Is LGBT progress seen as an attack on Christians?:

Examining Christian/sexual orientation zero-sum beliefs

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Abstract

As social policies have changed to grant more rights to lesbian, gay, bisexual, and transgender (LGBT) individuals, some Christians in the U.S. have suggested that LGBT rights impede Christians' religious freedom. Across five studies, we examined the causes and consequences of zero-sum beliefs (ZSBs) about Christians and LGBT individuals. We demonstrate that Christians' beliefs about conflict with sexual minorities are shaped by their understandings of Christian values, social change, interpretation of the Bible, and in response to religious institutions. In Study 1, heterosexual cisgender Christians endorsed ZSBs more than other groups. Christians reported perceiving that anti-LGBT bias has decreased over time while anti-Christian bias has correspondingly increased. In Study 2, Christians' zero-sum beliefs increased after they reflected on religious values, suggesting that intergroup conflict is seen as being a function of Christian beliefs. Study 3 confirmed the role of symbolic threat in driving ZSBs; perceived conflict was accentuated when Christians read about a changing cultural climate in which Christians' influence is waning. An intervention using Biblical scripture to encourage acceptance successfully lowered zero-sum beliefs for mainline, but not fundamentalist Christians (Study 4). A final field study examined how ZSBs predict sexual prejudice in response to changing group norms. After a special conference in which the United Methodist Church voted to restrict LGBT people from marriage and serving as clergy, zero-sum beliefs became a *stronger* predictor of sexual prejudice (Study 5). We discuss the implications of Christian/LGBT ZSBs for religious freedom legislation, attitudes toward sexual minorities, and intergroup conflict more generally.

Keywords: anti-Christian bias, LGBT bias, zero-sum beliefs, same-sex marriage

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"The activists who pursue same-sex marriage... are not satisfied with equality and they will not be satisfied until people of faith are driven out of this discourse, are made to cower, are made to be in fear of speaking their minds, of living up to their deeply held religious beliefs."

Virginia House Delegate Todd Gilbert (R) (Portnoy, 2016)

On June 26, 2015, the Supreme Court of the United States ruled in *Obergefell v. Hodges* that denying same-sex couples the right to marry was unconstitutional, thereby legalizing same-sex marriage in all 50 states in the U.S. Subsequently, a number of so-called "religious freedom" laws were passed (e.g., Religious Freedom Defense Act, 2015; HB4733, 2015), and many more were proposed. This legislation, although varied by state, generally allowed individual business owners the right to refuse service to gays and lesbians (also see *Masterpiece Cakeshop, LTD., et al. v. Colorado Civil Rights Commission* et al., 2018; Burton, 2018). Supporters of the legislation argued that being obligated to serve sexual minorities violated Christians' religious freedom. These measures and the above quotation also suggest that a subset of individuals and institutions in the U.S. may connect increasing rights for lesbian, gay, bisexual and transgender (LGBT) individuals with bias against Christians (Yancey, 2018). In other words, some may perceive a zero-sum relationship between bias against LGBT individuals and bias against Christians; they believe that social gains for one group necessarily involve losses for the other. These perceptions

arise despite the reality that Christians and LGBT individuals are overlapping groups, and more than half of LGBT individuals identify as Christian (Newport, 2014).

The current research assessed whether, on average, Christians in the US perceive conflict with LGBT individuals such that gains for LGBT individuals are seen as hurting Christians. We aimed to determine what drives those beliefs, what are their consequences, and whether it is possible to mitigate Christians/sexual orientation zero-sum beliefs (ZSBs).

Why do some perceive zero-sum relationships?

The pattern of perceived intergroup conflict, where gains for one group are seen as losses for another, is theoretically driven by a desire to maintain group dominance and arises in response to perceived resource stress. According to the Instrumental Model of Intergroup Conflict (Esses et al., 1998; Esses et al., 2001), zero-sum beliefs are a consequence of scarcity (and desire for unequal distribution) and the salience of relevant outgroups as sources of competition. Zero-sum beliefs, in turn, predict attitudes that hurt the outgroup and help the ingroup (Esses et al., 2001; Kuchynka et al., 2018; Wilkins et al., 2015; Wellman et al., 2016). For example, when men perceive that the gender system is unstable, ZSBs motivate them to withdraw support for gender-fair policies (Kuchynka et al., 2018). Furthermore, a zero-sum perspective on gender relations is associated with less support of women leaders (Ruthig et al., 2020). It is thus critical to understand Christian/sexual orientation ZSBs because these beliefs likely drive support for policies that hurt gender and sexual minorities while being framed as protecting Christians.

Previous research on zero-sum beliefs has examined attitudes among groups that vary on the same demographic dimension (i.e., race, gender, nationality) and that are widely perceived as being mutually exclusive (e.g., Bosson et al., 2012; Esses et al., 2001; Esses et al., 1998;

Meegan, 2010; Sherif & Sherif, 1969; Wilkins et al., 2015). For example, within race, Whites endorse racial zero-sum beliefs about the bias they experience relative to Blacks (Norton & Sommers, 2011; Wilkins et al., 2015). Within gender, men tend to perceive a zero-sum relationship about the bias they experience relative to women (Bosson et al., 2012; Kehn & Ruthig, 2013; Kuchynka et al., 2018; Wilkins et al., 2015). Native-born Canadians also perceive themselves as being in a zero-sum competition with immigrants (Esses et al., 1998, 2001).

  Intergroup Threat. Furthermore, the extant research on zero-sum beliefs has focused primarily on realistic threat or perceived competition over tangible resources, such as money, jobs, educational opportunities, and political power. The logic is often that limited resources (or perceptions of limited resources) and perceived competition drive ZSBs; when one group gains, the other – often dominant group – perceives that they lose out.

  Here, we propose and test whether ZSBs are also driven by *symbolic threat* (Kinder & Sears, 1981) for groups that are not necessarily mutually exclusive and do not fall on the same dimension. Symbolic threat approaches to intergroup conflict suggest that threat and prejudice arise from conflicting values and beliefs (Kinder & Sears, 1981; Riek et al., 2006; Stephan & Stephan, 2000). Symbolic threat implies that groups will be in conflict over a moral or value violation. This perspective is more consistent with the reality that some Christians forgo financial gain (real resources) in order to uphold their religious beliefs; for example, Masterpiece Cakeshop refused to make a cake for a same-sex wedding because of the owner's religious principles. The couple sued the cake shop, and the case was heard by the Supreme Court (*Masterpiece Cakeshop v. Colorado Civil Rights Commission*, 2018) – which ultimately ruled in favor of the baker and may have bolstered the perceived need for religious freedom protections.

Christians in the U.S. may be particularly concerned about symbolic threats to their group given their declining social influence in American political and social life. For much of U.S. history, White Christians were a dominant force in deciding elections, enacting legal policies, and setting cultural norms, but significant demographic and cultural shifts have reduced their influence (Jones, 2016). Many Christians have come to see themselves as being on the losing side of the culture wars (Hunter, 1992), and that loss was epitomized for some by the legalization of same sex marriage. For some, the core cultural understanding of what it means to be a moral Christian may increasingly be at odds with popular perspectives in the U.S. In other words, Christians may perceive that an America where same sex marriage is legal is one in which they have lost their sway and are now victimized. Thus, symbolic threat may lead Christians to perceive bias against their group and see themselves as being at odds with LGBT individuals (who are, in turn, perceived as having increasing social influence).

Empirical evidence is consistent with our proposal that perceived conflict between Christians and LGBT individuals is driven by *symbolic threat*. When a group's values are threatened, they are more inclined to endorse zero-sum beliefs (Davidai & Ongis, 2019). LGBT individuals are often perceived of as violating moral values in regard to sexuality (Haddock et al., 1993; Riek et al., 2006; Stephan et al., 2009), and in particular as violating Christian values (Herek, 1988; Newport, 2012; Rodriguez, 2009). Thus, perceived progress for LGBT individuals may be viewed as an attack on Christian morality and as a symbolic threat. This may especially be the case for evangelical (conservative) Christians in the U.S. – who are more likely than mainline Protestant Christians to believe that Christianity is a defining feature of being American (Stokes, 2017). For them, changes to U.S. culture which are inconsistent with their Christian values may be interpreted as a threat and may evoke perceptions of bias against the group. In

other words, greater social acceptance and visibility of sexual minorities may lead Christians to endorse a zero-sum perspective that there is less room for Christian beliefs in society.

Status-quo concerns. Christians might also endorse ZSBs to a greater extent than other groups by virtue of their unique dominant status in the U.S. Research on ZSBs demonstrates that dominant groups tend to endorse ZSBs to a greater extent than less-dominant groups (Kuchynka et al., 2018; Norton & Sommers, 2011; Wilkins et al., 2015). In the U.S., Christians are arguably higher-status than non-Christians, and are higher status than LGBT individuals (Rudman et al., 2002). Christians of all denominations make up over 70% of the U.S. population (Pew Research Center, 2014). Religious phrases appear in the Declaration of Independence, in the Pledge of Allegiance, and the national motto "In God we Trust" is printed on American currency (see Glass, 2018). Furthermore, Christian Protestantism is both explicitly and implicitly valued in the U.S. – even among non-Christians (Uhlmann & Sanchez-Burks, 2014). In contrast, LGBT individuals remain the group most targeted by hate crimes (Dashow, 2018). So, even though the groups overlap, Christians are relatively privileged and thus more likely to endorse ZSBs compared to relatively disadvantaged LGBT individuals.

One reason high-status groups are likely more inclined to endorse zero-sum beliefs is precisely because of their position. Zero-sum beliefs motivate dominant groups to maintain their privileged position – particularly if they are concerned that their status might change. For example, men (but not women) report less support for policies that increase gender equality when the gender hierarchy is threatened, and this tendency is driven by zero-sum beliefs (Kuchynka et al., 2018). High-status groups tend to be higher than low-status groups in social dominance orientation and preference for group-based inequality (Sidanius & Pratto, 1999; Sidanius et al., 1994). Preference for inequality is directly related to perceptions that one group's

gains involve another's losses (Esses et al., 1998; Wilkins et al., 2015). Furthermore, high-status groups perceive progress toward equality as a loss for their group (Eibach & Keegan, 2006), and losses are subjectively experienced as more severe than equal gains (Kahnamen & Tversky, 1979). Even high-status members of minimal groups experience threat in response to potential changes in social relations (see Scheepers & Ellemers, 2018 for review). Furthermore, perceiving bias against high-status groups upholds the status hierarchy (see Major et al., 2002; Unzueta et al., 2014; Wilkins et al., 2013, 2017), and increases zero-sum beliefs (Wilkins et al., 2015).

Here we suggest that the desire to maintain group dominance may be driven by desires for cultural dominance. Thus, we expect Christians to perceive a zero-sum relationship between Christians and LGBT individuals to a greater extent than other groups (i.e. non-Christians, LGBT individuals). ZSBs will be driven by symbolic threat in response to cultural change that threatens Christians' dominant status in the US.

Subgroup differences. Christians are a broad, heterogeneous group that differ in beliefs and practices. As such, we expect there will be variation in the extent to which particular Christians perceive ZSBs or conflict between group values and acceptance of LGBT individuals. In fact, some Christian denominations have split over the very question of inclusion of sexual minorities (e.g. see the Episcopal/Anglican realignment and potential Methodist split (Steele, 2020; Winston, 2016)). For simplicity, rather than examining denomination-specific variation, we focus instead on general categories.

Scholars have argued that, historically, Christians have been divided into two broad groups based on their understandings of culture (e.g., Griffith, 2017; Smidt, 1988). One camp, conservatives and fundamentalist Christians (more traditional), argue that sacred text and sexual mores are divinely ordained and should not change in response to cultural, political, or scientific

shifts. On the other hand, progressive or liberal Christians believe that religious practices and beliefs should remain open to cultural changes and new scientific findings. Progressive Christians argue that Biblical texts were written prior to modern scientific knowledge, therefore, understandings of sacred text and religious practices should "progress" with modern times. Thus, given that cultural changes have led to greater acceptance of LGBT lifestyles, and fundamentalist Christians resist those changes, we expect that fundamentalists will be particularly inclined to endorse ZSBs.

Another major factor in how Christians interpret their religion is driven by ecclesiastical authorities. Some churches have taken steps to create inclusive environments for LGBT people, whereas others take a hard line in excluding them from the community. The resulting tensions may affect the extent to which Christian community members perceive conflict with LGBT individuals.

Study Overview

In the current research, we first aimed to establish whether cishet (heterosexual, cisgender) Christians perceive a zero-sum relationship between the bias Christians experience and the bias experienced by LGBT individuals. In Study 1, we compared Christians' ZSB endorsement to other groups and assessed perceptions of changing bias against Christians and LGBT individuals over time. In Study 2, we tested whether reflecting on one's religious values would amplify zero-sum beliefs for Christians; we also tested whether ZSBs are a function of *self*-threat by examining whether self-affirmation reduces ZSBs. In Study 3, we tested cishet Christians' response to cultural change, to assess whether it evoked symbolic threat. Study 4 examined subgroup differences in ZSB endorsement (between mainline and fundamentalist Christians) and tested an intervention to determine whether religious values, conveyed by

scripture, could be harnessed to mitigate ZSBs. In Study 5 we examined the effect of ecclesiastical authority, by analyzing how ZSBs predicted sexual prejudice in response to church legislation related to LGBT inclusion among United Methodists. Thus, we examine how personal beliefs about intergroup conflict may be influenced by individual understandings, broader social or community values, interpretations of sacred scriptural texts, and deference to authoritative statements made by representatives of religious institutions.

Together these studies are the first to establish that zero-sum beliefs exist *across* identity dimensions (not just between groups that are mutually exclusive), to demonstrate that ZSBs are a function of Christian values (which can exacerbate or mitigate them), and to establish the role of symbolic threat in driving ZSBs.

Study 1

Study 1 examined cishet Christians', cishet non-Christians', and non-Christian LGBT individuals' beliefs about whether Christians and LGBT individuals are in a zero-sum relationship. We assessed group differences in ZSB endorsement and perceptions of the changing levels of bias against Christians and LGBT groups over time to determine whether they were consistent with a zero-sum perspective. We also assessed support for same-sex marriage and perceived threats to religious freedom.

We expected that heterosexual cisgender Christians would endorse ZSBs more and support same-sex marriage less than other groups. We expected Christians to have higher religious identification and to report greater threats to religious freedom than non-Christian LGBT individuals or cishet non-Christian individuals. Because we theorize that ZSBs are driven by symbolic threat, we also tested whether perceived threats to religious freedom would account for group differences in ZSB endorsement.

We hypothesized that for cishet Christians, decreases in perceived bias against LGBT individuals over time would correspond to increases in perceived anti-Christian bias. For non-Christian LGBT individuals, we expected that levels of perceived bias against the two groups would be unrelated to each other. Thus, in comparing cishet Christians with non-Christian LGBT individuals, we expected a three-way interaction between participant group membership, target group membership, and time. In order to determine whether Christians' perceptions were a function of religion or sexual orientations, we also examined differences between cishet non-Christians and LGBT individuals. We expected that the two groups would not significantly differ.

We also calculated within-person correlations between perceptions of bias against LGBT individuals and Christians to determine whether they were consistent with a zero-sum framework, and to validate our ZSB measure.

Method

Participants

Participants were 330 individuals in the U.S. recruited through TurkPrime (Litman et al., 2016). We aimed to collect data from approximately 300 participants, evenly split between cishet Christians (referred to in this study as Christians for simplicity), non-Christians LGBT individuals (referred to as LGBT) and cishet non-Christians (referred to as non-Christians). This sample goal was consistent with previous work that collected samples of 100 participants per demographic group[1] (Bosson et al., 2012; Wilkins et al., 2015) and included some oversampling because we assumed some would fail manipulation checks. After removing data from individuals who failed checks, 316 participants remained.

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[1] Power analyses included in supplemental materials.

Participants were screened using an instructional attention check (Oppenheimer et al., 2009) and demographic information. The demographic information was collected in order to utilize quotas and recruit approximately equal numbers of (1) Christians, (2) LGBT individuals, and (3) non-Christians. We experienced a failed quota command on our survey platform (Qualtrics). In addition to not recruiting equal numbers of the target samples, we inadvertently recruited individuals who identified as both Christian and as LGBT.

The majority of participants reported identifying as female (63.3%, 35.4% male, 1.3% other), and White (79.1%, 6.6% Black, 5.4% Latino, 5.1% Asian, 0.60% Native American, 0.06% Arab/Middle Eastern American, and 2.5% other). Participants' ages ranged from 18 to 74 years ($M = 33.94$, $SD = 12.26$).

Christians made up 43% of the sample. LGBT participants were 20.9% of the total sample. Within that group, 12.1% were gay, 56.1% bisexual, 13.6% lesbian, 3% transgender, and 15.2% reported "other". Non-Christians (of various religions and the non-religious) made up 28.5% of the sample. A small number, 7.6%, identified as both LGBT and Christian (50% of whom reported being bisexual – the other half were gay or lesbian).

Procedure and Measures

Participants first reported the degree to which they believed that LGBT individuals and then Christians (on a separate screen) were (or would be) victims of discrimination in every decade between the 1950s and 2020s (using a 1-10 scale, anchored at *not at all* and *very much*, see Bosson et al., 2012; Kehn & Ruthig, 2013; Norton & Sommers, 2011). Next, participants completed the dependent measures described below (on a 1-7 scale anchored at *strongly disagree* and *strongly agree*). They were debriefed and paid $0.25. Means, standard deviations, reliability

and intercorrelations for measures are presented in Table 1. All measures are posted on OSF (https://osf.io/jg7ry/?view_only=e25be5cff95e4fc09c41e684f8ad841e).

