the deep roots that religion has in culture and society.

Furthermore, because scientific belief lacks an explicit and specific moral code, it may not have strong enough ties to one's moral judgments of the self. Religion, as previously shown, has a strong connection to an individual's moral identity and religious individuals use it to evaluate their own morality and actions (Szekely, Opre and Miu, 2015). Although individuals with a greater belief in science have also been shown to have a harsher condemnation of immoral acts (Ma-Kellams & Blascovich, 2013), there is no indication from previous research that this judgment extends to the self. Indeed, this was a gap that this study set out to fill. Additionally, a key component of science is its value-free nature (Howard, 1985). While this claim has frequently been disputed (Yilmaz & Bahcekapili, 2015), it is possible that the moral content of science might be relevant to a smaller number of domains than the moral content of religion. If the value in scientific belief is that it is largely amoral, then even individuals who value scientific belief enough to moralize it may not apply these moralized beliefs as broadly to their lives as those who moralize religious belief.

Another possible explanation for this finding is that the measure of moralized rationality did not correctly capture scientific belief. Moralized rationality and scientific belief did correlate, but not strongly, and therefore the two constructs might not be similar enough for those high in moralized rationality to be affected by scientific primes.

The key concepts of moralized rationality are consistent with the scientific method, but the two systems of thought are not precisely the same. Additionally, moralized rationality is chiefly concerned with making judgments about other individuals (Stahl, Zaal & Stitka, 2016). Therefore, individuals who moralize rationality may be more likely to judge others for being irrational, but may not recognize their own rationality or may be more likely to be forgiving of themselves.

Limitations and Future Directions

Despite the insights it offers, the current research did include some limitations. The sample size for this study was relatively small for the amount of conditions, and therefore may have limited the statistical power to detect main effects and interactions. More robust effects may have been observed with a larger group of participants. Additionally, no pre-testing was conducted on the moral uncertainty writing task to see if it effectively induced people to think of past moral transgressions. Specifically, this study asked participants to think of morally ambiguous actions they performed rather than explicitly immoral actions. Although asking about morally ambiguous experiences was chosen because it may cause individuals to more deeply reflect on the morality of their actions by prompting feelings of moral uncertainty, asking about unambiguously immoral actions could potentially have elicited more intense feelings of guilt and anxiety. Future studies could task participants with reflecting on morally ambiguous and explicitly immoral actions and compare feelings of guilt and anxiety following each task.

Engagement with the writing task also varied greatly between participants. Some participants responded to the prompt with only a few words, whereas others wrote several

paragraphs. Responses also varied greatly in content. Some participants relied heavily on the examples provided, and others created completely original scenarios based on their own experiences. There was also a large degree of variation in the severity of the moral transgressions participants wrote about. Some responses included cheating on a test, stealing, being unfaithful to a partner or spouse, physically hurting another person and withholding important information from loved ones, among others. A task for future research will be to explore these responses in depth. Responses could be coded by type and engagement, allowing for an in-depth look at any relationships between the types of answers given, the religious or scientific belief of the person who gave the answer, and consequent guilt and anxiety. This analysis was beyond the scope of this study, but could prove potentially useful in future investigations of this topic.

The results of this study must also be considered in terms of cultural context. Participants in this study were exclusively from the United States, and as a result, participants' conceptualizations of religion and scientific belief are influenced by American values and culture. Unlike citizens of other wealthy nations, citizens of the United States have a greater belief in God and a greater belief that it is necessary to believe in God to be a moral individual (Pew Research Center, 2015a). However, separation of church and state is part of the United States constitution, and religious freedom is a key value in the United States, unlike other countries such as Sudan, where Islam heavily influences the law, or China, where religious organizations that may undermine the government are suppressed (Bureau of Democracy, Human Rights and Labor, 2015). Further, Americans tend to be skeptical of certain scientific findings and do

not believe there is scientific consensus on key issues such as evolution and climate change (Pew Research Center, 2015b). Therefore, it is likely that the findings of this study would be substantially different if carried out across different countries, and this is something that future research could address.

