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Examining Perceived In-Group Similarity And Out-Group Dissimilarity As Predictors Of Religious Intergroup Bias

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EXAMINING PERCEIVED IN-GROUP SIMILARITY AND OUT-GROUP DISSIMILARITY AS PREDICTORS OF RELIGIOUS INTERGROUP BIAS

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This dissertation, submitted by Richard Clark Grove in partial fulfillment of the requirements for the Degree of Doctor of Philosophy from the University of North Dakota, has been read by the Faculty Advisory Committee under whom the work has been done and is hereby approved.

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Richard Clark Grove
May 5, 2020

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ABSTRACT

People tend to feel more favorably toward others who share their beliefs and values. Religion can provide a quick estimate of ideological similarity. The religious values conflict model (Brandt & Van Tongeren, 2017) proposes that people high and low in religiosity are both prejudiced toward groups with dissimilar values. However, the role of dissimilarity in predicting religious intergroup bias has not been directly tested. A pilot study (N = 326) tested whether Christians and nonreligious people would demonstrate the patterns of intergroup bias predicted by the religious values conflict model. Additionally, the respective roles of perceived in-group and out-group dissimilarity in predicting religious intergroup bias were examined. Results showed that Christians and nonreligious people did demonstrate the patterns predicted by the religious values conflict model. Further examination showed that greater in-group similarity, not greater dissimilarity of the out-group, was the best predictor of attitudes toward the out-group. The main study (N = 519) replicated these findings and also used structural equation modeling to demonstrate that participants' perceived similarity to Christians mediated the relationship between religiosity and prejudice toward atheists, while participants' perceived similarity to atheists mediated the relationship between religiosity and prejudice toward Christians. The findings provide a more nuanced picture of the role of in-group similarity and out-group dissimilarity in explaining intergroup bias between Christians and nonreligious people.

CHAPTER I

BACKGROUND AND REVIEW

People tend to have more positive attitudes toward others who share their beliefs and values (Brandt & Van Tongeren, 2017; Drigotas,1993; Rokeach, 1960). People also tend to be more prejudiced toward others who have dissimilar beliefs and values (Brandt & Van Tongeren, 2017; Drigotas, 1993; Rokeach, 1960). Although it may be difficult for a person to determine if others share their ideology, religion may be a powerful heuristic for estimating ideological similarity. Recent studies suggest that religious and nonreligious individuals both exhibit in-group favoritism and out-group derogation toward one another (Brandt & Van Tongeren, 2017; Grove, Hall, Rubenstein, et al., 2019). Some researchers suggest that this intergroup bias between religious and nonreligious individuals is due to perceived ideological dissimilarity (Brandt & Van Tongeren, 2017). However, the role of perceived dissimilarity in predicting intergroup bias between religious and nonreligious people has not been directly tested. The current studies were designed to directly test the effects of perceived similarity on attitudes toward religious people (e.g., Christians) and nonreligious people (e.g., atheists).

Intergroup Bias

Prejudice is one of the most persistent problems facing humanity. Some of the oldest and most popular writings in history include themes of prejudice. For example, the Bible includes several verses that seem to endorse prejudicial or discriminatory attitudes toward women ("I do not permit a woman to teach or to have authority over a man; she must be silent." (1 Timothy 2:12)), members of other religious groups ("The fool says in his heart, "There is no God." They are corrupt, they do abominable deeds, there is none who does good." (Psalm 14:1)), and gay men ("If there is a man who lies with a male as those who lie with a woman, both of them have

committed a detestable act." (Leviticus 20:13)). Thousands of years have passed, and we remain unable to achieve egalitarianism in society. Negative attitudes toward women, religious out-group members, and lgbtq+ individuals remain commonplace in mainstream political discourse in the U.S. These biases contribute to global conflict and systemic inequalities that can have severe consequences for large groups of people. For example, when a country introduces policies aimed at reducing the number of immigrants and refugees from countries with different religious beliefs, the consequences can be dire for people seeking refuge from areas with unlivable conditions. Working hard to better understand the basic elements of bias between groups is an important aspect of addressing the harmful consequences of prejudice.

Prejudice has been described as unfavorable feelings toward another person that are not substantiated by actual experience (Allport, 1954). An individual may harbor these negative feelings toward another person based upon group membership. There is a long history of research on prejudice toward others based on their group membership. For example, there is evidence of prejudice toward others on the basis of race, ethnicity, gender, sexual orientation, and religion, as well as numerous other types of social categories (Cottrell & Neuberg, 2005; Glick & Fiske, 2001). Although relations between different groups all come with detailed historical and societal contexts, bias can emerge in the absence of meaningful relationships between groups (Tajfel, 1970).

Group membership plays an important role in forming judgments about other people. It influences perceptions of fellow group members and members of other groups. Identifying as a member of a group often means self-categorizing as an in-group member. When a person self-categorizes as a member of a group, they are likely to feel increased similarity to other in-group members (Smith & Henry, 1996). Increased favorability toward members of the group may take

the form of increased trust, positive regard, cooperation, and empathy (Brewer, 1999; Levin & Sidanius, 1999; Singh et al., 1998). These in-group benefits, although not extended to out-group members, are not necessarily indicative of hostility toward an out-group. However, group membership can also lead people to have more negative attitudes toward out-groups.

Favoritism of fellow group members and derogation of people from other groups can both be viewed as prejudice. The combination of in-group favoritism and out-group derogation between different groups is known as intergroup bias (Hewstone et al., 2002). Just as prejudice is often considered to be unfounded, the use of the word "bias" implies that the favoritism and derogation that are characteristic of intergroup bias are unfair or unjustified. Essentially, intergroup bias is understood as prejudice toward another group by way of favoring the in-group and/or derogating the out-group. Although distinguishing between in-group favoritism and out-group derogation can be difficult, the research on prejudice shows that it is possible to have one without the other (Hewstone et al., 2002).

Origins of Intergroup Bias

Although bias may be related to identifiable conflicts between groups, simply identifying as a member of a group is sufficient enough to activate these in-group/out-group processes (Tajfel, 1970). The minimal group paradigm was developed in the 1970's to determine the minimal conditions necessary for intergroup bias to occur (Tajfel, 1970). The researchers conducted experiments using 14 and 15-year-old boys. The boys would perform a task, such as estimating the number of dots on a screen. Students were then arbitrarily assigned to be "overestimators" or "underestimators" of the number of dots on the screens. In a subsequent and ostensibly unrelated task, they were asked to privately distribute money to other participants. The boys distributed the money fairly when no information about groups was provided. However,

when they were provided with simple information about whether the other participants were "overestimators" or "underestimators", the boys distributed significantly more money to in-group participants than out-group participants. Several other versions of the minimal group paradigm have been conducted (Tajfel et al., 1971). These studies illustrate that in-group and out-group categorization have a powerful ability to influence attitudes and behaviors toward others.

Reducing the concept of prejudice to simple in-group/out-group processes can often be the most parsimonious explanation for conflict between groups. Even as infants and children, humans tend to divide people into categories based on characteristics such as race (Bar-Haim et al., 2006; Kelly et al., 2005). By three years of age, children demonstrate a preference for playing with other members of their own race (Aboud, 1988) and gender (Huston, 1983). Out-group derogation is also present among children at a very young age. Children between three and five years old verbally demonstrate negative attitudes toward out-groups and associate out-group children with negative traits (Bigler & Liben, 2006; Hirschfeld, 1998; Aboud, 1988). Intergroup bias is, in fact, so parsimonious that it can also be used to explain prejudice among other species of animals. Across seven experiments, Mahajan and colleagues (2011) demonstrated evidence of intergroup bias among rhesus macaque monkeys. The monkeys quickly identified in-group and out-group members and exhibited clear signs of in-group favoritism and out-group derogation.

The ease with which in-group/out-group processes can be elicited, combined with evidence of intergroup bias among human children and other species of animals, suggests that prejudice may have evolutionary origins. It is not difficult to imagine how such processes might provide an evolutionary benefit to humans and other social animals. The sociofunctional threat-based approach to prejudice emphasizes the evolutionary importance of in-group members'

reactions to potential threats caused by out-groups. According to the sociofunctional threat-based approach, different out-groups pose different threats to in-groups. For example, African Americans are seen as a threat to in-group safety, while gay men are viewed as a threat to in-group values. In order to protect the in-group from these out-group threats, it is evolutionarily advantageous for in-group members to experience emotions that motivate action to mitigate the specific threats posed by the out-group. For example, U.S. samples that are predominately white and Christian associate African Americans with feelings of fear and associate gay men with feelings of disgust (Cottrell & Neuberg, 2005).

Evolutionary explanations for prejudice, such as the sociofunctional threat-based approach, support the notion that people are evolutionarily prepared to detect out-group threats in order to protect the in-group. Perhaps this predisposition for identifying out-group threats explains why intergroup bias is activated with ease, is exhibited at a young age, and is present among other species of social animals. However, there are several additional aspects of intergroup bias that should be considered. For example, not all people identify strongly as a member of their in-group, resulting in variability in levels of in-group favorability across individuals and groups. Additionally, there may be individual-level benefits to intergroup bias beyond the survival benefits described by evolutionary theories. A deeper understanding of intergroup bias can be gained by carefully considering some of the prominent theories in social psychology that have been proposed on the topic.

Theories of Intergroup Bias

Research on prejudice dates back several decades. During this time, several popular theories in social psychology have been proposed in an attempt to better understand intergroup bias and why there is variation in how favorably in-groups and out-groups are perceived. Some

of the most prominent theories regarding intergroup bias are discussed below: belief congruence theory (Rokeach et al., 1960), similarity-attraction hypothesis (Byrne et al., 1966), dissimilarity-repulsion hypothesis (Rosenbaum, 1986), social identity theory (Tajfel & Turner, 1979), terror management theory (Greenberg et al., 1986), and subjective uncertainty reduction theory (Hogg, 2000; Hogg & Abrams, 1990). Although there are numerous other theories related to intergroup bias, these selected theories should provide sufficient background for understanding intergroup bias within the scope of the current studies.

Belief Congruence Theory

Belief congruence theory (Rokeach et al., 1960) is the oldest theory related to intergroup bias that will be discussed later. It is an ideal starting point, because it relates directly to the types of intergroup bias that will be examined in the current studies. Rokeach and colleagues (1960) believed that prejudice was heavily influenced by the degree to which out-groups are perceived as having different beliefs than the in-group. Belief congruence theory suggests that people are most prejudiced against out-groups with dissimilar beliefs, as opposed to differences in other features, such as skin color. For example, Rokeach demonstrated that white participants were more prejudiced toward a racial in-group member with dissimilar beliefs, a communist white man, than a racial out-group member who did not have dissimilar beliefs, a black man who was not a communist (Rokeach et al., 1960). This early work helped set the stage for other researchers to investigate the respective importance of similarity and dissimilarity in understanding intergroup bias. Many of the theories discussed subsequently in this paper build off of this idea.

Similarity-Attraction Hypothesis and Dissimilarity-Repulsion Hypothesis

In the decades following the introduction of belief congruence theory, two opposing hypotheses about similarity were proposed. These hypotheses made different predictions about the relationship between perceived similarity to others and attitudes toward others. First, the similarity-attraction hypothesis (Byrne et al., 1966) was proposed. This hypothesis asserts that perceived similarity leads to increased attraction. Then, the dissimilarity-repulsion hypothesis (Rosenbaum, 1986) was proposed as an alternative explanation. In contrast to the similarity-attraction hypothesis, the dissimilarity-repulsion hypothesis contends that people are primarily repulsed by dissimilarity and secondarily attracted to similarity. Subsequent studies by Drigotas (1993) tested these two competing hypotheses. After filling out an attitude survey, participants could choose to include or exclude other people with similar or dissimilar attitudes for a subsequent group activity. Across two studies, participants demonstrated a pattern of sequentially including similar others first, and then choosing to exclude dissimilar others. These results provide evidence that similarity-attraction was primary to dissimilarity-repulsion, providing support for the similarity-attraction hypothesis. However, the results still indicate that similarity and dissimilarity both play a role in predicting attitudes toward others.

Social Identity Theory

Another popular theory within intergroup bias literature is social identity theory (Tajfel & Turner, 1979). Social identity theory is different than the previous theories because of its emphasis on self-esteem. Social identity theory suggests that intergroup bias may actually be a way to maintain the favorability of an in-group. Consequently, members of the in-group are then provided with a positive social identity, due to the relative favorability of the group compared to other groups. The benefit of maintaining this high in-group status may come in the form of increased self-esteem for group members. Numerous studies have supported the notion that

intergroup bias maintains greater self-esteem (Aberson et al., 2000; Rubin & Hewstone, 1998). This approach to intergroup bias provides a functional explanation – improved self-esteem – for maintaining higher favorability of an in-group relative to an out-group.

Terror Management Theory

Self-esteem also plays a role in terror management theory (Greenberg et al., 1986). However, terror management theory provides its own account of the function of intergroup bias. According to terror management theory, people develop worldviews as buffers for existential anxiety. For example, religious beliefs that promise life after death can help buffer anxiety about mortality. Intergroup bias comes into play when people are faced with others who bolster or challenge their worldview. A person's worldview is bolstered when it is shared by other people. In-group members with similar worldviews are important for maintaining a buffer against anxiety and maintaining self-esteem. Conversely, a person's worldview comes under threat when other people seem to have a conflicting worldview. Out-group members may pose a challenge to buffering anxiety and maintaining self-esteem. Prejudice toward others with dissimilar worldviews is an aspect of terror management theory that was also present in belief congruence theory.