Zero-sum beliefs. Individuals reported ZSB endorsement with 6 items (adapted from Barker et al., 2011; Esses et al., 1998): "When LGBT individuals get rights they are taking rights away from Christians", "As LGBT individuals face less discrimination, Christians end up facing more discrimination", "Efforts to reduce discrimination against LGBT individuals have led to increased discrimination against Christians", "Paying less attention to LGBT issues improves the situation for most Christians", "More bias against LGBT individuals means less bias against Christians", and "LGBT individuals' successes comes at the expense of Christians".

Support for same-sex marriage. Participants reported their support for same-sex marriage with the following items: "Same-sex marriage laws are good for the country", "Laws allowing same-sex marriage should be over-turned" (reversed), "Legalizing same-sex marriage was a mistake" (reversed), "Legalizing same-sex marriage represents the moral decay of the United States" (reversed), "Same-sex marriage represents a step in the right direction", and "I support same-sex marriage rights".

Perceptions of threat to religious freedom. We assessed perceived threat to religious freedom with four items: "Religious freedom is under attack in this country," "There is a greater need to protect religious freedom today then there has been in the past," "We must do more to protect religious freedom in the U.S." and "Religious freedom is our most fundamental right."

Religious identification. Religious identification was assessed with the following items adapted from Luhtanen and Crocker's (1992) centrality subscale: "My religion is an important reflection of who I am," "In general, my religion is important to my self-image," "My religion has little to do with how I feel about myself" (reversed), and "My religion is unimportant to my

sense of what kind of person I am" (reversed). We also included an additional item: "How religious are you?"

Table 1. Mean, standard deviations, reliability and correlations between measures for Study 1.

Variables	2	3	4	Mean(SD)	α
1) ZSBs	-.65***	.54***	.42***	1.97 (1.36)	.94
2) Marriage Support		-.62***	-.57***	5.68 (1.89)	.98
3) Religious Threat			.60***	3.42 (1.86)	.88
4) Religious ID				3.16 (1.98)	.93

Note: *** significant at .001 level

Results

Group differences[2]

We utilized one-way ANOVAs with Bonferroni post-hoc corrections to examine group differences on all of the primary DVs. The omnibus tests were all significant, suggesting that the groups significantly differed in ZSBs, $F(3, 312) = 21.00, p < .001$, support for same sex marriage, $F(3, 311) = 39.89, p < .001$, perceived threat to religious freedom, $F(3, 311) = 50.14, p < .001$, and religious identification $F(3, 311) = 51.62, p < .001$.

Christians reported endorsing ZSBs ($M = 2.60, SD = 1.60$) to a greater extent than LGBT individuals ($M = 1.41, SD = 0.71$), $p < .001$, non-Christians ($M = 1.47, SD = 0.87$), $p < .001$ and individuals who reported being both Christian and LGBT ($M = 1.78, SD = 1.32$), $p = .02$.

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[2] These results were largely the same when reanalyzed controlling for political orientation. The only difference is that Christians and LGBT Christians did not significantly differ from each other on ZSB endorsement after controlling for political orientation. We however interpret this null effect with caution given the particularly small sample of LGBT Christians.

Christians reported lower support for same sex marriage ($M = 4.54$, $SD = 2.17$) than LGBT individuals ($M = 6.63$, $SD = 0.99$), $p < .001$, non-Christians ($M = 6.52$, $SD = 0.93$), $p <.001$ and those identifying as both Christian and LGBT ($M = 6.39$, $SD = 1.23$), $p < .001$.

Christians reported greater threats to religious freedom ($M = 4.61$, $SD = 1.64$) than LGBT individuals ($M = 2.18$, $SD =1.43$), $p < .001$, non-Christians ($M = 2.62$, $SD = 1.44$), $p < .001$ and individuals identified as both Christian and LGBT ($M = 3.10$, $SD = 1.51$), $p < .001$.

Christians reported stronger religious identification ($M = 4.35$, $SD = 1.74$), $p < .001$ than the LGBT ($M = 2.08$, $SD = 1.62$), $p < .001$ and the non-Christian sample ($M = 1.98$, $SD = 1.35$), $p < .001$, but similar levels to Christian LGBT individuals ($M = 3.91$, $SD = 1.92$), $p = .999$. See Figure 1.

Figure 1.
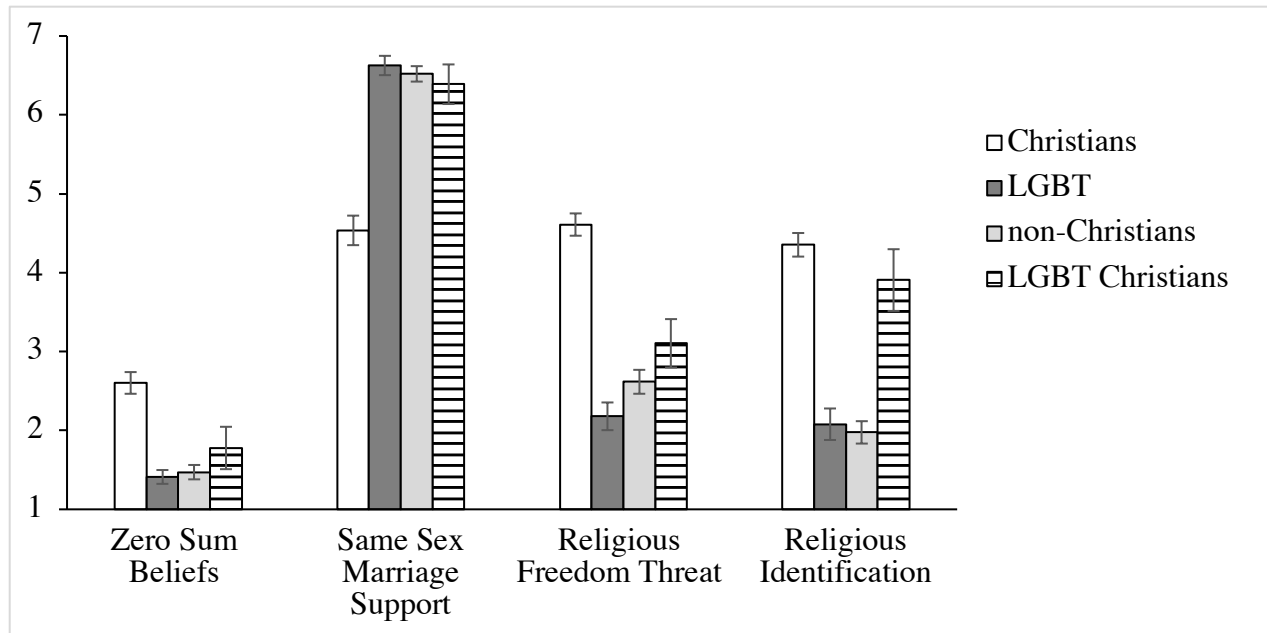
Note: Error bars represent standard error of the mean.

These results are consistent with hypotheses that heterosexual cisgender Christians will endorse ZSBs, perceive greater threats to religious freedom, and are less inclined to support same sex marriage than other groups.

Does perceived threat explain group differences in ZSBs?[3]

We utilized Hayes PROCESS Macro (model 4) (Hayes, 2018) to examine whether religious threat mediated the relationship between group membership (Christian vs. LGBT, or non-Christian) and ZSBs. Condition was dummy coded to compare Christians to LGBT individuals and to heterosexuals (X1: Christian = 0, LGBT = 1, non-Christian = 0; X2: Christian = 0, LGBT = 0, non-Christian = 1).

The overall model predicting ZSBs with religious threat as a mediator was significant, $F(3, 287) = 44.72$, $p < .0001$, $R^2 = .32$. There were significant group differences in ZSBs and religious threat (as described above), and religious threat significantly predicted ZSBs, $b = .33$, $p < .001$. For the comparison between Christians and LGBT individuals, the indirect effect was significant = -.81, $SE = .15$, 95% CI[-1.12, -.53]. For Christians compared to heterosexual individuals, the indirect effect was also significant = -.66, $SE = .13$, 95% CI[-.95, -.42]. See Figures 2 & 3 for all path coefficients. Because neither confidence interval includes zero, we infer that mediation occurred for both comparisons. In other words, differences in perceived religious threat accounts for differences between groups in ZSB endorsement.

Figure 2

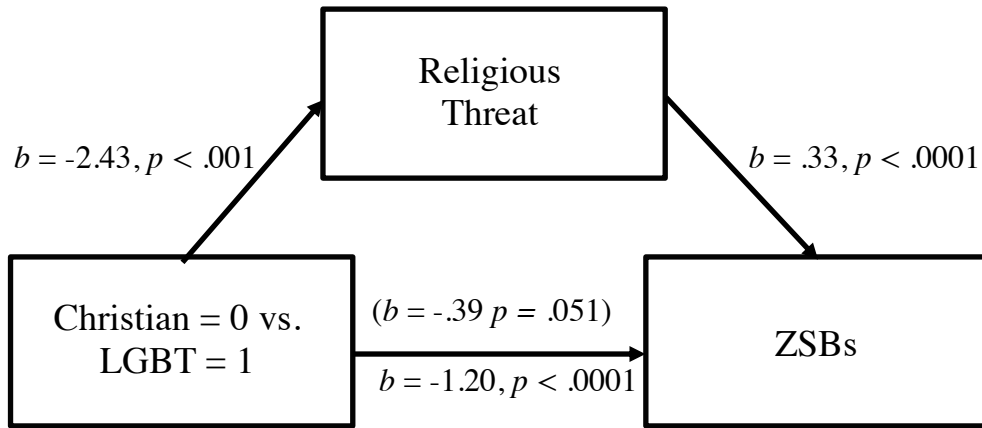[3] We thank Kurt Hugenberg for suggesting these analyses.

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            ┌──────────────┐
            │  Religious    │
            │   Threat      │
            └──────────────┘
  b = -2.43, p < .001              b = .33, p < .0001

┌──────────────────┐  (b = -.39 p = .051)   ┌──────────┐
│ Christian = 0 vs. ├───────────────────────►│   ZSBs   │
│   LGBT = 1        │  b = -1.20, p < .0001  │          │
└──────────────────┘                         └──────────┘
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Figure 3

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            ┌──────────────┐
            │  Religious    │
            │   Threat      │
            └──────────────┘
  b = -1.99, p < .001              b = .33, p < .0001

┌──────────────────┐  (b = -.48 p = .007)   ┌──────────┐
│ Christian = 0 vs. ├───────────────────────►│   ZSBs   │
│ Non-Christian = 1 │  b = -1.14, p < .0001  │          │
└──────────────────┘                         └──────────┘
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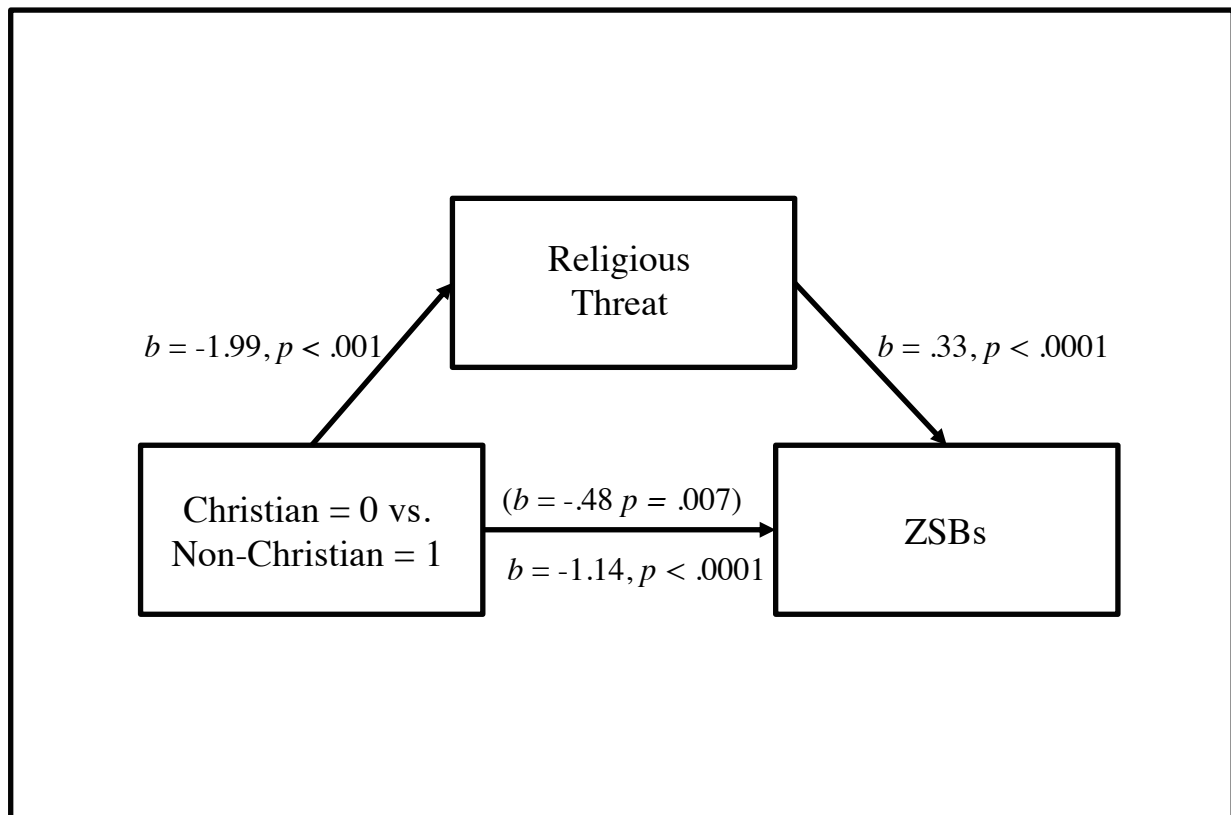
Perceptions of changing bias

In order to determine whether Christians and LGBT individuals differ in perceived bias

against groups over time, we ran an 8(decade: 1950-2020) X 2(participant group: Christian vs. LGBT) X 2(target group: Christian vs. LGBT) mixed-model ANOVA. As expected, there was a significant three-way interaction, $F(7, 1358) = 2.41, p = .02, \eta_p^2 = .01$ suggesting that perceptions of the relative change in bias differed between LGBT and Christian individuals.

Cisgender heterosexual Christian participants. Christians reported decreasing bias against LGBT individuals between the 1950's ($M = 8.43, SE = .19$) and 2010's ($M = 5.40, SE = .21$), $t(135) = 10.50, p < .0001$; 95%CI[2.46, 3.60]. They perceived significant increases in anti-Christian bias between the 1950's ($M = 2.99, SE = .21$) and 2010's ($M = 4.35, SE = .25$), $t(135) = -5.29, p < .0001$, 95%CI[-1.90, -0.87]. Christians perceived greater amounts of anti-LGBT bias than anti-Christian bias for every decade between 1950-2000 ($ps < .00001$). We determined this by conducting paired sample t-tests. We set the p-level for significance to .001 to correct for the number of comparisons (see Kehn & Ruthig, 2013). Furthermore, Christians perceived that the bias against their group will be as severe as bias against LGBT individuals in the next decade: 2020, $t(135) = -0.19, p = .85$; 95%CI[-0.76,0.62]. See Figure 4a.

Figure 4a. Christians' perceptions of discrimination by decade and target
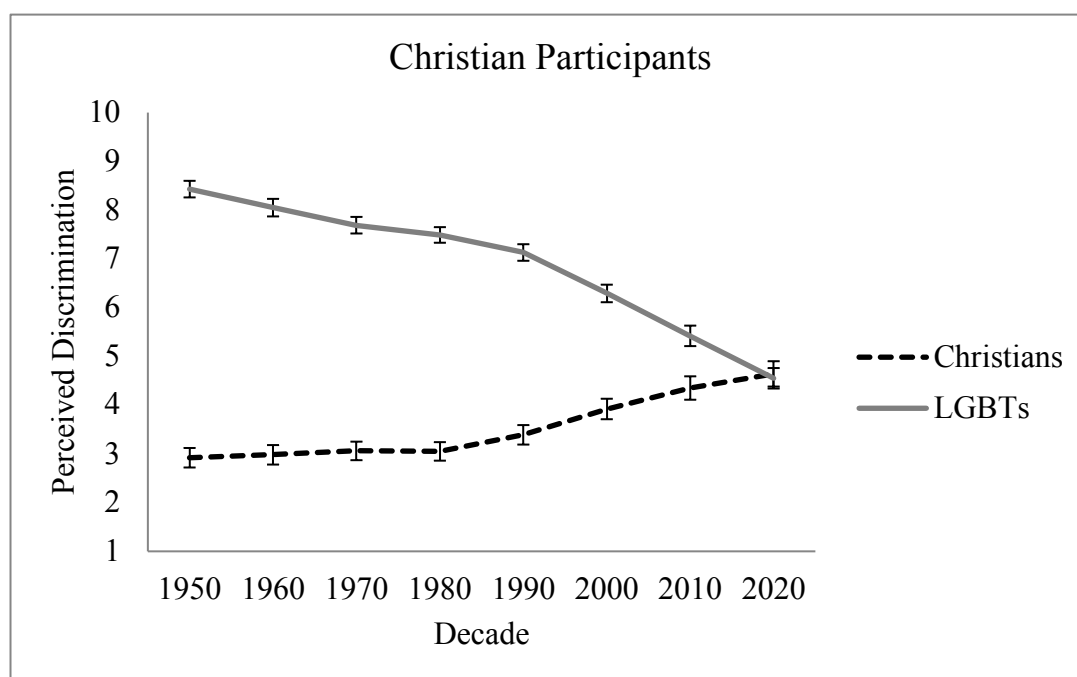
Note: Error bars represent standard error of the mean.

