

## Religious complexity and intergroup bias

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Religious Complexity and Intergroup Bias

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**Abstract**

Religion is associated with both positive and negative outcomes, such as prosocial or discriminatory attitudes and behavior. Previous research has linked particular styles of religious belief, such as fundamentalism, to these kinds of outcomes; however, their explanatory power is necessarily limited by their content specificity. In this paper, we investigate the relationship between two types of religious complexity, the complexity of people's thought (Integrative Complexity) and the complexity of people's social identities (Social Identity Complexity), and intergroup bias. Two online studies investigate the relationship between religious complexity and attitudes towards religious outgroup members, finding that higher religious complexity predicts more positive attitudes and less anxiety towards outgroup members, as well as less ingroup preference. These findings suggest that Integrative Complexity and Social Identity Complexity may be useful constructs for understanding the relationship between religion and positive or negative outcomes, as well as the development of theory-based interventions.

*Keywords: Religion, integrative complexity, social identity complexity, intergroup bias, prosociality*

## Introduction

The simplicity or complexity with which we approach an idea or category (e.g., a group of people or social issue) plays a key role in how we interact with that idea – perhaps particularly when it comes to intergroup conflicts. More simple approaches may lead to less accurate perceptions, worse communication, and less successful solutions, whereas more complex approaches may lead to greater nuance and understanding, and thus more successful outcomes. In this paper, we investigate the relationship between two kinds of religious complexity and intergroup bias. Integrative complexity (or IC), is a measure of the complexity of people’s thought, and has been found to predict conflict resolution outcomes. The greater the complexity of political speeches and documents pertaining to crisis situations, the greater likelihood the conflict ends in peace (Suedfeld & Jhangiani, 2009; Suedfeld, Tetlock, & Ramirez, 1977; Winter, 2007). According to Winter, “(...) simplistic, black-and-white thinking is associated with more aggressive crisis outcomes. Alternatively, resolving crises peacefully requires differentiation and integration — in short, complex thinking” (2007, p. 933). Additionally, social identity complexity (or SIC), is a measure of the complexity of people’s social surroundings, and has been found to predict outgroup tolerance (Brewer & Pierce, 2005). In this paper, we argue that the complexity (or simplicity) of people’s religiosity, both in regards to their ideas about religious issues and the diversity of their social environment, could help to clarify the relationship between religion and intergroup bias.

Religion has long been acknowledged as a double-edged sword when it comes to its relationship to people’s attitudes and behaviors towards others – at times associated with prosocial behaviors, and at times associated with discriminatory ones. Many studies

argue that religion can make one a better person – more moral, more generous, and more helping (for reviews, see Batson, Shoenrade, & Ventis, 1993; Norenzayan, 2014; Norenzayan & Shariff, 2008; Preston, Ritter, & Hernandez, 2010). Explanations for this relationship include religious believers behaving better under the perceived watchful eye of God (Shariff & Norenzayan, 2007; Gervais & Norenzayan, 2012), and believers having an ingrained moral code instilled by religious teachings (Graham & Haidt, 2010). However, religion also has a “dark side,” and is often associated with prejudice and discrimination (e.g., Allport, 1966; Altemeyer & Hunsberger, 1992; Hunsberger & Jackson, 2005; Jackson & Hunsberger, 1999; Johnson, Rowatt, & LaBouff, 2010).

From an intergroup perspective, these divergent findings make sense: religion provides people with a sense of belonging within particular social groups, which in turn leads to social cohesion and cooperation on the one hand (e.g., Saroglou, Pichon, Trompette, Verschuere, & Dernelle, 2005; Norenzayan et al, 2016), and ingroup favoritism and outgroup derogation on the other (e.g., Hunsberger & Jackson, 2005; Jackson & Hunsberger, 1999; Johnson, Rowatt, & LaBouff, 2012; Verkuyten, 2007; Verkuyten & Yildiz, 2007). Thus, viewed from an intergroup perspective, religion appears to encourage people to behave better towards people who are *like them*, meaning those who are a part of their religious ingroup, rather than towards humanity as a whole.

We can see the importance of these ingroup/outgroup dynamics in existing research on the relationship between individual differences in religious style and prosocial or discriminatory behavior. Much of the research to date that has addressed prejudice and discrimination with regards to religion has been in reference to fundamentalism, a rigid style of belief found across many religious traditions (Marty &

Appleby, 1991). Fundamentalism among Christian populations has long been associated with negative outcomes such as prejudice and discrimination towards outgroup members (e.g., Altemeyer & Hunsberger, 1992; Hunsberger & Jackson, 2005). However, its relationship with prosociality is different based on whether the targets are ingroup or outgroup members. Research shows that while fundamentalism does predict prejudice towards outgroup members, it can actually predict prosociality towards ingroup members (Blogowska & Saroglou, 2011).

Fundamentalism is a useful construct in regards to investigating the relationship between religion and discrimination/prejudice, as people who are fundamentalist are likely not thinking about religion in complex ways. People who are high in fundamentalism have a tendency towards rigid or dogmatic thinking – they believe that they are the “true believers” and have access to the one correct way of being religious, which necessarily sets up a dichotomy between believers and non-believers (Savage, 2012). However, given that existing measures of fundamentalism include specific religious content, they are only relevant to discrimination on the basis of a particular set of beliefs (in existing research, primarily conservative, Protestant Christian beliefs). Additionally, it should be noted that this kind of thinking is not solely the domain of religion – recent research has shown higher levels of dogmatic thinking (e.g., intolerance of contradiction) in non-religious participants in highly secularized Western countries (Uzarevic, Saroglou, & Clobert, 2017). Moreover, dogmatic thinking among non-religious people is negatively related to empathic concern and perspective taking (Friedman & Jack, 2017). Measures of religious fundamentalism would not be able to

explain, for example, an atheist who is prejudiced against people who are religious, but the complexity or simplicity of their understanding of religion might.

