

**Multi-Dimensionality and the Complex Relationships between Religious Belief and Sexual  
Prejudice**

BY

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## RELIGIOUS BELIEF AND SEXUAL PREJUDICE

For Elrita Lathrop, a woman strong in both belief and acceptance

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### Summary

Sexual prejudice has profound and negative consequences for sexual minorities, and previous research has linked it extensively with religious belief. Such research has been limited, however, in several important ways, including failure to fully account for the broad range of beliefs, attitudes, and behaviors that make up both of these constructs. Accordingly, the purpose of the current study was to conduct a secondary data analysis that first examined the specific multidimensionality of religious belief and sexual prejudice and then investigated the unique patterns of association between those emergent dimensions while controlling for other demographic and personality-trait predictors of prejudice. A series of confirmatory factor analyses and structural regression models were used to accomplish those objectives. Results provided strong evidence regarding the discrete dimensionality of both religious belief and sexual prejudice, as well as suggesting unique patterns of association between them. Right wing authoritarianism, religious fundamentalism, and centrality of religious identity surfaced as key predictors across the separate dimensions of sexual prejudice. Additional dimensions of religious belief and participants' demographics were comparatively weak and inconsistent predictors of sexual prejudice. Implications of these findings for intervening to reduce sexual prejudice and prevent its objectionable consequences on sexual minority individuals are discussed.

### Multi-Dimensionality and the Complex Relationships between Religious Belief and Sexual Prejudice

Offenses motivated by sexual orientation bias comprised 20.8% of all hate crimes reported to the Federal Bureau of Investigation (FBI) in 2011 (FBI, 2012). Although crimes based on race occur more frequently, sexual minorities (i.e., gay men, lesbians, and bisexual individuals) are disproportionately more likely to be victimized when considering the low prevalence of bi- and same-sex sexuality in the population (Southern Poverty Law Center, 2010). Moreover, crimes perpetrated against sexual minorities (or those perceived to be) are significantly more violent than other types of bias-motivated offenses (Dunbar, 2006) and are committed more often against persons rather than property (FBI, 2012).

Hate crimes against sexual minorities provide an extreme and violent example of sexual prejudice. The term *sexual prejudice* refers to any negative attitude that is directed at a specific group or its members based on their sexual behavior or identity, regardless of whether that target is homosexual, bisexual, or heterosexual (Herek, 2000). Given how sexuality has been organized in the United States, however, sexual prejudice is almost exclusively directed at sexual minorities (Herek, 2000). Indeed, 98.8% of sexual prejudice-related hate crimes reported in the U.S. in 2011 were perpetrated against sexual minorities (FBI, 2012).

Such overt forms of sexual prejudice have profound, negative consequences. For instance, a recent study using a nationally representative sample found that approximately one in five adult sexual minorities in the United States had been victimized by a violent crime that was motivated by sexual orientation bias and was perpetrated against either their person or their property (Herek, 2009a). In addition, half of that sample's respondents reported experiencing verbal harassment motivated by sexual orientation bias at least once in their adult lives (Herek,



2009a). Most troubling, however, is the finding that sexual minorities who report experiencing these overt forms of mistreatment suffer significantly greater adverse mental health consequences than those who have not experienced such easily recognized forms of prejudice (Herek, Gillis, & Cogan, 1999).

Still, sexual prejudice does not always manifest in so direct or violent a manner. In fact, it occurs much more frequently as a subtle form of harassment or discrimination, or even as the persistent possibility of having any number of negative experiences because of one's sexual orientation (Herek, 2009b). As an example of these more insidious forms of sexual prejudice, 84.9% of respondents in a recent, national survey of sexual minority youth reported hearing the word "gay" used negatively either often or frequently within their schools, and fully 91.4% felt distressed as a result of those experiences (Kosciw, Greytak, Bartkiewicz, Boesen, & Palmer, 2012). In an extensive review of the research literature on the psychological effects of these more subtle yet pervasive forms of sexual prejudice, Meyer (2003) concluded that, in comparison to their heterosexual counterparts, sexual minorities experience a host of more negative outcomes (including depression and suicide) as a result of the excess stress they experience due to their minority status in unwelcoming or hostile contexts.

Sexual prejudice has long been a topic of interest in psychology, as well as within the social sciences more generally, due to the prevalence and severity of its negative consequences for sexual minorities. Much of the research on sexual prejudice has explored its social and psychological correlates: religious belief, personality traits, gender, lower SES, and lower educational attainment (for a review see Horn, 2012). Of these, religious belief emerges as one of the most consistent predictors of sexual prejudice (Spilka, Hood, Hunsberger, & Gorsuch, 2003). Research has generally shown that measures of religious belief correlate positively with anti-gay

attitudes such that higher levels of religious belief are associated with significantly higher levels of sexual prejudice. Specifically, higher frequency of attendance at religious services predicts greater sexual prejudice (Batson, Schoenrade, & Ventis, 1993; Morrison & Morrison, 2002; Schulte & Battle, 2004). Self-reported religiosity also correlates positively with sexual prejudice (Allport, 1954; Morrison & Morrison, 2002). In addition, individuals with more orthodox or fundamentalist beliefs are generally more sexually prejudiced than those who maintain less orthodox beliefs (Altemeyer, 2003; Herek, 1987, 1994, 2009b).

Explaining the association between religious belief and sexual prejudice in this manner is limiting in several key ways. First, although religious belief is often assumed to be a precursor to sexual prejudice, causality cannot definitively be determined in light of the statistical methods and non-experimental designs typically used. Second, this link presupposes a view of religions as being necessarily conservative institutions; however, many religious faiths and denominations are openly accepting of sexual minority individuals (e.g., Unitarian Universalist, Evangelical Lutheran Church in America, United Church of Christ, Quaker, Reform Judaism, some traditions within Hinduism). Moreover, views on same-sex sexuality are heterogeneous within faith traditions. Third, the veracity of this association has also been undermined by some fundamental limitations in how these two constructs have been studied. Specifically, most researchers have not conceptualized and/or measured both constructs as multi-dimensional. For example, early research on religious belief assessed only a single aspect of that phenomenon: frequency of attending religious services, self-reported religiosity, specific faith tradition, or orthodoxy. Because belief and prejudice are multi-faceted, however, treating each of them as uniform constructs obscures the potentially complex relationships that exist between their constituent elements. Accordingly, social scientists now increasingly recognize that uni- and bi-dimensional

models of religious belief and sexual prejudice are inadequate, and they have begun to change how they measure these phenomena (Whitley, 2009), as will be further discussed below.

A final significant limitation of the previous studies on this topic is that they do not allow room for appropriate and effective intervention and prevention efforts aimed at reducing sexual prejudice and its objectionable consequences. For instance, if we accept the overly simplistic finding that religious belief correlates positively with sexual prejudice and then take it as our aim to reduce the latter, the principal option for intervention would be to work to reduce the prevalence or magnitude of religious belief. In the United States, however, we live in a pluralistic society that respects individuals' and groups' rights to their own religious beliefs. Therefore, an intervention designed around the goal of preventing or reducing sexual prejudice by reducing religious belief is not only inappropriate, it is offensive. For all of these reasons, we need a more nuanced understanding of the ways in which various components or dimensions of religious belief and sexual prejudice are associated in order to effectively intervene to reduce sexual prejudice and prevent its negative effects on sexual minorities.

Accordingly, this paper reports the results of a research study wherein I explored the complex associations between discrete dimensions of religious belief and sexual prejudice while considering both as multi-dimensional constructs. To justify such an approach, I first review the relevant research literature on this association in the pages that follow. In doing so I will highlight the ways in which these constructs have been measured in order to illustrate the general patterns of association that have emerged from previous research. Second, I make a case for why I believe it is important to examine these issues within an emerging adult (typically, those who are 18-26 years old; Arnett, 2000) population. Lastly, I conclude the literature review section by enumerating the research hypotheses that guided the conduct of this study.

## **Literature Review**

### **History and Limitations of Uni-dimensional Measurement**

In 1954, Gordon Allport published *The Nature of Prejudice*, a landmark book focusing, in part, on the relationships between religious belief and several forms of prejudice. In it, Allport conceptualized religious belief in two discrete ways: one's specific faith or denomination and, separately, the influence of religion on one's life. Using this distinction, Allport (1954) concluded that among those who reported religion to be an important influence in their upbringing, "we find the degree of prejudice far higher than among those who report that religion was a slight or nonexistent factor in their training" (p. 451). Similarly, most of the early scholars who investigated religious belief and prejudice found that they were positively associated by employing uni-dimensional measures of both constructs (Putney & Middleton, 1961). Most commonly, they found significant differences in prejudice by specific faith tradition or denomination (e.g., Adorno, Frenkel-Brunswik, Levinson, & Sanford, 1950; Allport & Kramer, 1946; Rokeach, 1960; Rosenblith, 1949). However, self-reported interest in religion was also linked to prejudicial attitudes (Lenski, 1953), as was possessing favorable attitudes toward religious belief (Kirkpatrick, 1949).

Using such a uni-dimensional approach to measuring these constructs is limited, however. By measuring religious belief and prejudice in that manner, those authors were unable to capture the many unique ways that individuals experience their beliefs and attitudes. For example, it is entirely possible for someone to hold strong religious beliefs and for their faith to comprise a central part of their personal identity, but also for them to not attend religious services regularly. If one conceptualizes belief only as frequency of attendance at services or uses that as a proxy for religion, this hypothetical individual would wrongly be assessed as

someone of little faith. Clearly, this would not be an accurate characterization. In the same way with sexual prejudice, if one asks only about someone's comfort in interacting with lesbian and gay people, nothing would be known about their attitudes regarding the acceptability of same-sex sexuality or even their opinions about the legal treatment of sexual minorities (e.g., in issues of marriage, housing or employment discrimination, adoption). As a result, it is essential to conceptualize and measure both religious belief and sexual prejudice as multi-dimensional constructs.

### **Multi-dimensional Views of Religious Belief**

"The evidence that people think, feel, and act differently when it comes to religion is all around us" (Glock, 1962, p. 98). In view of that diversity, Glock (1962) attempted to lay the groundwork for differentiating the various aspects of religious belief by theorizing five discrete dimensions of it. The experiential component, the first of these five, constitutes the lived experience of religious emotion. The ideological component relates to the specific set of beliefs that religious individuals have. The ritualistic aspect represents the specific behaviors in which believers engage (e.g., communal worship, prayer). An intellectual component describes an expectation that believers have knowledge about the specific tenets or dogma of their faith tradition. The last of these dimensions, the consequential, is concerned with the secular significance of subscribing to a particular religion. Accordingly, Glock (1962) advocated that these five components should be measured as separate dimensions in order to fully appreciate the ways in which they constitute belief and are interrelated.