As previously noted, the correlation between moralized rationality and scientific belief was only moderate. This indicates that moralized rationality may not be a valid and complete measure of individuals who moralize scientific belief, and this could have limited any potential guilt and anxiety felt by individuals who moralized scientific belief and were primed with science-related words. In a similar vein, it was also practically necessary to exclude measures of external and internal religiosity, which are often used to evaluate strength of religious belief. Although the moralized religiosity scale was designed to counter this limitation, this was the first use of this measure and it has not been compared in depth to the various existing measures of religiosity; however, this measure did correlate strongly with religiosity operationalized by the Santa Clara Strength of Religious Faith Questionnaire. Future research could look further into honing these scales.

Research could also explore whether science is more value-free than some past research suggests. If science were, by nature, amoral, it would explain why scientism fails as an explanatory system on par with religion in terms of informing moral self-evaluations. Research could assess participants on the associations that they have with the concept of science, and whether morally charged ideas such as right and wrong are among the frequent associations. This study suggests that it is possible that science does

not have any strong associations with moral self-evaluations, even for those who moralize rational thought, and this could be explored further by looking at how these associations occur in individuals of different belief systems.

Science as a belief system may also need to be more formally conceptualized. The study of science as a belief system is still relatively new, and research is slim compared to the research on religiosity. More measures of scientific belief need to be developed, including measures that account for strength of scientific belief and moralization of scientific belief. If research continues to show that science is not functionally equivalent to religion, it may be useful to study belief systems that are more formally recognized that have beliefs in common with scientism, such as atheism. While scientific belief may not affect moral identity, atheism may be more likely to do so, as it has more in common with religion and stronger associations with morality. In addition, comparing the ability of different religions to influence moral identity may also inform the subject. Christians, Muslims, Buddhists and Hindus, for example, may have their identities affected very differently by their respective religious beliefs, and the model of this current study could be applied to looking further into this topic.

Conclusion

Because of the waning influence of religion, and the growing evidence that science may be a belief system similar to religion, I sought to test whether religion and scientific belief are functionally equivalent explanatory systems. Although my hypothesis that religious individuals would feel more guilty and anxious when primed with their beliefs and that individuals who believed in science would feel similar negative emotions

when primed with their beliefs was not supported, this study did lend support to the idea that religion and science serve different roles in informing moral identity. Science may be a powerful belief system in informing moral judgments, but these judgments do not appear to extend to the self. In contrast, religion, when moralized, can provide a buffer against guilt in situations when religion is salient and a buffer against anxiety when moral identity is threatened. The literature concerning religious belief continues to be divided as to whether religion is beneficial or not, but this study seems to indicate that strong religious belief is adaptive and good for mental health in a way that scientific belief may not be. The current research highlights the difference between these belief systems and suggest that science and religion are not functional equivalents.

References

Abdel-Khalek, A. M., & Lester, D. (2010). Constructions of religiosity, subjective well-being, anxiety, and depression in two cultures: Kuwait and USA. *International Journal of Social Psychiatry*, *58*(2), 138-145. doi:10.1177/0020764010387545

Abdel-Khalek, A. M., & Singh, A. P. (2014). Religiosity, subjective well-being, and anxiety in a sample of Indian university students. *Arab Journal of Psychiatry*, *25*(2), 201-208.

Abdel-Khalek, A. M., & Lester, D. (2015). Self-reported religiosity in Kuwaiti and American college students. *Psychological Reports*, *116*(3), 986-989. doi:10.2466/17.PR0.116k31w4

Adamczyk, A. (2009). Understanding the effects of personal and school religiosity on the decision to abort a premarital pregnancy. *Journal of Health and Social Behavior*, *50*(2), 180-195. doi:10.1177/002214650905000205

Aghababaei, N., Sohrabi, F., Eskandari, H., Borjali, A., Farrokhi, N., & Chen, Z. J. (2016). Predicting subjective well-being by religious and scientific attitudes with hope, purpose in life, and death anxiety as mediators. *Personality and Individual Differences*, *90*, 93-98.

Alavi, H. R. (2007). Correlatives of happiness in the university students of Iran (a religious approach). *Journal of Religion and Health*, *46*(4), 480-499.

Bibby, R. W. (2002). *Restless gods: The renaissance of religion in Canada*. Stoddart Pub.