Non-Christian LGBT Participants. LGBT individuals reported decreasing bias against

their own group between the 1950's ($M = 9.05$, $SE = .24$) and 2010's ($M = 6.65$, $SE = .29$), $t(65)$

$= 7.33$, $p < .00001$, 95%CI[1.74, 3.05]. They perceived an increase in anti-Christian bias

between the 1950's ($M = 1.83$, $SE = .23$) and 2010's ($M = 2.61$, $SE = .30$), but it was not

significant according to our criteria, $t(65) = -3.23$, $p = .002$; 95%CI[-1.25, -0.30]. Importantly,

LGBT individuals perceived that their own group would continue to experience more bias than

Christians through the next decade (ps $< .00001$). See Figure 4b.

Figure 4b. Perceived discrimination by decade and target
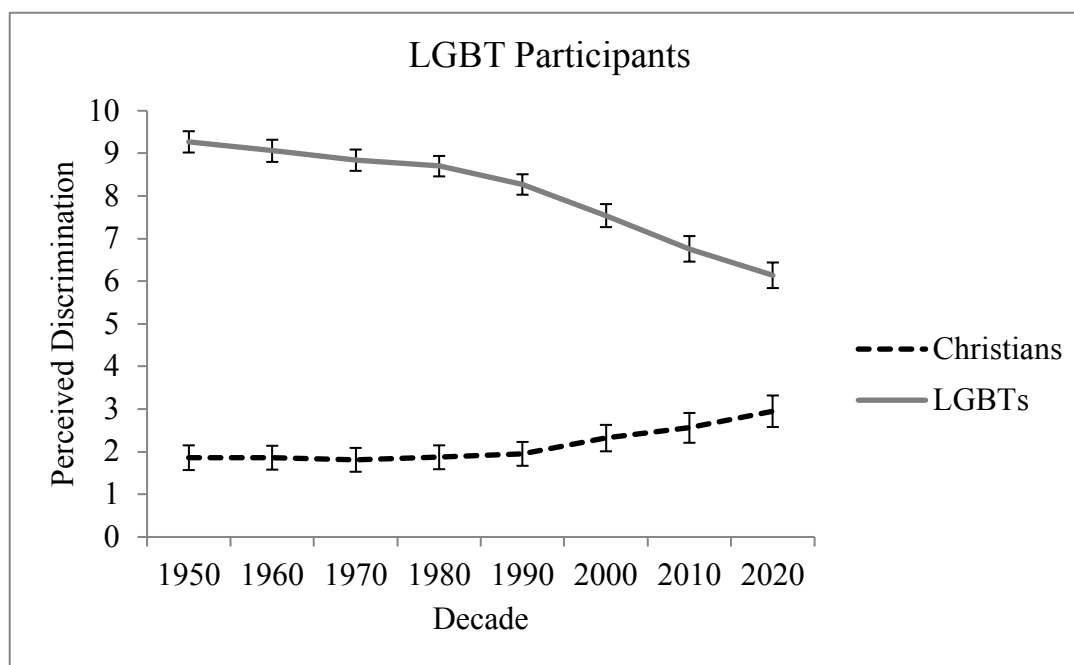
Note: Error bar represent standard error.

To determine whether cishet non-Christians and LGBT individuals perceived significantly

different patterns over time, we ran an 8(decade: 1950-2020) X 2(participant group: non-

Christian vs. LGBT) X 2(target group: Christian vs. LGBT) mixed-model ANOVA. The three

way interaction was not significant, $F(7, 1050) = .91, p = .50, \eta_p^2 = .006$ suggesting that LGBT

and non-Christians did not differ in changing perceptions over time.[4]

Among **cishet non-Christians** there was a significant interaction between decade and

target group, $F(7, 609) = 114.42, p < .00001, \eta_p^2 = .57$. They reported perceiving decreasing bias

against LGBT individuals between the 1950's ($M = 9.13, SE = .16$) and 2010's ($M = 6.18, SE =$

$.23$), $t(89) = 10.89, p < .00001$; 95%CI[2.42, 3.50]. They also perceived significant increases in

anti-Christian bias between the 1950's ($M = 1.84, SE = .18$) and 2010's ($M = 2.67, SE = .24$),

$t(89) = -4.95, p < .00001$; 95%CI[-1.15, -0.49]. But, like LGBT participants, they reported

expecting that LGBT individuals will continue to experience more bias than Christians in every

decade through the 2020's, $p < .00001$. See Figure 4c.

Figure 4c. Perceived discrimination by decade and target.

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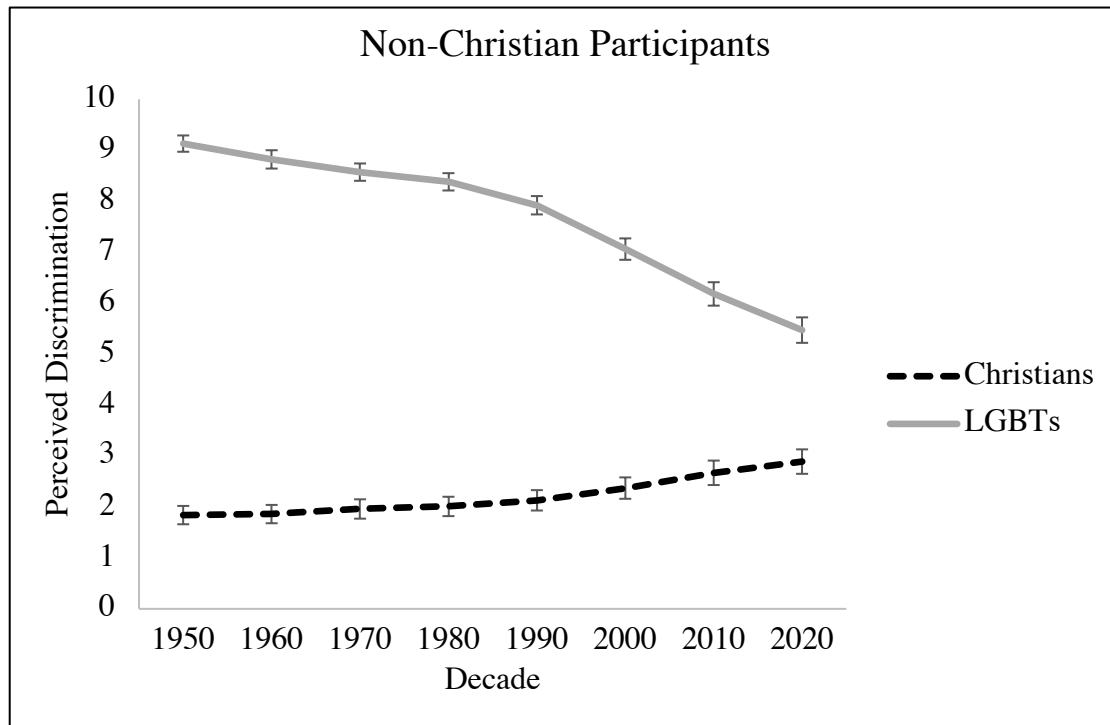
[4] A similar analysis comparing Christians to non-Christians also revealed a non-significant 3-way interaction, $F(7, 1526) = 1.01, p = .42, \eta_p^2 = .005$.

Note: Error bars represent standard error.

Do changing perceptions of bias over time correspond to ZSB endorsement? We examined within-person correlations between perceptions of bias against LGBT individuals and Christians across the decades to examine whether they predicted ZSBs. They did; participants whose responses showed negative correlations between perceptions of anti-Christian bias and anti-LGBT bias also reported higher ZSB scores, $r(314) = -.19$, $p = .001$. In other words, perceiving that less bias against LGBT individuals, correlated with perceiving more bias against Christians, which corresponded to stronger endorsement of the ZSB measure. This suggests convergent validity of the ZSB measure.

Discussion

In sum, Christians were the most inclined to perceive a zero-sum relationship between the bias experienced by their own group and the bias experienced by LGBT individuals. They endorsed ZSBs to a greater extent than other groups and reported that decreasing bias against LGBT individuals over time corresponds to increasing bias against their group. Strikingly, Christians reported that most recently, bias against their group is as severe as bias against LGBT individuals. In contrast, LGBT participants acknowledged the improving social condition of their group without perceiving significant corresponding disadvantages for Christians. Cishet non-Christians, like LGBT individuals, reported that LGBT individuals will continue to experience more bias than Christians through the next decade.[1]

Study 1 also suggests that Christians' beliefs about competition with LGBT individuals are likely a function of their religion rather than sexual orientation. Christians differed from other groups (including non-Christians) in ZSB endorsement, support for same sex marriage and perceived threats to religious freedom. Furthermore, while Christians significantly differed from

LGBT individuals on perceptions of changing bias over time, LGBT and non-Christians did not significantly differ from one another.

While Christians endorsed ZSBs to a greater extent than other groups, their agreement still fell below the scale midpoint. In other words, even though Christians' perceptions of changing patterns of bias was consistent with a zero-sum framework, they were relatively reluctant to endorse items that explicitly reflect that perspective. Nevertheless, the pattern of their perceptions of changing bias over time is consistent with a zero-sum perspective. Thus, Study 1 provides evidence that Christians are more inclined than other groups to endorse ZSBs.

Furthermore, consistent with our hypothesis that threat accounts for ZSBs, group differences in ZSB endorsement were statistically mediated by perceived threats to religious freedom. This suggests that Christians endorsed ZSBs more than other groups because Christians perceived greater threats to religious freedom. While Study 1 suggests that these results are a function of religion, as opposed to sexual orientation, there are other potential explanations. For example, we cannot rule out the role of other demographic characteristics that vary between groups (see Table 2)[5].

We tested whether ZSBs are a function of Christian beliefs more directly in Study 2.

Table 2. Group differences in demographics.

Demographic Variables	Christians (n = 136)	LGBT (n = 66)	Non-Christians (n = 90)	LGBT Christians (n = 24)
Age M(SD)	38.01(13.33)[a]	27.42(7.52)[b] (N = 65)	33.26(11.76)[c]	31.04(9.40)[bc]
Political Orientation M(SD)	4.09(1.60)[a]	2.26(1.14)[b]	2.96(1.48)[c]	3.00(1.59)[bc]
% White	78.94%	75.76%	84.44%	75.00%

[5]These differences were not predicted a-priori.

% Women	63.24%	71.21%	57.78%	62.50%
% Men	36.76%	22.73%	42.22%	37.50%
% 4-year college degree or higher	49.63%	48.48%	48.89%	45.83%
% born in U.S.	95.59%	95.45%	97.78%	95.83%

Note: Different superscripts (a, b, or c) indicate a significant difference within the row (after a Bonferroni correction).

Study 2

The purpose of Study 2 was to provide more direct evidence that ZSBs are a function of Christian religion or values (as opposed to sexual orientation). If perceived conflict between Christians and LGBT individuals are an aspect of group beliefs, priming Christian values should highlight the ways in which LGBT individuals violate said values and how the groups are incompatible (e.g. Herek, 1988; Newport, 2012). In other words, we predicted that priming Christian values would exacerbate ZSB endorsement.

It may seem intuitive that religious values would *reduce* rather than increase Christians' bias. In fact religious primes do lead to a number of prosocial outcomes for religious individuals (for review see Shariff et al. 2015). But this literature also suggests that prosocial behavior may be selectively directed toward the ingroup (e.g. LaBouf et al., 2012; Preston & Ritter, 2013).

The effect of religious primes varies as a function of whether a social group is perceived of as being consistent with ingroup values (Johnson et al, 2012). For example, Christian concepts can increase generousity and cooperation (Ahmend & Salas, 2011) or elicit hate. For example, a predominantly Christian sample of American college students primed with Christian religious concepts (e.g. Bible, gospel, church) report more racial prejudice against African Americans

(Johnson et al., 2010). Furthermore, priming Christian words leads to more negative attitudes toward gay men (relative to Christians) in a predominantly Christian sample (Johnson et al., 2012). This suggests that negative attitudes towards gay people are a function of Christian values as they are commonly interpreted. Here we test whether perceived group conflict (ZSBs) are also a function of Christian beliefs.

Why would priming Christian values lead to these effects? Priming increases the accessibility of mental representations of a particular construct (Bargh, 2007): in this case Christianity. Because priming effects are more consistent in religious than non-religious individuals, Sharif et al. (2015) conclude that responsiveness depends on the specific *meaning* that is made by religious people. Thus, if Christians respond to a Christian value prime by endorsing ZSBs to a greater extent, it suggests that perceived conflict with LGBT individuals (ZSBs) is a part of how they conceptualize Christian beliefs.

In contrast, if ZSBs are mitigated by self-affirmation, it suggests that they are a function of self-threat. Self-affirmation is an established method of buffering individuals against identity threat (Sherman & Cohen, 2006; Steele, 1988) and of reducing bias motivated by self-image maintenance (e.g., Fein & Spencer, 1997).

Since ZSBs are associated with efforts to improve conditions for the ingroup relative to the outgroup, we expected that support for same-sex marriage and perceptions of anti-LGBT bias would mirror condition differences in ZSBs. Specifically, same-sex marriage support would be lower when religious values were primed relative to a control. Finally, we hypothesized that perceptions of anti-Christian bias would be higher when religious values were primed relative to a control.

For all analyses, we controlled for political orientation (see Wilkins et al., 2015 for use of this covariate) because political orientation predicts perceptions of discrimination, and gender and racial zero-sum beliefs (Bosson et al., 2012; Wilkins et al., 2015). In addition, greater conservatism is associated both with greater prejudice against sexual minorities and with religiosity among predominantly Christian respondents (van der Toorn et al., 2017)[2]. Our goal was to assess the effect of priming religious values beyond what is accounted for by political orientation.

Participants

Participants were 354 U.S. Christians recruited through Mturk panels via TurkPrime (Litman et al., 2016). We aimed to recruit 100 participants per condition but over-sampled anticipating some individuals would miss attention checks.[3] Thirty-three participants' data were excluded for missing attention checks, five individuals were eliminated for spending less than 30 seconds completing the manipulation, and two individuals were eliminated for not following directions (in the affirmation condition). Finally, 22 participants were eliminated because they reported not identifying as Christian. The final sample consisted of 292 self-identified Christians, the majority reported identifying as female (61.4%) and White (75.8%, 11.2% Black, 6.3% Latino, 5.3% Asian, 1.5% other). Participants' ages ranged from 18 to 88 years ($M = 39.71$, $SD = 12.48$).[4]

Procedure

Participants in this study were randomly assigned to 1 of 3 conditions: *religious values*, *self-affirmation*, or *control*. In the *religious values* condition, participants reported the importance of religion or spirituality in their life and wrote about a time when their behavior exemplified their religious or spiritual beliefs.[5] In the *self-affirmation* condition, participants

viewed a list of values, selected their most important value and then wrote about a time when they exemplified that value (Sherman & Cohen, 2006). Importantly, religion and spirituality were excluded as options in the *self-affirmation* condition in order to avoid religious affirmation. In the *control* condition, participants wrote about what they ate during the previous day (e.g., Monin, Sawyer & Marquez, 2008). Afterward, participants completed the dependent variables described below.

Measures

Descriptive information, reliability and partial correlations (controlling for political orientation) are presented in Table 3. Qualtrics files and all measures are posted on OSF: https://osf.io/83a9s/?view_only=0e0fc67566c744f280b8bec0dd744bf1.

Participants reported their **zero-sum beliefs**, **support for same-sex marriage, religious identification** and **political orientation** ($M = 4.12$, $SD = 1.83$) using the same items reported above.

Perceived anti-Christian bias. Five items assessed perceived anti-Christian bias: "Discrimination against Christians is on the rise", "Christians do not have the same freedoms as non-Christians", "Christians do not experience religious bias" (reversed), "Christian morality is losing its place in America", and "People in the U.S. are generally accepting of Christians" (reversed).

Perceived anti-LGBT bias. Three items assessed perceived anti-LGBT bias: "LGBT people routinely face discrimination", "LGBT groups experience prejudice and discrimination" and "LGBT people don't have the same freedoms as non-LGBT people".

Perceived LGBT progress. Two items assessed perceived LGBT progress: "LGBT acceptance is on the rise," and "There has been a lot of legal progress for LGBT individuals."

Table 3. Means, reliability and partial correlations between measures controlling for political orientation for Study 2.

Variables	2	3	4	5	6	Mean (SD)	α
1) ZSBs	-.65*	.64*	-.40*	-.01	.25*	2.84 (1.67)	.94
2) Support for Same-sex Marriage		-.57*	.40*	.11*	-.41*	4.38 (2.20)	.97
3) Perceived Anti-Christian Bias			-.29*	.08	.38*	3.91 (1.39)	.81
4) Perceived Anti-LGBT Bias				-.18*	-.13*	4.93 (1.34)	.84
5) LGBT Progress					.12*	5.61 (.94)	.73
6) Religious ID						5.08 (1.56)	.90

Note: * significant at .05 level

Results

Analysis strategy

We conducted ANCOVAs to examine condition differences controlling for political orientation. This strategy is outlined in our preregistered hypotheses (https://osf.io/cmqs4/?view_only=51402bbbe1e846a7b48fab63c4426efc).

Condition differences

Zero-sum beliefs. Political orientation was a significant covariate, $F(1, 281) = 90.45$, $p < .001$, $\eta_p^2 = .24$. As expected, there was a significant effect of condition, $F(2, 281) = 3.52$, $p = .03$, $\eta_p^2 = .02$, such that participants in the *religious values* condition ($M = 3.13$, $SE = 0.12$) endorsed ZSBs to a greater extent than participants in either the *self-affirmation* ($M = 2.66$, $SE = 0.15$, $p = .03$; 95%CI:[.06, .88] or the *control* conditions ($M = 2.62$, $SE = 0.15$, $p = .02$; 95%CI:[.08, .92]. There were no significant differences between the *self-affirmation* and *control* conditions ($p = .86$; 95%CI:[-.38, .45]. See Figure 5.