Subjective Uncertainty Reduction Theory

Subjective uncertainty reduction theory (Hogg, 2000; Hogg & Abrams, 1990) combines elements of social identity theory and terror management theory. Subjective uncertainty theory is based on the notion that people are motivated to reduce feelings of uncertainty. According to the theory, this can be achieved by identifying with an in-group that provides identifiable rules for normative behavior. Because the in-group is associated with reduced uncertainty, people associated with the in-group are viewed more positively than out-group members, which creates

an in-group favoritism effect. When faced with uncertainty, people may respond by showing increased intergroup bias.

Theoretical Conclusions

These popular theories provide valuable information about the types of factors that play a role in intergroup bias. Being a member of an in-group may provide benefits such as increased self-esteem, positive social identity, clear rules for behavior, and protection from existential anxiety. Out-groups may pose threats to the benefits provided by the in-group. As such, people tend to give preference to others who share similar beliefs and discriminate against others with dissimilar beliefs. These findings emphasize the importance of group membership, values, and perceived similarity in predicting intergroup bias. If group membership, values, and perceived similarity are critical to intergroup bias, it is only logical to conclude that members of *religious* groups will exhibit strong levels of in-group favoritism and out-group derogation in relation to out-groups. The benefits provided by the religious group membership (self-esteem, positive social identity, clear rules for behavior, and protection from existential anxiety) may be threatened by people from other groups. This should be especially true for out-groups perceived to have dissimilar beliefs.

Religion and Prejudice

Religion has been linked to prejudice toward multiple out-groups for several decades (Allport, 1966; Hall et al., 2010; Klein et al., 2018). However, religion is complicated, and religiosity is a difficult construct to measure. For example, religiosity could be defined by behaviors, such as how often a person prays or attends religious services. Religion could also be defined by beliefs, such as whether or not a person believes that religious texts contain unquestionable truth. Because religion is difficult to operationalize, several measures of

religiosity have been created to capture different aspects of religious beliefs and behaviors. Before discussing the link between religion and prejudice, it is important to discuss how religiosity has been operationally defined within the extant literature.

Measures of Religiosity

Numerous measures of religiosity have been developed and used to better understand the link between religion and prejudice toward various groups. Some of the measures that have been the most commonly used include religious fundamentalism, religious orientation, and post-critical belief scale. Of course, there are other measures used within the literature, but the measures discussed below provide a brief introduction to the variety of ways that religiosity has been defined by social psychologists interested in religiously motivated attitudes and behaviors.

Religious Orientation (Intrinsic/Extrinsic). One of the oldest measures of religion that has been used in social psychology is the Religious Orientation Scale (Allport & Ross, 1967). The scale was meant to indicate the way in which a person approaches their religion. It is based on the notion that people can have an intrinsic orientation to religion or an extrinsic orientation to religion. An intrinsic orientation refers to a deeply personal religious belief that is central to a person's way of life. An extrinsic orientation describes an approach to religion that is primarily based upon religious group membership. The Religious Orientation Scale contains 20 items (9 intrinsic items and 11 extrinsic items). Extrinsic religiosity is measured using questions designed to assess the extent to which a person views religion as a means to an end. Specifically, on a 5-point Likert-type scale ranging from *strongly disagree* to *strongly agree*, people indicate their level of agreement with statements 11 statements including "*I go to church mainly because I enjoy seeing people I know there.*" and "*I pray mainly to gain relief and protection.*" Intrinsic religiosity is measured using questions designed to assess the extent to which a person holds a

deeply personal connection to their religion. This portion of the scale contains items such as "I try hard to carry my religion over into all my other dealings in life."

Religious Fundamentalism. Altemeyer and Hunsberger (1992) created the Religious Fundamentalism scale to capture the degree to which a person believes that there is one set of religious teachings that provide the absolute, unquestionable truth about the world. Additionally, it was intended to determine the extent to which a person believes that opposition to this truth must be resisted and the ways of the past must continue to be followed. The original Religious Fundamentalism scale contained 20 items that were rated on a Likert-type scale. The scale had a mean interitem correlation of .37 and a reliability of $\alpha = .92$. Altemeyer and Hunsberger (2004) updated this with a shortened version that addressed limitations of the previous version. The shortened version contains 12 items, the mean inter-item correlation was improved, and reliability remained nearly identical to the original version. The 12-item version asks participants to indicate their level of agreement with each item on a Likert-type scale from *strongly disagree* to *strongly agree.* It includes items such as "*God has given humanity a complete, unfailing guide to happiness and salvation, which must be totally followed.*" and "*The basic cause of evil in this world is Satan, who is still constantly and ferociously fighting against God.*"

Post-Critical Belief Scale. It has been proposed that religiosity is multi-dimensional and should be measured accordingly (Wulff, 1991). Although the Religious Orientation Scale measures two different orientations, it is debatable whether it measures two different *dimensions* of religiosity. Researchers have expressed difficulty in identifying what each dimension of the scale is measuring (Kirkpatrick & Hood, 1990). The Post-Critical Belief Scale (Hutsebaut, 1996) was developed to measure religiosity two-dimensionally, with separate factors for strength of belief and cognitive processing style. Using this measure, a person can be high or low in their

strength of belief in religious content and can process religious content literally or symbolically. A shortened 18-item version of the scale was developed by Duriez and colleagues (2005). It contains four subscales: Second Naiveté, Orthodoxy, External Critique, and Relativism. The Second Naiveté subscale contains four items such as "the Bible holds a deeper truth which can only be revealed by personal reflection" and showed acceptable internal reliability. The Orthodoxy subscale contains five items such as "I think that Bible stories should be taken literally, as they are written" and showed high internal reliability. The External Critique subscale contains five items such as "science has made a religious understanding of life superfluous" and showed good internal reliability. The Relativism subscale contains four items such as "My ideology is only one possibility among so many others" and showed good internal reliability. All subscales were subsequently used to compute the strength of belief dimension (transcendence), which is done by subtracting the sum of External Critique and Relativism from the sum of Orthodoxy and Second Naiveté.

These measures of religiosity have been used to determine the relationship between religion and prejudice. Each measure encompasses different aspects of religiosity and has been linked to different types of prejudice. The following sections will provide details about religion and intergroup bias.

Religious In-group Favoritism

Being a member of a group can provide several benefits to a person, such as clear rules for behavior, self-esteem, and belonging (Deci & Ryan, 2012; Hogg & Abrams, 1990; Tajfel & Turner, 1979). Being a member of a *religious* group can provide some additional benefits. For example, being a member of a religious group can provide a person with a sense of control, meaning, and well-being (Ysseldyk et al., 2010). Logically, these benefits may make it even

more important for an individual to maintain the favorability of their religious in-group compared to other types of in-groups. Maintaining in-group favorability may also protect against threats to the sense of control, meaning, or well-being that is provided by religious group membership. This notion is supported by the finding that many people tend to categorize others on a religious dimension to a greater extent than categorizing people based on race, suggesting that religious group membership is particularly meaningful (Weeks & Vincent, 2007).

Based on theories of intergroup bias, it could be predicted that the importance of maintaining the favorability of one's religious in-group leads to religious in-group favoritism. Indeed, several studies have demonstrated religious in-group favoritism. Jackson and Hunsberger (1999) found that religious participants reported more favorable attitudes toward other religious people. Additionally, another series of studies found that individuals subliminally primed with religious words showed an increase in religious in-group favoritism (Johnson et al., 2012). Although both of the previous examples involved primarily Christian participants, there is also evidence of religious in-group favoritism among Muslims and Hindus (Islam & Hewstone, 1993).

Beyond simple in-group favoritism, there is also evidence that members of religious groups demonstrate more negative attitudes toward various out-groups. A meta-analytic review of religious racism showed that several measures of religiosity were linked with greater racial prejudice. Hall and colleagues (2010) looked at 55 independent studies from the United States linking religion with racism since the Civil Rights Act was passed in 1964. The results showed that religious fundamentalism and extrinsic religiosity were both significantly positively related to greater prejudice toward racial out-groups.

Value-violating Out-groups

Although certain aspects of religiosity have been consistently linked to racial prejudice, religion may be even more strongly linked with prejudice toward other types of out-groups. Specifically, religiosity has been strongly linked to prejudice toward groups that have traditionally been perceived to violate important religious values. These groups are often referred to as value-violating out-groups in the literature, and consist of groups such atheists, gay men, and lesbians (Grove, Hall, Rubenstein, et al., 2019; Johnson et al., 2012). Higher scores on the strength of belief dimension of the Post-Critical Belief Scale have been shown to predict greater prejudice toward atheists, gay men, and lesbians (Grove, Hall, Rubenstein, et al., 2019).

Atheists are a particularly disliked out-group. Growing evidence suggests that people have more negative attitudes toward atheists than other demographic groups and that these attitudes are more stable over time than attitudes toward other stigmatized groups (Edgell et al., 2016; Edgell et al., 2006, Gervais et al., 2017). For example, one national survey found that Americans disapprove of intermarriage with atheists more than with any other group (Edgell et al., 2006). Additionally, it has been demonstrated that people around the world are more likely to assume that the perpetrator of deviant criminal behavior, such as murder or bestiality, is an atheist than a member of a religious group (Gervais, 2014; Gervais et al., 2017).

Religious Intergroup Bias

Most of the research discussed to this point has focused on higher levels of religiosity as a predictor of prejudice. However, past theories of intergroup bias suggest that nonreligious people should also have more negative attitudes toward people with dissimilar values. Many studies show that nonreligious people generally tend to have more egalitarian social perspectives than highly religious people when it comes to attitudes toward women (see Zuckerman, 2009), gay men and lesbians (Grove, Hall, Rubenstein, et al., 2019), and Black/African Americans (Hall

et al., 2010). That does not necessarily mean that nonreligious people are completely unprejudiced. There have been some conflicting findings about prejudice among atheists and nonreligious people. Gervais (2013) cites that atheists do not seem to show bias against religious believers (Gervais et al., 2011; Jackson & Hunsberger, 1999). Additionally, although Christians rate atheists as less trustworthy than other Christians, nonreligious people do not rate Christians as lower than other atheists on trustworthiness (Grove, Rubenstein, & Terrell, 2019).

However, there is some evidence that religious and nonreligious people are both prejudiced toward one another. Brandt and Van Tongeren (2017) demonstrated that individuals lower and higher in religious belief are prejudiced toward one another. Grove and colleagues (2019) found that high and low scores on the strength of belief dimension of the PCBS were both correlated with greater intergroup bias. Kossowska and colleagues (2017) found that atheists in Poland were prejudiced toward Catholics and viewed Catholics as threatening to their values. Nonreligious people may also prefer nonreligious romantic partners and try to avoid religious romantic partners (Jackson et al., 2015).

There is also evidence that religious and nonreligious people are viewed as being dissimilar to one another in many ways. Studies looking at stereotypes of Christians and atheists in the U.S. indicate that the two groups are seen as possessing many opposite attributes (Grove, Rubenstein, & Terrell, 2019). Atheists are seen as more scientifically minded and liberal than other people and less religious, conservative, tradition loving, and conventional than other people. Conversely, Christians are seen as more religious, conservative, tradition loving, and conventional than other people and less scientifically minded and liberal than other people. Furthermore, Grove and colleagues (2019) found that people intuitively associate each group with some of these opposite attributes. Based on theories of intergroup bias discussed previously,

the fact that atheists and Christians are viewed as possessing opposite attributes suggests that the groups may be especially prejudiced toward one another.

Religious Values Conflict Model

Contrary to decades of research suggesting that certain aspects of religiosity were uniquely associated with prejudice, Brandt and Van Tongeren (2017) proposed that people high and low in religiosity are both prejudiced toward ideologically dissimilar others. They argued that people who are low in measures of religiosity are prejudiced toward people with dissimilar values, just as people high in religiosity are. Two competing hypotheses were proposed to test this proposition. The selective prejudice hypothesis would be supported if people low in religiosity felt equally favorably about groups with similar and dissimilar values, but people high in religiosity favored groups similar in values over groups with dissimilar values. The religious values conflict hypothesis would be supported if people low and high in religiosity both favored people with similar values more than people with dissimilar values.

Generally, their results were consistent with the religious values conflict hypothesis and not the selective prejudice hypothesis. People low and high in measures of religiosity appeared to have more negative attitudes toward people who were perceived to have values dissimilar to their own. However, Brandt and Van Tongeren did not directly test perceived dissimilarity as a predictor of prejudice. They used measures of perceived similarity to put groups into one of two categories: similar to fundamentalists or dissimilar to fundamentalists. Then, the favorability ratings for groups considered similar or dissimilar to fundamentalists were averaged to create a composite score for each category. People 1 standard deviation above and below the mean in religiosity were then compared on how favorably they felt about each category. Based on the results, it is clear that people low and high in religiosity both demonstrate intergroup bias effects

toward groups that are perceived to have dissimilar values. However, due to the methodology employed by Brandt and Van Tongeren (2017), it remains unclear whether perceived dissimilarity in values directly predicts prejudice between religious and nonreligious people.