Bureau of Democracy, Human Rights and Labor. (2015) *International religious freedom report of 2015.* Retrieved from https://www.state.gov/j/drl/rls/irf/religiousfreedom/index.htm#wrapper

Byrne, P. (1999). The definition of religion: Squaring the circle. In J. Platvoet & A.L. Molendijk (Eds.), *The pragmatics of defining religion: Contexts, concepts and contests.* Bostin: Brill.

Cavrak, S. E., & Kleider-Offutt, H. M. (2015). Pictures are worth a thousand words and a moral decision or two: Religious symbols prime moral judgments. *International Journal for The Psychology Of Religion*, *25*(3), 173-192. doi:10.1080/10508619.2014.921111

Center on Wealth and Philanthropy. 2007. *Geography and giving: The culture of philanthropy in New England and the nation*. Boston, MA: Boston Foundation.

Chliaoutakis, J. E., Drakou, I., Gnardellis, C., Galariotou, S., Carra, H., & Chliaoutaki, M. (2002). Greek Christian Orthodox Ecclesiastical lifestyle: Could it become a pattern of health-related behavior?. *Preventive Medicine*, *34*(4), 428-435.

Christensen, J. F., Flexas, A., de Miguel, P., Cela-Conde, C. J., & Munar, E. (2014). Roman Catholic beliefs produce characteristic neural responses to moral dilemmas. *Social Cognitive and Affective Neuroscience*, *9*(2), 240-249. doi:10.1093/scan/nss121

Clements, A. D., & Ermakova, A. V. (2012). Surrender to God and stress: A possible link between religiosity and health. *Psychology of Religion and Spirituality*, *4*(2), 93-107. doi:10.1037/a0025109

Cohen, A. B. (2015). Religion's profound influences on psychology: Morality, intergroup relations, self-construal, and enculturation. *Current Directions in Psychological Science*, *24*(1), 77-82. doi:10.1177/0963721414553265

Coleman, J.S. (1990). *Foundations of social theory.* Cambridge, MA: Harvard University Press.

da Rosa, M. I., Silva, F. R., Silva, B. R., Costa, L. C., Bergamo, A. M., Silva, N. C., . . . Azevedo, R. (2013). A randomized clinical trial on the effects of remote intercessory prayer in the adverse outcomes of pregnancies. *Ciencia and Saude Coletiva*, 18, 2379–2384. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/23896920

Dawkins, R. (2006). *The God delusion.* New York: Bantam Books.

Durkheim, E. (1912 [1995]). *The elementary forms of religious life* (translated by Karen E. Fields). New York: Free Press.

Effron, D. A. (2014). Making mountains of morality from molehills of virtue threat causes people to overestimate their moral credentials. *Personality and Social Psychology Bulletin*, 0146167214533131.

Eriksson, K., & Funcke, A. (2014). Humble self-enhancement: Religiosity and the better-than-average effect. *Social Psychological and Personality Science*, 5, 76–83. doi:10.1177/1948550613484179

Enstrom, J. E., & Breslow, L. (2008). Lifestyle and reduced mortality among active California Mormons, 1980–2004. *Preventive medicine*, *46*(2), 133-136.

Farias, M., Newheiser, A., Kahane, G., & de Toledo, Z. (2013). Scientific faith: Belief in science increases in the face of stress and existential anxiety. *Journal of Experimental Social Psychology*, *49*(6), 1210-1213. doi:10.1016/j.jesp.2013.05.008

Fehring, R. J., Miller, J. F., & Shaw, C. (1997). Spiritual well-being, religiosity, hope, depression, and other mood states in elderly people coping with cancer. In *Oncology Nursing Forum 24*(4), 663-671.

Fønnebø, V. (1988). The Tromsø Heart Study: Diet, religion, and risk factors for coronary heart disease. *The American journal of clinical nutrition*, *48*(3), 826-829.

Fumagalli, M., Ferrucci, R., Mameli, F., Marceglia, S., Mrakic-Sposta, S., Zago, S., & ... Priori, A. (2010). Gender-related differences in moral judgments. *Cognitive Processing*, *11*(3), 219-226. doi:10.1007/s10339-009-0335-2

Furnham, A., & Proctor, E. (1989). Belief in a just world: Review and critique of the individual difference literature. *British Journal of Social Psychology*, 28, 365–384.