Putney and Middleton (1961) built upon early descriptive and theoretical work in this area by actually measuring religious belief as a multi-dimensional construct. Those authors surveyed approximately 1,200 undergraduate students from various regions of the U.S. using a

four dimensional scale of religious belief they had developed. The four dimensions they assessed were: orthodoxy, fanaticism, importance, and ambivalence. Next, they classified their participants' beliefs into one of three separate categories: those of skeptics, modernists, or conservatives. They then demonstrated that the three groups exhibited significantly different mean levels of those four distinct dimensions of belief (Putney & Middleton, 1961). Accordingly, these authors were among the first to provide empirical evidence demonstrating that religious belief was, in fact, a multi-dimensional construct.

Allport, in collaboration with another scholar, would also recognize the multiple dimensions of religious belief by later reframing that construct in his work on racial prejudice (Allport & Ross, 1967). Instead of only assessing it either as the frequency of attendance at religious services or the specific faith tradition one followed, Allport and Ross (1967) theorized and measured two distinct dimensions of belief simultaneously: intrinsic and extrinsic religious orientation. Intrinsic orientation refers to the degree to which an individual truly believes in their faith's teachings for the goals that it purports to help them obtain (Allport & Ross, 1967). In contrast, an extrinsic orientation is the degree to which an individual uses their faith to achieve goals that are unrelated to the belief system or its professed aims (Allport & Ross, 1967). Although previous research had treated these orientations as two endpoints of a single, continuous scale, these authors found evidence that intrinsic and extrinsic orientations functioned as separate dimensions. Consequently, they constructed a four category typology of people who were variously high or low on intrinsic and extrinsic orientation. Their results demonstrated that individuals who were indiscriminately pro-religious (i.e., high on both orientations) were significantly more prejudiced than those who were predominantly extrinsically oriented and even more prejudiced than those who were intrinsically oriented (Allport & Ross, 1967). Interestingly,

these authors were unable to identify even 1 participant out of 309 ostensibly religious individuals who exhibited low levels of both intrinsic and extrinsic religious orientation.

More recently, Herek (1987, 1988; Herek & Capitanio, 1996) has been the first researcher to consistently apply a multi-dimensional view of religious belief to the study of sexual prejudice. He measured the various belief dimensions independently, including: intrinsic orientation, extrinsic orientation, and fundamentalist views (Herek, 1987). With each of these three dimensions in a linear regression model predicting the attitudes of 126 college students toward gay men, Herek (1987) found fundamentalism ( $\beta = .29, t = 3.02, p < .01$ ) to be a significant predictor of prejudice, while intrinsic religious orientation ( $\beta = .00, t = 0.00, ns$ ) and extrinsic orientation ( $\beta = -.02, t = -0.16, ns$ ) were not significant predictors. Similarly, with all three of these dimensions in a linear regression model predicting the same participants' attitudes toward lesbians, fundamentalism ( $\beta = .34, t = 3.57, p < .001$ ) was again found to be a significant predictor, while intrinsic religious orientation ( $\beta = .04, t = 0.39, ns$ ) and extrinsic orientation ( $\beta = .08, t = 0.74, ns$ ) did not achieve significance (Herek, 1987). Moreover, Herek (1987) demonstrated through this study that although there were differences between intrinsically and extrinsically orientated people in terms of their racial prejudice, both groups demonstrated similarly high levels of prejudice against gays and lesbians. As a result, he provided evidence that individuals not only vary across multiple dimensions of religious belief, but that each of those unique dimensions also varies in the degree to which it is related to sexual prejudice. Furthermore, he also established empirically that sexual prejudice was a type of negative attitude that was conceptually and functionally distinct from other forms of prejudice.

Fundamentalism, which is the literal interpretation of a single religious doctrine as the inerrant and absolute truth, has been the strongest and most consistent single predictor of sexual

prejudice in these kinds of multi-dimensional belief models (Herek, 1987, 2009b; McFarland, 1989). Moreover, a variety of other dimensions (e.g., extrinsic religious orientation) are generally not found to be unique predictors of sexual prejudice when fundamentalism has also included in the model. More significant still is the fact that analyses of this sort consistently reveal different patterns of association between the various dimensions of religious belief in predicting sexual prejudice. In fact, in a recent meta-analysis of the research literature on this topic, Whitley (2009) tested the relationships between seven distinct dimensions of religious belief and sexual prejudice; he found five of them to be significant predictors of increased sexual prejudice. It is worth noting that fundamentalism, again, emerged as the strongest predictor of sexual prejudice with a mean Hedges' *d* effect size of -.995 ( $r = -.45, p < .001$ ) across 17 different primary studies (Whitley, 2009). In addition, frequency of attendance at religious services, Christian orthodoxy, self-rated religiosity, and intrinsic religious orientation were each associated with significantly higher levels of sexual prejudice (Whitley, 2009).

Results from Whitley's (2009) meta-analysis face two significant limitations. First, his study was only able to explore the univariate associations between a single dimension of belief and a generic fusion of sexual prejudice measures at a time. Whitley (2009) notes that the various dimensions of religion are highly inter-correlated, however, which prevents drawing inferences about their unique association with prejudice. Although a handful of studies on this topic have employed multivariate analyses (e.g., Leak & Finken, 2011; Rowatt et al., 2006; Wilkinson, 2004), even those have considered very few dimensions of religion simultaneously as predictors of prejudice. These limitations in method and measurement seriously undermine our ability to draw more definitive conclusions regarding the unique relationships that various dimensions of belief have with sexual prejudice (Whitley, 2009). A second significant limitation



facing the meta-analysis is almost all of the studies on which it was based treated sexual prejudice as a uniform, one-dimensional construct. Researchers now recognize the inherent complexity of that construct, however, and have begun to consider the multiple dimensions that constitute it.

### **Multi-dimensional Views of Sexual Prejudice**

With regard to sexual prejudice, Van de Ven (1994) was among the first researchers to effectively demonstrate the multi-dimensionality of that particular construct. Until then, researchers understood sexual prejudice as either ratings about the moral acceptability of homosexuality or, separately, attitudes about homosexual people. However, Van de Ven (1994) drew from various critiques of such uni-dimensional measures in order to propose a three component model of sexual prejudice: cognitions, behaviors, and affect, the last of which was further subdivided into homophobic guilt, homophobic anger, and delight (Van de Ven, 1994). In sampling groups of college students, high school students, and juvenile offenders, Van de Ven (1994) demonstrated significant group differences on four of these five (sub)dimensions (with delight as the non-significant outlier) as a function of both participant gender and cohort category. Accordingly, Van de Ven (1994) provided early empirical support for the multi-dimensionality of sexual prejudice.

LaMar and Kite (1998) further nuanced the construct by conducting an exploratory factor analysis on nearly 100 items related to sexual prejudice among a sample of 265 undergraduate students. Their results evidenced five unique dimensions that together explained 56.8% of the variance in attitudes: condemnation/tolerance, morality, contact with gay men, contact with lesbians, and stereotypes about homosexuals (LaMar & Kite, 1998). Despite those authors' expectation that there would be a separate emergent factor comprised of individuals' attitudes

toward the civil rights of gays and lesbians, those specific items actually loaded onto the factor they had termed condemnation/tolerance. LaMar and Kite (1998) subsequently used these separate factors or dimensions to demonstrate significantly different levels of sexual prejudice as a function of not only participant gender, but also as a function of the gender of the sexual minority individual or group in question (i.e., gay men or a lesbian women targets).

Most recently, Horn and Nucci (2003) built upon these foundations by taking a multi-dimensional approach to examining sexual prejudice among adolescents. They included multiple dimensions: beliefs about the acceptability of homosexuality, judgments about how lesbian and gay peers should be treated, as well as comfort in interacting with gay and lesbian peers in a variety of contexts. In a study of 264 tenth and twelfth grade high school students, Horn and Nucci (2003) demonstrated that these three dimensions are related but distinct constructs. For instance, although there were no significant gender or grade differences in students' evaluations of the acceptability of homosexuality, students of different genders and grades varied significantly in their judgments regarding the treatment of lesbian and gay students as well as their reported comfort with having lesbian and gay peers present in various school contexts (Horn & Nucci, 2003). These differences help underscore the distinct multi-dimensionality of sexual prejudice by evidencing unique associations between gender and grade on the one hand, and the three dimensions of sexual prejudice on the other. Because these patterns of association vary significantly across dimension, it suggests that these dimensions represent discrete aspects of sexual prejudice.

Interestingly, these authors also noticed that while their sample was fairly evenly divided on the question of whether homosexuality was an acceptable form of human sexuality (54% rating it as somewhat right or all right), the vast majority of respondents were comfortable with

lesbian and gay peers in schools and also affirmed their fair treatment (Horn & Nucci, 2003). In the series of studies that followed, Horn (2004, 2006, 2008) has introduced religious belief and social reasoning into this conceptual model, and these constructs are also shown to be differentially associated with the various dimensions of sexual prejudice. Collectively, these studies reaffirm the multi-dimensionality of sexual prejudice by demonstrating that individuals can and do hold seemingly contradictory (e.g., “homosexuality is ‘morally’ wrong” and “sexual minorities should be treated equally under the law”) beliefs and attitudes that, taken together, make up sexual prejudice. What remains unclear, however, is how these elements of sexual prejudice relate to discrete aspects of religious belief when both are simultaneously considered as multi-dimensional constructs. This is the aim of the current study.