Complexity may be a key way to investigate how the style of one's religious beliefs is associated with intergroup bias. In this paper, we investigate the relevance of two broad measures of complexity which are related to how people engage with outgroups and contain rich, participant-specific content. These include the complexity of people's thought processes (integrative complexity; IC) and the complexity of people's subjective social worlds (social identity complexity; SIC). While the measures in themselves do not pertain to any particular content, we will be using them in the context of people's thoughts about religious issues (IC) and the interrelationships between their religious social identities and other important social identities (SIC). Thus, while we use the more general term "religious complexity" throughout this paper, we are not referring to any specific religious content, but rather to either people's responses to questions (IC) or people's social identities (SIC) which are situated in the religious domain. We hypothesize that less complex religious views and social identities will be associated with more intergroup bias, regardless of the content of those views/identities.

### **Cognition: Integrative Complexity and Religion**

Integrative complexity (IC) is a method of assessing the extent to which people recognize and/or integrate multiple perspectives – that is, it measures the sophistication with which people reason about given debates or dilemmas, akin to thinking in "black and white" or "shades of grey," on a 1-7 scale (Baker-Brown, Ballard, Bluck, de Vries, Suedfeld, & Tetlock, 1992). At a score of 1, people think in "black and white" ways, only recognizing one valid perspective. A score of 3 indicates the differentiation of multiple

arguments – that is, the person recognizes multiple perspectives. A score of 5 indicates moderate levels of integration, and a score of 7 indicates high levels of integration of multiple perspectives. It is important to note that the integrative complexity scoring system is based on the structure of people’s responses, not the content, and is not associated with how “correct” any one answer might be. For example, one could make a complex argument in favor of the Nazi party (Baker-Brown et al, 1992). While the IC scale allows for a wide range of complexity, IC scores are generally quite low, and even small differences on the lower end of the scale can have meaningful effects (see e.g., Hunsberger, Pratt, & Pancer, 1994; Weeks & Geisler, 2017).

Research has shown that there are connections between IC and religious constructs, particularly religious fundamentalism. Importantly though, this association has been found to be domain-specific. That is, people high in fundamentalism tend to think less complexly about religious or existential issues specifically, but not necessarily about unrelated issues (Hunsberger, Pratt, & Pancer, 1994; Liht, Conway, Savage, White, & O’Neill, 2011; Weeks & Geisler, 2017). Given these previous findings as well as fundamentalism’s association with rigidity and dogmatism, we hypothesize that we will replicate the finding that religious fundamentalism is characterized by thinking about religion in less complex ways. Moreover, we hypothesize that thinking about religion in more complex ways will be associated with less intergroup bias towards religious outgroups, even when controlling for fundamentalist beliefs.

### **Social Surround: Social Identity Complexity**

In addition to the complexity of people’s thought, people may vary in the complexity of their social surround – that is, are the people around you similar to each

other, or are they more diverse? Social identity complexity (SIC; Roccas & Brewer, 2002) is a construct that assesses the complexity of the interrelationships between a person's social identities. The measure is based on both their overlap and similarity, with more overlap between social identities, and more similarity between identities, indicating lower complexity. In effect, people's social circles are "narrowed" when their ingroups are highly similar and overlapping – having a more complex social identity thus supports the perspective that while someone might be an outgroup member on one level, they may be an ingroup member on another. Someone with low religious SIC would view members of their religious ingroup as being similar and overlapping on their other social identities (e.g., race, nationality, gender), while someone with high religious SIC would view religious ingroup members as being differentiated on those other social identities. Researchers (e.g., Roccas & Brewer, 2002; Miller, Brewer, & Arbuckle, 2009) hypothesize that social identity complexity is related to the constructs of cognitive complexity and integrative complexity (e.g., because of exposure to diverse perspectives), but to our knowledge, this has yet to be shown empirically. Thus, we hypothesize that religious SIC will be correlated with religious IC.

One of the primary outcomes associated with SIC is outgroup tolerance. This is because one's "ingroup" is extended to people who are also outgroup members in regards to some social identities. For example, someone who is an ingroup member with regards to ethnicity might be an outgroup member with regards to gender. Research has shown that there is a positive relationship between SIC and outgroup tolerance (Brewer & Pierce, 2005), outgroup acceptance and deprovincialization (Brewer, 2008), and acceptance of diversity (Brewer, 2010), and that there is a negative relationship between

SIC and in-group bias and social distance (Schmid, Hewstone, & Ramiah, 2013).

Moreover, SIC predicts explicit and implicit racial attitudes, over and above ideology and cognitive style (Miller, Brewer, & Arbuckle, 2009). Thus, we hypothesize that higher religious SIC (operationalized such that someone's religious identity is specified as being one of the key identities measured) will also be associated with less religious intergroup bias.