Galen, L. W., Williams, T. J., & Ver Wey, A. L. (2014). Personality ratings are influenced by religious stereotype and ingroup bias. *International Journal for the Psychology of Religion*, *24*(4), 282-297. doi:10.1080/10508619.2013.837658

Galen, L. (2015). Atheism, wellbeing, and the wager: Why not believing in God (with others) is good for you. *Science, Religion and Culture*, *2*(3), 54-69.

Good, M., Inzlicht, M., & Larson, M. J. (2015). God will forgive: reflecting on God's love decreases neurophysiological responses to errors. *Social Cognitive and Affective Neuroscience*, *10*(3), 357-363.

Gray, J. (2005). *The myth of progress in science and society. Proceedings of the Bath Royal Literary & Scientific Institution, 9*.

Guenther, K. M., & Mulligan, K. (2013). From the outside in: Crossing boundaries to build collective identity in the new atheist movement. *Social Problems*, *60*(4), 457-475.

Hale, M. A., & Clark, D. A. (2013). When good people have bad thoughts: Religiosity and themotional regulation of guilt-inducing intrusive thoughts. *Journal of Psychology and Theology*, *41*(1), 24-35.

Hassin, R. R., Bargh, J. A., & Uleman, J. S. (2002). Spontaneous causal inferences. *Journal of Experimental Social Psychology*, *38*(5), 515-522.

Hill, P.C., Pargament, K.I., Hood, R.W., Jr., McCullough, M.E., Swyers, J.P., Larson, D.B., et al. (2000). Conceptualizing religion and spirituality: Points of commonality, points of departure. *Journal for the Theory of Social Behavior, 30,* 51-77.

Howard, G. S. (1985). The role of values in the science of psychology. *American Psychologist, 40*, 255-265.

Inozu, M., Karanci, A. N., & Clark, D. A. (2012). Why are religious individuals more obsessional? The role of mental control beliefs and guilt in Muslims and

Christians.*Journal of Behavior Therapy and Experimental Psychiatry*, *43*(3), 959-966. doi:10.1016/j.jbtep.2012.02.004

Inzlicht, M., & Tullett, A. M. (2010). Reflecting on god: Religious primes can reduce neurophysiological response to errors. *Psychological Science*, *21*(8), 1184-1190. doi:10.1177/095679761037545

Izard, C. E. (1977). *Human Emotions*. New York, NY: Plenum Press.

Kimhi, S., & Kasher, A. (2015). Moral dilemmas in military situations: Proportionality principle, religiosity, political attitudes, and authoritarian personality. *Military Psychology*, *27*(3), 169-184. doi:10.1037/mil0000072

Koster, F., Goudriaan, H., & van der Schans, C. (2009). Shame and punishment: An international comparative study on the effects of religious affiliation and religiosity on attitudes to offending. *European Journal of Criminology*, *6*(6), 481-495. doi:10.1177/1477370809341129

Kroll, J., Egan, E., Keshen, R., Carre, G., Johnson, M., & Carey, K. (2007). Moral worry and religiosity in US and Canadian college samples. *Mental Health, Religion and Culture*, *10*(6), 621-630. doi:10.1080/13674670601064932

Kurtines, W. M., Alvarez, M., & Azmitia, M. (1990). Science and morality: The role of values in science and the scientific study of moral phenomena. *Psychological Bulletin*, *107*(3), 283.

Lessl, T.M. (2007) The culture of science and the rhetoric of scientism: From Francis Bacon to the Darwin fish. *Quarterly Journal of Speech*. *93*(2), 123-149. doi:10.1080/00335630701426785

Lombrozo, T. (2007). Simplicity and probability in causal explanation. *Cognitive psychology*, *55*(3), 232-257.

Lupfer, M. B., DePaola, S. J., Brock, K. F., & Clement, L. (1994). Making secular and religious attributions: The availability hypothesis revisited. *Journal for the Scientific Study of Religion, 33*, 162–171.

Ma-Kellams, C., & Blascovich, J. (2013). Does "science" make you moral? The effects of priming science on moral judgments and behavior. *PloS one*, *8*(3), e57989.

Maltby, J. (2005). Protecting the sacred and expressions of rituality: Examining the relationship between extrinsic dimensions of religiosity and unhealthy guilt. *Psychology and Psychotherapy: Theory, Research and Practice*, *78*(1), 77-93. doi:10.1348/147608305X39644]

McIntosh, D. N. (1995). Religion-as-schema, with implications for the relation between religion and coping. *The International Journal for the Psychology of Religion*, *5*(1), 1-16.