### **Beliefs and Attitudes of Emerging Adults**

From the standpoint of prevention and intervention, examining the unique associations between religion and sexual prejudice among an emerging adult population is important for several key reasons. First, emerging adults aged 19-29 have consistently been shown to be the primary perpetrators of violence against sexual minority individuals and communities (National Coalition of Anti-Violence Programs, 2012). Second, little is currently known about sexual prejudice from a developmental perspective even though the period of emerging adulthood bookends an important phase of transition from childhood to adulthood within our society (Horn, 2006, 2012). Third, social cognitive domain theory, a developmental theory of social and moral reasoning, suggests that emerging adults should be increasingly evaluating social issues using justifications like individual prerogative, choice, or individual autonomy (Nucci, 1996). Accordingly, individuals in this developmental period may be becoming more likely to judge issues related to same-sex sexuality as a matter of personal preference rather than as a

prototypically “moral” concern. If that was in fact the case, then we might expect to observe declining levels of sexual prejudice from adolescence across the emerging adulthood period and into adulthood. Fourth, several authors have noted that it is common for emerging adults to be rethinking their relationship with organized religion and even questioning, reforming, or reinforcing their own personal religious beliefs during this period (Argue, Johnson, & White, 1999; Funk & Willits, 1987; Koenig, McGue, & Iacono, 2008). Finally, in the United States we are witnessing sweeping changes in the legal regulation of the lives of LGBT people as ballot measures and constitutional amendments about their rights and status are being brought to a popular vote in statewide referendums across the country (Harding, 2011). In light of their transition into adulthood and achieving the rights accorded to that status within our democratic society, emerging adults are newly able to have their voices heard at the polls and accounted for within these political processes. Furthermore, their opinions will continue to impact on these issues for a long time because we can reasonably expect that their generation will survive the longest of all current adult generations. For all these reasons, as well as from the standpoint of violence prevention, it is important that we consider emerging adults’ beliefs and attitudes toward same-sex sexuality – their sexual prejudice.

### **Current Study**

To date, only a handful of studies (cf. Leak & Finken, 2011; Rowatt et al., 2006) have paired a bi-dimensional assessment of either religious belief or sexual prejudice with a multi-dimensional assessment of the other construct. Only one study (i.e., Wilkinson, 2004) has considered both religious belief and sexual prejudice as truly multi-dimensional constructs. Findings from that study are limited, however, by the correlational analyses used to explore the associations between them. In fact, no published studies have examined the relationships

between multiple dimensions of both religious belief and sexual prejudice by using confirmatory factor analysis (CFA) through structural equation modeling (SEM). Using a CFA approach, however, would generate strong empirical evidence regarding the anticipated multi-dimensionality of these constructs (Kline, 2011; Ullman, 2001). In addition, few studies have examined these associations while controlling for other significant demographic predictors or correlates of sexual prejudice. These correlates include age (Herek, 2009b, 2009c; Hicks & Lee, 2006), gender (Herek, 1988; Horn, 2006; Olson, Cadge, & Harrison, 2006), race/ethnicity (Herek, 2000; Nierman, Thompson, Bryan, & Mahafley, 2007), and personality-type trait correlates such as right wing authoritarianism and social dominance orientation (Altemeyer, 2004; Poteat & Spanierman, 2010; Whitley, 1999). Therefore, the purpose of the current study was twofold: to first examine the multi-dimensionality of religious belief and sexual prejudice with CFA and then to investigate the unique patterns of association that connect these multiple dimensions while controlling for other demographic and personality-trait predictors using SEM. To do so, I completed a secondary analysis of a dataset wherein both religious belief and sexual prejudice were conceptualized and measured as multi-dimensional constructs.

**Research question 1.** What are the unique dimensions of religious belief and sexual prejudice that emerge when taking a multi-dimensional approach to the measurement of each of those constructs? This question is directed at providing empirical support to highlight the multiple distinct dimensions of religious belief and sexual prejudice that have already been demonstrated separately in the research literature on those topics.

**Specific hypotheses.** The first hypothesis related to this question (H1) is that CFA will support a four factor model of religious belief. Although additional dimensions are theorized, they cannot be included in this CFA due to measurement limitations. Therefore, I expect that

items measuring strength of religious belief, intrinsic religious orientation, extrinsic religious orientation, and religious fundamentalism will load significantly onto four, separate latent factors in a manner consistent with the research literature reviewed above (e.g., Herek, 1987, 2009b). Furthermore, I predict that this four factor model will fit the data significantly better than a one, two, or three factor model of religious belief. The second hypothesis (H2) is that another CFA will support a three factor model of sexual prejudice that includes the following distinct dimensions: comfort in interacting with sexual minorities, judgments about their rights, and judgments about the treatment of sexual minorities. Here again, theory and previous research suggest additional dimensions that cannot be included due to the manner in which they were measured. Nonetheless I expect that this three factor model of sexual prejudice will fit the data significantly better than a one or two factor model of it. This second hypothesis is based primarily upon Horn's (2004, 2006, 2008) recent work of conceptualizing and measuring the multiple dimensions of sexual prejudice, as described above.

**Research question 2.** What are the unique patterns of association that exist between the various dimensions of religious belief and each unique dimension of sexual prejudice? As was the case with the first research question, the goal of this second research question is aimed at adding to our understanding of the relationships between the different dimensions of religious belief and sexual prejudice using the work of Wilkinson (2004) as a model for assessing both of these as truly multi-dimensional constructs.

***Specific hypotheses.*** The first hypothesis related to this second research question (H3) is that religious fundamentalism is a significant unique predictor of each of the emergent dimensions of sexual prejudice when all of the other dimensions of religious belief are simultaneously included in the model. This hypothesis is based on the results of Whitley's

(2009) meta-analysis in which he found religious fundamentalism to be the most consistent and robust predictor of sexual prejudice. A second related hypothesis (H4) is that intrinsic religious orientation is a significant unique predictor of each dimension of sexual prejudice when all other dimensions of religious belief are considered simultaneously. If confirmed, this result would contradict the findings of Herek (1987) and McFarland (1989); however, it would be consistent with those of Allport & Ross (1967) as well as Whitley's (2009) meta-analysis, adding further clarification regarding the relationship between intrinsic orientation and sexual prejudice. Lastly, the third specific hypothesis related to this second research question (H5) is that the dimension of extrinsic religious orientation will not uniquely predict any dimension of sexual prejudice with all other dimensions of religious belief included in the model. Such a finding would contradict some of the existing evidence in the research literature (e.g., Allport & Ross, 1967), but would also be consistent with the results of Whitley's (2009) meta-analysis, as well as Herek's (1987) study. Here again, results from the current study might offer further empirical evidence describing the particular relationship between extrinsic religious orientation and multiple dimensions of sexual prejudice.

### Method

In an effort to shed additional light on these complex relationships, Horn and colleagues designed a series of research studies to assess the multi-dimensional components of both religious belief and sexual prejudice among an emerging adult population. The current study involves the secondary analysis of a dataset that was collected through an online survey and was generated as one part of this more substantial line of research underway by Horn and her colleagues. Further description of this sample, the procedures used to obtain it, and the measures that were used to generate the dataset follows.

### Participants

Two hundred and ninety-seven undergraduate students ( $M$  age = 19.06,  $SD$  = 2.04) from a large, urban, publicly-funded, Midwestern university were recruited to complete an online survey about religion and sexuality during the Fall Semester of 2011. Of these, 59.1% identified as female, one person self-identified their gender as Other, and the remaining 40.4% were male. The sample demonstrated considerable racial/ethnic diversity, with 33.9% identifying as White, 30.9% identifying as Asian, 17.0% as Latino, 9.6% as Black, and 8.7% who self-identified as Other. With regard to sexual orientation, the vast majority of participants (91.3%) reported that they identified as heterosexual or straight, 4.0% identified as Other, 2.9% as bisexual, 1.1% identified as lesbian, and the remaining two participants (0.7%) identified as gay.

In addition, this sample exhibited a moderate degree of diversity in terms of participants' religious affiliation. Almost a third of the sample (31.9%) identified their faith as Catholic, whereas another quarter (25.6%) identified with one of several other forms of Christianity (e.g., Mainstream Protestant, Evangelical Christian, Non-denominational Christian). In addition, 12.6% identified as Muslim, 10.0% identified with an Eastern faith tradition (e.g., Hinduism,



Buddhism), 0.7% as Jewish, and 15.9% identified as either atheist or agnostic. The remaining 3.3% of participants provided responses that were not easily categorized into a specific faith tradition (e.g., “the light in me honors the light in you”), so together they represent an Other category. Frequency of religious attendance varied from never to daily, with the average rate of attendance falling between a few times per year and monthly.

## Measures

In order to assess the various dimensions of religious belief and sexual prejudice, several distinct measures representing each of these two constructs were included in the online survey. In addition, two measures of personality-trait psychological constructs were included. These measures of right wing authoritarianism and social dominance orientation were included because they assess personality-trait characteristics that have consistently been shown to be highly correlated with anti-gay attitudes (Altemeyer, 2004; Poteat & Spanierman, 2010; Whitley, 1999). The sections that follow describe each of these measures in greater detail. Furthermore, all of the multi-item measures of sexual prejudice, which have not been published elsewhere, are included as Appendices to this paper.

**Dimensions of religious belief.** To start with, the multi-dimensional construct of religion was represented by seven distinct measures of various aspects of religious belief. First, the Revised Religious Fundamentalism Scale (RRFS; Altemeyer & Hunsberger, 2004) was included to assess participants’ religious fundamentalism. In this 12-item measure, participants responded to each of the statements using a 9-point Likert-type scale spanning from -4 (*very strongly disagree* with the statement) to +4 (*very strongly agree* with the statement). Participants’ responses can be summed across those 12 items to derive a total score representing their overall level of religious fundamentalism. An example statement is: “No single book of religious

teachings contains all the intrinsic, fundamental truths about life.” As is evidenced in this specific example, exactly half of the items are worded in the opposite direction. The RRFS has previously demonstrated good inter-item correlation ( $r = .48$ ), internal consistency ( $\alpha = .92$ ), as well as discriminant and convergent validity (Altemeyer & Hunsberger, 2004). For example, compared to its predecessor, the RRFS was found to correlate more strongly with constructs like belief in the traditional God and belief in creation science, while at the same time being more weakly associated with (i.e., discriminating from) racial/ethnic prejudice (Altemeyer & Hunsberger, 2004). The internal consistency of the 12 RRFS items was similarly high for the current sample,  $\alpha = .93$ .

Next, the two subscales of the Religious Orientations Scale (ROS; Intrinsic/Extrinsic Revised; Gorsuch & McPherson, 1989) were included to assess separately the intrinsic and extrinsic orientations or motivations that are believed to underlie participants’ religious beliefs. On this measure, participants are asked to rate their level of agreement with 14 different statements, 8 of which assess intrinsic motivations and 6 of which assess extrinsic motivations. Ratings of level of agreement are provided on a 5-point, Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Three of these 14 items are reverse coded. Responses to the intrinsic and extrinsic subscales are summed separately to arrive at total levels of intrinsic motivation and extrinsic motivation. An example item used to assess intrinsic motivation would be: “It is important to me to spend time in private thought and prayer.” An example item representing extrinsic motivation is: “I go to church because it helps me to make friends.” Finally, the ROS has demonstrated good internal consistency on the intrinsic subscale ( $\alpha = .83$ ) and somewhat lower internal consistency on the extrinsic subscale ( $\alpha = .65$ ); however, this lower value is still acceptable, especially considering the comparatively fewer number of items used to

assess the latter form of religious orientation (Gorsuch & McPherson, 1989). Similar levels of internal consistency were demonstrated among the intrinsic items in the current sample ( $\alpha = .79$ ); reliability for the extrinsic items, however, was noticeably higher in this sample ( $\alpha = .84$ ) as compared to the measure validation sample ( $\alpha = .65$ ).