The Present Studies

Several past theories have emphasized the importance of perceived in-group similarity and out-group dissimilarity in understanding intergroup bias. Additionally, theories and research both suggest that similarity and dissimilarity in *beliefs* may be particularly important. Brandt & Van Tongeren (2017) have demonstrated that people high and low in religiosity are prejudiced toward other groups with dissimilar values. They have described the pattern of results as the religious values conflict model. The goal of the current research is to provide a more detailed understanding of the variables involved in the religious values conflict model. The current studies are designed to examine the interplay between religion, perceived in-group similarity of values, and perceived out-group dissimilarity of values in predicting prejudice toward a religious out-group. The current studies investigate intergroup bias between groups high and low in measures of religiosity, just as Brandt and Van Tongeren (2017) did.

A pilot study was conducted to replicate the findings of Brandt and Van Tongeren (2017). The pilot study was also used to learn more about the relationship between religiosity, perceived in-group similarity of values, and perceived out-group dissimilarity of values in predicting prejudice toward an out-group. Based on the findings of the pilot study, a subsequent study was designed to test a mediation model.

CHAPTER II

PILOT STUDY

Introduction

A pilot study was conducted in order to develop clear, a priori hypotheses about the relationships between the variables of interest. Several different analytical methods were employed to examine the relationships between religiosity, perceived similarity in values to several groups, and attitudes toward several groups. Although it appears that perceived dissimilarity in values plays an important role in intergroup bias between people who are low and high in measures of religiosity, it is possible that measures of religiosity or perceived in-group similarity in values will be better at predicting intergroup bias. It is also possible that some of these factors will interact with one another to predict attitudes toward the groups. The pilot study was designed to replicate and extend the findings of Brandt and Van Tongeren (2017). Additionally, the results from the pilot study were used to develop predictions for the main study. The following hypotheses were made for the pilot study:

First, we conducted a conceptual replication of the findings of Brandt and Van Tongeren (2017).

Hypothesis 1a. Strength of belief will predict prejudice toward atheists.

Hypothesis 1b. Strength of belief will predict prejudice toward Christians.

Hypothesis 2a. Participants high (+1 SD) in strength of belief will be prejudiced toward atheists compared to Christians.

Hypothesis 2b. Participants low (-1 SD) in strength of belief will be prejudiced toward Christians compared to atheists.

Hypothesis 2c. Christian participants will be prejudiced toward atheists compared to Christians.

Hypothesis 2d. Atheist participants will be prejudiced toward Christians compared to atheists.

Then, we extended the findings by directly testing the role of in-group/out-group similarity. The variables that predict prejudice best were determined using regression with bootstrapping. In-group/out-group similarity as mediators of the link between religiosity and prejudice were tested using SEM with bootstrapping.

Method

Participants and procedure

In order to test a structural equation model (SEM), it was necessary to obtain a large sample. Additionally, nonreligious participants had to be recruited for some of the analyses. Amazon's Mechanical Turk (MTurk) was used for recruitment because it was able to provide a large number of participants and because MTurk samples tend to include a larger number of nonreligious participants than the university undergraduate participant pool. Participants (N = 553) were recruited for the pilot study. Because some analyses are difficult to perform in various software packages (e.g., Amos Graphics 25, RStudio) with missing data, participants with missing data for any of the important variables were excluded. Additionally, because some of the religious measures used in this study were specific to Christianity, any participants that reported religious affiliation other than Christian, atheist, or agnostic were also excluded.

In the final sample (N = 326), 70% of participants self-identified as male, 33.4% as female, <1% as other, and <1% as unspecified. The mean age for the sample was 31.83 years (SD = 9.70, ranging from 20 to 73 years). The self-reported race/ethnicity of the sample was 63.2% White, 22.1% Asian, 9.8% Black, 2.8% Native American, 1.8% Hispanic, and <1% "other ethnicity." The sample was 37.1% Democrats, 36.2% Republicans, 23.0% independents,

<1% libertarians, and 2.8% that reported no political affiliation. The religious affiliation of the sample was 68% Christian (140 Catholic, 57 Protestant, 1 Latter Day Saint, and 9 participants that indicated "other Christian") and 32% nonreligious (48 atheist and 56 agnostic).

Participants completed a Qualtrics survey containing a cover letter, demographics questionnaire, several measures of religiosity, measures of perceived similarity to several different target groups, and measures of prejudice toward several different target groups. All blocks and scale items were presented to participants in random order to control for order effects. After completing the study, $0.50 was credited to participants' accounts.

Materials

Demographics. Participants completed a demographic questionnaire containing items about age, sex, ethnicity, political affiliation, and religious affiliation.

Religiosity. Strength of religious belief was measured using the 18-item version of the Post-Critical Belief Scale (PCBS; Duriez et al., 2005), which is a two-dimensional measure of religiosity. The PCBS contains four subscales: Second Naiveté, Orthodoxy, External Critique, and Relativism. The Second Naiveté subscale contains four items, such as "the Bible holds a deeper truth which can only be revealed by personal reflection" and showed acceptable internal reliability. The Orthodoxy subscale contains five items, such as "I think that Bible stories should be taken literally, as they are written" and showed high internal reliability. The External Critique subscale contains five items, such as "science has made a religious understanding of life superfluous" and showed good internal reliability. The Relativism subscale contains four items such as "My ideology is only one possibility among so many others" and showed good internal reliability (see Table 1 for reliability analyses for all scales). All subscales were subsequently

used to compute the strength of belief dimension, which is done by subtracting the sum of External Critique and Relativism from the sum of Orthodoxy and Second Naiveté.

Similarity. Similarity was measured with two items used by Brandt and Van Tongeren (2017). Participants were asked to rate several social groups, including atheists and Christians, on "the extent to which you see them holding political or social beliefs different from your own" and "the extent to which you see them holding religious beliefs different from your own" on a 5-point Likert-type scale (1 = not at all different from me, 5 = very different from me). Although we were primarily interested in atheists and Christians, we included several groups to help prevent demand characteristics.

Prejudice. Prejudice was measured using thermometer items used by several researchers in the past (Brandt & Van Tongeren, 2017; Grove, Hall, Rubenstein, et al., 2019; Shen et al., 2013). Participants were asked to rate several social groups, including atheists and Christians, on "the extent to which you feel warm/favorable or cold/unfavorable toward each of the following groups" on a 7-point Likert-type scale (-3 = extremely cold/unfavorable, 3 = extremely warm/favorable). Again, we included several groups to help prevent demand characteristics.

Results

Analytic Strategy and Preliminary Analysis

Correlations, multiple regressions, and path analyses were used to examine the results. Data cleaning and preliminary analyses were conducted using SPSS 26 software, regression analyses were conducted using RStudio, and all path models were tested using Amos Graphics 25. Prior to any analyses, scales and variables were checked for violations of assumptions. None of the scales or variables showed skew or kurtosis greater than 2.0 and no transformations were deemed to be necessary.

Next, an exploratory factor analysis was run for the 18 items from the PCBS. The scale items were tested using the Principle Axis Factoring with a Direct Oblimin rotation. Theoretically, there should be four factors that each represent a subscale of the PCBS. Initial extraction identified any factors with eigenvalues greater than 1.0 and the scree plot suggested a possible three or four factor solution. However, only three factors were identified and accounted for 65.51% of the variance. Factor 1 contained all of the items from the Orthodoxy subscale, but also included some items from Second Naiveté. Factor 2 included all of the External Critique items. Factor 3 included all of the Relativism items, but also included some of the items from Second Naiveté. Specifying the extraction of four factors did little to improve the solution. Four factors only accounted for 67.86% of the variance. Although Factor 4 did exclusively contain Second Naiveté items, most of the items did still load stronger onto other factors. Closer examination of the items revealed that some of the double loadings were double-barreled items and could be improved. Ultimately, all of the items were retained for further analyses in the pilot study for the following reasons: (1) this is an established scale, (2) three of the factors were supported, and (3) the fourth factor was partially supported.

Hypothesis 1. Correlations and multiple regression analyses were conducted using RStudio. These analyses were used to test hypothesis 1a and 1b. In support of hypothesis 1a, strength of belief was positively associated with dissimilarity to atheists and negatively associated with favorability of atheists (Table 2). In support of hypothesis 1b, strength of belief was negatively associated with dissimilarity to Christians and positively associated with favorability of Christians (Table 2).

Regression analyses were conducted to further test hypothesis 1a and 1b. In the first model, favorability of atheists was regressed on strength of belief, controlling for demographic

variables. The demographic variables included in the model were sex (male = 1, female = -1), age (mean centered), and ethnicity (white = 1, nonwhite = -1). These demographic variables were coded the same as in Brandt and Van Tongeren (2017). Controlling for the demographic variables, strength belief was a significant predictor of favorability of atheists, supporting hypothesis 1a (Table 3). Hypothesis 1b was tested using the same procedure. Favorability of Christians was regressed on strength of belief, controlling for demographic variables. Strength of belief was a significant predictor of favorability of Christians (Table 4).

Hypothesis 2. The second hypothesis was that participants low and high in religiosity would be prejudiced toward dissimilar groups. Two competing hypotheses (selective prejudice hypothesis and religious values conflict hypothesis; Brandt & Van Tongeren, 2017) were tested by comparing mean differences and examining the pattern of results. These analyses were completed using IBM SPSS Statistics 26. Favorability ratings of atheists and Christians for people low (1 *SD* below the mean in strength of belief) and high (1 *SD* above the mean in strength of belief) in religious belief were compared. The pattern of results was consistent with the religious values conflict hypothesis (Figure 1). People high in religious belief rated Christians as more favorable than atheists which supported hypothesis 2a. People low in religious belief rated atheists as more favorable than Christians, which supported hypothesis 2b. Favorability ratings of atheists and Christians for atheist participants and Christian participants were also compared. Once again, the pattern of results was consistent with the religious values conflict hypothesis, rather than the selective prejudice hypothesis (Figure 2). Atheist participants rated atheists more favorably than Christians, which supported hypothesis 2c. Christians participants rated Christians more favorably than atheists, which supported hypothesis 2d.

Exploratory analyses. To extend the findings, exploratory analyses were conducted. The first exploratory analyses were designed to determine which variable (strength of religious belief, dissimilarity to target group, or dissimilarity to competing group) would best predict prejudice toward a particular target group (atheists or Christians). They were conducted by conducting two different multiple regression analyses using RStudio. In the first model, favorability of atheists was regressed on strength of belief, dissimilarity to Christians (competing group), dissimilarity to atheists (target group), and the demographic variables. The results indicated that the overall model was significant, and the predictors accounted for about 15% of the variance. Strength of belief, dissimilarity to atheists (target group), and dissimilarity to Christians (competing group) were all significantly associated with favorability of atheists. However, the standardized beta, upper and lower limits of the 95% confidence intervals, and Pearson's correlation coefficient indicate that perceived dissimilarity to Christians is the best predictor of favorability of atheists. In other words, greater similarity to Christians predicts less favorable attitudes toward atheists (Table 5).

In the second model, favorability of Christians was regressed on strength of belief, dissimilarity to Christians (target group), and dissimilarity to atheists (competing group), and the demographic variables. Results of this model showed that the overall model was significant, and the predictors accounted for approximately 26% of the variance. Strength of belief, dissimilarity to Christians (target group), and dissimilarity to atheists (competing group) were all significantly associated with favorability of Christians. Based upon the standardized beta, upper and lower limits of the 95% confidence intervals, and Pearson's correlation coefficient, it appears that perceived dissimilarity to atheists is the best predictor of favorability ratings of Christians. Greater similarity to atheists predicts less favorable attitudes toward Christians (Table 6).

Additional exploratory analyses were conducted to test for mediation. These analyses were conducted using structural equation modeling (SEM) in Amos Graphics 25. Mediation models were created, and bootstrapping was used to test for significant indirect effects. Model fit was assessed using several indices. The comparative fit index (CFI) is an incremental fit index that varies from 0 to 1. Hu and Bentler (1999) advise that CFI .90 or greater is acceptable, but CFI .95 or greater is ideal. Standardized root mean square residual (SRMR) is an absolute fit index, similar to chi-square, but with 0 indicating a perfect model fit and larger scores indicating worse model fit. Kline (2005) advises using .10 as a cutoff, Hu and Bentler (1999) advise using .08, and Byrne (2016) advises using .05 as a cutoff for SRMR. Root mean square error of approximation (RMSEA) is a parsimony fit index, with larger scores indicating worse model fit. RMSEA also includes 90% confidence interval estimates. Hu and Bentler (1999) suggest that .06 or less indicates great fit, MacCallum and colleagues indicate that .08 to .10 are acceptable fit, but greater than 10 indicates poor model fit. With RMSEA, it is ideal to have the 90% confidence intervals within the acceptable range (low estimate should be around .06 or less, high estimate should be .10 or less). The Tucker-Lewis Index (TLI) is incremental, like CFI, but uses chi-square to determine fit. TLI is interpreted using the same standards as CFI. All SEM models were assessed using these criteria to assess these model fit indices.

In the first model tested, favorability of Christians was used as an observed, endogenous outcome variable. Strength of belief was used as an observed, exogenous predictor variable. Dissimilarity to atheists and dissimilarity to Christians were used as endogenous latent variables, mediating the relationship between strength of belief and favorability of Christians. Overall, the model had acceptable fit (Table 7). Results indicated that all paths were significant except for the

path between dissimilarity to Christians and favorability of Christians (Figure 3). Additionally, there was a significant indirect effect of strength of belief on favorability of Christians.