Morgan, G. S., Skitka, L. J., & Wisneski, D. C. (2010). Moral and religious convictions and intentions to vote in the 2008 presidential election. *Analyses of Social Issues and Public Policy* , *10*(1), 307-320. doi:10.1111/j.1530-2415.2010.01204.x

Office of National Statistics (2012). Religion in England and Wales 2011. (UK Census release).

Paloutzian, R. F., & Park, C. L. (Eds.). (2014). *Handbook of the psychology of religion and spirituality*. Guilford Publications.

Pargament, K.I. (1997). *The psychology of religion and coping.* New York: Guilford Press.

Peterman, J. S., LaBelle, D. R., & Steinberg, L. (2014). Devoutly anxious: The relationship between anxiety and religiosity in adolescence. *Psychology of Religion and Spirituality*, *6*(2), 113-122. doi:10.1037/a0035447

Pew Research Center. (2015a). *U.S. public becoming less religious.* Retrieved from http://www.pewforum.org/2015/11/03/u-s-public-becoming-less-religious/

Pew Research Center. (2015b). *Public and scientists' views on science and society.* Retrieved from http://www.pewinternet.org/2015/01/29/public-and-scientists-views-on-science-and-society/

Plante, T.G., & Boccaccini, M. (1997). The Santa Clara Strength of Religious Faith Questionnaire. *Pastoral Psychology*, 45, 375-387

Preston, J. L. (2012). Religion is the opiate of the masses (but science is the methadone). *Religion, Brain and Behaviour*, 1, 231–233.

Preston, J., & Epley, N. (2005). Explanations versus applications: The explanatory power of valuable beliefs. *Psychological Science*, *16*(10), 826-832. doi:10.1111/j.1467-9280.2005.01621.x

Preston, J., & Epley, N. (2009). Science and God: An automatic opposition between ultimate explanations. *Journal of Experimental Social Psychology*, *45*(1), 238-241.

Public Religion Research Institute. (2013). *Do Americans believe capitalism and government are working?*

Riggio, H. R., Uhalt, J., & Matthies, B. K. (2014). Unanswered prayers: Religiosity and the god-serving bias. *The Journal of Social Psychology*, *154*(6), 491-514. doi:10.1080/00224545.2014.953024

Ritter, R. S., & Preston, J. L. (2013). Representations of religious words: Insights for religious priming research. *Journal for the Scientific Study of Religion*, *52*(3), 494-507. doi:10.1111/jssr.12042

Routledge, C., Roylance, C., & Abeyta, A. A. (2015). Miraculous meaning: Threatened meaning increases belief in miracles. *Journal of Religion and Health*, 1-8.

Ruback, R. B., & Singh, P. (2007). Ingroup bias, intergroup contact and the attribution of blame for riots. *Psychology and Developing Societies*, *19*(2), 249-265. doi:10.1177/097133360701900206

Rutjens, B. T., van Harreveld, F., & van der Pligt, J. (2010). Yes we can belief in progress as compensatory control. *Social Psychological and Personality Science*, *1*(3), 246-252.

Rutjens, B. T., Van Der Pligt, J., & Van Harreveld, F. (2010). Deus or Darwin: Randomness and belief in theories about the origin of life. *Journal of Experimental Social Psychology*, *46*(6), 1078-1080.

Rutjens, B. T., van der Pligt, J., & van Harreveld, F. (2009). Things will get better: The anxiety-buffering qualities of progressive hope. *Personality and Social Psychology Bulletin*.

Sagan C (2006) *The varieties of scientific experience.* Druyan A, (Ed.) New York: The Penguin Press.

Schieman, S. (2011). Education and the importance of religion in decision making: Do other dimensions of religiousness matter? *Journal For The Scientific Study Of Religion*, *50*(3), 570-587. doi:10.1111/j.1468-5906.2011.01583.x

Shariff, A. F., & Norenzayan, A. (2007). God is watching you: Priming God concepts increases prosocial behavior in an anonymous economic game. *Psychological Science*, *18*(9), 803-809. doi:10.1111/j.1467-9280.2007.01983.x

Shor, E., & Roelfs, D. J. (2013). The longevity effects of religious and nonreligious participation: A meta-analysis and meta-regression. *Journal for the Scientific Study of Religion*, *52*(1), 120-145.