Figure 5. Priming religious values increases ZSB endorsement
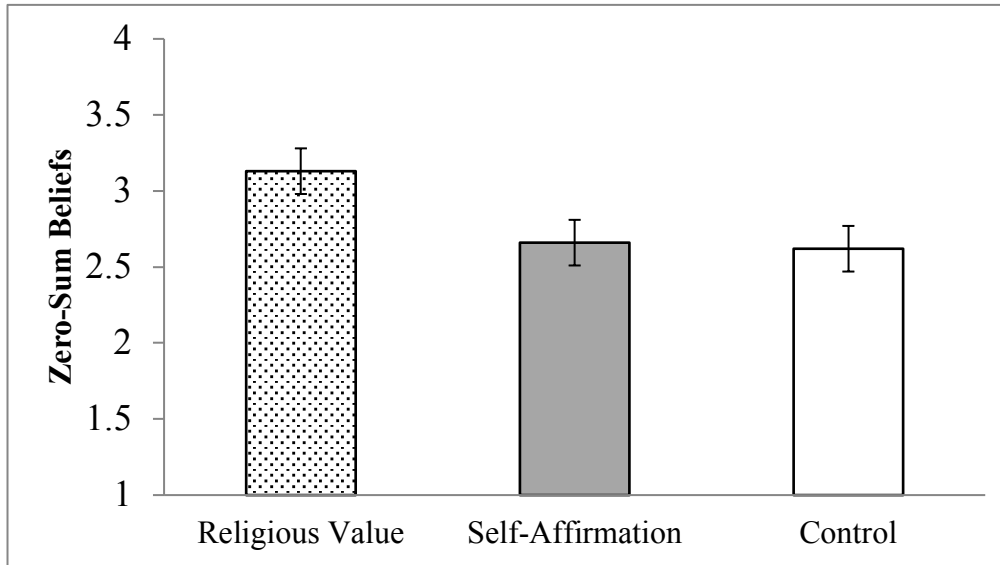
Note: Error bars represent +/- 1 standard error.

There were no significant condition differences on any of the other DVs (support for same sex marriage, $F(2, 281) = 0.42, p = .66$ $\eta_p^2 = .003$, perceptions of bias against Christians, $F(2, 281) = 2.09, p = .13, \eta_p^2 = .02$, perceived bias against LGBT individuals, $F(2, 281) = 2.72, p = .068, \eta_p^2 = .02$ or perceptions of LGBT progress, $F(2, 281) = 2.14, p = .12, \eta_p^2 = .02$).

Discussion

Consistent with hypotheses, we found that participants reported greater ZSBs after considering their religious values relative to the other conditions (which did not differ from one another). Thus, merely considering religious values increases the extent to which Christians perceive conflict between their own group and LGBT individuals. This suggests that an aspect of Christians' values is perceiving conflict between the group and LGBT individuals.

We failed to find support for the prediction that self-affirmation would decrease ZSB endorsement. Self-affirmation theoretically reduces self-threat (Steele, 1988). The null effect suggests that ZSBs are not driven by threats to the self. It is, however, also possible that not all

participants assigned to the affirmation condition were successfully affirmed because we did not include religion/spirituality as a value option. Successful affirmation relies on participants' reflection on their most important ideosyncratic value (Sherman & Cohen, 2006). Thus, the writing task may not have been affirming for Christians for whom spirituality is particularly important[6].

We also failed to find significant condition effects on the other dependent variables of interest. This suggests that while ZSBs are a function of group values, other attitudes (like perceptions of bias against the ingroup might not be). We did, however, find correlations between variables that were consistent with expectations for the other variables (See Table 3). For example, ZSBs were negatively associated with support for same-sex marriage and perceptions of anti-LGBT bias but positively associated with perceptions of anti-Christian bias and religious identification. In other words, ZSBs corresponded to support for policies that hurt the outgroup and help the ingroup, similar to previous research (Esses et al., 2001; Kuchynka et al., 2018).

In sum, we found evidence that religious values are directly tied to a zero-sum perspective for Christian participants.

Study 3

Having demonstrated that Christians were more inclined to endorse ZSBs than other groups in Study 1, and ZSBs are heightened when Christians reflect on their religious and spiritual values in Study 2, Study 3 more directly tested whether symbolic threat drives ZSBs.

We examined the role of symbolic motives by threatening Christians' perceptions of cultural dominance in the US. We utilized arguments similar to those outlined by religious

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[6] Although, we did not find a significant interaction between religiosity and condition (self-affirmation vs. control) in predicting ZSBs.

scholars (Jones, 2016) to emphasize perceptions that American culture is becoming increasingly secularized, that the U.S. Christian population is decreasing, and Christians' cultural influence is diminishing; in other words, we elicited symbolic threat by highlighting the decreasing social influence of Christian values in the US.

We expected that eliciting threat through cultural change would increase the extent to which participants endorsed zero-sum beliefs about the relationship between Christians and LGBT individuals. We hypothesized that Christians primed with culture change would report greater ZSBs relative to a control condition, and that symbolic threat would mediate the relationship between condition and ZSBs. We also tested whether realistic threat would predict ZSBs (consistent with previous research e.g., Esses et al., 1998, 2001).

We further examined whether priming culture change would affect perceptions of LGBT progress and anti-Christian bias. Given evidence in Study 1 that Christian participants were more inclined than other groups to perceive conflict between Christians and LGBT individuals, and in Study 2 that priming religious values heightened ZSBs for Christians, we expected Christian participants to believe that decreasing cultural influence of Christians would correspond to greater social influence of LGBT individuals, or LGBT progress. We also expected that changing culture would correspond to increasing concerns about anti-Christian bias, as losing the demographic majority is related to greater concern about bias against dominant groups (Craig & Richeson, 2017).

As exploratory measures, we also examined the extent to which the cultural change manipulation affected zero-sum beliefs about the relationship between Christians and atheists, and Christians and other religious groups.

Method

Participants

We recruited 708 participants through TurkPrime panels. We removed data from 164 participants who missed an attention check or failed a multiple-choice reading comprehension question and 15 who did not report a White, heterosexual, cisgender, Christian identity, as preregistered. We restricted the sample to White Christians because they are the subgroup most concerned about decreasing social influence (Jones, 2016). Below, we report data for 529 heterosexual, cisgender, White Christian participants (60.5% female, M_{age} [7]= 49.27, SD = 15.55).

Procedure

Participants were randomly assigned to one of two conditions intended to manipulate threat. The *culture change* condition highlighted cultural norms shifting away from Christianity, the U.S. becoming more secularized (e.g., "Some scholars have concluded. . . that the moral compass of the U.S. is no longer guided by Christian values.") and a declining Christian population in the U.S.. That condition highlighted real demographic trends (Jones & Cox, 2017; Kosmin & Keysar, 2009; Pew Research Center, 2019). In the *control* condition, participants read about changing trends in geographical mobility (adapted from Craig & Richeson, 2017). After reading the article, participants answered a multiple-choice question regarding the article's content and completed the following measures in the order outlined below.

Measures

All measures were completed on a 1-7 scale, anchored at strongly disagree and strongly agree unless otherwise indicated. Descriptive information, reliability and partial correlations (controlling for political orientation) are presented in Table 4. Qualtrics files, all measures,

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[7] One participant wrote 1988, so we assumed they entered their birth year by mistake. Ages ranged from 18-82 under this assumption.

manipulations and supplemental analyses are posted on OSF

(https://osf.io/4bkv7/?view_only=a2b5b1c583de4f2fbd5d4f642e6f6dee).

Symbolic threat was assessed by agreement with 6 items including: "I worry about

threats to my religious values" and "I am worried that people in America don't respect Christian

values."

Realistic threat was measured with 6 items such as "I worry that certain job options will

be blocked to Christians who refuse to compromise their morals" and "I am concerned that

Christian businesses will be boycotted for trying to be true to their values."

Participants reported their **zero-sum beliefs** using the same items described in Study 1.

We measured **LGBT/Christian mutual exclusivity**[8] with 4 items such as "It isn't

possible for someone to be a full member of both Christian and LGBT communities" and

"People who follow God should not come out as LGBT."

LGBT progress was measured by agreement with 6 items such as "LGBT people in the

U.S. are better off now than they have ever been" and "Acceptance of LGBT people in the U.S.

is on the rise."

Six items assessed **anti-Christian bias** such as "Christians are victims of prejudice" and

"Christians do not experience religious bias in America" (reverse coded).

Non-Christian/Christian ZSBs were assessed with 3 items (e.g., "Religious tolerance

for non-Christian religions usually means intolerance towards Christians" and "Non-Christian

religions are engaging in a culture war against Christians in the U.S.").

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[8] Participants in the *Culture Change* condition ($M = 3.32$, $SD = 2.13$) did not differ in their perception of LGBT/Christian mutual exclusivity from participants in the *Control* condition ($M = 3.29$, $SD = 1.99$), $t(526) = 0.16$, $p = .872$, 95%CI: [-.32, .38]. Perceptions of mutual exclusivity also did not differ after controlling for political orientation, $F(1, 524) = 0.03$, $p = .854$, $n_p^2 < .001$.

Atheist/Christian ZSBs were assessed with the items "Acceptance of atheists leads to decreased acceptance of Christians" and "Christianity and atheism cannot coexist in America."

The **manipulation check** assessed the perceived conflict between American culture and Christianity using the items "The current social climate is to blame for the decrease in the number of Christians" and "U.S. culture is at odds with Christianity."

Fundamentalism was assessed with the following "Yes" or "No" question: "Do you consider yourself a fundamentalist Christian?".

Political orientation was assessed with the question "When it comes to politics, do you consider yourself to be liberal, conservative, or moderate?" on a scale from 1 ("Very Liberal") to 4 ("Moderate") to 7 ("Very Conservative").

Table 4. Mean, standard deviations, reliability and partial correlations controlling for political orientation ($M = 4.76$, $SD = 1.58$) between measures for Study 3.

Variables	2	3	4	5	6	7	8	9	α	M (SD)
1) Symbolic Threat	.75***	.48***	.29***	.12**	.64***	.47***	.40***	.55***	.84	4.47 (1.34)
2) Realistic Threat		.58***	.38***	.06	.70***	.58***	.46***	.54***	.86	4.21 (1.41)
3) LGBT/ Christian ZSBs			.63***	-.06	.60***	.65***	.67***	.51***	.91	3.52 (1.62)
4)LGBT/ Christian Mutual Exclusivity				-.10*	.45***	.54***	.58***	.34***	.91	3.30 (2.06)
5) LGBT Progress					.11*	-.07	-.13**	.12**	.77	5.70 (0.97)
6) Anti-Christian bias						.60***	.50***	.54***	.84	4.38 (1.39)

7) Non-Christian/ Christian ZSBs	.65***	.54***	.74	3.52 (1.51)
8) Atheist/ Christian ZSBs		.49***	.75	3.42 (1.75)
9) American Culture/ Christianity Conflict Manipulation Check			.74	4.26 (1.68)

Note: * significant at .05 level, ** significant at .01 level, *** significant at .001 level

Results and Discussion

Analysis Strategy

We conducted ANCOVAs to examine condition differences on LGBT/Christian ZSBs while controlling for political orientation as explained above.

We utilized Hayes PROCESS Macro (model 4) to test whether symbolic and/or realistic threat (in separate models) mediated the relationship between condition and LGBT/Christian ZSBs. We also tested realistic and symbolic threat as simultaneous mediators using the same model. All predictions and analyses were preregistered: including those in supplemental analyses (https://osf.io/8bhnm/?view_only=f6b05797f64c44f5b755e43476d6bbf3).

Manipulation check. Perceptions of conflict between American culture and Christianity significantly differed between conditions, $t(525) = 3.71$, $p < .001$; 95%CI: [0.25, 0.82], such that participants in the *culture change* condition ($M = 4.51$, $SD = 1.58$) perceived significantly more conflict than those in the *control* condition, ($M = 3.98$, $SD = 1.75$). Thus, the manipulation worked as intended.

Condition Differences

Political orientation was a significant covariate for all analyses in this section (all $ps \leq$ .001), but we do not report specific covariate statistics in order to streamline results. Excluding the covariate in analyses leads to the same results unless otherwise specified.

LGBT/Christian Zero-Sum Beliefs. There was a significant effect of condition, $F(1, 525) = 6.82$, $p = .009$, $n_p^2 = .01$; participants in the *culture change* condition ($M = 3.68$, $SE = 0.09$) endorsed ZSBs to a greater extent than participants in the *control* condition ($M = 3.34$, $SE = 0.09$, $p = .008$; 95%CI: [.08, .59]. This suggests that considering a decreasing influence of Christianity in the U.S. increases the extent to which Christians perceive conflict with LGBT individuals (and this effect goes above and beyond differences based on political orientation).

LGBT Progress. Perceptions of LGBT progress differed after controlling for political orientation, $F(1, 525) = 4.13$, $p = .043$, $n_p^2 = .01$; participants in the *culture change* condition ($M = 5.78$, $SE = 0.06$) perceived significantly more LGBT progress than participants in the *control* condition ($M = 5.61$, $SE = 0.06$, $p = .043$; 95%CI: [.006, .33]. Thus, although the manipulation did not explicitly address LGBT individuals, decreasing Christian influence on society was sufficient to lead Christians to infer LGBT progress.

Anti-Christian Bias. Perceptions of anti-Christian bias differed by condition[9], $F(1, 525) = 4.00$, $p = .046$, $n_p^2 = .01$, such that those in the *culture change* condition ($M = 4.49$, $SE = 0.08$) perceived significantly more anti-Christian bias than participants in the *control* condition ($M = 4.27$, $SE = 0.08$, $p = .046$; 95%CI: [.004, .44]. Thus, perceiving culture change increases perceptions of anti-Christian bias when political orientation is controlled.

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[9] Perceptions of anti-Christian bias only marginally differed between the *culture change* ($M = 4.49$, $SD = 1.38$) and the *control* conditions ($M = 4.27$, $SD = 1.39$), $t(527) = 1.77$, $p = .078$; 95%CI: [-.02, .45] without political orientation as a covariate.

This result is consistent with previous research demonstrating that White participants primed with changing racial demographics in which they become a minority perceive greater future anti-White discrimination relative to those in a control group (Craig & Richeson, 2017). Together these results suggest that perceiving a changing cultural climate is sufficient to both increase perceived LGBT progress (decrease perceived LGBT bias) and increase perceptions of anti-Christian bias.

Atheist/Christian Zero-Sum Beliefs. There was a significant effect of condition, $F(1, 525) = 4.39$, $p = .037$, $n_p^2 = .01$; participants in the *culture change* condition ($M = 3.56$, $SE = 0.10$) endorsed ZSBs to a greater extent than participants in the *control* condition ($M = 3.26$, $SE = 0.11$, $p = .037$; 95%CI: [.02, .59]. Thus, perceiving decreasing cultural influence also appears to increase perceived conflict between Christians and atheists.

Non-Christian Zero-Sum Beliefs. Christians in the *culture change* condition ($M = 3.65$, $SE = 0.08$) endorsed ZSBs to a greater extent than participants in the *control* condition ($M = 3.38$, $SE = 0.09$, $p = .027$; 95%CI: [.03, .51], $n_p^2 = .01$. This suggests that Christians who perceive declining social influence see other religious groups as being a source of conflict. See Figure 6 for a summary of all condition differences.

Figure 6. Means and standard errors, controlling for political orientation, for all DVs.
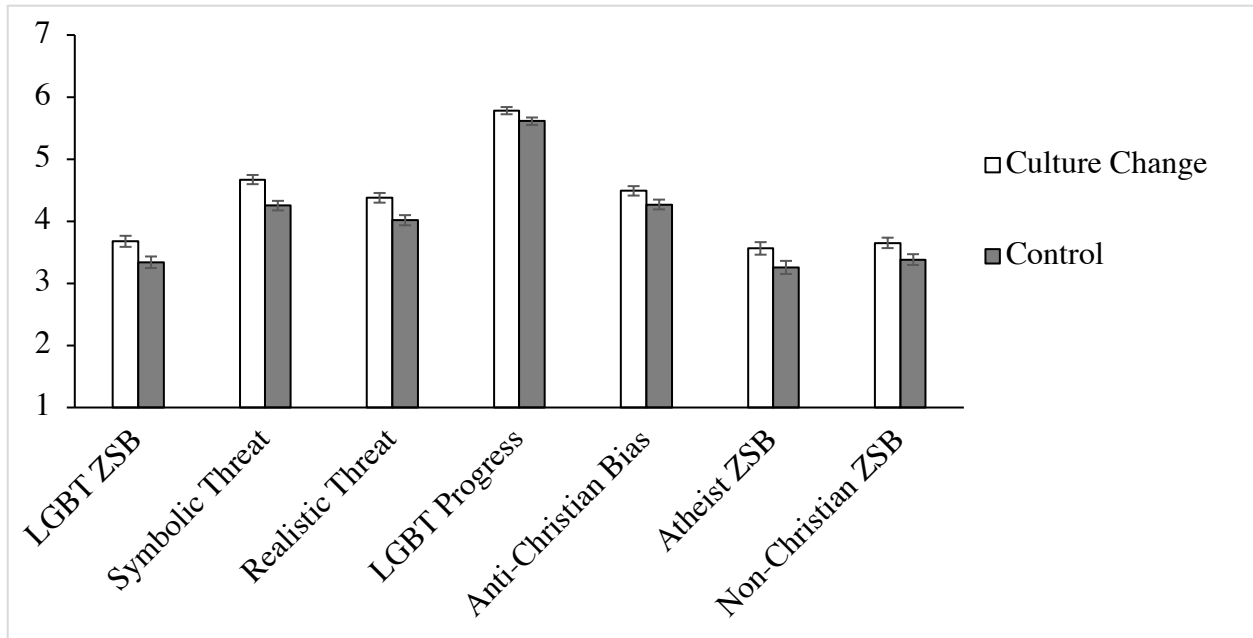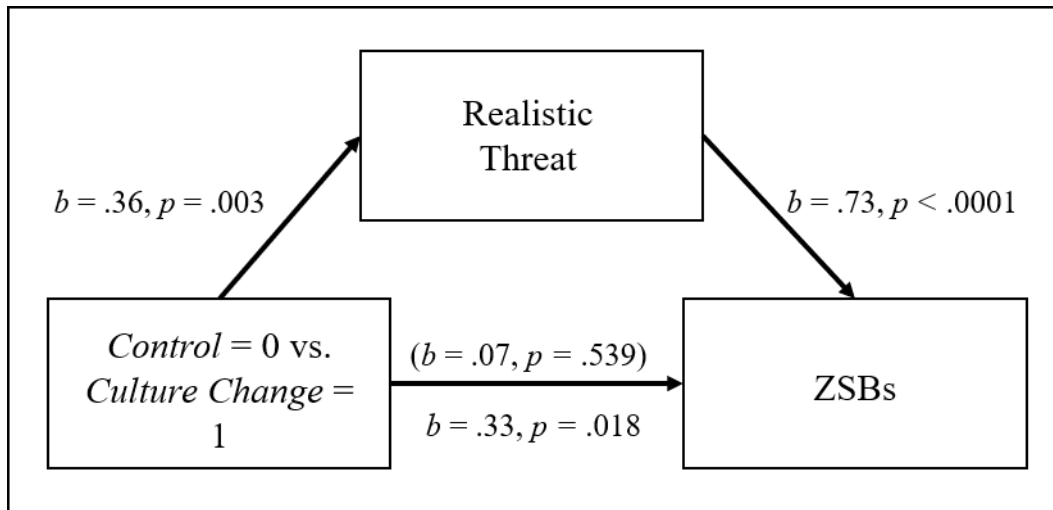
Note: Error bars represent +/- 1 standard error.