The second mediation model used the same exact procedure, but favorability of atheists was used as the observed, endogenous outcome variable. Overall, the model had acceptable fit (Table 7). All paths in the model were significant except for the path between dissimilarity to atheists and favorability of atheists (Figure 4). There was not a significant indirect effect of strength of belief on favorability of atheists. However, when dissimilarity to atheists was removed from the model, there was a significant indirect effect of strength of belief on favorability of theists through dissimilarity to Christians. The results of both mediational models suggest that (1) perceived dissimilarity to the target group does not significantly predict favorability of the target group, and (2) perceived dissimilarity to the competing group mediates the relationship between strength of religious belief and favorability of the target group.

CHAPTER III

MAIN STUDY

Introduction

The pilot study replicated the findings of Brandt & Van Tongeren (2017) using a different measure of religiosity and examining atheists and Christians as targets of prejudice, rather than aggregated groups. People low in religiosity favored atheists over Christians and people high in religiosity favored Christians over atheists. However, exploratory analyses revealed that perceived dissimilarity in values of the target group was actually not a good predictor of prejudice toward that group. Multiple regression analyses and mediation models both suggested that perceived similarity in values of the competing group was the strongest predictor of prejudice toward a target group. For example, prejudice toward atheists (target group) was best predicted by perceived similarity in values to Christians (competing group) in the pilot study.

The main study was designed to build upon the pilot study to provide a better understanding of the relationships between religiosity, perceived in-group/out-group (dis)similarity in values, and religious intergroup bias. The results of the pilot study were used to make new confirmatory hypotheses with a priori predictions. Multiple regression analyses were performed to replicate findings of the pilot study. Additionally, the mediation models from the pilot study had some limitations that needed to be addressed. For example, it is ideal to use latent variables with at least three indicators each in a structural equation model. The variables used in the mediation models for the pilot study did not have at least three indicators each. To address this, the main study used measures of religiosity and dissimilarity with at least three indicators each.

Hypotheses

Multiple regression in RStudio were used to test the following hypotheses:

Hypothesis 1a. Similarity to atheists will be the best predictor of prejudice toward Christians (controlling for religiosity and dissimilarity to Christians).

Hypothesis 1b. Similarity to Christians will be the best predictor of prejudice toward atheists (controlling for religiosity and dissimilarity to atheists).

SEM mediation with bootstrapping in Amos Graphics 25 was used to test the following hypotheses:

Hypothesis 2a. Similarity to atheists will mediate the relationship between religiosity and prejudice toward Christians (the indirect effect of dissimilarity to Christians will not be significant).

Hypothesis 2b. Similarity to Christians will mediate the relationship between religiosity and prejudice toward atheists (the indirect effect of dissimilarity to atheists will not be significant).

Method

Participants and procedure.

U.S. adults ($N = 688$) were recruited from Amazon.com's Mechanical Turk (MTurk). MTurk was used once again due to the need for a large overall number of participants and the need for a large number of nonreligious participants. Participants were excluded from the study using the same criteria outlined in the pilot study. Only Christians and nonreligious individuals were included for analyses and participants with incomplete responses for any of the important variables were excluded. This process results in the exclusion of 169 participants from the study.

The final sample (N = 519) contained 39.1% women, 60.1% men, <1% non-binary, and <1% gender non-conforming participant. The average age for participants was 34.40 (SD = 10.5, ranging from 18 to 70 years old). Seventy-four percent of participants self-identified as White/Caucasian, 11.2% as Black/African American, 7.1% as Hispanic, 4.4% as Asian, 2.3% as Native American/American Indian, <1% as other ethnicities, and 1 participant preferred not to say. The sample was 45.1% Democrats, 31.8% Republicans, 20.4% independents, 1.9% "nones", and <1% other political affiliations. The religious affiliation of the sample was 66.5% Christian (223 catholic, 94 protestant, and 28 participants that indicated other "Christian") and 33.5% nonreligious (86 atheist and 88 agnostic).

Participants accessed the survey link through MTurk and then completed the survey on Qualtrics. The survey contained a cover letter, demographics questionnaire, measures of religiosity, measures of perceived similarity to different target groups, and measures of prejudice toward different target groups. All questionnaire blocks and items were randomized to control for order effects. After finishing the survey, $0.50 was credited to participants' MTurk accounts.

Materials

Demographics. Participants were given a demographic questionnaire asking them to self-report information about gender, ethnicity, political affiliation, religious affiliation, and belief in God (Appendix B).

Religiosity. Religiosity was measured using the 12-item Religious Fundamentalism scale (RFS; Altemeyer & Hunsberger, 2004; Appendix C). The Religious Fundamentalism Scale was used to measure a strict and rigid belief in Christian religious doctrine. On a 7-point Likert-type scale, participants were asked to indicate their level of agreement with each of 12 statements, such as "*The basic cause of evil in this world is Satan, who is still constantly and ferociously*

fighting against God." The scale contained six items that required reverse coding, which were recoded during preliminary analyses. The scale showed very high reliability (Table 8).

Similarity. Similarity was measured with four items adapted from those used in the pilot study (Appendix E). Participants were asked to rate several social groups, including atheists and Christians, on "the extent to which you see them holding (social/political/religious/moral) beliefs different from your own" on a 5-point Likert-type scale. As in the pilot study, participants rated similarity to several different groups to avoid demand characteristics. The four similarity items were measured with reference to each group and the four items were intended to be used to create a single mean score representing perceived similarity to that group. The four similarity items with Christians as the target group, and the four similarity items with atheists as the target group, both showed high reliability (Table 8).

Prejudice. Prejudice was measured using the same thermometer/favorability items used in the pilot study and in many previous studies (Brandt & Van Tongeren, 2017; Grove et al., 2019; Shen et al., 2013; Appendix F). Participants were again asked to rate several social groups, including atheists and Christians, on "the extent to which you feel warm/favorable or cold/unfavorable toward each of the following groups" on a 7-point Likert-type scale (Table 8). Again, several other groups were included to help prevent demand characteristics.

Results

Analytic Strategy and Preliminary Analysis

Data were downloaded into SPSS version 26 from Qualtrics. Participants that did not meet criteria for inclusion were removed from analysis. Prior to analysis, the skewness and kurtosis for each item were assessed. None of the items showed high skewness or kurtosis (greater than 2.0).

Next, six items from the 12-item Religious Fundamentalism Scale (RFS) were reverse coded. The scale items were tested for unidimensionality using Principle Axis Factoring with a Direct Oblimin rotation. Theoretically, the RFS should be unidimensional and all items should load most strongly onto a single factor. Initial extraction identified all factors with eigenvalues greater than 1.0 and the scree plot suggested two factors. However, all items loaded highly, and strongest, onto Factor 1, which accounted for 47.89% of the variance.

Correlations between the key variables were examined. Unlike in the pilot study, all of the variables were highly significantly correlated in the main study (Table 9). This may have been due to the substantial increase in sample size.

Multiple regression models

Hypothesis 1. Multiple regression analyses were conducted using RStudio to test support for hypothesis 1a and 1b. The first hypothesis predicted that, controlling for religious fundamentalism and dissimilarity to Christians, dissimilarity to atheists would significantly predict prejudice toward Christians. Although religious fundamentalism and dissimilarity to Christians were both significant predictors of prejudice toward Christians, dissimilarity to atheists was the strongest predictor (Table 10). These results support hypothesis 1a. Hypothesis 1b predicted that, controlling for religious fundamentalism and dissimilarity to atheists, dissimilarity to Christians would significantly predict prejudice toward atheists. Results supported hypothesis 1b (Table 11). Religious fundamentalism and dissimilarity to atheists were both significant predictors of prejudice toward atheists, but it was dissimilarity to Christians that was the strongest predictor of prejudice toward atheists.

Structural equation models

Hypothesis 2. Amos Graphics 25 was used to create structural equation models to test support for hypothesis 2a and 2b. Hypothesis 2a predicted that dissimilarity to atheists would mediate the relationship between religious fundamentalism and prejudice toward Christians (Figure 5). A model was created in which religious fundamentalism was used as an exogenous, latent variable. Dissimilarity to atheists and dissimilarity to Christians were used as endogenous latent variables, mediating the relationship between religious fundamentalism and prejudice toward Christians. Although the Religious Fundamentalism Scale consists of 12 items, the six reverse-scored items did not have sufficient loadings and were excluded from the model, leaving the six remaining items as indicators for the religious fundamentalism latent variable. The dissimilarity latent variables each consisted of four items, and thus, were an improvement over the models used in the pilot study (Figure 6). Overall, the model had great fit (Table 12). Unlike in the pilot study, the path between dissimilarity to Christians and prejudice toward Christians was significant ($p < .001$). The direct effect of religious fundamentalism on prejudice toward Christians was nonsignificant ($p = .185$), but the indirect effect was statistically significant ($p = .014$, 95% confidence interval for the indirect effect [.22, .55]), showing that the effect of religious fundamentalism was mediated. This finding supports hypothesis 2a.

A second model was created to more directly test the mediational role of dissimilarity to atheists in the relationship between religious fundamentalism and prejudice toward Christians suggested by hypothesis 2a. This model was the same as the previous model, but without the dissimilarity to Christians latent variable (Figure 7). According to the model fit indices, this model had great fit (Table 12). The indirect effect of religious fundamentalism on prejudice toward Christians through dissimilarity to atheists was significant ($p = .021$, 95% confidence interval for the indirect effect [.17, .50]) and the direct effect of religious fundamentalism on

prejudice toward Christians was nonsignificant (p = .104). The results from both models provide partial support for hypothesis 2a. Although the effect of dissimilarity to Christians on prejudice toward Christians was not rendered nonsignificant within the model, dissimilarity to atheists did significantly mediate the relationship between religious fundamentalism and prejudice toward Christians.

Using the same procedures as for hypothesis 2a, another pair of models was used to test hypothesis 2b. These models had prejudice toward atheists as the endogenous, observed outcome variable. It was predicted that dissimilarity to Christians would mediate the relationship between religious fundamentalism and prejudice toward atheists (Figure 8). This model also had great fit (Table 13). All paths were significant in this model (Figure 9). The indirect effect of religious fundamentalism on prejudice toward atheists was significant (p = .011, 95% confidence interval for the indirect effect [-.90, -.46]). This provided support for hypothesis 2b.

Just as was done for hypothesis 2a, a second model was used to more directly test hypothesis 2b. This model was the same as the previous model, except that it did not include the dissimilarity to atheists latent variable (Figure 10). This model showed great fit among all of the fit indices (Table). The indirect effect of religious fundamentalism on prejudice toward atheists was significant (p = .013, 95% confidence interval for the indirect effect [-.14, -.05]). Both models supported the hypothesis that dissimilarity to Christians mediates the relationship between religious fundamentalism and prejudice toward atheists.

CHAPTER IV

GENERAL DISCUSSION

The perceived degree of similarity of others to ourselves is a common force in shaping our social attitudes and perceptions. This is especially true with regard to important beliefs and values. People seem to show favoritism toward others who share religious group membership or are perceived to have similar beliefs and values. More prejudicial attitudes are directed toward those who are religious out-group members or are perceived not to share important beliefs and values. Recent research has demonstrated that people high and low in religious belief are both more prejudiced toward others with dissimilar beliefs and values. The present work was designed to further investigate the role of perceived dissimilarity in explaining intergroup bias between people high and low in religious belief.

Across two studies, results consistently showed that people higher in religious belief demonstrate a preference for religious people (i.e., Christians) relative to nonreligious people (i.e., atheists), while people lower in religious belief demonstrate a preference for nonreligious people (i.e., atheists) relative to religious people (i.e., Christians). Essentially, these results illustrate that both Christians and nonreligious people demonstrate some degree of in-group favoritism and out-group derogation.

The combination of in-group favoritism and out-group derogation is known as intergroup bias. The Religious Values Conflict model suggests that people high and low in religious belief both demonstrate favoritism toward groups with similar values and derogation of groups with dissimilar values (Brandt & Van Tongeren, 2017). The current studies replicated these findings. It is not only the case that people high in religious belief are prejudiced toward dissimilar others, it is also true that people low in religious belief are prejudiced toward dissimilar others.

However, previous studies had not directly tested the role of dissimilarity in predicting religious intergroup bias. The current studies built upon past research by investigating the importance of in-group similarity and out-group dissimilarity in explaining the relationship between religious belief and prejudice.

With past theories of intergroup bias in mind, the present studies examined the role that perceived dissimilarity in values plays in religious intergroup bias between religious and nonreligious people. In both of the current studies, dissimilarity to a target group does predict prejudice toward that group. This finding would have been predicted based on the existing literature on religious intergroup bias. However, somewhat unexpectedly, greater perceived similarity to the opposite group is a better predictor of prejudice toward a group. Specifically, in both studies, greater perceived similarity to atheists was the strongest predictor of prejudice toward Christians, and greater perceived similarity to Christians was the strongest predictor of prejudice toward atheists. Several popular theories in social psychology have provided explanations for in-group favoritism and out-group derogation. Some of these past theories are particularly relevant to understanding intergroup processes between people with similar or different beliefs and values. Furthermore, the results of the current studies may fit well within some of these existing frameworks.