### **Overview of studies**

The purposes of the following studies are two-fold: 1) to determine the extent to which religious complexity, as measured by religious IC and religious SIC, predicts attitudes towards religious ingroups and outgroups, and 2) to determine the relationship between religious complexity, more general measures of complexity, and fundamentalism. Our overarching hypothesis is that religious complexity (both IC and SIC) will predict religious intergroup bias. Study 1 investigates the role of religious IC in predicting people's attitudes and anxiety towards Muslims using an online mixed religious/non-religious sample, while Study 2 investigates the roles of religious IC, religious SIC, and fundamentalism in predicting ingroup preference for Christians over Muslims and Christians over Atheists in an online religious sample.

### **Study 1: IC and Outgroup Attitudes**

In Study 1, we examined the relationship between people's integrative complexity (IC) and attitudes towards religious outgroups. In this study we were particularly interested in the relationship between IC and attitudes towards Muslims (a religious outgroup for the majority of Americans). Previous research has found that it is often

difficult to get people to engage with IC tasks even in lab-based settings, and researchers will sometimes use prodding questions to elicit higher levels of complexity (Hunsberger, Lea, Pancer, Pratt, & McKenzie, 1992; Hunsberger, Pratt, & Pancer, 1996). Therefore, we engaged participants in a related task (either thinking about the religious outgroup in question, or imagining an interaction with a member of that religious outgroup) previously to answering a free response question that was scored for IC.

### **Method**

**Participants.** 309 participants who were screened for being located in the United States completed the survey online, through Mechanical Turk. 4 participants were identified as not having attended to the task properly, and were thus deleted from the sample, leaving a final sample of 305 (22% atheist, 25% agnostic/uncertain, 52% theist/belief [2 missing]; mean age = 37.34 [4 missing]; 56.7% Female [1 missing]; 74% White).

### **Measures.**

***Intergroup contact prompt and IC task.*** Participants were asked to spend three minutes in one of 2 conditions: either an intergroup contact task (adapted from Crisp, Stathi, Turner, & Husnu, 2008) or a control task. For the intergroup contact task, participants were given the instruction, “Please spend the next three minutes imagining that you are meeting someone who is a *Muslim* for the first time. Imagine that the interaction is relaxed, positive, and comfortable. You spend about 30 minutes talking and learn some interesting and unexpected things about them.” For the control task, participants were given the instruction, “For the next three minutes please think about

*Muslims.*” Participants were automatically advanced to the next task on the survey after 3 minutes.

Participants were then randomly assigned to write their opinions on one of two issues: either a within-religion controversy:

Most mosques require a physical separation between men and women during public prayers. Women often enter through a separate door, and participate in a separate prayer space from the men. However, some Muslims oppose this separation on the basis of gender equality,

or a between-religion controversy:

In at least one major city in the U.S., community pools have developed special swimming times for Muslim girls to accommodate their cultural and religious modesty desires. During these hour-long swim sessions, all other swimmers are cleared out of the pool, the men's locker room is locked, and female lifeguards are brought in. However, some members of the local community have suggested this is an inappropriate public accommodation.

Participants were asked to take 3 minutes to provide their thoughts on the debate, and were given the instruction, “feel free to share your thoughts freely, and try to explain those thoughts in two short paragraphs.” Participants were automatically advanced onto the next page of the survey after 3 minutes. Participants’ responses to the writing prompts were scored for integrative complexity using the AutoIC program, which has been shown to have a modest correlation with handcoded responses ( $r = .46$ ; Conway, Conway, Gornick, & Houck, 2014). 8 participants did not answer the writing prompt; the remaining 297 responses were scored for IC ( $M = 2.16$ ;  $SD = .80$ ). The mean IC score of 2.16, while low, is similar to previous lab-based and online research (see e.g., Hunsberger, Pratt, & Pancer, 1994; Weeks & Geisler, 2017).

***Contact with Muslims.*** We hypothesized that the amount of contact that people had previously had with the target group would affect their attitudes towards that group,

with more contact being associated with more positive attitudes. Therefore we asked people to answer the question, “Roughly how many Muslims would you say you have in your circle of friends and family?” The measure was scored on a Likert scale, from 1 – “none” to 7 – “all”.

***Outgroup attitudes.*** Participants then answered questions about their attitudes (respect, trust, acceptance, approval, warmth, openness and liking, on a 10-item likert scale from “No \_\_\_\_ at all” to “Extreme \_\_\_\_”; LaBouff & Ledoux, 2016), anxiety (Stephan & Stephan, 1985), and allophilia (Pittinsky, Rosenthal, & Montoya, 2011) towards Muslims (an outgroup for the majority of participants). The allophilia questionnaire measures affection, comfort, engagement, and kinship towards the target – while higher scores on the measure do not indicate that intergroup boundaries have been dissolved, they indicate improved reach across them.

***Demographic variables.*** Finally, participants answered a series of demographic questions, including the extent to which they considered themselves a religious person, and the extent to which they considered themselves a spiritual person (Likert scales of 1 – not at all to 7 – very much).

**Study 1 Hypotheses.** We had 2 top-level hypotheses in this study:

Hypothesis A: The complexity with which people think about a religious outgroup would be affected by the cooperative prompt. Specifically, imagining an interaction with a Muslim (rather than just thinking about Muslims) would increase the complexity of people’s responses on the writing questions.

Hypothesis B: The IC of people’s responses would be related to more positive attitudes towards Muslims, less anxiety towards Muslims, and higher allophilia towards

Muslims, controlling for i) the extent to which they considered themselves religious, ii) the extent to which they considered themselves spiritual, and iii) contact with Muslims.