Shults, F. L. (2002) Scientism: Science, ethics and religion, *Ars Disputandi*, 2 (1), 43-46. doi:10.1080/15665399.2002.10819729

Spielberger, C.D., Gorssuch, R.L., & Lushene, R.E. (1964). State-Trait Anxiety Inventory.

Spilka, B. (1993). *Spirituality: Problems and directions in operationalizing a fuzzy concept.* Paper presented at the meeting of the American Psychological Association. Toronto, Ontario.

Stahl, T., Zaal, M.P., & Skitka, L.J. (2016). Moralized rationality: Relying on logic and evidence in the formation and evaluation of belief can be seen as a moral issue. *PloS ONE, 11*(1): e0166332. doi:10.371/journal.pone.0166332

Stavrova, O., Ehlebracht, D., & Fetchenhauer, D. (2016). Belief in scientific–technological progress and life satisfaction: The role of personal control. *Personality and Individual Differences*, *96*, 227-236.

Stenmark, M. (2001). *Scientism: Science, ethics and religion*. London, UK: Ashgate.

Szekely, R. D., Opre, A., & Miu, A. C. (2015). Religiosity enhances emotion and deontological choice in moral dilemmas. *Personality and Individual Differences*, *79*104-109. doi:10.1016/j.paid.2015.01.036

Toburen, T., & Meier, B. P. (2010). Priming God-related concepts increases anxiety and task persistence. *Journal of Social and Clinical Psychology*, *29*(2), 127-143. doi:10.1521/jscp.2010.29.2.127

Tracy, J. L., Hart, J., & Martens, J. P. (2011). Death and science: The existential underpinnings of belief in intelligent design and discomfort with evolution. *PloS one*, *6*(3), e17349.

Vail, K. I., Rothschild, Z. K., Weise, D. R., Solomon, S., Pyszczynski, T., & Greenberg, J. (2010). A terror management analysis of the psychological functions of religion. *Personality and Social Psychology Review*, *14*(1), 84-94. doi:10.1177/1088868309351165

Vitell, S. J., Bing, M. N., Davison, H. K., Ammeter, A. P., Garner, B. L., & Novicevic, M. M. (2009). Religiosity and moral identity: The mediating role of self-control. *Journal of Business Ethics*, *88*(4), 601-613. doi:10.1007/s10551-008-9980-0

Weiner, B. (1985). 'Spontaneous' causal thinking. *Psychological Bulletin*, *97*(1), 74-84. doi:10.1037/0033-2909.97.1.74

Williams, R. N., Taylor, C. B., & Hintze, W. J. (1989). The influence of religious orientation on belief in science, religion, and the paranormal. *Journal of Psychology and Theology*, *17(4)*, 352-359

Winchester, D. (2008). Embodying the faith: Religious practice and the making of a Muslim moral habitus. *Social Forces*, *86*(4), 1753-1780.

Worthington, E. J., Witvliet, C. O., Pietrini, P., & Miller, A. J. (2007). Forgiveness, health, and well-being: A review of evidence for emotional versus decisional forgiveness, dispositional forgivingness, and reduced unforgiveness. *Journal of Behavioral Medicine*, *30*(4), 291-302. doi:10.1007/s10865-007-9105-8

Yilmaz, O., & Bahçekapili, H. G. (2015). When science replaces religion: Science as a secular authority bolsters moral sensitivity. *Plos ONE*, *10*(9)

Zuckerman, P. (2009). Atheism, secularity, and well-being: How the findings of social science counter negative stereotypes and assumptions. *Sociology Compass*, *3*(6), 949-971. doi: 10.1111/j.1751-9020.2009.00247.