Does threat mediate the relationship between condition and LGBT/Christian ZSBs?

The overall model predicting LGBT/Christian ZSBs with symbolic threat as a mediator was significant, $F(2, 526) = 118.00$, $p < .0001$, $R^2 = .31$. Condition significantly predicted symbolic threat, $b = .42$, $p < .001$, and symbolic threat significantly predicted ZSBs, $b = .67$, $p < .0001$. Importantly, symbolic threat significantly mediated the relationship between condition and ZSBs; the indirect effect was significant = .28, 95% CI [.12, .43]. Thus, we found evidence that symbolic threat mediated the relationship between condition and ZSBs. See Figure 7.

Figure 7.
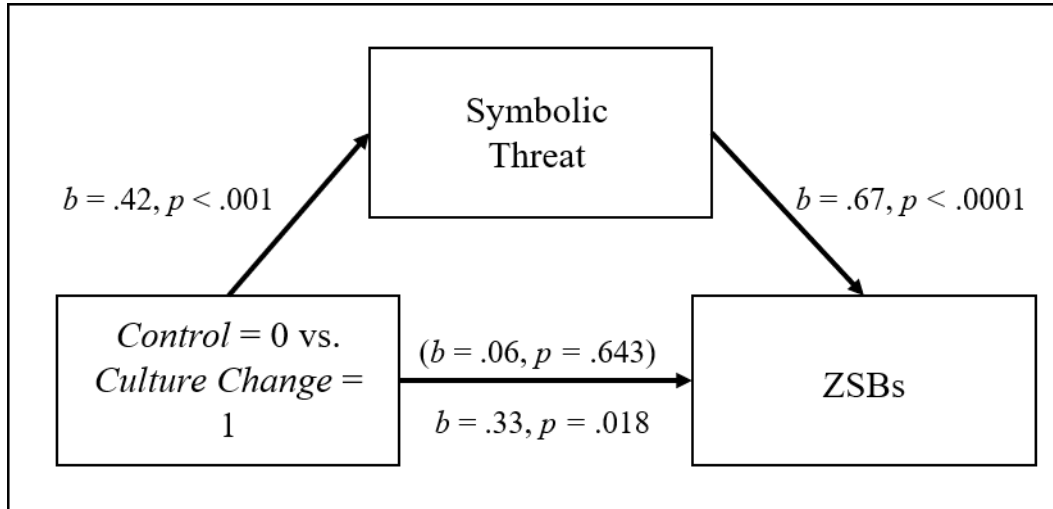
The overall model predicting LGBT/Christian ZSBs with realistic threat as a mediator was also significant, $F(2, 526) = 181.77$, $p < .0001$, $R^2 = .41$. Condition was a significant predictor of realistic threat, $b = .36$, $p = .003$. Realistic threat significantly predicted ZSBs, $b = .73$, $p < .0001$. Realistic threat significantly mediated the relationship between condition and ZSBs; the indirect effect was significant $= .27$, 95%CI: [.09, .45]. Thus, we found evidence that realistic threat successfully mediated the relationship between condition and ZSBs. See Figure 8.

Figure 8.

Given that symbolic and realistic threat were highly correlated, we next tested whether they simultaneously mediated the relationship between condition and ZSBs. The overall model

predicting LGBT/Christian ZSBs with symbolic and realistic threat as mediators was significant, $F(3, 525) = 124.91$, $p < .0001$, $R^2 = .42$. Condition significantly predicted symbolic threat, $b = .42$, $p < .001$, and symbolic threat significantly predicted ZSBs, $b = .17$, $p = .008$. Condition was also a significant predictor of realistic threat, $b = .36$, $p = .003$, and realistic threat significantly predicted ZSBs, $b = .61$, $p < .0001$. The indirect effect of symbolic threat was significant = .07, 95%CI: [.004, .15], and the indirect effect of realistic threat was significant = .22, 95%CI: [.08, .38]. Thus, both types of threat mediated the relationship between condition and ZSBs when included in the same model. See Figure 9.

Figure 9.
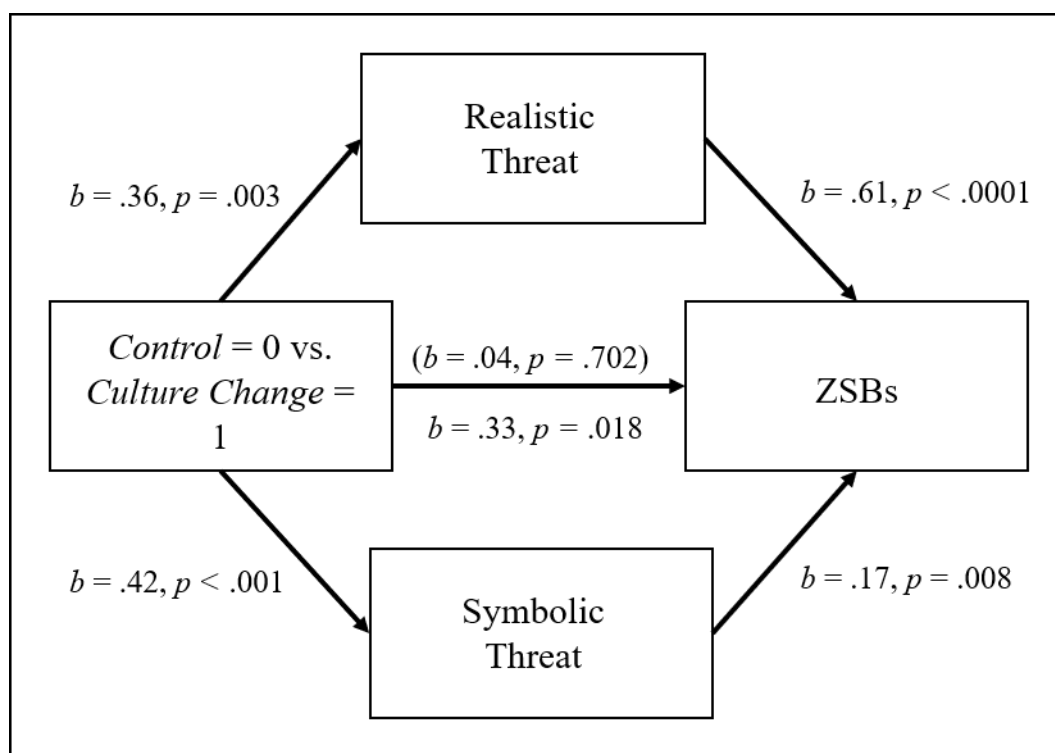
Symbolic vs. Realistic Threat

As an exploratory measure, we examined whether participants in the *culture change* condition reported greater realistic or symbolic threat. A paired samples t-test revealed that Christians in the *culture change* condition reported experiencing more symbolic ($M = 4.67$, $SD =$

1.28) than realistic threat ($M = 4.38$, $SD = 1.35$), $t(274) = 5.57$, $p < .001$; 95%CI: [.19, .39]. This pattern was similar in the control condition (there was no significant interaction between condition and threat type, $F(1, 527) = 0.47$, $p = .493$, $n_p^2 = .001$). Thus, it appears that across conditions Christians reported more concern about symbolic threat than realistic threat.

In sum, Study 3 provided evidence that Christian/LGBT ZSBs increase in response to perceiving social demographic and cultural shifts away from Christianity and in response to the experience of realistic and symbolic threat. Christian participants who perceived that their groups' influence is waning reported greater conflict between Christians and LGBT people (relative to those in a control condition), and those differences were driven by increases in threat.

Interestingly, the cultural shift condition also increased zero-sum beliefs about the relationship between Christians and non-Christians as well as ZSBs about Christians and Atheists. Thus, it appears that perceiving decreasing cultural influence of Christians corresponds to zero-sum beliefs relatively broadly: both within the religious category and across group domains (religion and sexual orientation).

Previous research examining ZSBs has focused primarily on realistic threat (although Norton and Sommers (2011) theorize that both types of threat predict ZSBs). We are the first, to our knowledge, to measure and provide empirical evidence that both symbolic and realistic threat drive ZSBs. Furthermore, we found that symbolic threat is a greater concern for our Christian participants than realistic threat.

Preregistered exploratory analyses also demonstrated subgroup differences in reactions to changing culture. Fundamentalist Chrisitans endorsed ZSBs to a greater extent and reported more symbolic threat than non-fundamentalists – particularly in the culture change condition (see

supplemental analyses for details). This suggest that while Christians as a group are threatened by decreasing social influence, fundamentalist Christians are particularly concerned.

Study 4

Having established that ZSBs are driven by religious values and symbolic threat, the purpose of Study 4 was to examine whether certain religious values could also be harnessed to mitigate ZSBs. We tested whether we could minimize perceived conflict between Christians and LGBT individuals by highlighting how acceptance is consistent with group morality - as exemplified by the Bible. We also tested whether particular Bible passages might exacerbate ZSBs. We chose the Bible because it is widely regarded as the source of Christian religious knowledge and authority. The Bible includes information about who Christians are, what they believe, and how they ought to behave (Chismar, 2006; McGrath, 2016).

We expected that Christians' responses to different verses would vary as a function of whether they identified as fundamentalist or not. We identified fundamentalism as the important individual difference variable because it provides the broad lens through which Christians interpret spiritual beliefs (as described above: e.g., Griffith, 2017). For some Christians, sexual prejudice is arguably a reflection of religious values, or efforts to be a "good Christian" (Herek, 1987, 2000). This perspective is particularly true of Christian fundamentalists who have stronger religious identification and a more literal interpretation of the Bible than mainline Christians (Kellstedt & Smidt, 1991). In fact, fundamentalism is associated with bias against sexual minorities (e.g., Burch-Brown & Baker, 2016; Herek, 1987, 2000; Herek & McLemore, 2013; Jonathan, 2008). Fundamentalists tend to believe that religious truths are timeless and should not change with cultural fluctuations (Kellstedt & Smidt, 1991). Thus, fundamentalists likely have higher ZSBs than other Christians given their resistance to cultural change. Furthermore, a belief

in absolute and unchanging truth might make fundamentalists less receptive to an intervention aimed at reducing bias against sexual minorities than mainline Christians because of this resistance to change.

In contrast, we expected that for mainline Christians, a Bible verse highlighting acceptance would lead them to perceive that embracing sexual minorities is consistent with their religious beliefs. Instead of experiencing aversion to increasing societal acceptance, mainline Christians may be more inclined to embrace sexual minorities particularly when they have a Biblical justification for doing so. A Bible passage in which Jesus counsels those around him to refrain from judging others would be interpreted as signaling that acceptance of sexual minorities can coexist with adherence with religious doctrine. In other words, we expected that a Bible verse highlighting acceptance rather than judgment would reduce (ZSBs) for mainline Christians.

We hypothesized that overall, fundamentalists would endorse ZSBs to a greater extent, report greater bias against sexual minorities, and support same-sex marriage less than other Christians. Furthermore, we expected that reflecting on a Bible verse related to sexual immorality would increase ZSB endorsement and bias, and lower same-sex marriage support. Conversely, we predicted that reflecting on a verse related to non-judgment would reduce ZSBs and bias but increase support of same-sex marriage for mainline, but not among fundamentalist Christians. Put simply, we predicted that fundamentalism would moderate condition differences.

Method

Participants

Participants were 1285 Christian participants recruited through TurkPrime panels[6]. We removed data from 13 individuals who either failed to report their sexual orientation or reported identifying as bisexual, transgender, or "other." We also removed data from eight individuals

who also identified with a religion other than Christianity and one that failed to report their religion. After excluding participants who failed attention checks, a total of 1017 heterosexual, cisgender Christian participants remained.

Participants' age ranged from 18-83 ($M = 46.18$, $SD = 15.73$). The majority were White (83.2%). Others reported Black (9.9%), Asian/Asian American (2.3%), Native American (1.7%), or "other" (2.8%) ancestry. The sample was predominantly female (61.6%). A little less than a third of the sample (31.4%) reported identifying as fundamentalist.

Procedure

Participants were randomly assigned to 1 of 3 conditions. In the *acceptance* condition participants read a Bible verse (John 8: 3-11 NIV) that describes a story of how Jesus encourages those around him to refrain from judging others because no one is free from sin. In the *bias justification* condition, participants read Romans 1: 21-27 NIV: a verse that describes sin, sexual impurity, and is often used as evidence that homosexuality is a sin (ActiveChristianity, 2015; Rodriguez, 2009)[7]. In the control condition, participants read an excerpt of a poem by Khalil Gibran about work (Gibran, 1997).

After reading the passage, participants were asked to briefly summarize it in their own words, and rate it on various measures described below.

As part of an ostensibly unrelated study, participants then reported a variety of social perceptions - which included the primary dependent measures of interest.

Measures

All measures were assessed on a 7-point scale anchored at 1(*strongly disagree*) and 7(*strongly agree*) unless otherwise noted. Means, SD and Cronbach alphas are included in Table 4. Qualtrics files and all measures are posted on OSF:

(https://osf.io/akds6/?view_only=e7e26bb03f434c198d0cf97b77d7e9aa).

Passage measures. Participants were asked to rate the passages on a variety of measures (e.g., "To what extent do you agree with the passage?" and "How familiar to you is the passage that you read?") rated on a 1-7 scale anchored at "not at all" and "very much." These were used as controls.

Zero-sum beliefs, **support for same-sex marriage**, and **religious identification** were assessed as described in Study 1.

Bias towards Gays and Lesbians was assessed with the short form of the scale developed by Herek (1988). Sample items include: "Male homosexuality is a perversion," and "Homosexual behavior between two men is just plain wrong."

Demographic characteristics: We asked participants to report their sexual orientation, age, race, and political orientation.

Participants also reported whether or not they identified as being fundamentalist (1 = yes, 2 = no). We utilized a binary measure because we believed it would most correspond with our desire to capture fundamentalism as a social identity. Furthermore, the self-identification measure has a more consistent relationship with criterion variables we cared about (than denominational affiliation or doctrine; see Kellstedt & Smidt, 1991).

Table 5. Means, reliability and partial correlations between measures controlling for political orientation for Study 4.

Variables	2	3	4	Mean (SD)	α
1) ZSBs	.61***	-.58***	.20***	3.07 (1.65)	.88
2) Sexual Prejudice		-.84***	.36***	3.65 (1.48)	.85

3) Support SSM	-.37***	3.98 (2.12)	.95
4) Religious ID		4.98 (1.63)	.84

Note: *** significant at .001 level

Results

Group differences

We examined whether fundamentalists differed in demographic characteristics from the other Christian participants by utilizing independent samples t-tests. Fundamentalists reported higher religious identification ($M = 5.81, SD = 1.22$ vs. $M = 4.61, SD = 1.65$), $t(1010) = 11.61, p < .001$ and greater political conservatism ($M = 5.04, SD = 1.69$ vs. $M = 4.32, SD = 1.50$), $t(982) = 6.65, p < .001$ than non-fundamentalists.

Analysis plan for primary DVs

For all dependent variables, we ran 2(fundamentalist vs. non-fundamentalist) X 3(condition) ANCOVAs (controlling for political orientation, and passage characteristics)[8]. We examined condition differences controlling for political orientation (as explained in Study 2) and passage characteristics that varied by condition (e.g., familiarity - as specified in the preregistration https://osf.io/bk7sm/?view_only=47cd9eb81faa4d34a296b4269bebacdc).

Given our specific predictions for non-fundamentalist Christians, we also probed simple effects for non-significant interactions.

ZSBs

There was a main effect of condition, $F(2, 963) = 6.18, p = .002, \eta^2 = .01$. There was also a significant main effect of fundamentalism, $F(1, 963) = 19.00, p < .001, \eta^2 = .02$. These effects

were qualified by the expected interaction between condition and fundamentalism, $F(2, 963) = 3.84$, $p = .02$, $\eta^2 = .008$.

Fundamentalist Christians did not vary in ZSB endorsement based on condition, $F(2, 963) = .32$, $p = .72$, $\eta^2 = .001$.