## **Results**

**Hypothesis A.** Our first hypothesis was not supported, as there were no significant differences between writing prompt conditions or imagination instruction conditions on IC or any of the attitudes towards Muslims measures, and thus we collapsed across conditions for the following analyses. It may be that our primes were not strong enough to produce an effect. While there is some evidence that online intergroup contact scenarios can be effective (Crisp, Stathi, Turner, & Husnu, 2008), the fact that participants were engaging with a likely unfamiliar outgroup (86.8% of participants reported having “none” or “very few” Muslims in their circle of friends and family) which is particularly relevant in reference to both current domestic and international conflict may be reasons for the ineffectiveness of the prime. Additionally, while we hypothesized that the type of issue which people engaged with (either between- or within-religious) might have an effect on IC, it may be that this would only be important if people have higher levels of familiarity with the target group.

**Hypothesis B.** We first examined the correlations between our target variables (see Table 1). IC was found to be significantly correlated with Attitudes towards Muslims (higher scores indicate more positive attitudes), anxiety regarding Muslims, and allophilia towards Muslims. Contact with Muslims was also significantly correlated with all three dependent variables, but IC and contact with Muslims were not significantly correlated. This suggests that IC and contact may account for different dimensions of people’s attitudes. The extent to which people considered themselves a religious or a

spiritual person was not correlated with any of the dependent variables, IC, or contact with Muslims.

\*\*Table 1 about here\*\*

We then ran stepwise linear regressions predicting attitudes, anxiety, and allophilia towards Muslims. Included in these regressions were IC, contact with Muslims, age, gender, the extent to which participants considered themselves to be religious, extent to which participants considered themselves to be spiritual, and dummy coded variables for the different conditions (experimental vs. control, and mosque vs. pool). For both attitudes and anxiety towards Muslims, the models were significant,  $R^2 = .15$ ,  $F(2, 286) = 26.08$ ,  $p < .001$  and  $R^2 = .05$ ,  $F(2, 288) = 8.036$ ,  $p < .001$  respectively, with contact with Muslims and IC in the models as significant predictors. For allophilia towards Muslims, the model was again significant,  $R^2 = .18$ ,  $F(2, 288) = 35.50$ ,  $p < .001$ , with contact with Muslims and age as significant predictors.

\*\*Table 2 about here\*\*

## **Conclusion**

We found no support for Hypothesis A, that the complexity with which people discuss a religious outgroup would be influenced by a cooperative prompt. However, we did find support for Hypothesis B, that IC is correlated with attitudes towards religious outgroups (in this case, Muslims), even when taking people's pre-existing contact with that outgroup into account. Specifically, we found that IC is a significant predictor of both Attitudes towards Muslims and Anxiety towards Muslims, predicting more positive attitudes and less anxiety. These findings suggest that IC does in fact work in the

direction that would be predicted from the literature – that higher levels of IC are related to lower levels of intergroup bias.

Interestingly, however, IC did not predict Allophilia towards Muslims. There are several possible explanations for this lack of significance. First, this belongingness measure included questions like “I feel a kinship towards Muslims,” which may be less related to complexity of *thought* rather than people’s social surround. Second, it is possible that the measure of contact with Muslims (how many Muslims people had in their circle of friends and family) overrode any effects that complexity of thought might have with regards to feelings of belongingness and kinship in particular.

The relationship between IC and attitudes and anxiety towards Muslims when accounting for contact with Muslims in this study indicates that IC may indeed be an important variable to take into account when investigating religious intergroup bias. However, in this preliminary study, we did not assess complexity in conjunction with other religiosity variables (e.g., Fundamentalism, which would not be relevant to the majority of the participants in this diverse religious and non-religious sample) and individual difference measures (e.g., social desirability) related to prosocial and/or prejudicial attitudes and behavior. Additionally, while pre-existing contact with the outgroup was an important predictor in this study, we wanted to investigate whether a more general measure of the diversity of people’s social worlds (i.e., social identity complexity), would have similar effects. Thus, in Study 2 we investigated IC in conjunction with these measures.

## **Study 2: Religious Complexity and Ingroup Preference**

In order to further investigate the extent to which religious complexity is related to attitudes towards religious outgroups, we investigated religious people's attitudes towards both Muslim (religious outgroup) and atheist (non-religious outgroup) targets. We chose to investigate attitudes towards atheists as they have been shown to be a particularly maligned group in the United States (Edgell, Gerteis, & Hartmann, 2006), a finding that appears to be largely driven by intuitive perceptions of atheists being less trustworthy and moral than other groups (Gervais, Shariff, & Norenzayan, 2011), and that persists even across more secularized countries (Gervais, et al, 2017).

Following from our use of an outgroup prime in Study 1, in this study we included an outgroup threat prime in order to investigate the extent to which IC could be manipulated. In order to extend our findings from Study 1 involving the relationship between IC and intergroup bias, we also included a measure of religious social identity complexity (SIC) and additional variables shown to be related to religious prejudice and discrimination in existing research in order to investigate IC's unique effects.

## **Method**

**Participants.** 831 participants located in the United States were prescreened for identifying as religious, and completed the survey online via MTurk. 230 of these participants either responded with missing data or did not meet our criteria for inclusion (e.g., did not adequately answer the free response question that was scored for IC) and were therefore removed from the analysis during the cleaning process, leaving a final sample of 601 ( $M_{age} = 37.76$ ; 57.2% Female; 88.4% Christian).