The first relevant theory is the belief congruence theory (Rokeach et al., 1960), which proposed that greater differences in beliefs and values between groups predicts greater prejudice. The belief congruence theory fits well with the religious values conflict model and the findings of the current studies. The similarity attraction hypothesis (Byrne et al., 1966) and the dissimilarity repulsion hypothesis (Rosenbaum, 1986) also seem particularly relevant to the current findings. Drigotas (1993) found, across two studies designed to determine whether

similarity or dissimilarity had greater influence on including or excluding others in an activity, that similarity was initially more important than dissimilarity in determining behavior toward others. The current studies have also demonstrated the importance of in-group similarity relative to out-group dissimilarity. Although Drigotas (1993) demonstrated temporal primacy of in-group similarity, the present studies demonstrate that in-group similarity seems to have greater magnitude of effect and predictive ability than out-group dissimilarity.

Other popular theories, such as social identity theory, terror management theory, and subjective uncertainty reduction, may also be relevant to the results of the present studies. Greater preference for religious in-group members may boost self-esteem and greater derogation of out-groups may buffer existential anxiety and uncertainty. Each of these theories could certainly be used to help explain the patterns of intergroup bias between religious and nonreligious people found in the current studies. However, the exact role of each theoretical phenomenon is not clear based on the findings.

Although several past theories in social psychology have already sought to explain intergroup bias, the current studies have yielded a novel finding. Although people are prejudiced toward others perceived to have dissimilar beliefs (Brandt & Van Tongeren, 2017), perceived out-group dissimilarity may not be as important as perceived in-group similarity. This finding provides a more nuanced picture of the group dynamics involved in intergroup bias between religious and nonreligious people. One possible interpretation of the results is that people who identify strongly with a group will feel more similar to members of that group and show greater prejudice to competing groups. This process may contribute to greater out-group prejudice than simply perceiving a group to have dissimilar values. An optimistic interpretation of these findings is that greater perceived dissimilarity is not the best predictor of prejudice toward a

group. People may not be strongly driven to harbor negative attitudes toward others based on the degree to which they are different, unless they identify strongly with a competing group.

The current studies have contributed to the religious intergroup bias literature by digging deeper into the role of perceived dissimilarity, but there are several limitations that should be considered. The studies conducted were correlational in nature and are not capable of demonstrating causation. Although it is difficult to manipulate participants' perceived similarity to different groups, such a design would be necessary to truly demonstrate causation. Another issue with the design of the current studies is that they are both cross-sectional and self-report. The participants were recruited from MTurk and their answers were based on self-report measures. A common concern associated with using self-report measures in prejudice research is that the results may be influenced by social desirability. However, it is likely that prejudice toward groups with dissimilar values is less likely to be influenced by social desirability than prejudice toward other types of out-groups, such as ethnic or racial out-groups, which may be less socially acceptable to express prejudice toward.

Another limitation of these studies is related to the specific scales used for the structural equation models. In the pilot study, each latent variable did not have the ideal number of indicators. This problem was addressed in the main study by increasing the number of items used to measure dissimilarity from two to four, and by using the 12-item Religious Fundamentalism Scale instead of the Post-Critical Belief Scale. However, the reverse-scored items from the RFS did not load well onto the latent variable in the main study and were subsequently dropped in all of the models. The religiosity scales picked for these studies are established, widely used measures, but they did not prove to be ideal for the structural equation models in these studies.

Future research may be used to identify measures of religiosity that work better within structural equation models.

The present research was primarily focused on religious intergroup bias. However, the findings may also apply to other groups. Future research can be designed to further explore this phenomenon among different religious groups, political groups, or any groups perceived to be dissimilar in important values. For example, the ideological conflict hypothesis suggests that conservatives and liberals are both intolerant toward others with dissimilar values (Brandt et al., 2014). It would be interesting to see if similarity to liberals is a stronger predictor of prejudice toward conservatives than is dissimilarity to conservatives, and vice versa.

This research was focused on prejudice between people with different religious beliefs, but the potentially hopeful interpretation of the current findings should be emphasized. Although religious and nonreligious people are perceived as being dissimilar from one another in many ways (Grove et al., 2019), viewing members of the religious out-group as having dissimilar religious values does not necessarily lead to prejudice. It is possible for a person to view another group's values to be in conflict with their own values without being significantly prejudiced toward that group. In the context of the present studies, a Christian or a nonreligious person who does not identify strongly with the values of other members of their in-group may be more tolerant of members of the out-group.

References

Aberson, C. L., Healy, M., & Romero, V. (2000). In-group bias and self-esteem: A meta-analysis. *Personality and social psychology review*, *4*(2), 157-173.

Aboud, F. E. (1988). *Children and prejudice*. B. Blackwell.

Allport, G. W. (1954) *The nature of prejudice*. Reading, Mass.: Addison-Wesley.

Allport, G. W. (1966). The religious context of prejudice. *Journal for the scientific study of religion*, *5*(3), 447-457.

Allport, G. W., & Ross, J. M. (1967). Personal religious orientation and prejudice. *Journal of personality and social psychology*, *5*(4), 432.

Altemeyer, B., & Hunsberger, B. (1992). Authoritarianism, religious fundamentalism, quest, and prejudice. *The international journal for the psychology of religion*, *2*(2), 113-133.

Altemeyer, B., & Hunsberger, B. (2004). A revised religious fundamentalism scale: The short and sweet of it. *The International Journal for the Psychology of Religion*, *14*(1), 47-54.

Bar-Haim, Y., Ziv, T., Lamy, D., & Hodes, R. M. (2006). Nature and nurture in own-race face processing. *Psychological science*, *17*(2), 159-163.

Bigler, R. S., & Liben, L. S. (2006). A developmental intergroup theory of social stereotypes and prejudice. In *Advances in child development and behavior* (Vol. 34, pp. 39-89). JAI.

Brandt, M. J., Reyna, C., Chambers, J. R., Crawford, J. T., & Wetherell, G. (2014). The ideological-conflict hypothesis: Intolerance among both liberals and conservatives. *Current Directions in Psychological Science*, *23*(1), 27-34.

Brandt, M. J., & Van Tongeren, D. R. (2017). People both high and low on religious fundamentalism are prejudiced toward dissimilar groups. *Journal of Personality and Social Psychology*, *112*(1), 76.

Brewer, M. B. (1999). The psychology of prejudice: In-group love and out-group hate?. *Journal of social issues*, *55*(3), 429-444.

Byrne Barbara, M. (2016). Structural equation modeling with AMOS: basic concepts, applications, and programming.

Byrne, D., Clore Jr, G. L., & Worchel, P. (1966). Effect of economic similarity-dissimilarity on interpersonal attraction. *Journal of Personality and Social Psychology*, *4*(2), 220.

Cottrell, C. A., & Neuberg, S. L. (2005). Different emotional reactions to different groups: a sociofunctional threat-based approach to" prejudice". *Journal of personality and social psychology*, *88*(5), 770.

Deci, E. L., & Ryan, R. M. (2012). Self-determination theory.

Drigotas, S. M. (1993). Similarity revisited: A comparison of similarity—attraction versus dissimilarity—repulsion. *British Journal of Social Psychology*, *32*(4), 365-377.

Duriez, B., Soenens, B., & Hutsebaut, D. (2005). Introducing the shortened post-critical belief scale. *Personality and individual Differences*, *38*(4), 851-857.

Edgell, P., Gerteis, J., & Hartmann, D. (2006). Atheists as "other": Moral boundaries and cultural membership in American society. *American Sociological Review*, *71*(2), 211-234.

Edgell, P., Hartmann, D., Stewart, E., & Gerteis, J. (2016). Atheists and other cultural outsiders: Moral boundaries and the non-religious in the United States. *Social Forces*, *95*(2), 607-638.

Gervais, W. M., Shariff, A. F., & Norenzayan, A. (2011). Do you believe in atheists? Distrust is central to anti-atheist prejudice. *Journal of personality and social psychology*, *101*(6), 1189.

Gervais, W. M. (2013). In godlessness we distrust: Using social psychology to solve the puzzle of anti-atheist prejudice. *Social and Personality Psychology Compass, 7*(6), 366-377.

Gervais, W. M. (2014). Everything is permitted? People intuitively judge immorality as representative of atheists. *PloS one, 9*(4), e92302.

Gervais, W. M., Xygalatas, D., McKay, R. T., Van Elk, M., Buchtel, E. E., Aveyard, M., ... & Klocová, E. K. (2017). Global evidence of extreme intuitive moral prejudice against atheists. *Nature Human Behaviour, 1*(8), 0151.

Glick, P., & Fiske, S. T. (2001). An ambivalent alliance: Hostile and benevolent sexism as complementary justifications for gender inequality. *American psychologist*, *56*(2), 109.

Greenberg, J., Pyszczynski, T., & Solomon, S. (1986). The causes and consequences of a need for self-esteem: A terror management theory. In *Public self and private self* (pp. 189-212). Springer, New York, NY.

Grove, R. C., Rubenstein, A., & Terrell, H. K. (2019). Distrust persists after subverting atheist stereotypes. *Group Processes & Intergroup Relations*, 1368430219874103.

Grove, R. C., Hall, D. L., Rubenstein, A., & Terrell, H. K. (2019). Post-Critical Belief Scale and Scripture as Predictors of Prejudice. *Journal for the Scientific Study of Religion*, *58*(2), 526-536.

Hall, D. L., Matz, D. C., & Wood, W. (2010). Why don't we practice what we preach? A meta-analytic review of religious racism. *Personality and social psychology review*, *14*(1), 126-139.

Hewstone, M., Rubin, M., & Willis, H. (2002). Intergroup bias. *Annual review of psychology*, *53*(1), 575-604.

Hirschfeld, L. A. (1998). *Race in the making: Cognition, culture, and the child's construction of human kinds*. MIT Press.

Hogg, M. A. (2000). Subjective uncertainty reduction through self-categorization: A motivational theory of social identity processes. *European review of social psychology*, *11*(1), 223-255.

Hogg, M. A., & Abrams, D. (1990). Social motivation, self-esteem and social identity. *Social identity theory: Constructive and critical advances*, *28*, 47.

Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural equation modeling: a multidisciplinary journal*, *6*(1), 1-55.

Huston, A. C. (1983). Sex-typing. *Handbook of child psychology*, *4*(4), 387-467.

Hutsebaut, D. (1996). Post-Critical Belief a New Approach to the Religious Attitude Problem. *Journal of empirical theology*, *9*(2), 48-66.

Islam, M. R., & Hewstone, M. (1993). Dimensions of contact as predictors of intergroup anxiety, perceived out-group variability, and out-group attitude: An integrative model. *Personality and Social Psychology Bulletin*, *19*(6), 700-710.

Jackson, J., Halberstadt, J., Jong, J., & Felman, H. (2015). Perceived openness to experience accounts for religious homogamy. *Social Psychological and Personality Science*, *6*(6), 630-638.

Jackson, L. M., & Hunsberger, B. (1999). An intergroup perspective on religion and prejudice. *Journal for the scientific study of religion*, 509-523.

Johnson, M. K., Rowatt, W. C., & LaBouff, J. P. (2012). Religiosity and prejudice revisited: In-group favoritism, out-group derogation, or both?. *Psychology of Religion and Spirituality*, *4*(2), 154.

Kelly, D. J., Quinn, P. C., Slater, A. M., Lee, K., Gibson, A., Smith, M., ... & Pascalis, O. (2005). Three-month-olds, but not newborns, prefer own-race faces. *Developmental science*, *8*(6), F31-F36.

Kirkpatrick, L. A., & Hood Jr, R. W. (1990). Intrinsic-extrinsic religious orientation: The boon or bane of contemporary psychology of religion?. *Journal for the scientific study of religion*, 442-462.

Klein, C., Lühr, M., & Streib, H. (2018). Extant empirical research on religiosity and prejudice. In *Xenosophia and Religion. Biographical and Statistical Paths for a Culture of Welcome* (pp. 23-84). Springer, Cham.

Kline, R. B. (2005). Principles and practice of structural equation modeling 2nd ed. New York: Guilford.

Kossowska, M., Czernatowicz-Kukuczka, A., & Sekerdej, M. (2017). Many faces of dogmatism: Prejudice as a way of protecting certainty against value violators among dogmatic believers and atheists. *British Journal of Psychology*, *108*(1), 127-147.

Levin, S., & Sidanius, J. (1999). Social dominance and social identity in the United States and Israel: In-group favoritism or out-group derogation?. *Political Psychology*, *20*(1), 99-126.

MacCallum, R. C., Browne, M. W., & Sugawara, H. M. (1996). Power analysis and determination of sample size for covariance structure modeling. *Psychological methods*, *1*(2), 130.

Mahajan, N., Martinez, M. A., Gutierrez, N. L., Diesendruck, G., Banaji, M. R., & Santos, L. R. (2011). The evolution of intergroup bias: Perceptions and attitudes in rhesus macaques. *Journal of personality and social psychology*, *100*(3), 387.

Rokeach, M. (1960). *The open and closed mind: Investigations into the nature of belief systems and personality systems.*

Rokeach, M., Smith, P. W., & Evans, R. I. (1960). Two kinds of prejudice or one. *The open and closed mind*, 132-168.