Table 1

Demographic Characteristics of Participants

	Wave 1		Wave 2	
Variable	Mean	SD	Mean	SD
Age	35.85	12.46	37.11	12.38
	N	Percentage	N	Percentage
Gender				
Male	549	52.2	164	52.2
Female	501	47.6	149	47.5
Other	2	0.2	1	0.3
Race/Ethnicity				
White	822	78.1	252	80.3
Hispanic/Latino	71	6.7	19	6.1
American Indian or Alaska Native	2	0.2	1	0.3
Asian	87	8.3	23	7.3
Black or African American	52	4.9	14	4.1
Other	17	1.6	6	1.9
Level of Education				
No schooling	1	0.1	0	0
Some high school, no diploma	1	0.1	0	0
High school diploma, or equivalent	105	10	25	8
Some college	275	26.1	80	25.5
Associate's Degree	124	11.8	40	12.7
Bachelor's Degree	398	37.8	113	36
Master's Degree	118	11.2	47	15
Professional Degree	13	1.2	5	1.6
Doctoral Degree	14	1.3	2	0.6
Estimated Household Income				
Less than $25,000	193	18.3	52	16.6
$25,000-34,999	138	13.1	38	12.1
$35,000-$49,999	197	18.7	58	18.5
$50,000-$74,999	254	24.1	85	27.1
$75,000-$99,999	138	13.1	46	14.6
$100,000-$149,999	103	9.8	27	8.6
More than $150,000	26	2.5	6	1.9
Household Situation				
Has a hard time buying things	187	17.8	51	16.2
Has money for the things we need	430	40.9	132	42
Has no problem buying the things we need and sometimes we can buy special things	388	36.9	121	38.5
Has enough money to buy pretty much anything we want	44	34.2	10	3.2

Marital Status				
Single (never married)	542	51.5	154	49
Married	405	38.5	130	41.4
Separated	14	1.3	2	1
Widowed	10	1.0	3	0.6
Divorced	76	7.2	24	7.6
Political Orientation				
Very Liberal	144	13.7	43	13.7
Liberal	261	24.8	69	22
Slightly Liberal	150	14.3	49	15.6
Neither Liberal Nor Conservative	204	19.4	67	21.3
Slightly Conservative	134	12.7	42	13.4
Conservative	116	11.0	35	11.1
Very Conservative	43	4.1	9	2.9

Table 2

Means, Standard Deviations and Correlations Between All Scales

Variables	M	SD	1	2	3	4	5	6
1. Religiosity	-.79	2.11						
2. Moralized Religiosity	-1.26	1.28	.69**					
3. Scientific Belief	.36	1.65	-.67**	-.52**				
4. Moralized Rationality	-.25	1.23	-.32**	-.11	.55**			
5. Anxiety	2.06	.63	-.12*	-.09	.04	.07		
6. Guilt	.31	1.09	.06	.03	.02	-.06	.18**	

*p < .05. **p < .001

Note. All means have been mean-centered

Table 3

Relationship between Moralized Religiosity, Moralized Rationality, Prime Type and Guilt

	Moralized Religiosity				Moralized Rationality				Moralized Religiosity and Moralized Rationality				Moralized Religiosity and Moralized Rationality w/ Controls			
	B	*SE*	*t*	*p*	*B*	*SE*	*t*	*p*	*B*	*SE*	*t*	*p*	*B*	*SE*	*t*	*p*
Religious Prime	.17	.15	1.1	.26	.17	.15	1.16	.25	.17	.15	1.1	.26	.17	.15	1.13	.26
Science Prime	.04	.15	.24	.81	.05	.15	.36	.72	.04	.15	.25	.80	.02	.15	.15	.88
Moralized Relig.	.10	.08	1.2	.22	-	-	-	-	.11	.08	1.26	.21	.11	.10	1.12	.27
MoralRelig.xRelig.Prime	**-.21**	**.11**	**-1.8**	**.07**	-	-	-	-	**-.21**	**.11**	**-1.9**	**.06**	**-.23**	**.11**	**-2.0**	**.05**
MoralRelig.xSci.Prime	.01	.13	.10	.92	-	-	-	-	-.02	.13	-.14	.89	-.04	.13	-.32	.75
Moralized Rationality	-	-	-	-	.05	.09	.49	.62	.06	.09	.60	.55	-.00	.10	-.03	.97
MoralRat.xRelig.Prime	-	-	-	-	-.11	.12	-.93	.35	.13	.12	-1.1	.24	-.11	.12	-.93	.35
MoralRat.xSci.Prime	-	-	-	-	-.20	.13	-1.6	.12	-.20	.13	-1.5	.14	-.20	.13	-1.5	.13
Religiosity	-	-	-	-	-	-	-	-	-	-	-	-	.08	.05	1.65	.10
Scientific belief	-	-	-	-	-	-	-	-	-	-	-	-	**.13**	**.06**	**2.14**	**.03**