## **Measures.**

***Outgroup threat prime and IC task.*** Participants watched a video presented as a BBC news report, with a custom voice-over. The news report covered a supposed debate regarding whether the 10 Commandments would be allowed to be displayed at a Tennessee courthouse, and stated that “Lawmakers on both sides of this issue believe that it has the potential to impact future debates about the separation of church and state.” The control condition did not specify an antagonist, whereas in the prime condition, atheist groups were identified as lobbying against the display.

After watching the video, participants answered the following writing prompt, and their written response was coded for IC: “Recent legislation in several European countries has banned the wearing of overtly religious symbols (e.g., Christian cross, Sikh turban, Muslim headscarf) in public places such as schools and government buildings. Efforts to introduce such legislation in the United States have produced both support and resistance. Please share your thoughts on this debate. Should religious symbols be banned in public spaces such as schools and government buildings, and why or why not?” Participants were automatically advanced to the next page after 3 minutes and 30 seconds. Responses were again coded by the AutoIC program (Conway, Conway, Gornick & Honck, 2014).

***Social identity complexity.*** We measured social identity complexity (Roccas & Brewer, 2002) using an adapted group solicitation questionnaire (Miller, Brewer, & Arbuckle, 2009) anchored on participants’ religious identity. Participants were asked to identify their religious identity, a number of relatively orthogonal identities (e.g., gender, profession, relationship status), and up to 3 hobbies, and subsequently asked to identify the 3 most important of those identities besides their religious identity. Participants were

then asked to answer 2 series of questions for every possible combination of their religious identity and the other 3 identities: overlap questions (“How many people who are a(n) <group 1> are also a(n) <group 2>”; “0, none are” – “10, all are”) and similarity questions (“How similar are typical members of <group 1> and <group 2>?”; “Not at all similar [0]” – “Very similar [10]”). Overall overlap and similarity scores were calculated as an average of all ratings.

***Preference for ingroup measure.*** The outcome measures included preference for Christians (an ingroup for 88.4% of our sample) over Atheists, as well as preference for Christians over Muslims. These were calculated as an average of differences in attitudes towards the targets across 3 measures: an attitude thermometer (warm-cold; 0-10), how happy the participant would be for their child to marry someone of the targets’ religious affiliation (7-point likert scale, strongly negative - strongly positive), and the Inclusion of Other in the Self scale (Aron, Aron, & Smolan, 1992; no overlap – nearly complete overlap).

In order to calculate our outcome variables (Preference for Christians over Atheists and Preference for Christians over Muslims), we subtracted people’s responses for Muslim targets from their responses for Christian targets, for the attitude thermometer, willingness for child to marry, and IOS scales<sup>i</sup>, and turned them into Z-scores. We did reliability analyses ( $\alpha = .85$  for Preference for Christians over Muslims;  $\alpha = .86$  for Preference for Christians over Atheists), and then calculated the average of the three measures to represent the overall preference.

***Need for cognition.*** We included the Need for Cognition Scale (NFCS; Cacioppo, Petty, & Kao, 1984), as previous research has shown that IC is sometimes

correlated with Need for Cognition (Hunsberger, Pratt, & Pancer, 1994). Cognitive style is also an important correlate of SIC (Roccas & Brewer, 2002; Miller, Brewer, & Arbuckle, 2009), and thus we aimed to assess the relationship between all three of our complexity variables (IC, SIC, and NFCS).

***Fundamentalism.*** In keeping with findings that fundamentalism is related to rigidity of thinking (Johnson, LaBouff, Rowatt, Patock-Peckham, & Carlisle, 2012) and IC (Hunsberger, Pratt, & Pancer, 1994; Liht, Conway, Savage, White, & O'Neill, 2011), we included the Intratextual Fundamentalism Scale (Williamson, Hood, Ahmad, Sadiq, & Hill, 2010), which is applicable across many religious traditions. We hypothesized that fundamentalism would be negatively related to complexity and positively related to ingroup preference.

***Religious orientation.*** Another religiosity variable that is pertinent in our study is religious orientation. Religious orientation classically has been defined as either “intrinsic” (internally gripped by one’s religion) or “extrinsic” (religion as serving other needs), with extrinsic orientations being more closely associated with prejudice (Allport & Ross, 1967; Donahue, 1985). We used single-item measures of Intrinsic, Extrinsic Personal, and Extrinsic Social orientations (Gorsuch & McPherson, 1989).

***Social desirability.*** Expressing negative opinions about outgroup members may be seen as socially undesirable, and thus we included an 11-item version of the Balanced Inventory of Desirable Responding (BIDR; Paulhus, 1991) to control for social desirability.

***Demographic variables.*** We also included demographic variables including age, gender, socioeconomic status (“SES”), political identity (7-point scale from very

conservative to very liberal, with “other” dropped from the analysis at the cleaning stage), and a self-report measure of how religious participants considered themselves to be (5-point scale; “Not at all religious” – “Very religious”).

**Study 2 Hypotheses.** We had 3 top-level hypotheses in this study:

Hypothesis A: There would be differences in IC based on whether people were in the prime or control condition.

Hypothesis B: The complexity variables (IC, SIC, NFC) would correlate with each other and with fundamentalism.