Fourth, to assess participants' strength of religious belief, Horn and colleagues included the Santa Clara Strength of Religious Faith Questionnaire (SCSRF; Plante & Boccaccini, 1997). The SCSRF is a widely-used measure that is comprised of 10 items listed in statement format with which participants rate their level of agreement. All of the statements are worded in the same, positive direction and ratings are provided on a 4-point, Likert-type scale running from 1 (*strongly disagree*) to 4 (*strongly agree*). Items include statements such as: "My religious faith is extremely important to me." Summing across the 10 items produces an overall measure of strength of religious faith. According to Plante and Boccaccini (1997), the SCSRF Questionnaire has demonstrated high internal consistency ( $\alpha = .95$ ), split-half reliability ( $r = .92$ ), and good overall convergent and discriminant validity. Moreover, internal consistency reliability for these 10 items was similarly high among the current sample,  $\alpha = .97$ .

In order to assess centrality of religious identity, the fifth dimension of religious belief, participants were provided an open textbox in which they could respond to the following question:

All of us have many roles or identities that make up who we are. For example:  
daughter, friend, student, Catholic. In the space below please list all the roles or  
identities that are important to how you think about yourself right now. Once you  
have listed them, please indicate how important each item is to your sense of self.  
If something is less important, you would give it a smaller number. If it is really

important you would give it a higher number. Your numbers should add up to 100 (e.g., if you list five things, and they are of equal importance, each one would be given a score of 20).

Centrality of religious identity was then calculated on a scale of 0 (not a central identity) to 100 (participants' sole identity) as a function of the numeric value that they ascribed to a religious identity. This could have been either the name of a specific faith tradition (e.g., Christian) or any number of adjectives or phrases that would indicate religious belief (e.g., person of faith).

Participants who did not include a religious identity or category within their response set were assigned a value of 0. Similarly, participants who did not assign values to their various identities were assigned a number that was the exact proportion of religious identities listed (typically just one) compared to the overall number of identities with which they responded. For example, if a participant had responded "sister, daughter, friend, and Buddhist" but neglected to assign a value to each of these identities, she would be assigned a value of 25 out of 100 on this measure.

The last two dimensions of religious belief were assessed using single-item measures that were also created by Horn and colleagues for the purpose of their study. An item asking participants about the frequency with which they attend religious services, the sixth dimension, was rated on a 5-point, ordinal scale ranging from never to daily. The seventh and final dimension of religious belief was assessed by an item asking participants to identify their particular religious tradition. More specifically, participants were provided with an open textbox with which they could respond to the following question: "What religion do you consider yourself? (please be as specific as you can)." Participants' responses were initially coded into 1 of 15 discrete, nominal categories of faith or non-belief. Because the number of participants identifying with many of these categories was very small, however, several initial categories

were later collapsed into superordinate categories in order to achieve sufficient subsamples sizes to conduct group comparisons. For instance, although a large number of participants identified their faith simply as “Christian,” some provided the specific name of their Christian denomination (e.g., Presbyterian). These smaller groups were subsequently combined with that larger group to form a single Christian group comprised of non-denominational and Protestant Christians. Through this process, the majority of participant responses to this question were easily collapsed into one of five superordinate categories: Catholic, Protestant Christian, Muslim, Eastern faith (e.g., Hinduism, Buddhism), and Non-believer (i.e., Atheist, Agnostic). A final set of 6 initial faith codes represented the remaining 11 participants who were not covered by the collapsed, superordinate categories above, with 1 or 2 participants being in each. Example groups include Jewish, Bahai, and pan-religious. As a result of their small size and lack of clear fit with the other five categories, these groups were subsequently combined into a single Other category. Thus, specific faith tradition in this study was represented by six discrete, nominal categories: Catholic, Protestant Christian, Muslim, Eastern faith, Other, and Non-believers.

**Personality-trait correlates of sexual prejudice.** The Right Wing Authoritarianism Scale (RWAS; Dunwoody, Hsiung, & Funke, 2009) and the Social Dominance Orientation Scale (SDOS; Sidanius & Pratto, 1999) were included as measures of two personality-trait characteristics that are correlated with sexual prejudice. The RWAS is a 3-factor (Authoritarian Submission, Conventionalism, and Authoritarian Aggression) scale, each of which is comprised of 6 statements for a total of 18 items. Participants rated their level of agreement with each statement using a 7-point Likert-type scale that ranges from 1 (*strongly disagree*) to 7 (*strongly agree*). Exactly half of the items (three from each factor) are worded in the contrary direction and are reverse coded. An example item from the Authoritarian Submission group is: “Our

leaders know what is best for us.” A Conventionalism example is: “It would be better for society if more people followed social norms.” An example item from the Authoritarian Aggression group would be: “Strong punishments are necessary in order to send a message.” Scores on the RWAS items can either be summed across the 6 items within the 3 different factors, or participant responses can be summed across all 18 items to derive an overall RWA rating. Dunwoody and colleagues (2009) note that the RWAS was developed using ratings of face validity by a team of researchers familiar with the construct, and it subsequently demonstrated good predictive validity as well as discriminant and convergent validity. In fact, those authors found the RWAS to be a better predictor of political tolerance and political trust, in addition to demonstrating a lower correlation (i.e., potential conflation) with religiosity compared to another validated three-factor model of authoritarianism: Funke’s (2005) RWA<sup>3</sup>D-scale (Dunwoody et al., 2009). In the current sample, internal consistency across all 18 items was good,  $\alpha = .78$ . Reliability was observed to be similarly high among the three distinct subscales of the RWAS, despite only including a third of the items: Authoritarian Submission,  $\alpha = .74$ ; Conventionalism,  $\alpha = .71$ ; and Authoritarian Aggression,  $\alpha = .76$ . As a result, subsequent analyses will include the total from each subscale separately rather than a single, global measure of RWA.

To assess participants’ social dominance orientation, another correlate of sexual prejudice, Horn and colleagues included the SDOS (Sidanius & Pratto, 1999). This measure is comprised of 16 different statements to which participants rate their level of agreement using a 7-point Likert-type scale running from 1 (*strongly disagree*) to 7 (*strongly agree*). The first 8 of these 16 statements are worded in a positive direction, while the last 8 of them are worded in a contrary direction. An example item, worded contrarily, would be: “All groups should be given an equal chance in life.” Participants’ responses are summed across all 16 items to derive a total

score representing their overall level of social dominance orientation. The SDOS has demonstrated good test-retest reliability ( $r = .86$ ), internal consistency ( $\alpha = .89$ ), as well as discriminant and convergent validity (Sidanius & Pratto, 1999). Finally, internal consistency among these 16 items was similarly high among the current sample,  $\alpha = .92$ .

**Dimensions of sexual prejudice.** For the purpose of their study, Horn and colleagues developed all of the measures that were used to capture the four distinct dimensions of sexual prejudice. They include a variety of items that assess participants': attitudes regarding the acceptability of homosexuality (i.e., the Acceptability dimension), degrees of comfort in interacting with lesbian and gay people (i.e., the Comfort dimension), attitudes about the legal rights and status of lesbian and gay people (i.e., the Rights dimension), and judgments about the fairness of several forms of context-specific mistreatment and discrimination (i.e., the Treatment dimension) those individuals commonly face within the United States. As each of these items was developed for the purpose of their study, the psychometric properties of the four measures are not currently available. However, Horn and colleagues have used similar measures of acceptability, comfort, and treatment in previous research (see Heinze & Horn, 2009; Horn, 2006; Horn, Szalacha, & Drill, 2008).

Acceptability, the first of these four dimensions, was assessed using a single item that was worded as follows: "On a scale from 1 to 5 do you think that homosexuality is wrong or right?" Participants responded to this question using a 5-point Likert-type scale that ranges from 1 (*completely wrong*) to 5 (*completely right*).

Second, the comfort dimension of sexual prejudice was assessed using a three item measure with each item asking participants to rate their own anticipated level of comfort for experiencing a specific hypothetical scenario that involved a lesbian or gay person (see

Appendix A). An example item would be: “On a scale from 1 to 4, how comfortable would you be having a gay or lesbian student as a study partner?” As this item suggests, participants responded to these three questions using a 4-point Likert-type scale running from 1 (*Really uncomfortable, it would/does bother me a lot*) to 4 (*Absolutely comfortable, it wouldn't/doesn't bother me at all*). In the current sample, internal consistency among these three items was unexpectedly high,  $\alpha = .84$ , especially in light of the Spearman-Brown Prediction Formula (Brown, 1910; Spearman, 1910).

Next, the rights dimension was assessed through five different questions about the legal rights and status of lesbian and gay people in the United States (see Appendix B). An example from these items is: “Do you think lesbian and gay people should be legally protected from losing their jobs because of their sexual orientation?” Participants were provided with binary response choice options for four of these five questions: 0 (*No*) or 1 (*Yes*). The last of these questions (acceptability of gay marriage) was rated on a 4-point Likert-type scale ranging from 1 (*completely wrong*) to 4 (*completely all right*). Responses could be summed across the five items to derive a total score that ranges from 1 to 8, with higher values corresponding to lower levels of sexual prejudice on the rights dimension. An internal reliability coefficient was not calculated for the current sample on these items as they made use of grossly discrepant response scales.

Finally, participants were asked to respond to a series of five hypothetical scenarios or vignettes meant to access their judgments about the fairness of several forms of context-specific mistreatment and discrimination that sexual minority individuals frequently face within the United States (see Appendix C). Participants’ responses to these five items comprise the treatment dimension of sexual prejudice. A specific example of these scenarios follows:



Jason is a student at [University name] and lives in the residence halls. Jason is gay and most of the other students in the dorm know about his sexual orientation.

One night Jason comes back from the library to find that someone tore down the poster and SAFE zone sticker he had on his dorm door and wrote on the white board, “Faggot go home.”