In contrast, non-fundamentalists reported significant differences between conditions, $F(2, 963) = 14.48$, $p < .001$, $\eta^2 = .03$. Among mainline Christians, ZSB endorsement in the *bias justification* condition ($M = 3.26$, $SE = .10$) was not significantly higher than in the *control* condition ($M = 3.10$, $SE = .12$), $p = .29$. ZSBs were lower in the *acceptance* condition ($M = 2.47$, $SE = .10$) than both the *control* and *bias justification* conditions, $ps < .001$. See Figure 10.

Figure 10. Zero-sum beliefs as a function of fundamentalism and condition.
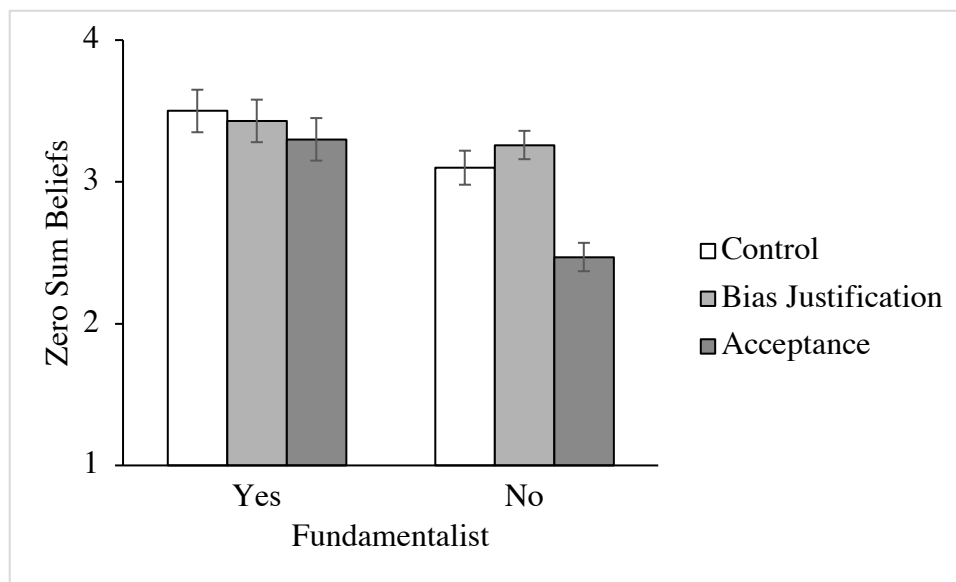
Note: Error bars represent standard error of the mean

**Bias toward Lesbians and Gays**

For bias towards lesbians and gays, there were main effects of condition, $F(2, 963) = 6.33$, $p = .002$, $\eta^2 = .01$ and fundamentalism, $F(1, 963) = 49.04$, $p < .001$, $\eta^2 = .05$. There was no significant interaction between the two, $F(2, 963) = 1.35$, $p = .26$, $\eta^2 = .003$.

Fundamentalist Christians did not vary in attitudes toward homosexuals based on

condition, $F(2, 963) = 1.66, p = .19, \eta^2 = .003$.

Non-fundamentalists reported significant differences between conditions, $F(2, 963) = 9.24$, $p < .001, \eta^2 = .02$. Among non-fundamentalists, attitudes toward lesbians and gays in the *bias justification* condition ($M = 3.71, SE = .09$) did not differ from the *control* condition ($M = 3.50$, $SE = .10$), $p = .11$. But attitudes were less negative in the *acceptance* condition ($M = 3.16, SE = .09$) relative to both the *control*, $p = .02$ and *bias justification* conditions, $p < .001$. See Figure 11.

Figure 11. Sexual prejudice as a function of fundamentalism and condition, Study 4.
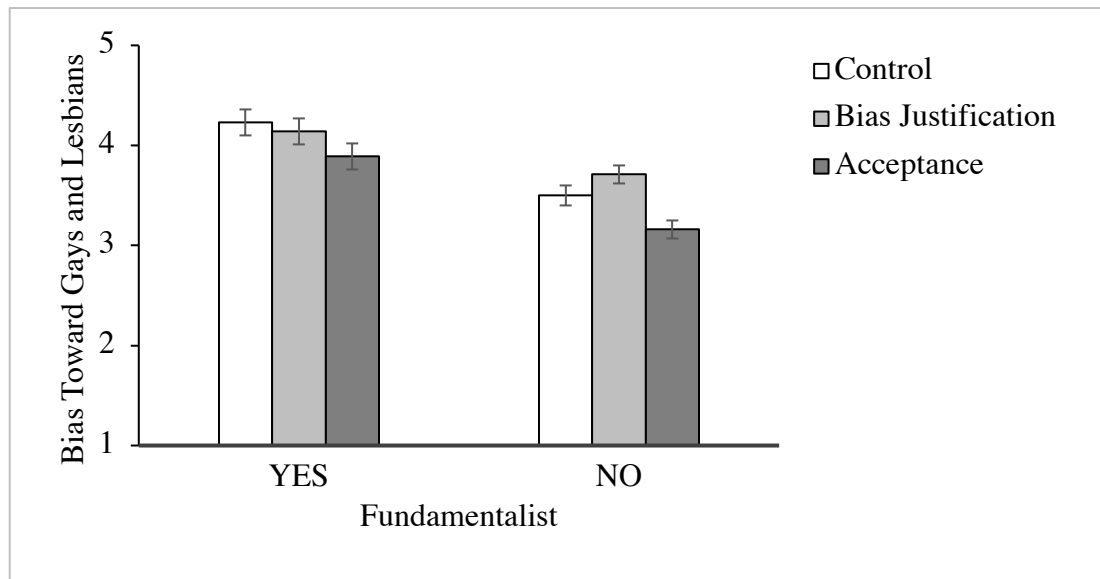
Support for Same Sex Marriage

There was a main effect of condition, $F(2, 962) = 3.02, p = .049, \eta^2 = .006$. There was also a main effect of fundamentalism, $F(1, 962) = 35.55, p < .001, \eta^2 = .04$. Main effects were qualified by a significant interaction, $F(2, 962) = 3.18, p = .042, \eta^2 = .007$.

Condition did not significantly affect fundamentalist Christians' support of same-sex marriage, $F(2, 962) = 0.13, p = .88$.

Non-fundamentalists reported significant differences between conditions, $F(2, 962) = 9.01$, $p < .001, \eta^2 = .02$. Support for same sex marriage did not differ between the *bias justification* (M

= 3.87, *SE* = .12) and *control* condition (*M* = 4.12, *SE* = 0.14), *p* = .18. Support for same sex

marriage was higher in the *acceptance* condition (*M* = 4.63, *SE* = 0.12) than both the *control*, *p* =

.01 and *bias justification* conditions, *p* < .001. In fact, for mainline Christians, the acceptance

prime improved support for same-sex marriage to significantly above the scale midpoint, *t*(251)

= 3.84, *p* < .001, 95% CI[.24, .74]. See Figure 12.

Figure 12. Same-sex marriage support as a function of fundamentalism and condition, Study 4.
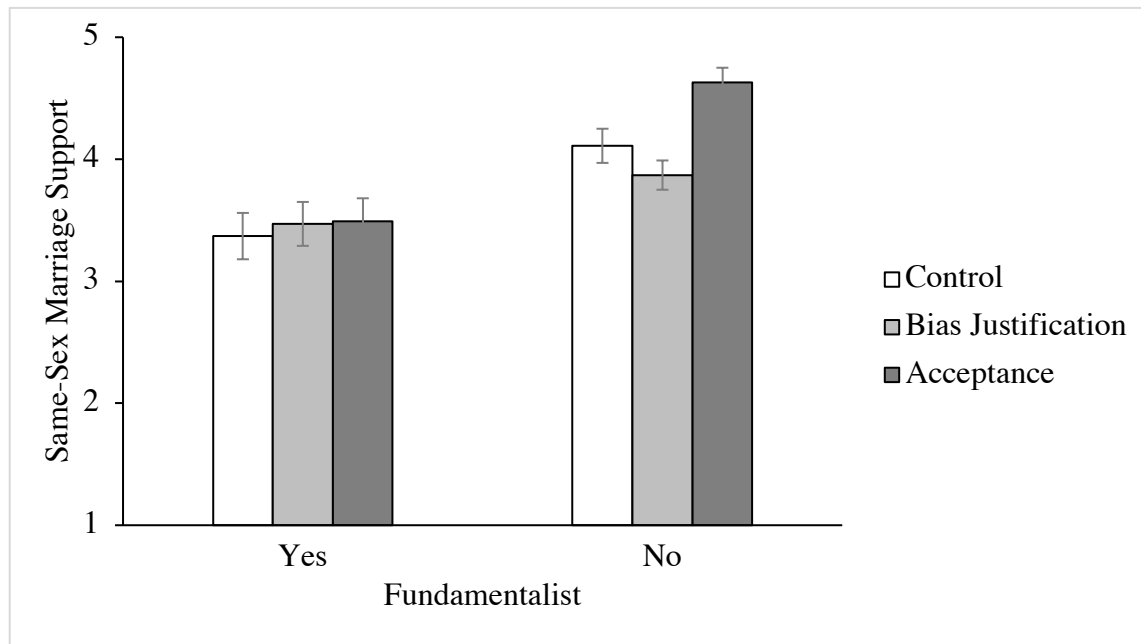
Discussion

Study 4 tested whether Christians' ZSBs could be heightened or mitigated by reflecting

on different Bible passages. We expected the bias justification prime to increase ZSBs relative to

the control condition for both fundamentalists and non-fundamentalists. Instead, we found that

attitudes in the *bias justification* condition did not differ relative to the control. It is possible that

bias against sexual minorities is the normative position, so the prime may have simply affirmed

previously-held worldviews on sexuality (rather than changing attitudes). It is, however, possible

that the verse we chose was not the most representative condemnation of homosexuality in the

Bible[9]. Future research could utilize stimulus sampling to examine whether other passages related to sexuality might increase ZSBs.

As predicted, the acceptance prime intervention was effective for improving intergroup attitudes for mainline Christians but not for fundamentalists. For non-fundamentalists, priming religious acceptance reduced ZSBs, decreased homophobia and increased support for same sex marriage relative to the *control* and *bias justification* conditions.

These results suggest that this simple Biblical intervention is a promising avenue for reducing sexual prejudice for a significant proportion of Christians; according to recent estimates about a third of Protestants identify with mainline traditions (Pew Research Center, 2015). Mainline Christians may be more open than their more conservative counterparts to changing social reality (Griffith, 2017) and thus to increasingly positive norms about sexual minorities (Pew Research Center, 2017). Reflecting on a Bible passage that highlights non-judgment likely drew attention to consistency between religious beliefs and acceptance of LGBT individuals and thus lowered their ZSBs.

The intervention passage we chose includes a statement by Jesus "to leave your life of sin." It is thus conceivable that the intervention was interpreted by mainline Christians as an instruction to "love the sinner and not the sin" – thereby retaining negative attitudes toward homosexual behavior while refraining from condemning those who identify as lesbian or gay. However, we consider this unlikely because support of same-sex marriage among mainline Christians increased in that condition relative to the control. In other words, it is not simply that their bias against LGBT people decreased, their support for institutional structures for same-sex relationships *increased*. Nevertheless, we examined participants' free-response summaries of the passages and confirmed that the themes differed based on condition; participants in the

acceptance condition were more inclined to summarize themes related to non-judgment than those in the *bias justification* condition. Furthermore, mainline Christians in the acceptance condition were more likely than fundamentalists to note themes related to non-judgment – which is consistent with evidence that they were more receptive to the intervention. Details about the coding procedure and results are available in supplemental online materials.

In Studies 1-4 we provided evidence that Christians, particularly fundamentalists (Study 4), perceive a zero-sum relationship between the bias they experience and bias against LGBT individuals. These beliefs are driven by perceived threats to Christian values, but were mitigated (for mainline Christians) by highlighting the Biblical support for acceptance. Together these studies highlight the importance of values and symbolic concerns in predicting perceived conflict between LGBT individuals and Christians. Further, they demonstrate that beliefs about conflict correspond to attitudes toward same-sex marriage and bias toward sexual minorities.

Study 5

The goal of Study 5 was to examine how ZSBs predict attitudes and how they may vary in response to changing social norms. Study 2 demonstrated that highlighting Christian values accentuated Christians' perceived conflict with LGBT individuals based on their individual perceptions of religious values. Here we were interested in examining how values communicated by *church authorities* shape the perceived conflict between religion and sexual orientation. We reasoned that the church is a strong moral authority with the potential to shape norms and attitudes toward sexual minorities like court rulings have shifted attitudes on same sex-marriage (e.g., Aksoy et al., 2020; Ofosu et al., 2019; Tankard & Paluck, 2017). In this study we measured changing attitudes in response to church legislation in a sample of United Methodists.

In February 2019, the United Methodist Church (UMC) held a special session of the general conference in St. Louis, Missouri. The purpose of the gathering was to examine language in the church's Book of Discipline concerning human sexuality and to explore ways of maintaining church unity ("2019 Special Session of the General Conference", 2019). Elected church delegates, lay people, and clergy from all over the world attended the session. Delegates voted on many initiatives including on one of five plans (see Table 6) to make language in the Book of Discipline referring to sexual minorities either more or less inclusive: for example, whether to allow openly-gay people to hold clergy positions, allow same sex marriage in the church, and whether to sanction individuals who violate these rules. The vote provided an opportunity to examine how ZSBs relate to Methodists' responses to a potential symbolic threat aroused by a change in doctrine/religious policy. We reasoned that if the church adopted a plan inconsistent with one's beliefs, it would be threatening.

We assessed attitudes of United Methodist Christians before and after this vote. We expected that self-identified fundamentalists would report greater support for more traditional plans than non-fundamentalists. Consistent with results of previous studies, we also predicted that self-identified fundamentalists would endorse zero-sum beliefs to a greater extent than mainline Methodists. Furthermore, we hypothesized that higher ZSB endorsement would predict greater sexual prejudice.

We were also interested in exploring how passing a particular plan would affect ZSB endorsement and sexual prejudice. In exploratory analyses we examined the relationship between ZSBs and sexual prejudice. We tested the possibility that regardless of which plan passed, the relationship between ZSBs and sexual prejudice might become stronger after the vote. We thought that the passing of legislation would evoke different responses among those who were

high or low in ZSBs – leading to polarization in either case. If a more restrictive plan passed, it was possible that it would reaffirm perceived conflict between the church and the LGBT community for those higher in ZSBs and thereby justify more negative attitudes towards gay and lesbian people. But, among ZSB rejectors, a restrictive vote might be disappointing, lead to reactance and a greater commitment to egalitarianism. Similarly, a vote to loosen restrictions might lower sexual prejudice for those low in ZSBs, but lead to increased sexual prejudice for ZSB endorsers. Either outcome might cause ZSBs to more strongly predict bias.

The convention delegates ultimately passed the Traditional Plan (by a narrow margin: 53% in favor vs. 47% opposed) – thus voting to reaffirm the language in the Book of Discipline that bans sexual minority clergy, prohibits same-sex marriage, and penalizes those who break rules.

Method

Participants

We recruited a sample of self-identified United Methodist Christians to respond to a survey before and/or after the February 26, 2019 United Methodist Special Session vote[10]. We recruited participants at the convention and from seven churches in St. Louis County. There were a total of 420 responses from 321 people (99 individuals provided data at both time points). We excluded three responses in analyses that appeared to be from individuals who provided more than two responses; we removed the second response in a particular time frame (pre - or post-vote).

In keeping with the previous studies, we included only heterosexual cisgender participants in the analyses below. Results for the full sample are available in the supplemental online material. Sample restrictions left us with 283 responses from 209 people (74 individuals

provided data at both time points). These participants ranged in age from 18-89 ($M = 58.33$, $SD = 14.99$) and reported being slightly liberal on average in political affiliation ($M = 3.05$, $SD = 1.62$) on a scale from 1(*very liberal*) to 7 (*very conservative*). Most respondents identified themselves as non-fundamentalist (77.0%), 17.2% identified as fundamentalist and 5.7% did not report. This set of respondents were 45.9% female and 54.1% male and predominantly White (89.0%), with 2.9% identifying as African American, 2.9% as Asian American, 1.0% as Latinx American, 1.4% as "Other", and 0.5% as multiracial; the remainder declined to report their racial background.

Procedure

To recruit participants, we cold-called United Methodist churches in St. Louis County, Missouri and asked if they would be willing to let us survey their congregants about their perspectives on the upcoming church vote. We requested names of other churches and pastors from those who agreed to participate. Of the 28 churches we contacted, seven agreed to participate, two declined, and the rest did not respond. The congregations of five of the participating churches completed the survey online through a Qualtrics link distributed over email by the church pastor or by church staff before and after the vote. Two churches requested hard copies of the survey, which were administered by the research team at one church and by church staff at the other church.

Surveys were also collected at the United Methodist Conference, and were administered in the lobby of the convention center by the research team between February 23 and February 26, 2019. Participants who provided data before the vote had an opportunity to provide contact information (an email address) if they were willing to be contacted after the vote.

Participants self-generated an identification code, consisting of a mix of various letters and numbers of their name and birthdate, which was utilized by experimenters to match their data across time. All participants were compensated $2 cash if they completed the survey in person, and those who completed the survey online were compensated the same amount through the Rewards Genius participant payment program (https://www.rewardsgenius.com).

Measures

Qualtrics files and all measures are posted on OSF:

(https://osf.io/dku3s/?view_only=341c675578024c548cf5a5a7ab86ec55).

Zero-Sum Beliefs. Participants completed the 6-item zero-sum beliefs (ZSB) measure described in Study 1. These were completed on a scale from 1 (*strongly disagree*) to 7 (*strongly agree*).