Hypothesis C: IC and the other complexity variables would be related to attitudes towards religious outgroups, accounting for relevant religiosity and demographic variables, both i) for a relevant outgroup to the writing prompt (atheists), and ii) for an irrelevant outgroup to the writing prompt (Muslims).

## **Results**

**Hypothesis A.** There were no significant differences in IC between the control and prime condition, and thus we collapsed across conditions for the further analyses. The average IC for this sample was 2.04 – similar to our Study 1 sample and previous literature.

**Hypothesis B.** We investigated the relationships between our 4 complexity variables and fundamentalism (see Table 3). We found that IC was significantly correlated with both SIC Overlap and SIC Similarity. However, although it has sometimes been shown to be related to IC in the past (Hunsberger, Pratt, & Pancer, 1994), Need for Cognition was only found to be correlated with the “SIC Overlap” complexity score in this sample. Additionally, the complexity variables were

significantly correlated with fundamentalism, with fundamentalism being associated with lower levels of complexity across all 4 measures. Additionally, all four complexity variables, as well as fundamentalism, were significantly correlated with the two ingroup preference measures.

\*\*Table 3 about here\*\*

**Hypothesis C.** We conducted hierarchical multiple regressions predicting preference for Christians over Atheists (situationally-relevant outgroup, given our prime), and predicting preference for Christians over Muslims (situationally-irrelevant outgroup). In Step 1, we entered the prime, social desirability, and demographic measures (age, gender, SES, political identity). In Step 2, we entered the religiosity variables of Fundamentalism, how religious, and Intrinsic, Extrinsic personal, and Extrinsic social orientations. Finally, in Step 3, we entered the complexity variables of IC, SIC similarity, SIC overlap [Note: SIC variable scoring is counter-intuitive – lower scores indicate more complexity], and Need for Cognition.

***Hypothesis C(i): Multiple regression with preference for Christians over Atheists.*** The final model was significant and provided an improvement on the previous models,  $R^2 = .47$ ,  $F(15, 585) = 34.51$ ,  $p < .001$ ,  $\Delta R^2 = .02$ ,  $F(4, 585) = 6.52$ ,  $p < .001$ , with social desirability, age, political identity, fundamentalism, how religious, extrinsic personal orientation, extrinsic social orientation, IC, and SIC Similarity as significant predictors (see Table 4).

\*\*Table 4 about here\*\*

***Hypothesis C(ii): Multiple regression with preference for Christians over Muslims.*** The final model was significant and provided an improvement on the previous

models,  $R^2 = .35$ ,  $F(15, 585) = 21.02$ ,  $p < .001$ ,  $\Delta R^2 = .02$ ,  $F(4, 585) = 3.59$ ,  $p = .007$ , with age, political identity, fundamentalism, how religious, extrinsic personal orientation, and IC as significant predictors, and social desirability, SIC Similarity, and Need for Cognition as marginally significant predictors (see Table 5). The only differences from the results for Hypothesis C(i) are that for this model, Extrinsic Social Orientation did not predict preference, while Need for Cognition (which was not significant in the previous model) was a marginally significant predictor, and that social and desirability and SIC Similarity were only marginally significant predictors.

\*\*Table 5 about here\*\*

### **Conclusion**

In investigating the relationship between Integrative Complexity and Social Identity Complexity, we have contributed to the literature by showing that these two measures are significantly correlated. The complexity of thought as measured by IC and the complexity of participants' social group were related, whereas neither of these measures were related to the more general measure of Need for Cognition in this sample. The relationship between these two measures makes sense, given that IC is related to being able to think in "shades of grey," which enables people to see beyond their own perspective, and that SIC is related to including people with different social identities, and thus different perspectives on the world, in their social surround. Additionally, all three religious complexity variables were significantly correlated with Fundamentalism, again indicating that these measures are related. However, it is important to note that, with the exception of the two SIC variables, which are calculated from the same task, while the correlations between these four variables are significant, they are small

(ranging from  $-.14$  to  $.26$ ; see Table 3). This suggests that while they are related, they are still distinct from each other.

The relationship of both of these measures to differentiated and diverse perspectives further underlines their importance in reducing bias. We found that even when including relevant religiosity and demographic measures, religious complexity (in the form of both Integrative Complexity and Social Identity Complexity) was an important predictor of people's intergroup bias, both towards a situationally-relevant outgroup and a situationally-irrelevant outgroup. This indicates that in addition to the religious style measures that are typically understood as being related to religious prosociality/discrimination (e.g., fundamentalism), we should take people's religious complexity (of both thought and social identity) into account.

It is important to note that while the complexity variables did contribute significantly to the overall model, showing incremental validity over and above existing religiosity variables, as we would have expected from the previous literature, fundamentalism stood out as being the strongest predictor of both ingroup preference measures ( $B = .37$  and  $B = .28$  for preference over Atheists and Muslims respectively), although this was followed closely by political identity in the preference for Christians over Muslims model ( $B = -.22$ ). Thus, we do not claim that in studying religious complexity we should see these measures as being replacements for investigating the effects of fundamentalism or other relevant beliefs, but rather as complementary measures. Indeed, using these religious complexity measures may be a better means of getting specifically at the rigidity and simplicity of thinking that may underlie measures such as fundamentalism, which are by necessity more constrained in content, and they

may thus be important additions to our understanding of intergroup bias in the religious domain.