For each of these scenarios, participants are asked to rate the degree to which they feel as though that particular form of (mis)treatment of the sexual minority person was right or wrong using a scale that ranges from 1 (*completely wrong*) to 4 (*completely right*). Responses to these five scenarios could then be summed across the five items to derive a total score that ranges from 5 to 20, with higher values corresponding to higher levels of sexual prejudice on the treatment dimension. Internal consistency among these five items was low,  $\alpha = .57$ ; however, this is not surprising given the relatively small number of items that make up this measure.

## **Procedures**

Each of the 297 research participants was recruited through the University’s Department of Psychology Research Subject Pool. Accordingly, all participants were enrolled in the Introduction to Psychology course during the Fall Semester of 2011 and received credit in that course for participating in Horn’s research study. In addition, participants were recruited through an online study management system in which they had been assigned a unique four digit personal identification number (PIN) to help protect their privacy. Before signing up for the study, all participants were informed that it consisted of an online survey, were offered a brief description of the study, and were told that they could complete the online survey at a time and place of their choosing. Those who signed up to participate were provided with an Internet URL

for the secure online survey, which was designed and collected using SurveyMonkey, a web-based survey management service.

At that website, participants were first presented with an IRB-approved Agreement to Participate form and were subsequently asked: 1) whether they had read and understood the Agreement, and 2) whether they agreed to be a participant in the research study. Those who indicated “Yes” to both of these questions were then presented with the study measures in the following order: hypothetical scenarios regarding the treatment of sexual minorities; the acceptability of homosexuality; attitudes about sexual minorities’ rights; degree of comfort interacting with lesbians and gays; centrality of religious identity; the SCSRF Questionnaire (Plante & Boccaccini, 1997); the two subscales (i.e., Intrinsic/Extrinsic) of the ROS (Gorsuch & McPherson, 1989); the RRFS (Altemeyer & Hunsberger, 2004); the RWAS (Dunwoody et al., 2009); the SDOS (Sidanius & Pratto, 1999); and the demographic questionnaire, including items assessing religious affiliation and frequency of religious attendance. On average, participants required 31 minutes to complete the online survey. Consistent with IRB regulations, all who agreed to participate in their research study were given credit for consenting to participation, regardless of whether or to what extent they had completed the online survey.

Lastly, brief mention of the various computer software programs I used to complete the current study is warranted here. All data management and data cleaning, including the missing data analysis, were conducted using SPSS Statistics for Windows, version 20.0 (IBM Corporation, 2011). Similarly, SPSS was used to calculate descriptive statistics and indices of measure reliability. Finally, all analyses related to the research questions and specific hypotheses were then conducted using Mplus, version 6.12 (Muthén & Muthén, 2011).

## Results

### Data Cleaning and Recoding

**Missing data analysis and imputation.** Missing data analyses were conducted using the missing value analysis function within SPSS. This statistical test is based on Little and Rubin's (1987) criteria for determining whether the data within a particular set of variables are missing completely at random (MCAR). More specifically, this method produces a Chi-square statistic that can be used to test the null hypothesis that the data are MCAR. Results of this analysis demonstrated that the data from the full, unedited file containing all of the observed variables from the survey were indeed MCAR,  $\chi^2(5,556) = 5,651.67, p = .18$ . Therefore, it is safe to assume that data are not missing in any systematic or non-random way, which permits imputation of the missing values.

With regard to those missing values, the Mplus statistical software package employs Full Information Maximum Likelihood (FIML) estimation by default with continuous data and an imputation method called "pairwise present" when one of several weighted least squares estimators is used for ordinal data (Muthén & Muthén, 2011). The FIML procedure accounts for missing data by simultaneously constructing parameter estimates and calculating standard errors for each variable as it identifies the variance and covariance matrix through an iterative process using all available data at each step (Graham, 2009; Muthén & Muthén, 2011). By contrast, the pairwise present imputation method relies on full information only when generating the initial parameter estimates; however, it then uses an exhaustive series of variable pairs in order to derive threshold estimates for the ordinal variables before constructing the final covariance and variance matrix through a similar iterative process (Asparouhov & Muthén, 2010). It is worth noting that these methods of estimating missing data are preferable to other available methods,

such as mean substitution or regression imputation, because they produce more realistic parameter estimates by relying on all of the observed values and distributions when constructing the variance and covariance matrix from the variables in the dataset (Tabachnick & Fidell, 2007).

**Violations of normality.** In order to assess for violations to the assumption of normality in the item response distributions, I examined visually the skewness and kurtosis of each of the non-nominal variables in the dataset. Visual examination suggested that many of these response distributions were skewed and kurtotic; therefore, I used the Shapiro-Wilk test of normality function in SPSS to evaluate statistically whether each variable distribution was significantly different from normal. Notably, each of the non-nominal variables in the dataset, including all of the variables associated with religious belief and sexual prejudice, were revealed to be non-normally distributed, with all  $p$ -values  $< .001$ . As a result, two Mplus estimators that are robust to violations of normality were selected for subsequent analyses. These are the maximum likelihood estimator with robust standard errors (MLR) and the mean and variance-adjusted weighted least squares (WLSMV) estimator. Use of these robust estimators in Mplus is recommended over various data transformations that attempt to recreate a normally distributed variable (Muthén, 2013; Muthén & Muthén, 2011).

**Data transformations.** All variables from previously validated measures were reverse scored according to the scale developers' instructions. In addition, several of the sexual prejudice variables were recoded to achieve a consistent directionality among all of those items. Accordingly, higher scale values for all of the religious belief and sexual prejudice items represent uniformly higher levels of their respective, underlying construct. These transformations facilitate easier interpretation of subsequent results. An additional transformation was conducted to reduce the extreme variance observed in the centrality of religious identity variable, which had

been measured on a scale of 0 – 100 and exhibited a variance of 368.49. Muthén and Muthén (2011) recommend that variables with such extreme variance be transformed such that the rescaled item variance is between 1 and 10. Therefore, I calculated a rescaled version of this variable by dividing each original value by a constant of 10. This rescaled centrality of religious identity variable subsequently exhibited a variance of 3.69 with a range of 0 – 10.

Because the RWAS and SDOS were only included as covariates in the structural regression models that follow, their total subscale and overall scale scores, respectively, were first derived in SPSS and later treated as manifest rather than latent variables in all SEM analyses. This was done to facilitate model convergence by decreasing the number of latent factors in the SEM models. As a result, missing values for the RWAS and SDOS alone were replaced using mean substitution. This process resulted in composite scores for the three subscales of the RWAS and one score for the SDOS. The three RWAS subscales of Authoritarian Submission, Conventionalism, and Authoritarian Aggression were analyzed separately throughout because they have been established as measures of unique psychological constructs (Altemeyer, 2004). More importantly, each authoritarianism subscale has been shown to be differentially correlated with prejudice (Altemeyer, 2004; Dunwoody et al., 2009). Finally, descriptive statistics for each of these four, newly calculated variables revealed large variances, so a similar rescaling transformation was performed with each to bring their variances between 1 and 10. As a result, the variances of the four rescaled RWAS and SDOS variables ranged from 1.31 to 3.11.

### **Descriptive Statistics**

Descriptive statistics for each of the hypothesized dimensions of sexual prejudice, its personality correlates, and religious belief were calculated. For variables measured on a

continuous or ordinal scale, these included the potential and observed range, the mean response, the standard deviation, as well as the degree of skewness and kurtosis. For variables measured on a nominal scale, the number and corresponding percentage of participants indicating each category was calculated. Table 1 provides these descriptive statistics for each item measuring religious belief, except for specific faith or denomination, which is presented as a function of the reduced categorical groupings in Table 2. With regard to sexual prejudice, descriptive statistics for each of those items are listed in Table 3. Finally, Table 4 contains descriptive statistics for the three subscales of the RWAS and the composite score of the SDOS.

### **Testing Multi-Dimensionality**

**H1: Multiple dimensions of religious belief.** To test the first research hypothesis regarding the fit of a four factor model of religious belief, I conducted a series of confirmatory factor analyses in Mplus. The fit statistic for the one, two, three, and four factor models of religious belief were compared to demonstrate significant improvement in model fit with the addition of each factor and the corresponding, theoretically-based changes in item groupings. Because the models with two, three, and four factors are not nested, however, their fit to the data must be compared using an absolute fit index (Kline, 2011; Rafferty, 1995; Schreiber, Nora, Stage, Barlow, & King, 2006), such as the Bayesian Information Criterion (BIC). When comparing nested and non-nested models on the BIC, models with smaller values are considered to fit the data better (Rafferty, 1995). Furthermore, for samples of at least 30 cases, evidence for fit improvement is considered “very strong” for BIC differences  $\geq 10$ , with a maximum associated *p*-value of .001 for such differences (Rafferty, 1995).

Although the majority of the religious belief constructs were measured with more than five individual items, item parcels (i.e., aggregated item groupings) were not used to define latent

factors. Use of item parcels is discouraged when investigating the underlying factor structure or dimensionality of a particular construct (Little, Cunningham, Shahar, & Widaman, 2002).

Therefore, all variables from each established religion scale with at least two items were loaded onto latent factors representing the construct that particular scale was designed to assess. For instance, in the four factor model, all of the items from the SCSRF scale were loaded onto a single latent factor representing participants' strength of religious belief. The four dimensions of religious belief that were measured with at least two items are strength of religious belief, intrinsic religious orientation, extrinsic religious orientation, and religious fundamentalism. Items related to the three additional dimensions of religious belief (i.e., centrality of identity, frequency of attendance, and specific faith tradition) were not included in these models because each of them was assessed by Horn and colleagues using only a single item. In order to specify a separate latent factor or dimension in factor analysis, however, at least two items or variables are required. Therefore, these three additional items were treated as discrete dimensions of religious belief and included in subsequent analyses as independent, manifest predictor variables based on theoretical grounds. Finally, all items from the intrinsic ROS subscale, extrinsic ROS subscale, and RRFS were treated as continuous variables as they were measured with either five or seven scale points, whereas all items from the SCSRF were treated as categorical ordinal because they were measured on a four-point Likert scale (Dolan, 1994; Rhemtulla, Brosseau-Liard, & Savalei, 2012).