Rosenbaum, M. E. (1986). The repulsion hypothesis: On the nondevelopment of relationships. *Journal of Personality and Social Psychology*, *51*(6), 1156.

Rubin, M., & Hewstone, M. (1998). Social identity theory's self-esteem hypothesis: A review and some suggestions for clarification. *Personality and social psychology review*, *2*(1), 40-62.

Shen, M. J., Yelderman, L. A., Haggard, M. C., & Rowatt, W. C. (2013). Disentangling the belief in God and cognitive rigidity/flexibility components of religiosity to predict racial and value-violating prejudice: A Post-Critical Belief Scale analysis. *Personality and Individual Differences*, *54*(3), 389-395.

Singh, R., Choo, W. M., & Poh, L. L. (1998). In-group bias and fair-mindedness as strategies of self-presentation in intergroup perception. *Personality and Social Psychology Bulletin*, *24*(2), 147-162.

Smith, E. R., & Henry, S. (1996). An in-group becomes part of the self: Response time evidence. *Personality and Social Psychology Bulletin*, *22*(6), 635-642.

Tajfel, H. (1970). Experiments in intergroup discrimination. *Scientific American*, *223*(5), 96-103.

Tajfel, H., Billig, M. G., Bundy, R. P., & Flament, C. (1971). Social categorization and intergroup behaviour. *European journal of social psychology*, *1*(2), 149-178.

Tajfel, H., & Turner, J. C. (1979). An integrative theory of intergroup conflict. In W. G. Austin, & S. Worchel (Eds), *The social psychology of intergroup relations.* Monterey, CA: Brooks/Cole.

Weeks, M., & Vincent, M. A. (2007). Using religious affiliation to spontaneously categorize others. *The International Journal for the Psychology of Religion*, *17*(4), 317-331.

Wulff, D. M. (1991). *Psychology of religion: Classic and contemporary views*. John Wiley & Sons.

Ysseldyk, R., Matheson, K., & Anisman, H. (2010). Religiosity as identity: Toward an understanding of religion from a social identity perspective. *Personality and Social Psychology Review*, *14*(1), 60-71.

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.

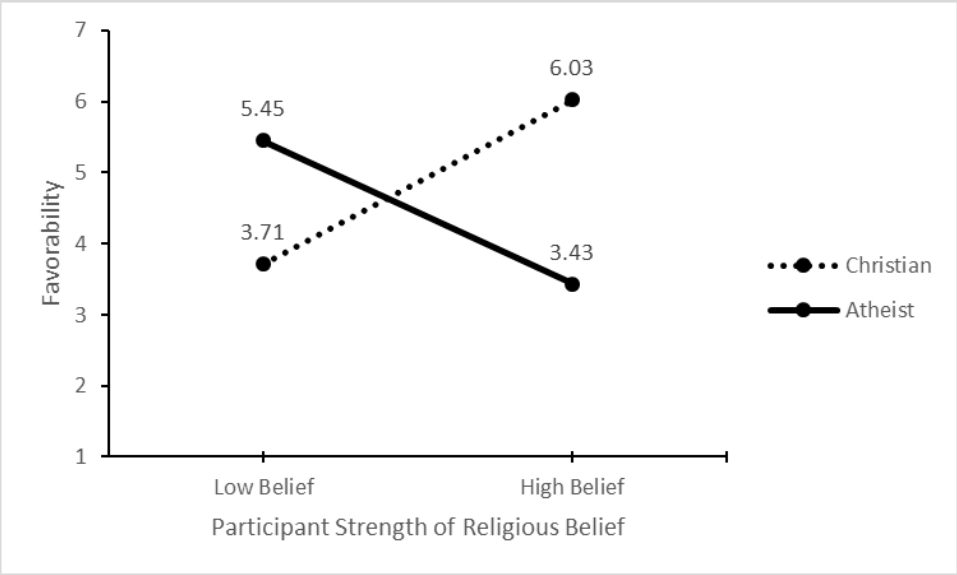

Figure 1. Pattern of results for hypothesis 2a and 2b of the pilot study. Note: Participants ≤ -1 *SD* in strength of belief rated atheists (*M* = 5.45, *SD* = 1.39) significantly more favorably (*t*(84) = -6.01, *SE* for the difference = .34, *p* < .001, 95% CI for the difference [-2.68, -1.35])than Christians (*M* = 3.71, *SD* = 1.66). Participants ≥ +1 *SD* in strength of belief rated Christians (*M* = 6.03, *SD* = .93) significantly more favorably (*t* (84) = 7.62, *SE* for the difference = .30, *p* < .001, 95% CI for the difference [1.71, 2.92]) than atheists (*M* = 3.43, *SD* = 1.73). This pattern of results supports the religious values conflict hypothesis.

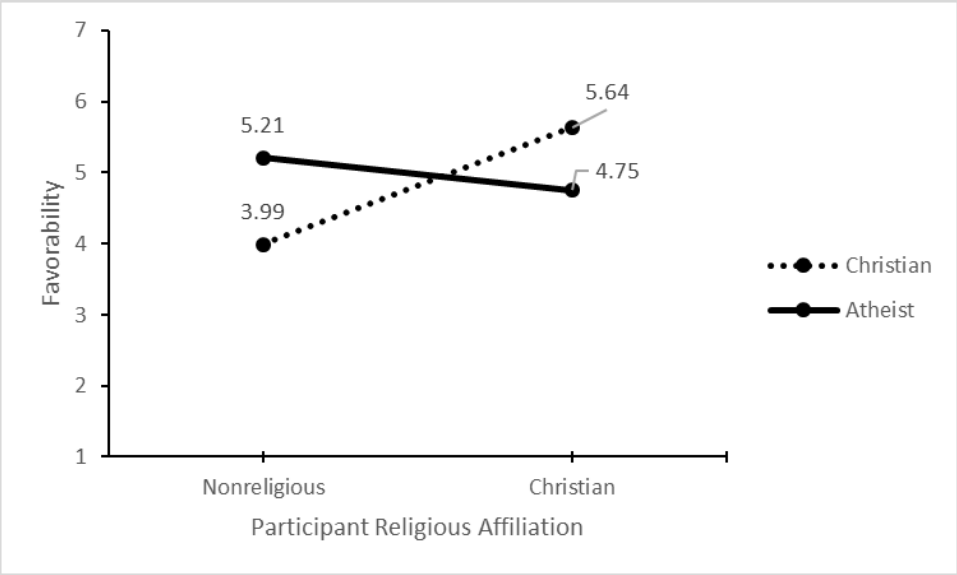

Figure 2. Pattern of results for hypothesis 2c and 2d of the pilot study. Note: Nonreligious participants rated atheists (M = 5.21, SD = 1.35) significantly more favorably (t (324) = -2.34, SE for the difference = .20, p = .003, 95% CI for the difference [-.85, -.07]) than Christians (M = 3.99, SD = 1.57). Christian participants rated Christians (M = 5.64, SD = 1.36) significantly more favorably (t (324) = 9.68, SE for the difference = .17, p < .001, 95% CI for the difference [1.31, 1.98]) than atheists (M = 4.75, SD = 1.77). This pattern of results supports the religious values conflict hypothesis.

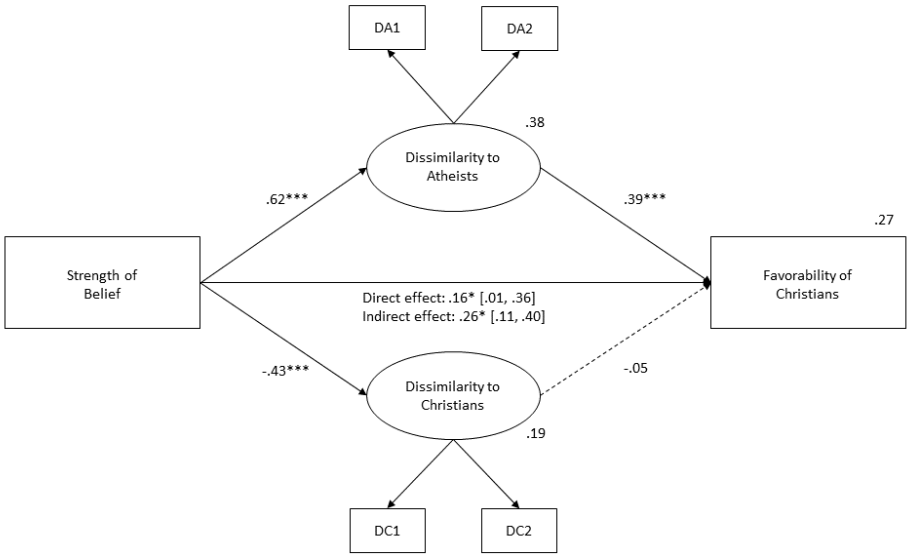

Figure 3. SEM of the first mediation model from the pilot study. Note: All paths are significant (*p*s < .05) except for the path from dissimilarity to Christians to favorability of Christians (*p* = .36). There was a significant indirect effect of strength of belief on favorability of Christians (*p* = .016; lower bound = .11, upper bound = .40). Greater perceived similarity to atheists mediated the relationship between strength of belief and favorability of Christians. **p* < .05, ***p* < .01, *** *p* < .001.

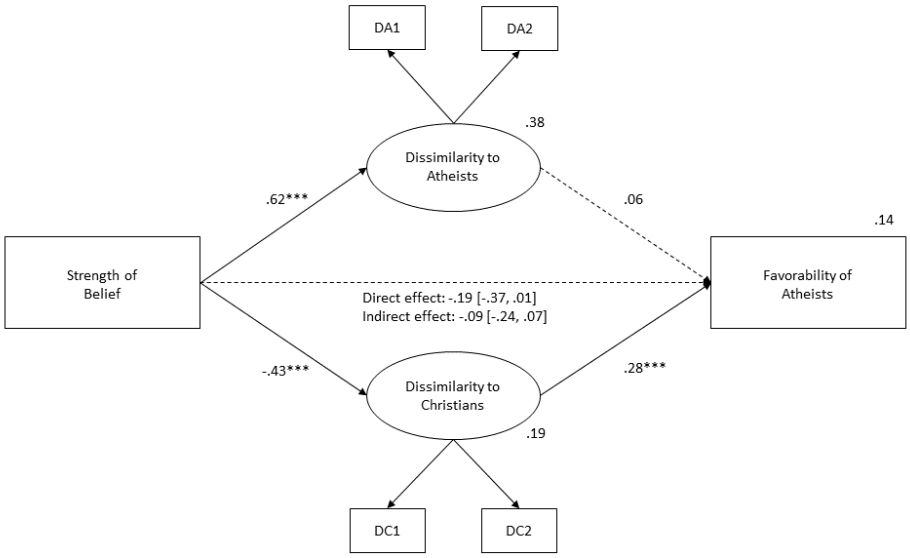

Figure 4. SEM of the second mediation model from the pilot study. Note: All paths are significant (*p*s < .05) except for the path from dissimilarity to atheists to favorability of atheists ($p = .43$), and the direct path from strength of belief to favorability of atheists ($p = .06$). There was not a significant indirect effect of strength of belief on favorability of atheists ($p = .23$). However, when a model was tested removing the dissimilarity to atheists latent variable, dissimilarity to Christians mediated the relationship between strength of belief and favorability of atheists ($p = .009$; lower bound = -.19, upper bound = -.06). *$p < .05$, **$p < .01$, *** $p < .001$.

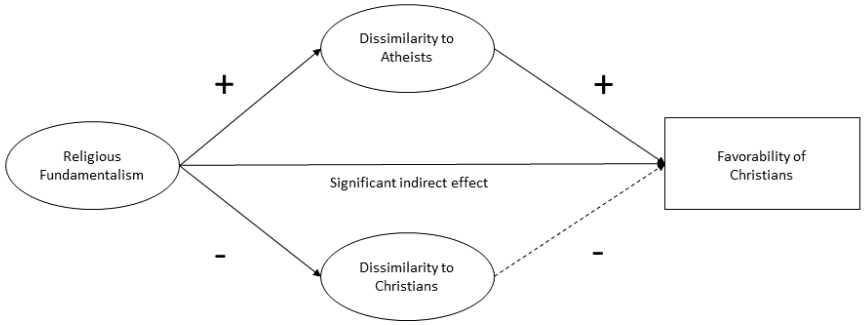

Figure 5. Hypothesized mediation model for hypothesis 2a of the main study. Note: It was predicted that the path from dissimilarity to atheists to favorability of Christians will be significant, the path from dissimilarity to Christians to favorability of Christians will not be significant, and the indirect effect of religious fundamentalism on favorability of Christians will be significant.