### Discussion

Across our 2 studies we found support for our overarching hypothesis that higher complexity (both regarding thought and people's social surround) predicts less intergroup bias, both in having more positive attitudes and less anxiety towards outgroups (Study 1) and in showing less ingroup preference (Study 2). The complexity with which people think about religion and the complexity of people's religious social worlds are important factors in determining people's intergroup biases, even when accounting for variables such as fundamentalism, religious orientation, and past contact. In Study 2 we found that this was the case for both situationally-relevant outgroups and situationally-irrelevant outgroups. Notably, our Study 1 sample was mixed religious/non-religious, which indicates that our findings may not simply be a feature of *religious* people's complexity, but rather the complexity with which one thinks about religion regardless of one's own beliefs.

Furthermore, we found the expected relationships between religious complexity and our other variables of interest. The complexity with which people think about religious issues (IC), the extent to which they have complex religious social worlds (SIC), and general thinking style (NFCS) are all correlated, but not so highly that they are redundant. In fact, NFCS was only significantly correlated with one religious complexity measure, SIC Overlap. Fundamentalism, on the other hand, was correlated with all 4 complexity variables. These findings suggest that future research should clarify the

relationship between these variables and their unique effects on people's attitudes towards religious ingroups and outgroups.

This research had several limitations. First, we largely focused on variables related to cognitive rigidity and thus did not include variables such as Quest religious orientation (Batson & Raynor-Prince, 1983), which has been found to be related to IC in recent research (Weeks & Geisler, 2017). Furthermore, this research was conducted online with participants from the United States. Both of these factors may affect the generalizability of our results, and future research should investigate similar questions in different settings and with different populations.

Additionally, areas of potential growth were the low levels of IC and a lack of effect for our primes across the studies. While our results show that we cannot easily manipulate IC or SIC using simple outgroup threat or cooperation primes, the relationships we found between the attitude and complexity variables indicate that an important dimension affecting how people perceive others in the religious domain is their ability and/or propensity to think complexly and to have more complex social worlds. This may enable them to take others' perspectives and see the world from others' points of view. We can see the importance of this from existing training programs aiming to decrease intergroup tensions by increasing levels of IC (e.g., Boyd-MacMillan, 2016; Boyd-MacMillan, Campbell, & Furey, 2016; Liht & Savage, 2013). Lab-based levels of IC tend to be quite low (means were 2.16 and 2.04, on a 7-point scale in our studies). This indicates that there is a great deal of room for growth in most people's levels of religious complexity.

The relationships between religiosity and prejudice as well as religiosity and discrimination are by no means a recent phenomenon; however, this research is also particularly timely. Recent history has seen great upheaval in regards to historically “Christian” and “Muslim” regions of the world. A recent poll (Pew Research Center, 2017) indicates continuing intergroup tensions with regards to religion in the United States, with Muslims (as well as Atheists) being rated more negatively than all other religious groups, with 50% of respondents saying that Islam is not a part of mainstream American society. Although attitudes towards these minority groups are more positive than they were during the last poll conducted in 2014, they still indicate high levels of negativity and “otherness.”

Finally, the importance of these findings are underlined by existing guidelines in interfaith dialogue, many of which encourage members to engage with people of different faiths (something which might increase SIC), and to work on not just tolerating them, but also *understanding* them (something which might increase IC; Eck, 2006; Guidelines for Interfaith Dialogue). Understanding the roles of IC and SIC in people’s attitudes towards outgroups may help to facilitate further theory-based interventions along these lines. Given the volatility of our current global climate, the question of what can allow us to understand religious others in ways that promote understanding, empathy, and cooperation, rather than prejudice and discrimination, is especially pertinent.

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*Table 1: Correlations between IC, outgroup attitudes, and outgroup contact*

<i>Measures</i>	2	3	4	5
1. <i>IC</i>	.17**	.14**	-.14*	.05
2. <i>Mus_Att</i>	--	.82**	-.59**	.36**
3. <i>Mus_Allo</i>		--	-.58**	.39**
4. <i>Mus_Anx</i>			--	-.16**
5. <i>Mus_Contact</i>				--

*Note: N ranges from 295 to 304. IC = integrative complexity; Mus\_Att = attitudes towards Muslims; Mus\_All = allophilia towards Muslims; Mus\_Anx = anxiety towards Muslims; Mus\_Contact = previous contact with Muslims.*

\* $p < .05$ . \*\* $p < .01$ .

*Table 2: Predictors of Attitudes, Anxiety, and Allophilia Towards Muslims*

Dependent variable	Predictors	Unstandardized B	SE	95% CI
<b>Attitudes</b>				
	Contact	.92**	.14	[.64, 1.20]
	IC	.40**	.14	[.12, .68]
<b>Anxiety</b>				
	Contact	-.19**	.06	[-.31, -.07]
	IC	-.14*	.06	[-.26, -.03]
<b>Allophilia</b>				
	Contact	.65**	.09	[.47, .82]
	Age	-.02**	.01	[-.03, -.01]

*Note:* \*p < .05. \*\*p < .01.

*Table 3: Summary of correlations between complexity measures*

Measures	2	3	4	5	6	7
1. IC	-.14**	-.14**	.07	-.15**	-.17**	-.19**
2. SIC_Overlap	--	.57**	-.12**	.20**	.15**	.19**
3. SIC_Similarity		--	-.03	.26**	.23**	.29**
4. NFC			--	-.19**	-.16**	-.17**
5. Fundamentalism				--	.48**	.61**
6. Preference C_M					--	.77**
7. Preference C_A						--

*Note:* Preference C\_M = Preference for Christians over Muslims; Preference C\_A = Preference for Christians over Atheists.