To construct the one factor model of religious belief, all of the items related to the four dimensions identified above were loaded onto a single latent factor in Mplus using the MLR estimator. Here, the MLR estimator was used to derive the BIC fit index, which allows for statistical comparison of non-nested measurement models (Rafferty, 1995). The resultant BIC

value for this model was 29,588.10, which serves as a baseline measure of model fit. Comparing this value to the BIC fit value of the two factor model will demonstrate whether a two factor model accounts for the data significantly better than a uni-dimensional model, or general factor. It is also worth noting that 34 of the 36 religious belief items loaded significantly onto this general factor of religious belief, all with  $p$ -values  $< .001$ . These significant factor loadings provide clear evidence that this group of items do represent a similar underlying construct of religious belief, even though that construct may in fact be multi-dimensional. Two items from the ROS (i.e., item 10 – “Although I am religious, I don't let it affect my daily life” and item 14 – “Although I believe in my religion, many other things are more important in life”) did not load significantly onto the general factor; this issue is addressed in subsequent analyses.

Next, a two factor model of religious belief was specified based on work differentiating between intrinsic and extrinsic religious belief (Allport & Ross, 1967). In this model, all of the items from the intrinsic subscale of the ROS were grouped with the RRFS items as well as the majority of the SCSRF items. Two items from the SCSRF (i.e., item 8 – “I enjoy being around others who share my faith” and item 9 – “I look to my faith as a source of comfort”) were grouped with all of the items from the extrinsic orientation subscale of the ROS as these two statements were more closely related to an instrumental view of religious belief and were therefore more consistent with extrinsic religious orientation. This two factor model produced a BIC value of 29,537.55, with  $\Delta\text{BIC} = 50.55$ . Because the  $\Delta\text{BIC}$  value exceeded 10, the two factor model can be said to fit the data better than the one factor model (Rafferty, 1995).

A three factor model was constructed based on three of the four dimensions of Putney and Middleton's (1961) model of religious belief. More specifically, all of the items from the RRFS were loaded onto a single factor representing orthodoxy, all of the items from the SCSRF



were loaded onto a factor representing the importance dimension, and lastly, all of the extrinsic and intrinsic items from the ROS represented the dimension Putney and Middleton (1961) termed fanaticism. Their fourth dimension of religious belief (i.e., ambivalence) was not assessed by any of the current variables. The absolute fit index for this three factor model of religious belief demonstrated substantial improvement over the two factor model,  $BIC = 28,971.69$ ;  $\Delta BIC = 565.86$ . Therefore, this three factor model fit the data statistically significantly better than the two factor model of religious belief.

Finally, the four factor model of religious belief was specified in Mplus with all of the items from the SCSRF, the intrinsic ROS subscale, the extrinsic ROS subscale, and the RRFS loaded onto separate latent factors. The absolute fit index for this four factor model suggested improvement in the fit of the model to the data over the three factor model,  $BIC = 28,830.52$ ;  $\Delta BIC = 141.17$ . Accordingly, this four factor model of religious belief fit the data statistically significantly better than each of the other, more parsimonious models, and the first hypothesis regarding the multi-dimensionality of religious belief was confirmed.

**H2: Multiple dimensions of sexual prejudice.** The strategy for testing the second research hypothesis was similar to the strategy for testing the first. In particular, I used a CFA procedure with the MLR estimator in Mplus in which each sexual prejudice item was loaded onto a latent factor representing the corresponding dimension those particular items were designed to assess. As before, one dimension of sexual prejudice (i.e., acceptability of same-sex sexuality) was only measured with a single item and was therefore not included in these CFA models. However, this item was treated as a discrete dimension of sexual prejudice in subsequent analyses based on theoretical grounds and empirical findings from previous research literature (Horn, 2004, 2006, 2008; Horn & Nucci, 2003; LaMar & Kite, 1998). Finally, all 13 of the

available sexual prejudice items were treated as categorical dichotomous or ordinal variables as they were all measured on response scales with fewer than five points (Dolan, 1994; Rhemtulla, Brosseau-Liard, & Savalei, 2012).

In order to construct the one factor model of sexual prejudice, all of the variables from each sexual prejudice measure that included at least two items were loaded onto a single latent factor representing sexual prejudice. The resultant BIC value was 5,545.58, which serves as a baseline fit index. Comparing the absolute fit of this one factor model to the two factor model will demonstrate whether the variance associated with sexual prejudice is better captured by a one or two factor model. Here, it is also worth noting that all of the sexual prejudice items did load significantly onto the single latent factor, with all  $p$ -values  $< .02$ . This result suggests that all 13 of these items measured a similar underlying construct of sexual prejudice.

A two factor model of sexual prejudice is based on three of LaMar and Kite's (1998) five categories of sexual prejudice. The two dimensions from their model that were not included were stereotypes, which were not assessed in the existing dataset, as well as morality, which was only assessed by a single item (i.e., acceptability) and cannot, therefore, comprise a separate latent factor or dimension. Furthermore, although LaMar and Kite (1998) hypothesized that views on the rights of sexual minorities would comprise a separate dimension of sexual prejudice, all of those items within their own study were found to group significantly with their condemnation/tolerance dimension. In addition, LaMar and Kite (1998) found that comfort in interacting with gay men comprised a dimension separate from comfort in interacting with lesbians. In the existing study, however, the gender of the target sexual minority individual was not always specified; therefore, the comfort items will be collapsed into a single dimension. As a result, the two factor model of sexual prejudice under investigation here consisted of all of the

rights and treatment items loaded onto a single factor, while all of the comfort items were loaded onto a separate, additional factor. The absolute fit index for this two factor model showed significant improvement over the one factor model,  $BIC = 5,370.23$ ;  $\Delta BIC = 175.35$ .

Finally, the three factor measurement model of sexual prejudice was specified and tested in Mplus. These three factors represent comfort, rights, and treatment considered as unique dimensions of sexual prejudice. Comparison of the absolute fit indices associated with this model revealed additional improvement in model fit to the data over the two factor model,  $BIC = 5,276.57$ ;  $\Delta BIC = 93.66$ . Accordingly, the three factor model of sexual prejudice fit the data significantly better than a one or two factor model. Moreover, the second research hypothesis regarding the multi-dimensionality of sexual prejudice was confirmed.

### **Measurement Model Modifications**

With the first and second research hypotheses confirmed, the next set of hypotheses regarding which dimensions of religious belief significantly predict the various dimensions of sexual prejudice were examined. These hypotheses were tested by constructing a series of four structural regression models in Mplus with each model varying only in the specific dimension of sexual prejudice serving as the criterion variable. However, before constructing those structural regression equations, the measurement models for religious belief and sexual prejudice were further examined to see whether estimating and accounting for additional parameters would improve the overall fit of these models to the data. It was also important to evaluate these models using alternate fit indices to confirm the results of the BIC model comparisons and ensure that these two different models do indeed fit the data well (Rafferty, 1995). Both of these tasks were accomplished using comparative and approximate fit indices, which facilitate evaluation of a single measurement model as well as comparisons between nested models (Schreiber et al.,

2006). Furthermore, these models were evaluated using the WLSMV estimator in Mplus, which not only produces a variety of comparative and approximate fit indices, but also provides more efficient estimation of models with categorical ordinal variables, as compared to the MLR estimator used earlier (Muthén & Muthén, 2011).

**Model of religious belief.** The four factor model of religious belief demonstrated relatively good fit of the model to the data when first evaluated with the WLSMV estimator,  $\chi^2(588) = 1,345.69$ ,  $p < .001$ ; RMSEA = .07; CFI = .93; WRMR = 0.93. Examination of the residual variances and the modification indices provided by Mplus revealed that items 10 (“Although I am religious, I don't let it affect my daily life”) and 14 (“Although I believe in my religion, many other things are more important in life”) from the intrinsic ROS subscale exhibited a large degree of misfit with the specified measurement model. Interestingly, both of these items were contrarily worded. In addition, neither of these two items loaded significantly onto the intrinsic ROS factor,  $p = .74$  and  $p = .18$ , respectively. Additional evidence for removing these two items from the intrinsic ROS dimension was provided by the internal consistency reliability coefficients for this particular subscale. Internal consistency was acceptable with all eight items included in the scale,  $\alpha = .79$ . Items 10 and 14, however, demonstrated a remarkably low item to scale-total correlation,  $r = .11$  and  $r = .07$ , respectively. Therefore, item 14 was removed from the scale and internal consistency was recalculated. Internal consistency of the remaining seven items improved,  $\alpha = .83$ . Again, item 10 demonstrated a low item to scale total correlation,  $r = .01$ , so it was subsequently removed. The resultant six item scale of intrinsic religious orientation demonstrated remarkably higher internal consistency,  $\alpha = .89$ . Taken together, these results suggest that items 10 and 14 should be removed from the intrinsic ROS factor in the four factor measurement model. This re-specified

four factor model of religious belief exhibited improved fit of the model to the data across three of the four indices examined,  $\chi^2(521) = 1,220.58, p < .001$ ; RMSEA = .07; CFI = .94; WRMR = 0.80. Fit improvement could not be supported statistically using these indices, however, because the two models were not nested.

The residual variances and modification indices for this re-specified model of religious belief suggested that additional model modifications were warranted. They demonstrated that there was a strong unmodeled correlation between two items from the extrinsic ROS factor. Items 11 (“I go to church mostly to spend time with my friends”) and 13 (“I go to church mainly because I enjoy seeing people I know there”) are remarkably similar in terms of their wording and meaning. I therefore modified the measurement model to estimate this additional correlated error variance and account for these similarities. Fit indices again showed improvement,  $\chi^2(520) = 1,157.22, p < .001$ ; RMSEA = .07; CFI = .94; WRMR = 0.77. Comparing these two nested models using the Difftest function in Mplus demonstrated that modeling the correlated error variance between these two items statistically significantly improved model fit to the data,  $\chi^2(1) = 51.74, p < .001$ .

Modification indices for this further revised model again suggested an additional correlated error variance between two items from the extrinsic ROS subscale. As before, items 2 (“I go to church because it helps me to make friends”) and 11 (“I go to church mostly to spend time with my friends”) are quite similar in both their wording and meaning; therefore, the measurement model for religious belief was further revised to estimate this additional correlated error variance. With this revision, fit indices for the model again showed modest improvement,  $\chi^2(519) = 1,110.30, p < .001$ ; RMSEA = .06; CFI = .95; WRMR = 0.74. Comparison of this model with the previous one demonstrated a significant improvement in fit,  $\chi^2(1) = 45.56, p <$

.001. Final examination of the residual variances and modification indices for the model revealed no additional theoretically justified changes in terms of the magnitude of fit improvement; therefore, the four factor model of religious belief was considered fully specified (see Figure 1). Moreover, this final set of factor groupings and correlated residual variances serve as the latent predictor variables of interest in subsequent structural regression analyses examining the unique predictors of sexual prejudice.