Sexual prejudice. Participants rated their warmth toward 1) homosexual/lesbian and gay individuals, and 2) heterosexual individuals using feeling thermometers anchored at 0 (*cold*) to 100 (*warm*). We subtracted reported warmth toward gay individuals from warmth toward straight individuals to capture relative preference: sexual prejudice.

Fundamentalism. Participants were asked "Do you consider yourself a fundamentalist Christian?" They could answer "Yes" or "No," or they could choose not to respond.

Pre-vote plan selection. Participants who completed the survey before the official vote viewed a summary of each proposed plan and were asked to select the plan they would support. The plans, their descriptions, and the percentage of cishet respondents in support of each one are listed in Table 6 in order of decreasing inclusivity (from most to least inclusive of sexual minorities). Of our respondents prior to the vote, 3.2% did not select any of the five options.

Table 6.

Plan Name	Plan Description	Tighten or loosen restrictions?	Reported Preference (pre-vote)
1. Simple Plan	This plan would remove all language from the Book of Discipline that excludes LGBTQ people from full participation in the church.	Loosen	45.2%
2. One Church Plan	This plan would remove restrictive language from the Book of Discipline that prohibits same-sex weddings in UMC properties and ordination of "self-avowed practicing homosexuals". It would add language to protect churches and pastors who choose not to allow same-sex marriages.	Loosen	39.4%
3. Connectional Conference Plan	This plan would create three connectional conferences based on perspective of LGBTQ issues: Progressive, Traditional, and Unity, which would function throughout the worldwide church (the five existing U.S. jurisdictions would be abolished). All three would use a general Book of Discipline with the ability to adapt other portions to their context for ministry.	Loosen	3.7%
4. Traditional Plan	This plan would affirm current language in the Book of Discipline, which bans "self-avowed and practicing" gay clergy and the blessing of same-sex unions. It would broaden the definition of "self-avowed practicing homosexual"; establish penalties for disobedience to the Discipline; and require bishops, pastors, and conferences to adhere to the Discipline.	Tighten	1.6%
5. Modified Traditional Plan	This plan would add to the Traditional Plan a committee with authority to hold bishops accountable to the sexuality	Tighten	6.9%

				standards in the Book of
				Discipline.

Post-vote outcome opinion. After the vote, participants reported how they felt that the

Traditional plan had passed on a scale from 1(*very disappointed*) to 7 (*very pleased*).

Means, standard deviations and correlations between measures are listed in Table 7.

Table 7. Means, standard deviations and correlations between measures for Study 5.

Variables	2	3	4	5	Mean (SD)
1) ZSBs	.42**	-.40**	.50**	.80**	1.54 (0.95)
2) Sexual Prejudice (Warmth toward Straight – Warmth toward Gay People)		-.14*	.23**	.45**	4.04 (13.65)
3) Fundamentalist 1=yes 2=no			-.32**	-.59**	N/A
4) Pre-vote Plan Preference (1-5)					N/A
5) Post-vote Outcome Opinion					1.77 (1.58)

Note: * significant at .05 level, ** significant at .01 level

Results

Because some participants in our sample responded both before and after the vote, and

many sets of participants reported belonging to the same church, we could not assume that scores

were completely independent of each other. Therefore, unless otherwise noted, we utilized multi-

level models to account for the presence of both group- and individual-level factors. Both church

and individuals' unique identity numbers were included in the model as random-effects factors.

Not all participants responded to all measures, so degrees of freedom in the analyses below reflect the number of respondents to the relevant measures and are reported based on the Satterthwaite approximation used by SPSS for calculating non-integer degrees of freedom in multi-level models.

Fundamentalism predicted ZSBs. We ran a multi-level model, with participants nested within churches, to test whether fundamentalism predicted endorsement of zero-sum beliefs. As expected, fundamentalists reported significantly stronger zero-sum beliefs than non-fundamentalists, $b = 0.79, SE = 0.15, t(250.43) = 5.71, p < .001, 95\%CI$ [0.50, 1.07].

ZSBs were related to plan preference before the vote. In order to assess the patterns of plan preference before the vote, we combined counts of individuals who preferred plans 1-3 and those that preferred plans 4-5 (listed in Table 5). Thus, we ended up with two plan categories representing plans that would loosen language and those that would affirm traditional exclusive language.

Using this dichotomous split and a nested model to account for shared church membership, we assessed the difference in average level of zero-sum beliefs held by those who supported the more inclusive plans ($M = 1.38, SD = 0.71$), versus the more traditional plans, $M = 3.07, SD = 1.35$), and found statistically significant results indicating that higher ZSBs were associated with support for the traditional plans, $t(172.92) = 7.83, p < .001, 95\%$ CI [-2.09, -1.25].

ZSBs predicted sentiments after the vote. Using a multi-level model to account for some individuals in our sample being nested in the same church, we found that those with higher ZSBs were significantly more pleased with the outcome of the vote, $b = 1.09, SE = 0.09, t(82.64) = 12.24, p < .001, 95\%CI$ [0.91, 1.26].

ZSBs were not affected by the vote nor was this moderated by fundamentalism. We also tested whether the vote affected ZSBs across the sample, and found no evidence that the levels of ZSBs changed for the sample before or after the vote, b = -0.01, SE = 0.81, $t(81.12)$ = 0.13, p = .89, 95%CI [-0.17, 0.15]. Furthermore, ZSBs did not change from pre- to post-vote based on participants' fundamentalist identification, b = -0.03, SE = 0.21, $t(100.42)$ = 0.12, p = .90, 95%CI [-0.45, 0.39], although fundamentalism continued to predict ZSBs before and after the vote, b = 0.81, SE = 0.20, $t(182.27)$ = 3.98, p < .001, 95%CI [0.41, 1.21].

ZSB endorsement predicted sexual prejudice, and the relationship strengthened after the vote. We next examined the effect of ZSBs on Methodists' sexual prejudice before and after the vote. We included time (pre- versus post-vote) and participants' ZSB scores as our fixed factors as well the interaction of those two terms in the model, keeping church and individual ID number as random effect factors.

Results showed a main effect of zero-sum beliefs, b = 6.76, SE = 1.19, $t(247.71)$ = 5.67, p < .001, 95%CI [4.41, 9.11], and a main effect of time, b = 5.60, SE = 2.45, $t(141.25)$ = 2.29, p = .024, 95%CI [0.76, 10.44]; however, as predicted, these were qualified by a significant interaction between ZSBs and time, b = -2.96, SE = 1.34, $t(147.94)$ = 2.20, p = .029, 95%CI [-5.62, -0.31]. Follow-up analyses showed that prior to the vote, greater ZSBs predicted greater sexual prejudice, b = 4.39, SE = 1.01, $t(177.88)$ = 4.35, p < .001, 95%CI [2.40, 6.38]; after the vote, this relationship became *stronger*, b = 8.92, SE = 1.22, $t(87.05)$ = 7.32, p < .001, 95%CI [6.50, 11.35]. See Figure 13.

Figure 13.
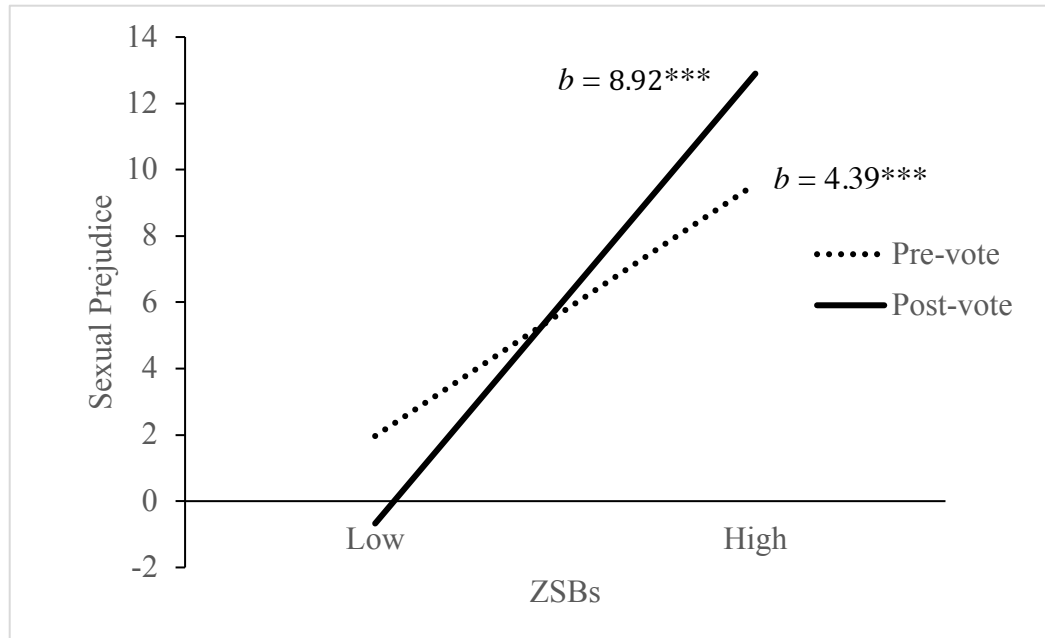
Note: ZSBs graphed at the 10th percentile (ZSB score = 1) and the 90th percentile (ZSB score = 3).
*** significant at .001 level

Discussion

Study 5 utilized a community sample and a within-subjects naturalistic experiment of the UMC vote to provide further evidence of the relationship between fundamentalism, ZSBs, and sexual prejudice. Fundamentalism significantly predicted ZSBs, and ZSBs predicted plan preferences before the vote and opinions after the vote. With the passing of the Traditional Plan, which upheld restrictions on sexual minorities, ZSBs became a *stronger* predictor of sexual prejudice. This suggests that when relatively high ZSB endorsers (who perceived greater conflict between LGBT individuals and Christians) felt their view was supported by the broader church, they likely felt condoned to express greater sexual prejudice. In contrast, those who saw no conflict between LGBT progress and Christians (those low in ZSBs) were disappointed by the vote and reacted with a stronger commitment to equality. Thus, Study 5 provided support for our

hypothesis that changes at the institutional church-level would communicate values to parishioners about the conflict between Christians and LGBT individuals.

We did not find significant differences in mean-level ZSB endorsement based on the vote. While it is possible that there was simply no effect, it is also possible that the effect was difficult to detect because of restricted range and a floor effect; the mean ZSB endorsement was 1.54 on a 1-7 scale – a full point lower than the cishet Christian average in Study 1. This may be due to the nature of our recruitment for the study; it is possible that congregations that responded self-selected to be those that were especially proud of their stance on LGBT issues. That our sample was liberal is evident in the contrast between the final vote for the Traditional Plan and our sample's reported preferences; a very small percentage of our respondents supported the Traditional Plan (1.6% vs. 53% that passed the plan). In addition to sampling bias, this liberal skew may also reflect the more liberal stance of U.S. Methodists compared to the more conservative global Methodist community who participated in the official vote (Green, 2019). Furthermore, the very nature of the vote may have suppressed ZSBs because it concerned the future of gay and lesbian United Methodists and thus recognized their existence. Christians with the strongest ZSB endorsement likely believe that homosexuality is immoral and inconsistent with true Christian life (National Association of Evangelicals, 2012; Griffith, 2017)[10]. In other words, the discussions leading up to the vote about how to accommodate LGBT Methodists may have reduced the perceived conflict between the two identities (and lowered ZSBs) even before data collection began.

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[10] Study 3 revealed a significant positive correlation between ZSBs and perceptions that being Christian and LGBT are mutually exclusive (r=.63). Thus, it is feasible that Christians with particularly high ZSBs believe that real Christians cannot be LGBT, or that they cannot act on their non-heterosexual impulses (DeRogatis, 2005; Griffith, 2017; National Association of Evangelicals, 2012).

Despite the restricted range of ZSBs in our sample, the vote still led to greater polarization. Before the vote, mainline Methodists were more inclined to support an inclusive plan than fundamentalists, and when the more restrictive Traditional Plan passed, mainline Methodists reported feeling more disappointed by the outcome. Going forward, this polarization will likely lead to a church split based on understandings of same-sex marriage and LGBT clergy (Gjelten, 2019; Robertson & Dias, 2020).

Our findings, on how church authorities shape attitudes, parallels recent research examining antigay bias in response to same-sex marriage legalization (Aksoy et al., 2020; Ofosu et al., 2019; Tankard & Paluck, 2017). While Tankard and Paluck (2017) found that the U.S. Supreme Court ruling allowing same-sex marriage shifted perceptions of social norms, it did not shift personal attitudes. But, other research in the U.S. and in Europe reveals that legal recognition of same-sex relationships is associated with significant improvements in attitudes toward sexual minorities (Aksoy et al., 2020; Ofosu et al., 2019). For example, although bias (both explicit and implicit) was decreasing before the legalization of same-sex marriage in the U.S., it decreased at a sharper rate after the Supreme Court ruling (Ofosu et al., 2019).

Unlike Study 5, no previous research, to our knowledge, has examined the potential role of religion (or religious subgroup membership) in shaping reactions to legislation. Ofosu and colleagues (2019) did examine state-level differences in reactions to same-sex marriage legalization. They found that in states that legalized same-sex marriage at the state-level before the Supreme Court ruling, anti-gay bias decreased more quickly after than before the Supreme Court legalized same-sex marriage (*Obergefell v. Hodges*, 2015). But, for the 15 states that legalized same-sex unions in response to the ruling, implicit anti-gay bias actually *increased*. Essentially they found evidence of backlash in the late-adoption states. We wondered whether

differences in responding might be a function of religious orientation, so we examined the proportion of conservative Christians in each state.[11] As expected, the proportion of evangelicals was higher in the 15 states that required a Supreme Court ruling to legalize same-sex marriage ($M = 0.35$, $SD = 0.10$) than in the 35 states that legalized it prior to the ruling ($M = 0.22$, $SD = 0.09$), $t(48) = -4.46$, $p < .001$. Put simply, an event that increased inclusion of sexual minorities was associated with an increase in bias in states with a higher proportion of more conservative Christians. See OSF for relevant data and syntax:

https://osf.io/ephj6/?view_only=0d4c036a640c4725811cc56688412aa3.

In Study 5, the decision by the United Methodist Church to exclude LGBT people led to a widening gap in sexual prejudice between those low and high in ZSBs. Although the institutional changes made in these two cases were in opposite directions in terms of their effects on the LGBT community, the reactions to both are consistent with a zero-sum perspective; broad changes in inclusion shaped Christians' sexual prejudice by either accentuating or mitigating it. Both actions (legalization of same-sex marriage and exclusion of LGBT people from the church) led to increased polarization based on religious orientation (e.g., identification as evangelical, mainline, or fundamentalist).

In sum, Study 5 complimented previous studies by utilizing a naturalistic experiment provided by the UMC vote on the future of sexual minorities. It relied on a diverse community sample to suggest that values communicated by church authorities may shape the degree to which ZSBs predict attitudes toward sexual minorities.

General Discussion

For much of U.S. history, sexual minorities were pathologized (Drescher, 2015) and criminalized (sodomy laws were not abolished nationwide until 2003: *Lawrence v. Texas*).

Therefore, many LGBT activists and allies celebrated the Supreme Court's landmark decision in *Obergefell v. Hodges* that legalized same-sex marriage (Sarkar, 2015). However, others reacted significantly less favorably (e.g., "US Gay Marriage: Texas Pushes Back against Ruling", 2015). For example, as a senator, former Attorney General Jeff Sessions described the Supreme Court's decision as an "effort to secularize, by force and intimidation" (Sommerfeldt, 2016). He made a direct connection between increasing rights for sexual minorities and anti-Christian bias. Our current research sought to determine whether Christians view themselves as being in a zero-sum relationship with the LGBT community, and whether those perceptions decrease support for LGBT rights in both secular and religious society.

We provide evidence that, on average, cishet Christians are more likely than other groups to view LGBT individuals as being in a zero-sum relationship with Christians. In Study 1, cishet Christians reported believing that decreasing discrimination against LGBT individuals corresponds to increasing bias against their own group. Other groups tended to perceive decreasing bias against sexual minorities without the corresponding increase in perceptions of anti-Christian bias. Cishet Christians also endorsed explicit ZSBs to a greater extent than cishet non-Christians, LGBT individuals, and individuals who reported identifying as both Christian and LGBT. Study 2 demonstrated that priming religious values increased Christians' ZSBs. Together these findings suggest that Christians are most inclined to perceive a zero-sum relationship between Christians and LGBT individuals and that these beliefs are a function of Christian beliefs (rather than sexual orientation).

While past research has focused primarily on realistic threat, we provide evidence that symbolic threat drives zero-sum beliefs. In Study 1, perceived threats to religious freedom explained group differences in ZSBs. Study 3 manipulated symbolic threat by asking Christians

to consider the decreasing social and cultural influence of Christians in the U.S. When threat was primed in this way, Christians reported greater ZSBs relative to a control condition. Furthermore, the relationship between condition and ZSBs was driven by both symbolic and realistic threat perceptions (though symbolic threat was a greater overall concern). Thus, we provide the first evidence that symbolic threat drives zero-sum beliefs; perceived conflict between Christians and sexual minorities stems from perceived threat to Christian values (in addition to concern about real resources). And, perceived threats to values arise in response to socio-demographic changes and decreasing social influence of Christians in the U.S..

We also examined subgroup differences in the tendency to endorse ZSBs. Conservative Christians (those identifying as fundamentalist) are most resistant to social change, and thus we anticipated that they would be more concerned about maintaining Christians' social position. Consistent with this expectation, supplemental analyses for Study 3 revealed that fundamentalists experience the most threat in response to decreasing Christian influence in society.