Table 4

Relationship between Moralized Religiosity, Moralized Rationality, Prime Type and Anxiety

	Moralized Religiosity				Moralized Rationality				Moralized Religiosity and Moralized Rationality				Moralized Religiosity and Moralized Rationality w/ Controls			
	B	*SE*	*t*	*p*	*B*	*SE*	*t*	*p*	*B*	*SE*	*t*	*p*	*B*	*SE*	*t*	*p*
Religious Prime	.02	.09	.28	.78	.00	.09	.04	.97	.02	.09	.17	.86	.01	.09	.16	.87
Science Prime	-.07	.09	-.80	.43	-.08	.09	.93	.35	-.08	.09	-.88	.38	-.07	.09	-.83	.40
Moralized Relig.	-.08	.05	-1.6	.11	-	-	-	-	-.07	.05	-1.5	.15	-.06	.06	-1.0	.31
MoralRelig.xRelig.Prime	-.01	.07	-.13	.90	-	-	-	-	-.01	.07	-.19	.85	-.01	.07	-.09	.93
MoralRelig.xSci.Prime	**.13**	**.07**	**1.80**	**.07**	-	-	-	-	**.13**	**.07**	**1.70**	**.09**	**.14**	**.07**	**1.90**	**.06**
Moralized Rationality	-	-	-	-	.08	.05	1.54	.12	.08	.05	1.41	.16	.09	.06	1.59	.11
MoralRat.xRelig.Prime	-	-	-	-	-.05	.07	-.70	.49	-.05	.07	-.70	.49	-.06	.07	-.80	.42
MoralRat.xSci.Prime	-	-	-	-	-.08	.08	-1.1	.27	-.07	.08	-.88	.30	-.07	.08	-.85	.40
Religiosity	-	-	-	-	-	-	-	-	-	-	-	-	**-.05**	**.03**	**-1.7**	**.09**
Scientific belief	-	-	-	-	-	-	-	-	-	-	-	-	-.05	.03	-1.5	.13

Appendix A: Priming Sentences

To the best of your ability, use four or five of the words in each grouping to create a sentence.

Religion-Related Priming Sentences

1. felt she eradicate spirit the
2. dessert divine was fork the
3. appreciated presence was imagine her
4. more paper it once do
5. send I over it mailed
6. evil thanks give God to
7. yesterday it finished track he
8. sacred was book refer the
9. reveal the future simple prophets
10. prepared somewhat I was retired

Neutral Priming Sentences

1. fall was worried she always
2. shoes give replace old the
3. retrace good have day a
4. more paper it once do
5. send I over it mailed
6. saw hammer he the train
7. yesterday it finished track he

8. sky the seamless blue is

9. treat I today it bought

10. prepared somewhat I was retired

Science Priming Sentences

1. heard she eradicate hypothesis the

2. idea logical was fork the

3. appreciated presence was imagine her

4. more paper it once do

5. send I over it mailed

6. dark thankful be scientists for

7. yesterday it finished track he

8. new was laboratory refer the

9. reveals the truth simple theory

10. prepared somewhat I was retired

Appendix B: State-Trait Anxiety Inventory (Spielberger, C.D., Gorssuch, R.L., & Lushene, R.E., 1964).

Please rate the following statements based on your agreement with them

1. I feel calm. (reverse-scored)

2. I feel secure. (reverse-scored)

3. I feel tense.

4. I feel strained.

5. I feel at ease. (reverse-scored)

6. I feel upset.

7. I am presently worrying over possible misfortunes.

8. I feel satisfied. (reverse-scored)

9. I feel frightened.

10. I feel comfortable. (reverse-scored)

11. I feel self-confident. (reverse-scored)

12. I feel nervous.

13. I am jittery.

14. I am indecisive.

15. I am relaxed. (reverse-scored)

16. I feel content. (reverse-scored)

17. I am worried.

18. I feel confused.

19. I feel steady. (reverse-scored)

20. I feel pleasant. (reverse-scored)