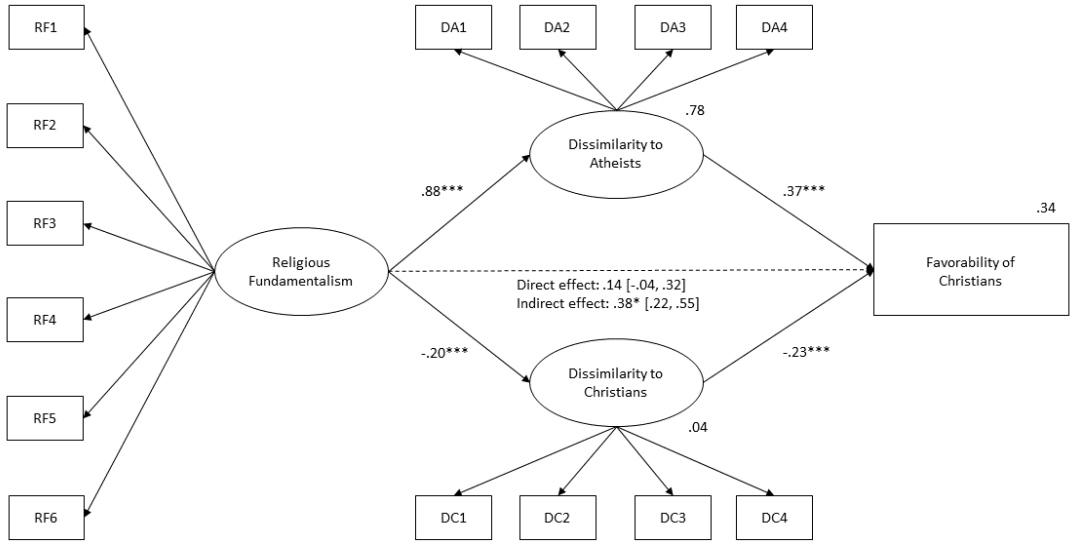

Figure 6. SEM of the mediation model for hypothesis 2a of the main study. Note: All paths were significant except for the direct effect of religious fundamentalism on favorability of Christians. There was a significant indirect effect of religious fundamentalism on favorability of Christians. The relationship between religious fundamentalism and favorability of Christians was mediated by the dissimilarity latent variables. *$p < .05$, **$p < .01$, *** $p < .001$.

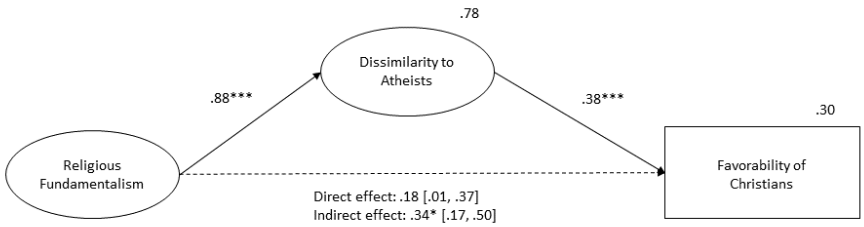

Figure 7. Additional SEM showing the mediational relationship between dissimilarity to atheists and favorability of Christians in the main study. Note: The direct effect of religious fundamentalism on favorability of Christians was not significant. The indirect effect through dissimilarity to atheists was significant. *$p < .05$, **$p < .01$, *** $p < .001$.

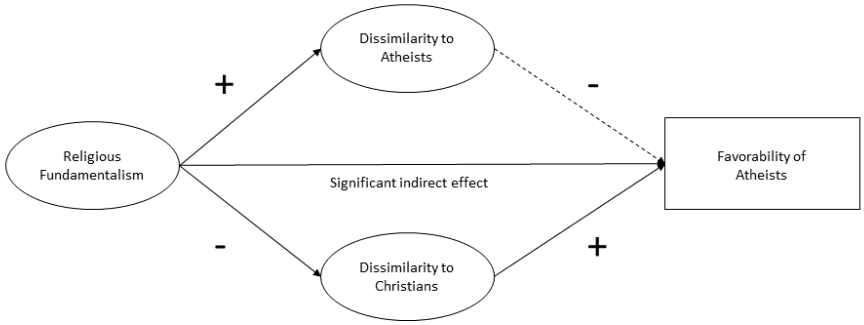

Figure 8. Hypothesized mediation model for hypothesis 2b of the main study. Note: It was predicted that the path from dissimilarity to Christians to favorability of atheists will be significant, the path from dissimilarity to atheists to favorability of atheists will not be significant, and the indirect effect of religious fundamentalism on favorability of atheists will be significant.

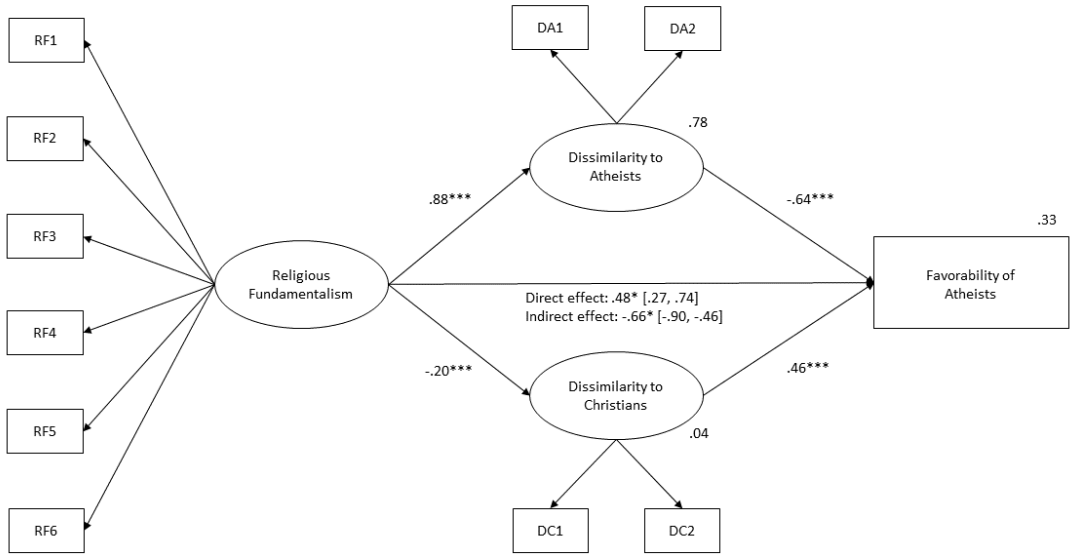

Figure 9. SEM of the mediation model for hypothesis 2b of the main study. Note: All paths were significant. There was a significant indirect effect of religious fundamentalism on favorability of atheists. The relationship between religious fundamentalism and favorability of atheists was mediated by the dissimilarity latent variables. *$p < .05$, **$p < .01$, *** $p < .001$.

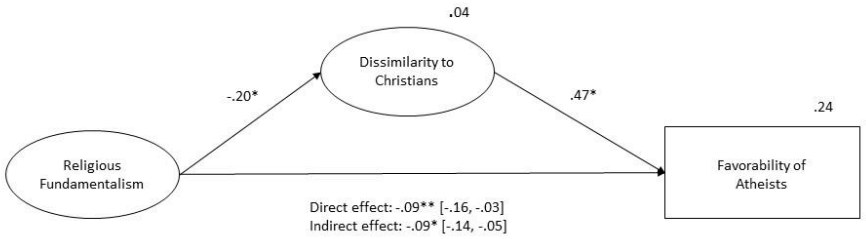

Figure 10. Additional SEM showing the mediational relationship between dissimilarity to Christians and favorability of atheists in the main study. Note: The direct effect of religious fundamentalism on favorability of atheists was significant, but the indirect effect of religious fundamentalism on favorability of atheists through dissimilarity to atheists was also significant. *$p < .05$, **$p < .01$, *** $p < .001$.

Table 1

Summary of the key variables in the pilot study

Measure	Number of items	Anchors	*a*	*M*	*SD*	Actual range
Post-critical Belief Scale	18	1 = completely opposed 7 = completely in agreement	.92	n/a	n/a	n/a
Second Naiveté Subscale	4	1 = completely opposed 7 = completely in agreement	.77	4.77	1.39	1-7
Orthodoxy Subscale	5	1 = completely opposed 7 = completely in agreement	.92	4.16	1.87	1-7
External Critique Subscale	5	1 = completely opposed 7 = completely in agreement	.90	4.52	1.68	1-7
Relativism Subscale	4	1 = completely opposed 7 = completely in agreement	.82	4.88	1.42	1-7
Strength of Belief Dimension	n/a	-12 = lowest belief 12 = strongest belief	n/a	-.47	2.86	-8.40 - 10.25
Dissimilarity to Target Group	2 items per target group	1 = not at all different from me 5 = very different from me	n/a	n/a	n/a	n/a
Prejudice Toward Target Group	1 item per target group	1 = extremely cold/unfavorable 7 = extremely warm/favorable	n/a	n/a	n/a	n/a

Table 2

Means, standard deviations, and correlations with confidence intervals of key variables in the pilot study

Variable	*M*	*SD*	1	2	3	4
1. Strength of Belief	-0.47	2.86				
2. Dissimilarity to Atheists	3.29	1.30	.57** [.49, .64]			
3. Dissimilarity to Christians	3.26	1.29	-.40** [-.49, -.31]	-.04 [-.15, .07]		
4. Favorability of Atheists	4.90	1.66	-.28** [-.37, -.17]	-.10 [-.21, .01]	.34** [.24, .43]	
5. Favorability of Christians	5.11	1.62	.42** [.33, .51]	.46** [.37, .54]	-.17** [-.28, -.06]	.20** [.09, .30]

Note. M and *SD* are used to represent mean and standard deviation, respectively. Values in square brackets indicate the 95% confidence interval for each correlation. The confidence interval is a plausible range of population correlations that could have caused the sample correlation (Cumming, 2014). * indicates $p < .05$. ** indicates $p < .01$.

Table 3

Regression results for hypothesis 1a of the pilot study using favorability of atheists as the criterion

Predictor	*b*	*b* 95% CI [LL, UL]	*beta*	*beta* 95% CI [LL, UL]	sr^2	sr^2 95% CI [LL, UL]	*r*	Fit
(Intercept)	4.79**	[4.59, 4.99]						
Strength of Belief	-0.16**	[-0.23, -0.10]	-0.28	[-0.38, -0.18]	.08	[.03, .14]	-.29**	
Sex	0.03	[-0.15, 0.22]	0.02	[-0.09, 0.12]	.00	[.00, .02]	.04	
Age	-0.02*	[-0.04, -0.00]	-0.12	[-0.22, -0.02]	.01	[.00, .04]	-.10	
Ethnicity	0.08	[-0.12, 0.28]	0.05	[-0.07, 0.15]	.00	[.00, .02]	.06	
								R^2 = .098**
								95% CI[.05,.18]

Note. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights. *beta* indicates the standardized regression weights. sr^2 represents the semi-partial correlation squared. *r* represents the zero-order correlation. *LL* and *UL* indicate the lower and upper limits of a confidence interval, respectively.
* indicates $p < .05$. ** indicates $p < .01$.

Table 4

Regression results for hypothesis 1b of the pilot study using favorability of Christians as the criterion

Predictor	*b*	*b* 95% CI [LL, UL]	*beta*	*beta* 95% CI [LL, UL]	sr^2	sr^2 95% CI [LL, UL]	*r*	Fit
(Intercept)	5.31**	[5.14, 5.49]						
Strength of Belief	0.23**	[0.17, 0.29]	0.41	[0.31, 0.50]	.16	[.09, .25]	.42**	
Sex	-0.17	[-0.32, 0.01]	-0.10	[-0.19, 0.01]	.01	[.00, .03]	-.11*	
Age	0.00	[-0.01, 0.02]	0.03	[-0.07, 0.12]	.00	[.00, .01]	.03	
Ethnicity	-0.09	[-0.28, 0.08]	-0.06	[-0.16, 0.05]	.00	[.00, .02]	-.10	
								R^2 = .188**
								95% CI[.12,.28]

Note. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights. *beta* indicates the standardized regression weights. sr^2 represents the semi-partial correlation squared. *r* represents the zero-order correlation. *LL* and *UL* indicate the lower and upper limits of a confidence interval, respectively.
* indicates $p < .05$. ** indicates $p < .01$.

Table 5

Regression results for exploratory hypotheses of the pilot study using favorability of atheists as the criterion

Predictor	*b*	*b* 95% CI [LL, UL]	*beta*	*beta* 95% CI [LL, UL]	sr^2	sr^2 95% CI [LL, UL]	*r*	Fit
(Intercept)	3.87**	[3.09, 4.59]						
Strength of Belief	-0.09*	[-0.21, 0.01]	-0.17	[-0.36, 0.01]	.01	[.00, .06]	-.29**	
Dissimilarity to Atheists	-0.03	[-0.23, 0.19]	-0.03	[-0.18, 0.14]	.00	[.00, .02]	-.13*	
Dissimilarity to Christians	0.33**	[0.13, 0.55]	0.26	[0.10, 0.42]	.05	[.01, .12]	.34**	
Sex	-0.02	[-0.22, 0.18]	-0.01	[-0.13, 0.10]	.00	[.00, .02]	.04	
Age	-0.01	[-0.03, 0.01]	-0.04	[-0.16, 0.07]	.00	[.00, .02]	-.10	
Ethnicity	0.08	[-0.11, 0.26]	0.05	[-0.06, 0.15]	.00	[.00, .02]	.06	
								R^2 = .145**
								95% CI[.10,.25]

Note. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights. *beta* indicates the standardized regression weights. sr^2 represents the semi-partial correlation squared. *r* represents the zero-order correlation. *LL* and *UL* indicate the lower and upper limits of a confidence interval, respectively.
* indicates $p < .05$. ** indicates $p < .01$.