**Model of sexual prejudice.** The three factor model of sexual prejudice demonstrated minimally acceptable fit of the model to the data when first estimated in Mplus with WLSMV,  $\chi^2(62) = 241.61, p < .001$ ; RMSEA = .10; CFI = .96; WRMR = 1.46. Residual variances and modification indices for this three factor model pointed to a strong, unmodeled correlation between two items from the treatment factor. Items 2 (anti-gay language) and 3 (anti-gay language in the presence of an out gay man) from that dimension refer to the same target behavior and only vary by the context in which that behavior occurs. Therefore, I re-specified the measurement model of sexual prejudice to estimate the additional correlated error variance between these two items. Fit indices showed marked improvement,  $\chi^2(61) = 135.63, p < .001$ ; RMSEA = .07; CFI = .98; WRMR = 1.01. Comparing this revised model with the initial three factor model of sexual prejudice using the Difftest function demonstrated that the revision significantly improved model fit to the data,  $\chi^2(1) = 47.92, p < .001$ .

Subsequent modification indices pointed to an additional correlated error variance between two items from the rights factor. Items 3 (permissibility of high school GSAs) and 4 (permissibility of middle school GSAs) resemble each other both in wording and meaning. I therefore estimated this additional correlated error variance in a further revised model. With this revision, fit indices showed more improvement,  $\chi^2(60) = 97.94, p < .01$ ; RMSEA = .05; CFI =

.99; WRMR = 0.83. Comparison of this model with the previous one demonstrated that improvement was significant,  $\chi^2(1) = 28.94, p < .001$ . Finally, further examination of the residual variances and modification indices for this final model revealed no additional theoretically justified changes in order of fit-improvement magnitude; therefore, the three factor measurement model of sexual prejudice was also considered fully specified (see Figure 2). Furthermore, this final set of factor groupings and correlated residual variances served as the main criterion variables of interest in subsequent structural regression analyses.

**Combined measurement model.** A final check of the revised models of religious belief and sexual prejudice was conducted by specifying a single, combined measurement model with both constructs. This final measurement model included all of the empirically supported modifications reported above, including the four correlated residual variances. In addition, this model included two second order factors representing religious belief and sexual prejudice. This fully specified, combined model demonstrated excellent fit to the data,  $\chi^2(1,009) = 1,364.26, p < .001$ ; RMSEA = .04; CFI = .98; WRMR = 0.84. These results further support the specific multidimensionality of these two constructs. Table 5 lists the variances and bivariate correlations between this final set of fully-specified dimensions as well as the personality-trait covariates, which had been measured on continuous response scales.

### **Predictors of Sexual Prejudice**

With the two measurement models fully specified, a series of structural regression models were then constructed in Mplus to explore which of the seven dimensions of religious belief significantly predicted the four separate dimensions of sexual prejudice. More specifically, I constructed a series of four structural regression models with each model differing only on the criterion (i.e., the outcome) variable. In constructing each of these, the four demographic control

variables of gender, age, race/ethnicity, and sexual orientation were included as covariates. Age was entered as a continuous variable, whereas gender (male = 0, female = 1) and sexual orientation (heterosexual = 0, non-heterosexual = 1) were treated as dichotomous categorical variables. An array of four dichotomous vectors was entered into the models to represent race/ethnicity, with White serving as the reference group. In addition, the four personality-trait constructs (i.e., sums of the three subscales of the RWAS and the SDOS composite score) were also entered into the model as covariates. A single criterion dimension of sexual prejudice was then regressed onto this entire set of manifest variables, latent factors, and covariates to determine which of those, if any, were its significant predictors. Because the last three research hypotheses concerned whether specific dimensions of religious belief were significant predictors across all four dimensions of sexual prejudice, results of the four structural regression analyses are presented first below before the final three hypotheses are then evaluated.

With regard to the acceptability dimension, the procedure outlined above was followed in order to construct the first structural regression model in Mplus. The resultant fit indices for this model revealed misfit of the model to the data,  $\chi^2(1,161) = 2,583.48, p < .001$ ; RMSEA = .07; CFI = .69; WRMR = 1.88. Although these values indicate considerable misfit of the model, this is not surprising for a number of reasons: the large number of predictors included in the model, the fact that the model treated all predictors as uncorrelated, the lack of item parceling, and the large number of parameters estimated compared to the relatively restricted sample size for such a complex model (Fan, Thompson, & Wang, 1999; Hall, Snell, & Singer Foust, 1999; Kline, 2011; Marsh, Balla, & McDonald, 1988; Marsh, Hau, Balla, & Grayson, 1998). In addition, the RMSEA value obtained above suggests adequate model fit compared to the criterion threshold of  $< .10$  (Browne & Cudeck, 1993). By contrast, the CFI value suggests very poor fit; however,



because the RMSEA index is less affected by sample size than is the CFI (Rigdon, 1996), this model may actually exhibit adequate fit. Finally, in view of the fact that the combined measurement model of religious belief and sexual prejudice fit the data so well, the misfit of this structural regression model likely stems from the path model rather than the measurement model (Kline, 2011; McDonald & Ho, 2002). Furthermore, estimating non-significant parameters adds to model misfit (Byrne, 2011; Ullman, 2001). Therefore, some degree of misfit is to be expected with so many estimated but non-significant pathways of predictors leading to the criterion variable, as is demonstrated below. Accordingly, the results of this structural regression analysis were interpreted, but with caution.

Results revealed that none of the four demographic variables were significant predictors for the acceptability dimension of sexual prejudice (see Table 6). On the contrary, the Conventionalism subscale of the RWAS predicted significantly higher levels of sexual prejudice on this dimension,  $\beta = .23, p = .001$ , whereas the Aggression subscale trended as a significant predictor,  $\beta = .12, p = .084$ . Finally, two of the seven dimensions of religious belief emerged as statistically significant predictors of acceptability. Fundamentalism predicted significantly higher levels of sexual prejudice on this dimension,  $\beta = .33, p < .001$ , as did centrality of religious identity,  $\beta = .34, p < .001$ . Comparison of the standardized beta weights suggests that centrality of religious identity was the most robust predictor of these three.

A structural regression model predicting the comfort dimension of sexual prejudice revealed similar fit of the model to the data,  $\chi^2(1,265) = 2,687.23, p < .001$ ; RMSEA = .07; CFI = .72; WRMR = 1.82. Accordingly, these results were interpreted, but again with caution. They revealed that race/ethnicity was a significant predictor of the comfort dimension (see Table 7) with participants selecting “Other” exhibiting significantly more sexual prejudice on this

dimension as compared to the White reference group,  $\beta = .17, p = .031$ . In addition, the Aggression subscale of the RWAS predicted significantly higher levels of sexual prejudice on this dimension,  $\beta = .18, p = .029$ . Furthermore, only one of the seven dimensions of religious belief emerged as a statistically significant predictor of comfort, and one additional dimension was marginally significant as a predictor. Specific faith or denomination was significantly associated with prejudice on this dimension such that Muslims exhibited significantly higher levels of sexual prejudice than non-believers,  $\beta = .35, p = .005$ , and the Eastern religious traditions exhibited a similar, albeit marginal, pattern of higher sexual prejudice compared to the same reference group,  $\beta = .19, p = .077$ . Fundamentalism also emerged as a marginal but not significant predictor of this dimension,  $\beta = .21, p = .077$ . Comparison of the standardized beta weights demonstrates that specific faith or denomination was the most robust predictor of the comfort dimension.

Next, a structural regression model predicting the rights dimension of sexual prejudice was specified and tested in Mplus. Examination of the fit indices again revealed some misfit of the data with the model,  $\chi^2(1,373) = 2,763.15, p < .001$ ; RMSEA = .06; CFI = .71; WRMR = 1.78, so results were interpreted cautiously. They revealed that one of the four demographic variables was marginally significant as a predictor of the rights dimension (see Table 8). Specifically, older participants were marginally more prejudiced than younger participants,  $\beta = .13, p = .093$ . In addition, the Aggression subscale of the RWAS predicted significantly higher levels of sexual prejudice,  $\beta = .20, p = .007$ , as did the Conventionalism subscale,  $\beta = .16, p = .029$ . Moreover, three of the seven dimensions of religious belief emerged as statistically significant predictors of rights. Religious fundamentalism predicted significantly higher levels of sexual prejudice on this dimension,  $\beta = .23, p = .009$ , as did centrality of religious identity,  $\beta =$

.23,  $p = .002$ . Differences between specific faiths or denominations also emerged with Christians exhibiting more prejudice than non-believers,  $\beta = .33$ ,  $p = .012$ , when controlling for all other effects. Comparison of the standardized beta weights indicated that specific faith was the most robust of the significant predictors.

A final structural regression model predicting the treatment dimension of sexual prejudice was then tested in Mplus. Fit indices again suggested a large degree of misfit of the model to the data,  $\chi^2(1,373) = 2,738.13$ ,  $p < .001$ ; RMSEA = .06; CFI = .71; WRMR = 1.77, so these results were also interpreted with caution. They revealed that only one of the four demographic variables was marginally significant as a predictor of the treatment dimension (see Table 9). Females were marginally less prejudiced than male participants with regard to treatment,  $\beta = -.23$ ,  $p = .051$ . In addition, the Aggression subscale of the RWAS predicted significantly higher levels of sexual prejudice on this dimension,  $\beta = .28$ ,  $p = .028$ , as did the SDOS,  $\beta = .35$ ,  $p = .012$ . Interestingly, none of the seven dimensions of religious belief emerged as statistically significant predictors of treatment. Comparison of the standardized beta weights demonstrated that social dominance orientation was the most robust of the three predictors.

**H3: Religious fundamentalism.** Again, the third hypothesis was that religious fundamentalism would be a significant predictor of all of the emergent dimensions of sexual prejudice. Results of the four structural regression analyses presented above revealed that the latent factor representing religious fundamentalism was a significant predictor of the acceptability and rights dimensions of sexual prejudice, and it was a marginally significant predictor of the comfort dimension. Fundamentalism was not a unique predictor of the treatment dimension, however. Therefore, the third hypothesis was only partially supported.

**H4: Intrinsic religious orientation.** The fourth research hypothesis was that the factor representing intrinsic religious orientation would be a significant predictor of each of the emergent dimensions of sexual prejudice. On the contrary, the modified subscale of the intrinsic ROS was not a significant predictor of any of the four dimensions of sexual prejudice. As a result, the fourth hypothesis was completely rejected.