\* $p < .05$ . \*\* $p < .01$ .

Table 4: Predictors of Preference for Christians over Atheists:

	B	SE	95% CI
<b>Step 1</b>			
Prime	-.06 <sup>+</sup>	.19	[-.69, .06]
Social desirability	-.04	.36	[-1.14, .29]
Age	.12**	.01	[.01, .04]
Political identity	-.38***	.05	[-.64, -.43]
SES	-.06	.06	[-.21, .02]
Gender	.10*	.20	[.11, .88]
<b>Step 2</b>			
Prime	-.04	.16	[-.51, .11]
Social desirability	-.08*	.31	[-1.34, -.14]
Age	.11**	.01	[.01, .04]
Political identity	-.10**	.05	[-.24, -.04]
SES	-.01	.05	[-.11, .08]
Gender	.01	.17	[-.29, .38]
Fundamentalism	.42***	.07	[.46, .72]
How Religious	.19***	.11	[.24, .65]
Intrinsic	-.02	.07	[-.16, .10]
Extrinsic Personal	.15***	.06	[.15, .37]
Extrinsic Social	-.07*	.05	[-.20, -.01]
<b>Step 3</b>			
Prime	-.04	.16	[-.50, .11]
Social desirability	-.09**	.31	[-1.44, -.22]
Age	.09**	.01	[.01, .03]
Political identity	-.10**	.05	[-.23, -.04]
SES	.001	.05	[-.10, .10]
Gender	.03	.17	[-.19, .47]
Fundamentalism	.37***	.07	[.39, .65]
How Religious	.19***	.10	[.26, .66]
Intrinsic	-.02	.07	[-.15, .11]
Extrinsic Personal	.13***	.06	[.11, .33]
Extrinsic Social	-.07*	.05	[-.20, -.02]
IC	-.09**	.11	[-.55, -.11]
SIC Similarity	.12**	.06	[.06, .29]
SIC Overlap	-.002	.08	[-.15, .14]
Need for Cognition	-.05	.07	[-.24, .04]

Note:  $R^2 = .18$  for Step 1,  $\Delta R^2 = .26$  for Step 2 ( $p < .001$ ),  $\Delta R^2 = .02$  for Step 3 ( $p < .001$ ).

<sup>+</sup> $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

Table 5: Predictors of Preference for Christians over Muslims

	B	SE	95% CI
<b>Step 1</b>			
Prime	-.06	.17	[-.63, .07]
Social desirability	-.04	.34	[-1.05, .27]
Age	.18***	.01	[.02, .05]
Political identity	-.40***	.05	[-.63, -.44]
SES	-.01	.06	[-.12, .10]
Gender	.05	.18	[-.13, .59]
<b>Step 2</b>			
Prime	-.05	.16	[-.54, .10]
Social desirability	-.07*	-.63	[-1.25, -.004]
Age	.18***	.01	[0.02, 0.05]
Political identity	-.22***	.05	[-.40, -.19]
SES	.03	.05	[-.06, .14]
Gender	-.01	.18	[-.38, .32]
Fundamentalism	.32***	.07	[.30, .56]
How Religious	.11*	.11	[.02, .45]
Intrinsic	-.08	.07	[-.25, .03]
Extrinsic Personal	.13***	.06	[.10, .33]
Extrinsic Social	-.02	.05	[-.13, .07]
<b>Step 3</b>			
Prime	-.04	.16	[-.54, .10]
Social desirability	-.07 <sup>+</sup>	.33	[-1.28, .01]
Age	.16***	.02	[.02, .05]
Political identity	-.22***	.05	[-.40, -.19]
SES	.04	.05	[-.05, .16]
Gender	.01	.18	[-.31, .39]
Fundamentalism	.28***	.07	[.24, .056]
How Religious	.11*	.11	[.04, .47]
Intrinsic	-.08	.07	[-.24, .03]
Extrinsic Personal	.11**	.06	[.07, .30]
Extrinsic Social	-.02	.05	[-.13, .06]
IC	-.08*	.12	[-.51, -.05]
SIC Similarity	.08 <sup>+</sup>	.06	[-.01, .23]
SIC Overlap	-.00	.08	[-.16, .15]
Need for Cognition	-.06 <sup>+</sup>	.07	[-.27, .02]

Note:  $R^2 = .22$  for Step 1,  $\Delta R^2 = .12$  for Step 2 ( $p < .001$ ),  $\Delta R^2 = .02$  for Step 3 ( $p = .007$ ).

<sup>+</sup> $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

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Footnotes

<sup>i</sup> Interestingly, the mode response on the IOS for the Christian target was 7 (nearly complete overlap). This suggests that some participants may be experiencing identity fusion, which occurs when one's personal and social identities are functionally equivalent; however while the identity fusion measure is similar to the IOS Scale, "fusion" is indicated by the self circle being completely surrounded by the group circle (Swann, Gomez, Seyle, Morales, & Huici, 2009), so we were not able to investigate this in our study. Identity fusion is related to outcomes such as willingness to engage in extreme behavior on behalf of the group (Swann et al, 2009); therefore, researchers may want to investigate the extent to which identity fusion associated with religious complexity in the future.