Table 6

Regression results for exploratory hypothesis of the pilot study using favorability of Christians as the criterion

Predictor	*b*	*b* 95% CI [LL, UL]	*beta*	*beta* 95% CI [LL, UL]	sr^2	sr^2 95% CI [LL, UL]	*r*	Fit
(Intercept)	4.07**	[3.38, 4.77]						
Strength of Belief	0.11**	[0.02, 0.20]	0.19	[0.03, 0.35]	.02	[.00, .06]	.42**	
Dissimilarity to Christians	-0.07	[-0.25, 0.13]	-0.05	[-0.20, 0.10]	.00	[.00, .03]	-.18**	
Dissimilarity to Atheists	0.42**	[0.25, 0.60]	0.34	[0.21, 0.49]	.07	[.03, .14]	.45**	
Sex	-0.15	[-0.30, 0.01]	-0.09	[-0.18, 0.01]	.01	[.00, .03]	-.11*	
Age	0.01	[-0.01, 0.03]	0.05	[-0.06, 0.16]	.00	[.00, .02]	.03	
Ethnicity	-0.10	[-0.26, 0.08]	-0.06	[-0.15, 0.05]	.00	[.00, .02]	-.10	
								R^2 = .261**
								95% CI [.19,.37]

Note. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights. *beta* indicates the standardized regression weights. sr^2 represents the semi-partial correlation squared. *r* represents the zero-order correlation. *LL* and *UL* indicate the lower and upper limits of a confidence interval, respectively.
* indicates $p < .05$. ** indicates $p < .01$.

Table 7

Goodness of fit for mediation models in the pilot study

Fit Index	Criteria	Model 1	Model 2
CFI	≥ .95 = good fit	.97	.96
RMSEA	≥ .10 = poor fit	.12	.12
SRMR	≤ .08 = good fit	.08	.08
TLI	≥ .90 = acceptable fit	.92	.91

Table 8

Summary of the key variables in the main study

Measure	Number of items	Anchors	*a*	*M*	*SD*	Actual range
Religious Fundamentalism scale	12	1 = completely opposed 7 = completely in agreement	.92	3.38	1.43	1 - 7
RFS (excluding reverse-scored items)	6	1 = completely opposed 7 = completely in agreement	.95	3.80	1.92	1 - 7
Dissimilarity to Christians	4	1 = not at all different from me 5 = very different from me	.87	3.04	1.17	1 - 5
Dissimilarity to Atheists	4	1 = not at all different from me 5 = very different from me	.85	3.38	1.12	1 - 5
Favorability of Christians	1	1 = extremely cold/unfavorable 7 = extremely warm/favorable	n/a	4.94	1.67	1 - 7
Favorability of Atheists	1	1 = extremely cold/unfavorable 7 = extremely warm/favorable	n/a	4.86	1.65	1 - 7

Table 9

Means, standard deviations, and correlations with confidence intervals of key variables in the main study

Variable	*M*	*SD*	1	2	3	4
1. Religious Fundamentalism	3.38	1.43				
2. Dissimilarity to Atheists	2.94	1.12	.73** [.68, .77]			
3. Dissimilarity to Christians	3.04	1.17	-.42** [-.49, -.35]	-.16** [-.24, -.07]		
4. Favorability of Atheists	4.86	1.65	-.38** [-.45, -.31]	-.28** [-.36, -.20]	.45** [.38, .52]	
5. Favorability of Christians	4.94	1.67	.45** [.38, .52]	.50** [.43, .56]	-.30** [-.38, -.22]	-.01 [-.09, .08]

Note. M and *SD* are used to represent mean and standard deviation, respectively. Values in square brackets indicate the 95% confidence interval for each correlation. The confidence interval is a plausible range of population correlations that could have caused the sample correlation (Cumming, 2014). * indicates $p < .05$. ** indicates $p < .01$.

Table 10

Regression results from hypothesis 1a of the main study using favorability of Christians as the criterion

Predictor	*B*	*b* 95% CI [LL, UL]	*beta*	*beta* 95% CI [LL, UL]	sr^2	sr^2 95% CI [LL, UL]	*r*	Fit
(Intercept)	3.79**	[3.20, 4.36]						
Religious Fundamentalism	0.06	[-0.09, 0.19]	0.05	[-0.08, 0.17]	.00	[.00, .01]	.45**	
Dissimilarity to Atheists	0.64**	[0.47, 0.81]	0.43	[0.32, 0.53]	.08	[.04, .12]	.50**	
Dissimilarity to Christians	-0.30**	[-0.42, -0.18]	-0.21	[-0.29, -0.13]	.03	[.01, .07]	-.30**	
								R^2 = .300**
								95% CI [.24,.37]

Note. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights. *beta* indicates the standardized regression weights. sr^2 represents the semi-partial correlation squared. *r* represents the zero-order correlation. *LL* and *UL* indicate the lower and upper limits of a confidence interval, respectively.
* indicates $p < .05$. ** indicates $p < .01$.

Table 11

Regression results from hypothesis 1b of the main study using favorability of atheists as the criterion

Predictor	*b*	*b* 95% CI [LL, UL]	*beta*	*beta* 95% CI [LL, UL]	sr^2	sr^2 95% CI [LL, UL]	*r*	Fit
(Intercept)	4.29**	[3.71, 4.88]						
Religious Fundamentalism	-0.15*	[-0.33, 0.02]	-0.13	[-0.28, 0.02]	.01	[.00, .03]	-.38**	
Dissimilarity to Atheists	-0.19*	[-0.38, 0.02]	-0.13	[-0.26, 0.02]	.01	[.00, .03]	-.28**	
Dissimilarity to Christians	0.54**	[0.41, 0.65]	0.38	[0.29, 0.46]	.11	[.07, .16]	.45**	
								R^2 = .256**
								95% CI [.19,.33]

Note. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights. *beta* indicates the standardized regression weights. sr^2 represents the semi-partial correlation squared. *r* represents the zero-order correlation. *LL* and *UL* indicate the lower and upper limits of a confidence interval, respectively.
* indicates $p < .05$. ** indicates $p < .01$.

Table 12

Goodness of fit for mediation models predicting favorability of atheists in the main study

Fit Index	Criteria	Model 1	Model 2
CFI	≥ .95 = great fit	.97	.99
RMSEA	≤ .06 = great fit	.06	.06
SRMR	≤ .05 = good fit	.05	.05
TLI	≥ .95 = great fit	.96	.98

Table 13

Goodness of fit for mediation models predicting favorability of Christians in the main study

Fit Index	Criteria	Model 1	Model 2
CFI	≥ .95 = great fit	.97	.98
RMSEA	≤ .06 = great fit	.06	.06
SRMR	≤ .05 = good fit	.05	.02
TLI	≥ .95 = great fit	.96	.98

Appendix A

Cover Letter

Dear Participant:

I am a graduate student in the Department of Psychology at the University of North Dakota. You are invited to participate in a research study that investigates social attitudes.

In this study, you will be asked to fill out information about yourself and answer questions about others. This study should take you approximately 15 minutes to complete.

Please be assured that your responses will remain anonymous. Any identifying information will not, at any time, be connected with your responses to this questionnaire. The results of this study may be used in reports, presentations, or publications but your name will not be known. Additionally, please realize that your responses are your own and you are only asked to read questions and instructions carefully and respond to the best of your ability.

There are minimal foreseeable psychological or physical risks associated with your participation. However, you may skip any items you do not want to answer, and you may withdraw your participation at any time with no negative consequences.

If you have any questions concerning this research, please contact Dr. Terrell at Heather.Terrell@email.und.edu. If you have been made uncomfortable or upset by any of the questions presented here, you may contact Dr. Terrell. If you have questions regarding your rights as a research subject, or if you have any concerns or complaints about the research, you may contact the University of North Dakota Institutional Review Board at (701) 777-4279. Please call this number if you cannot reach research staff, or you wish to talk with someone else.

Completion of the questionnaire that follows will be considered your consent to participate.

Sincerely,
Richard Grove, M.S.

Appendix B:

Demographics Questionnaire

Please provide the following information about yourself to the best of your ability.

Gender (select the option that you most identify with)

__ Woman

__ Man

__ Non-binary

__ Transgender

__ Intersex

__ Gender non-conforming

__ Other (please specify) _____

__ Prefer not to say

Age (in years)

_____

Ethnicity (select the option that you most identify with)

__ Black/African American

__ White/Caucasian

__ Hispanic

__ Native American/American Indian

__ Asian

__ Other (please specify) _____

__ Prefer not to say

Political affiliation (select one)

__ Democrat

__ Republican

__ Independent

__ None

__ Other (please specify)

Religious affiliation (select one)

__ Catholic

__ Protestant

__ Latter Day Saints (Mormon)

__ Other “Christian” (please specify) _____

__ Jewish

__ Atheist

__ Agnostic

__ Hindu

__ Muslim

__ Buddhist

__ Other (please specify) _____

Do you believe in God?

__ Yes

__ Uncertain, but leaning toward yes

__ Uncertain, but leaning toward no

__ No

Appendix C

Religious Fundamentalism scale

For each of the 12 items, participants respond on a 7-point scale ranging from strongly disagree (1) to strongly agree (7).

1. God has given humanity a complete, unfailing guide to happiness and salvation, which must be totally followed.
2. No single book of religious teachings contains all the intrinsic, fundamental truths about life.
3. The basic cause of evil in this world is Satan, who is still constantly and ferociously fighting against God.
4. It is more important to be a good person than to believe in God and the right religion.
5. There is a particular set of religious teachings in this world that are so true, you can't go any "deeper" because they are the basic, bedrock message that God has given humanity.
6. When you get right down to it, there are basically only two kinds of people in the world: the Righteous, who will be rewarded by God, and the rest, who will not.
7. Scriptures may contain general truths, but they should not be considered completely, literally true from beginning to end.
8. To lead the best, most meaningful life, one must belong to the one, fundamentally true religion.
9. "Satan" is just the name people give to their own bad impulses. There really is no such thing as a diabolical "Prince of Darkness" who tempts us.
10. Whenever science and sacred scripture conflict, science is probably right.

11. The fundamentals of God's religion should never be tampered with, or compromised with others' beliefs.

12. All of the religions in the world have flaws and wrong teachings. There is no perfectly true, right religion.

Appendix D

Post-Critical Belief Scale

1. The Bible holds a deeper truth that can only be revealed by personal reflection
2. God has been defined for once and for all and therefore is undeniable
3. Faith turns out to be an illusion when faced with the harshness of life
4. The Bible is a rough guide in the search for God, and not a historical account
5. Even though this goes against modern rationality, Mary truly remained a virgin
6. Each statement about God is a result of the time in which it was made
7. Even though the Bible was written a long time ago, it retains a basic message
8. Only the major religious traditions guarantee admittance to God
9. The manner in which humans experience God will always be colored by society
10. Ultimately, there is only one correct answer to each religious question
11. The world of Bible stories is so far removed from us that it has little relevance
12. Science has made a religious understanding of life superfluous
13. God grows together with the history of humanity and therefore is changeable
14. My ideology is only one possibility among so many others
15. I think that Bible stories should be taken literally, as they are written
16. Despite the injustices caused by Christianity, Christ's message remains valuable
17. In the end, faith is nothing more than a safety net for human fears
18. Faith is an expression of a weak personality

Appendix E

Perceived Dissimilarity Items

Rate the extent to which you see each of the following groups as holding **political** beliefs different from your own on the following scale (1= not at all different, 3 = somewhat different, 5 = very different)

1. Atheists
2. Christians
3. Muslims
4. Jews
5. Highly religious people
6. Gay men
7. Lesbians
8. African Americans
9. White Americans
10. Mexican Americans
11. Asian Americans
12. Liberals
13. Conservatives

Rate the extent to which you see each of the following groups as holding **social** beliefs different from your own on the following scale (1= not at all different, 3 = somewhat different, 5 = very different)

1. Atheists

2. Christians
3. Muslims
4. Jews
5. Highly religious people
6. Gay men
7. Lesbians
8. African Americans
9. White Americans
10. Mexican Americans
11. Asian Americans
12. Liberals
13. Conservatives

Rate the extent to which you see each of the following groups as holding **religious** beliefs different from your own on the following scale (1= not at all different, 3 = somewhat different, 5 = very different)

1. Atheists
2. Christians
3. Muslims
4. Jews
5. Highly religious people
6. Gay men
7. Lesbians
8. African Americans

9. White Americans
10. Mexican Americans
11. Asian Americans
12. Liberals
13. Conservatives

Rate the extent to which you see each of the following groups as holding **moral** beliefs different from your own on the following scale (1= not at all different, 3 = somewhat different, 5 = very different)

1. Atheists
2. Christians
3. Muslims
4. Jews
5. Highly religious people
6. Gay men
7. Lesbians
8. African Americans
9. White Americans
10. Mexican Americans
11. Asian Americans
12. Liberals
13. Conservatives

Appendix F

Thermometer/Favorability Items

Rate the extent to which you feel warm and favorable or cold and unfavorable toward each of the following groups (-3 = extremely cold and unfavorable, 0 = neither cold and unfavorable nor warm and favorable, 3 = extremely warm and favorable)

1. Atheists
2. Christians
3. Muslims
4. Jews
5. Highly religious people
6. Gay men
7. Lesbians
8. African Americans
9. White Americans
10. Mexican Americans
11. Asian Americans
12. Liberals
13. Conservatives