Study 4 identified an intervention to mitigate ZSBs by highlighting the consistency between acceptance of sexual minorities and the Christian faith for a subgroup of Christians. We found that Christian fundamentalists endorsed ZSBs to a greater extent than non-fundamentalists. Although fundamentalist Christians were not receptive to the intervention (attitudes did not differ based on condition), non-fundamentalist Christians were. Mainline Christians who read a Bible passage about non-judgment reported lower ZSBs, lower sexual prejudice and greater support for same sex marriage than those in a control condition. For this group, a Bible passage highlighting acceptance likely drew attention to consistency between religion and acceptance of LGBT individuals, and thus lowered ZSBs. In fact, an analysis of passage interpretation revealed that fundamentalism predicted the extent to which Christians interpreted Bible passages as accepting

or condemning of sexual minorities (see online supplemental analyses for details). Therefore, Christian values can increase (Study 2) or decrease (Study 4) Christians' ZSBs. The specific role likely depends on whether values are seen as highlighting the perceived inconsistency, or consistency, between being a good Christian and accepting sexual minorities.

Study 5 examined ZSBs in a community sample of United Methodists, and assessed changes over time in response to church legislation, which conveys norms and church values. ZSBs predicted support for legislation that increased restrictions on sexual minorities. Furthermore, ZSBs predicted greater sexual prejudice before the vote, and the relationship became *stronger* after the church governing body voted to tighten constraints for gay and lesbian United Methodists. This pattern suggests that the UMC's vote to increase restrictions communicated the inconsistency between religious doctrine and LGBT individuals and thus sanctioned bias against the latter for ZSB endorsers. We thus provide the first research, to our knowledge, to demonstrate how legislation interacts with religious beliefs to affect sexual prejudice.

Across studies we demonstrated that ZSBs predicted greater sexual prejudice and decreased support for same-sex marriage. Thus, these beliefs (themselves predicted by perceived threat to religious values) predict attitudes that relate to discriminatory outcomes. These results are consistent with patterns reflected in the real world. For example, the legalization of same-sex marriage provided new clientele and significant potential financial gains for the wedding industry: not an economic threat. Nevertheless, the owner of the Masterpiece Cakeshop viewed this legalization as a symbolic threat that posed a danger to the owner's religious values, and this was used to justify service refusal (*Masterpiece Cakeshop v. Colorado Civil Rights Commission*). Our research suggests that perceiving bias against Christians might help explain

the increasing support for religiously-based service refusals in the U.S. (Greenberg et al., 2019)

and suggestions that same-sex marriage hurts Christians and should be overturned (Liptak, 2020)

Our research also presents Christians' concern about bias against their ingroup as a novel

explanation for sexual prejudice and symbolic threat as the driving factor.

Do Zero-Sum Beliefs Reflect Reality?

It is important to note that although there have been significant social gains for sexual

minorities, these do not likely correspond to increasing bias against Christians, despite some

Christians' perspectives. Sexual minorities continue to face disproportionate violence and

discrimination (Dashow, 2018). In 2018 LGBT individuals made up approximately 20% of all

hate crime incidents according to FBI statistics (FBI, 2018) even though they make up only

about 4.5% of the population (Gallup, 2018). And, although same-sex marriage (SSM) has been

legal in the U.S. since 2015, a recent audit study revealed that same-sex couples continue to

experience more discrimination from wedding industry professionals than heterosexual couples

(Kroeper et al., 2019). Furthermore, only recently did the Supreme Court establish that the Civil

Rights Act of 1964 applies to sexual orientation and gender identity (*Bostock v. Clayton County,

Georgia,* 2020). Interestingly (and consistent with the present research), it seems that

conservative Christians interpret the ruling as a loss for their group (Dreher, 2020). Before the

June 15, 2020 ruling, laws meant to prevent bias based on sex were selectively interpreted to

only sometimes include sexual orientation and gender identity (Nelson, 2015). Despite these

recent safeguards for workers, the U.S. government has finalized a rule that eliminates healthcare

protections for transgender people (Perez, 2020). Thus, LGBT individuals continue to experience

bias, and progress in some domains is often accompanied by set-backs in others (Brady, 2020).

Although Christians perceive increasing bias against their group (Vandermaas-Peeler et al., 2018), there is little evidence to support those perceptions. Perceptions of anti-Christian bias seem to be particularly acute for conservative Christians; the majority (57%) of White evangelicals report that their group experiences a lot of discrimination in the U.S. today (Vandermaas-Peeler et al., 2018). These perceptions stand in stark contrast to objective bias experienced by these groups. Hate crimes against Christians account for about 9% of crimes based on religion and less than 2% of all incidents in the United States (FBI, 2018). Furthermore, an analysis of 40 years of attitudes toward conservative Christians based on the American National Election Studies (ANES) survey provides no evidence of increasing negativity toward Christians over time; in fact, attitudes averaged from near neutral to positive for fundamentalist Christians (Yancey, 2018). Similarly, research examining whether scientists are biased against Christians reveals that while Christians perceive bias, there is inconsistent evidence of objective favoritism of atheists over Christians (evidence in one study but not another) (Barnes et al., 2020). Thus, overall, LGBT individuals continue to bear the brunt of discrimination, but there is less evidence of widespread bias against Christians. Furthermore, there is no evidence, to our knowledge, connecting the experiences of LGBT individuals to bias against Christians.

What are the function of ZSBs?

If Christians do not appear to experience increasing objective bias against their group, what is the purpose of ZSBs? As described above (and articulated in the Instrumental Model of Intergroup Conflict; Esses et al., 1998; 2001), ZSBs likely arise to motivate efforts to maintain group dominance. In fact, social dominance orientation, or preference for group-based inequality (Pratto et al., 1994) predicts perceived intergroup competition between immigrants and nonimmigrants (ZSBs) which in turn predicts negative attitudes toward immigrants (Esses et al.,

1998). While dominance related to ZSBs has traditionally been conceptualized in relation to distribution of resources (Esses et al., 1998; 2001), we argue and provide evidence that ZSBs also arise as an effort to exert cultural dominance. Endorsement of Christian/LGBT ZSBs likely corresponds to efforts to relegate sexual minorities to subordinate status – perhaps as a means of reducing their social influence.

Religiosity is a form of system justification, *particularly* for Christians (Jost et al., 2014), so a threat to Christianity might be taken as a threat to the system, which Christians are motivated to defend. When Christians experience symbolic threat and are concerned about losing their group's historic dominance, ZSBs motivate them to reestablish the group's position. This is consistent with our findings in Study 3; perceiving decreasing Christian influence in society increased Christians' ZSBs *and* sexual prejudice. Sexual prejudice may be a way to minimize LGBT influence and thus make more room for Christian influence in society. By leading to bias against the relatively disadvantaged, ZSBs also appear to justify inequality for dominant groups.

That said, it is unclear from the present research whether ZSBs serve similar functions for dominant and subordinate social groups. The current research and previous work suggest that dominant groups are more inclined than subordinate groups to endorse ZSBs (Norton & Sommers, 2011; Wilkins et al., 2015), so there is likely a status-based asymmetry. Future research can clarify the nature of ZSBs in disadvantaged groups.

Limitations and Future Directions

The current work examines Christians' zero-sum beliefs about their relations with LGBT individuals as a broad group. Thus, our treatment does not distinguish between perceived competition based on sexual orientation (gay, lesbian, bisexual individuals) and gender identity (transgender people). It is possible that attitudes and perceived competition differ based on

subgroups. For example, attitudes towards bisexual individuals differ from attitudes toward gay and lesbian individuals (Burke et al., 2017) and bias against sexual and gender minorities are likely driven by different motivations (Worthen, 2013). But, our treatment is consistent with popular survey methods (e.g., see Gallup Poll: Newport, 2014).

In this research, we examined intergroup competition between LGBT individuals and Christians even though the two groups overlap. In examining Christian responses to LGBT progress we do not deny the existence of those who identify as both LGBT and Christian, any more than examining White responses to Black progress denies the existence of multiracial individuals. Even more so, because Christianity is a religious identity and LGBT references sexual orientation and gender identity, the two categories are orthogonal; recall that about 7% of our sample in Study 1 identified as both LGBT and Christian, and they reported equally high levels of religiosity as their same-faith heterosexual counterparts. However, as noted above, the values attributed to Christianity (by some Christians) are often placed in opposition to tolerance of the LGBT way of life, and those who identify as LGBT.

Future research should investigate how LGBT Christians perceive relations between their two identity groups. It is conceivable that individuals who strongly identify with both identities would reject ZSBs to an even greater extent than other groups. But, LGBT individuals who are also Christian fundamentalists (e.g., 5.6% of Study 5 sample, reported in supplemental Study 5 materials) may experience identity conflict (e.g., Rodriguez, 2009) and might endorse ZSBs *more*. These data underscore that there are many ways to think about the relationship between one's sexuality and spirituality and how these understandings evolve.

Although we recognize the limitation of treating overlapping groups as distinct, our treatment highlights important avenues that can be explored in future work. Previous research

examining ZSBs has focused on groups that vary along the same dimension (e.g., race, gender; Bosson et al., 2012; Kehn & Ruthig, 2013; Kuchynka et al., 2018; Norton & Sommers, 2011; Wilkins et al., 2015; Wellman et al., 2016). Here we focused on groups that are not mutually exclusive and found that beliefs about conflict between those groups (ZSBs) predict a number of important outcomes. It is thus possible that other overlapping groups display a similar process.

For example, some Christians may perceive that they are in a zero-sum conflict with scientists, even though there are religious scientists. Although no previous research, to our knowledge, has directly examined Christian/science zero-sum beliefs, there is an established tendency for Christians (particularly conservative Christians) to perceive conflict between religion and science (Evans, 2011). There is also evidence that the perceived conflict has been increasing over time (Evans, 2013), but none examining the *consequences* of these perceptions for intergroup relations or behavior more broadly. For example, some Christians interpret the Biblical verse about God giving man dominion over the earth (Genesis 1:26-28) as a license to do as they like with the environment: seeing the extraction of resources from the earth (i.e. drilling, fracking) as divinely ordained practices (see Dochuck, 2019)[11]. This belief is in conflict with climate science and likely predicts conservation behavior, support for climate policy and the utilization of science more broadly. Our examination of ZSBs could inform these issues as Christian/science ZSBs are likely also be driven by symbolic threat, or perceived conflict of ideas.

The current work may also inform research on the perceived conflict between religion and race. Even though religion and race are distinct social categories, there is substantial

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[11] Others interpret this same Biblical passage as responsibility for stewardship (Whelchel, 2012).

evidence of Christian racism (Hall et al., 2010; Johnson et al., 2010), including incidents of racial bias justified by Christian beliefs (Jacobo, 2019). In fact, Jones (2020, p. 6) argues that "American Christianity's theological core has been thoroughly structured by an interest in protecting white supremacy." White evangelical Christians regularly report the most negative racial attitudes in the U.S., and use religious beliefs to justify the subjugation of Black people (Jones, 2020). Perhaps Christian/Black ZSBs drive racial prejudice among some White Christians. This may be particularly the case for symbolic, or modern racism (e.g. Kinder & Sears, 1981; McConahay & Hough, 1976), which is motivated by perceived failure of Black people to live up to "abstract moral values" (Sears & Henry, 2003). Future research could explore ZSBs among these, and other, overlapping groups. Importantly, our intervention to reduce Christian/LGBT ZSBs, might also be adapted to target other, cross-dimension, ZSBs.

Future research can also examine the cultural and contextual specificity of Christian/LGBT (or other) ZSBS. There is reason to believe that we have identified a uniquely US phenomenon. For example, religious Americans have more negative attitudes towards scientists than other parts of the world (McPhetres et al 2020), so they may be particularly poised to endorse Christian/science ZSBs. Similarly, Jones (2020) argues that a particular brand of Evangelical Christianity was established in the US to justify the institution of slavery. Segregation and particular biblical teachings may make White US Christians particularly prone to Christian/race ZSBs. Other scholars have examined a unique brand of Christian Nationalism in the US that specifies a particular order of society across a variety of domains including race and gender (e.g. see Whitehead & Perry, 2020), which may provide a particularly fertile ground for ZSB development across identity domains.

There are also reasons to believe that Christian/sexual orientation ZSBs might be prevalent in other countries. As noted in Study 5, the Traditional Plan to exclude sexual minorities from aspects of the Methodist church received considerable support from the global Methodist community (Green, 2019). In addition to spreading religious faith, missionaries may spread beliefs about the incompatibility between Christianity and particular groups. For example, evangelical missionaries from the US spread sexual prejudice and have inspired legislation criminalizing same sex behavior in other countries (Williams, 2013). Because our data demonstrate that ZSBs predict these prejudicial attitudes, it is likely that worldwide bias towards LGBT individuals also reflect global Christian/LGBT endorsement. Ultimately, questions related to the cultural specificity of these effects are empirical. Regardless of nationality, our research suggests ZSBs are most likely present in contexts where the Christian population experiences threat -- whether as a function of changing demographics, decreasing political power (Jones 2016), or perceived threats to values.

While the current research clearly informs research on ZSBs and sexual prejudice, it may also inform research on intergroup attitudes more broadly. In particular, our examination of intergroup attitudes across identity dimensions has parallels to research on intra-minority intergroup relations. The latter demonstrates that perceiving bias against one's group can lead to social identity threat, which motivates bias against other groups (e.g., Craig & Richeson, 2012; 2014; Craig et al., 2012). For example, White women reminded of sexism display more racial bias (Craig et al., 2012), and racial minorities reminded of racial discrimination display more sexual prejudice (Craig & Richeson, 2014). In addition to social identity threat, it is also possible that perceiving bias against the ingroup activates zero-sum beliefs (see Wilkins et al., 2015), which in turn increases bias across dimensions – as we see in the present research. Thus,

understanding ZSBs may also help us understand intergroup attitudes across identity dimensions (although, for reasons described above, this process is more likely to occur in dominant than subordinate groups).

Drawing connections between ZSBs and intra-minority intergroup relations also provides promising avenues for future interventions. Highlighting shared disadvantage can improve intergroup attitudes across dimensions. For example, drawing parallels between same-sex marriage and interracial marriage reduces sexual prejudice among racial minorities primed with racial bias (Cortland et al., 2017). It may similarly be possible to draw attention to the ways in which anti-Christian bias has parallels with sexual prejudice to reduce bias against LGBT individuals.

Finally, future work can examine the extent to which Christian/LGBT ZSBs are related to autochthony: collective psychological ownership – a group's feelings of possessiveness towards cultural objects (e.g. a territory) (Verkuyten & Martinovic, 2017). Christians in the US may perceive *founders'* claims of ownership and believe that they established the guiding laws and social institutions in the U.S. and thus have a greater sense of entitlement to maintaining their groups' control and excluding perceived intruders. Collective psychological ownership is linked to backlash against social change and efforts to defend the status quo in several cultural contexts (Selvanathan et al., 2020) as well as prejudicial attitudes toward perceived outsiders (Verkuyten & Martinovic, 2017). Thus, ownership beliefs may function similarly to ZSBs and may help explain why they arise.

Conclusion

Using multiple measures of sexual prejudice and zero-sum beliefs, qualitative and quantitative measures, convenience and community samples, we find that cishet Christians

(particularly conservative ones) are inclined to perceive a zero-sum relationship between Christians and LGBT individuals. ZSBs predict greater sexual prejudice. It is thus critical to understand both the causes and consequences of religion/sexual orientation ZSBs – particularly because Christians comprise the largest religious group in the U.S. and the world (Hackett & McClendon, 2017; Pew Research Center, 2014).

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Notes

1   Gay and lesbian Christians reported perceiving more bias against LGBT individuals than Christians through 2010 - at which point the difference between groups became marginal according to our criteria, $p = .003$ (year 2020 group difference: $p = .006$). But, we interpret these results with caution given the small sample size.
2   This is likely a conservative test given the overlap between religious and political conservativism among Christians in US – particularly among White majority religions (O'Brien & Abdelhadi, 2010).
3   We posted and paid 340 individuals $.75 each through TurkPrime, however, 14 individuals completed the survey but failed to enter their confirmation code and thus we had data from more individuals than we originally recruited.

4   All but 12 individuals identified as heterosexual. Results were identical when the 12 individuals were excluded from analyses. Reported results include the 12 participants because we did not include sexual orientation as an exclusion in the preregistration.

5   No participants wrote about LGBT individuals in the religious value condition.

6   Participants were recruited in two different samples (see OSF preregistration https://osf.io/8utxz/?view_only=e37ebe32d22745da8139d4d03697f63c and https://osf.io/bk7sm/?view_only=47cd9eb81faa4d34a296b4269bebacdc), but were combined in order to include a sample of at least 100 Fundamentalist Christians per condition (as specified in the original preregistration https://osf.io/bk7sm/?view_only=47cd9eb81faa4d34a296b4269bebacdc).

7   We chose this verse over other options because it is the only Biblical text that refers to Lesbian behavior. We wanted the text to include as many sexual orientations as possible.

8   Across all analyses, political orientation, passage agreement and familiarity were all consistently significant covariates ($ps < .01$).

9   Some biblical scholars (e.g., Hays, 1996) argue that the passage (Romans 1: 21-27) communicates that homosexuality is a reflection of sin that is an outward expression of an inward rebellion against god, rather than sin itself.

10   We did not have a particular sample size in mind during recruitment; we simply collected as much data as we were able to between receiving IRB approval and the final vote, and then within a four week period after the vote.

11   Using data from the U.S. Census on state populations (U.S. Census, 2017) and state-level data on religious affiliation from the Pew Research Center (2014), we determined the proportion of evangelical Christians relative to the total population in each state. We found data on evangelical representation in each state and reasoned that it would serve as a close proxy for fundamentalism as most evangelicals, like fundamentalists, define themselves as Bible believers, attest that the Bible is the infallible word of God, and view it as the final authority on all things related to life and faith. Therefore, the theological and moral stances of fundamentalists and evangelicals are aligned (Marsden, 1991). The major difference between the two groups is that evangelicals, unlike fundamentalists, are willing to engage in ecumenical and/or interfaith activities and publicly participate in the political arena.