**H5: Extrinsic religious orientation.** Finally, the fifth research hypothesis was that extrinsic religious orientation would not be a significant predictor of any of the emergent dimensions of sexual prejudice. Examining the results of the structural regression analyses above demonstrates that the latent factor representing all of the items from the Extrinsic ROS subscale was not a significant predictor of acceptability, comfort, rights, or treatment. Accordingly, the fifth research hypothesis was fully supported.

### **Summary**

Results presented above provide strong evidence regarding the discrete dimensionality of religious belief and sexual prejudice. CFA results supported four dimensions of religious belief and three dimensions of sexual prejudice. Theoretical justifications were used to examine separately additional dimensions of each of these two constructs. A series of structural regression models then demonstrated the unique associations between these multiple dimensions of religious belief and sexual prejudice while controlling for a variety of demographic and personality-trait covariates. Across those four models, RWA and religious fundamentalism were the most robust, significant predictors. By comparison participant demographics were relatively weak and inconsistent predictors. Table 10 presents a comparison of all significant and marginal predictor variables across these four dimensions of sexual prejudice.

### **Discussion**

The purpose of this study was to investigate the multi-dimensionality of religious belief and sexual prejudice as well as the unique associations between the emergent dimensions of those two constructs. In particular, I explored which dimensions of religious belief significantly predicted various dimensions of sexual prejudice while controlling for the influence of several demographic and personality-trait effects. Both religious belief and sexual prejudice were demonstrated to be multi-dimensional, as hypothesized. In addition, study results evidenced unique patterns of association between these emergent dimensions. In comparison to the various dimensions of religious belief and the personality-trait variables, participant demographics were found to be relatively weak and inconsistent predictors of sexual prejudice. By contrast, authoritarianism emerged as a robust and consistent predictor of sexual prejudice. The statistical significance of several dimensions of religious belief as unique predictors varied based on the specific dimension of sexual prejudice under examination; however, religious fundamentalism and centrality of religious identity emerged as two key predictors.

### **Religious Belief**

With regard to the multi-dimensionality of religious belief, the hypothesis that a four factor model would fit the data significantly better than the other, more parsimonious models was confirmed. These results offer sound empirical evidence through CFA that religious belief is indeed a multi-dimensional construct. Moreover, these findings are consistent with other research that has established strength of faith, intrinsic religious orientation, extrinsic religious orientation, and religious fundamentalism to be unique dimensions of belief (Gorsuch & McPherson, 1989; Herek, 1987, 1994; Plante & Boccaccini, 1997; Whitley, 1999, 2009). Although the unique dimensionality of three additional components of religious belief could not

be supported empirically due to measurement constraints, the fact that these dimensions were differentially correlated with the various sexual prejudice outcome dimensions suggests that they are also unique aspects of belief. Thus, the current study explored seven distinct dimensions of religious belief, with four of those measured as latent constructs and the remaining three directly observed.

Besides offering support for extant findings, this study also adds to the research literature in several important ways. First, previous research (e.g., Herek, 1987; Leak & Finken, 2011; Putney & Middleton, 1961) had conceptualized belief using far fewer dimensions. Accordingly, the current study represents an improvement in that it advances our understanding of belief by helping to further disentangle its various components and their associations. A better appreciation of these multiple dimensions could have implications for studying which particular aspects of belief are associated with other forms of prejudice, as well as which experiences of belief (e.g., sense of belonging) might serve a self-actualization or even protective function in people's lives. Second, the current study extends beyond previous work by using an advanced statistical technique like SEM to demonstrate multi-dimensionality. SEM analyses (and CFA in particular) can provide strong empirical evidence to support the theoretical multi-dimensionality of a construct (Kline, 2011; Ullman, 2001). This is the first study of which I am aware to examine simultaneously the multi-dimensionality of both religious belief and sexual prejudice through such a method. Third, the current study found that two contrarily worded items from the intrinsic subscale of the ROS (Gorsuch & McPherson, 1989) may not be functioning as its authors intended. These items failed to load significantly on the general factor of belief or the specific intrinsic ROS factor, and they demonstrated surprisingly low item to scale-total correlations. Given that the ROS measure predates most of the participants in this sample, it may

benefit from additional development and revision, especially for use in assessing religious orientation in younger generations.

This study also built on Horn and colleagues' concept of centrality of religious identity as a discrete aspect of belief by demonstrating that it was a unique predictor of two distinct dimensions of sexual prejudice (i.e., acceptability and rights). This concept was measured with a single item in the current study; therefore, I was not able to use CFA to test whether there is sufficient statistical evidence for treating it as a discrete dimension. Review of this item suggests that it may be closely related in content to the strength of faith or religious orientation dimensions; however, those were not uniquely associated with sexual prejudice. Additional research is therefore needed to determine if and how this identity concept differs from other aspects of belief. Because this item was incidentally a significant predictor of sexual prejudice, exploring its dimensionality represents an intriguing direction for future research looking at religious belief. This could be accomplished by adapting existing social identity models (e.g., Tajfel & Turner, 1986) to better assess the extent to which religion constitutes a discrete aspect of one's own identity that may facilitate making out-group categorizations and possibly discrimination. Research examining identity centrality should also be informed by Sellers' multidimensional model of racial identity (viz., Sellers, Smith, Shelton, Rowley, & Chavous, 1998) in which identity centrality and salience are key concepts that may parallel this centrality of religious identity construct. Furthermore, given the finding that centrality of identity was a significant predictor for two dimensions of belief in the current study, it would also be important to examine the ways in which contextual differences or environmental cues might raise or lower this particular identity's salience within individuals.

## **Sexual Prejudice**

The second hypothesis, which stated that sexual prejudice is multi-dimensional, was supported. Results from this study are wholly consistent with previous work done by Horn and colleagues that examined acceptability, comfort, rights, and treatment as separate dimensions of sexual prejudice (Horn, 2004, 2006, 2008; Horn & Nucci, 2003). As before, only three of these four dimensions could be supported empirically using the CFA approach due to the way in which the fourth (i.e., acceptability) was measured. However, the fact that this dimension demonstrated a unique pattern of association with the prejudice covariates and religious belief provides some support that it also constitutes a unique dimension of sexual prejudice. Further, these results clarify the dimensional structure of sexual prejudice, a construct that has been paid considerably less attention in the research literature than has religious belief and one whose structure and features have been widely theorized but are still under considerable empirical investigation.

Examination of the sexual prejudice item means and standard deviations suggests that this particular sample was relatively consistent and low on their levels of sexual prejudice. In fact, the mean score for each of these items was uniformly toward the less prejudiced end of each response scale. As these data had been collected through an online survey at a time and place of the participants' choosing, it is not likely that social desirability contributed significantly to this finding. Instead, this may suggest a few intriguing implications for how we understand sexual prejudice, particularly among emerging adults. First, they could signal that emerging adults are generally less sexually prejudiced than older adult generations. This would be consistent with other work that has found a positive correlation between age and sexual prejudice among adults (Herek, 2009b, 2009c; Hicks & Lee, 2006). Furthermore, it is also consistent with recent polling data that shows emerging adults in the United States possess the most favorable attitudes toward



same-sex sexuality among all adult generations (Pew Research Center, 2011). Attempting to replicate these results would shed light, however, on whether these outcomes do indeed indicate a general trend of less prejudice among emerging adults, or whether they evidence something unique about the local context in which these data were gathered. Second, these findings suggest the need for additional exploratory research to determine whether emerging adults are experiencing and enacting sexual prejudice in ways that these particular measures are not accurately capturing. This may be particularly important for the items that comprise the rights dimension given the rapid political and social changes we have recently witnessed in this country: the repeal of Don't Ask, Don't Tell; the end of the Defense of Marriage Act; and the proliferation of legal recognition for same-sex unions. Such exploratory work could have important theoretical implications for how sexual prejudice is defined and assessed in the future.

Though sexual prejudice was low overall, it is worth noting that the lowest observed averages and least variable levels of it across these items were on the dimensions of rights and treatment. By contrast, participants' responses to the acceptability item were both higher in sexual prejudice and more variable, and their responses to the comfort dimension also evidenced greater variability compared to rights and treatment. Not only do these findings support the multifaceted nature of sexual prejudice, but they also show that individuals can be variably high and low across these dimensions. This demonstrates that one can maintain the belief that homosexuality is "morally" wrong (i.e., acceptability) but simultaneously assert that sexual minorities should receive equal rights and treatment under the law. This finding could have implications for understanding secularism and the separation of Church and State, particularly in the United States. It may also be relevant for understanding political ideology and voting habits. For example, conventional wisdom suggests that the outcome of the 2004 presidential election

was partly determined by Christian voters' attitudes toward sexual minorities. Their dislike of same-sex marriage, in particular, drew many who lived in battleground states to the polls to vote on various constitutional amendments and ballot initiatives on that issue, where they subsequently voted for George Bush (Lewis, 2005). Findings from the current study point to multiple factors in explaining their vote: fundamentalism, denomination, centrality of religious identity, authoritarian aggression, and conventionalism. Accordingly, this group of "Christian voters" was in fact likely motivated by a variety of both religious and non-religious reasons.

Further, the observed discrepancy between the more explicit and behavioral manifestations of sexual prejudice compared to the more covert, internal attitudes and beliefs may mirror the historical shift that has occurred from understanding overt racism to seeing subtle racial prejudice. During the last half-century in the United States, overtly racist attitudes and actions have become far less socially acceptable. In fact, several bias-motivated behaviors have been criminalized, including employment and housing discrimination as well as hate crimes. In order to keep pace with those societal changes, researchers have had to change how they model and measure racism in the United States (Sears & Henry, 2005; Whitley & Kite, 2010). A similar re-visioning of the meaning and measurement of sexual prejudice could also be on the horizon.

Finally, the finding that individuals vary considerably across these sexual prejudice dimensions also highlights a need to further explore the processes by which individuals maintain such discrepant beliefs and attitudes. Understanding how individuals maintain these prejudices is all the more important when considering the many social norms and religious tenets that stress respect for basic human rights and the fair treatment of others. In fact, people in the United States are often exposed to many inherently contradictory religious and moral messages about sexual minority issues and individuals. For instance, the pronouncement to "love thy neighbor as

thyself” (Mark 12:31) stands in stark contrast to the assertion that “God hates fags” (Westboro Baptist Church, 2012). Interestingly, religious people often do hold these seemingly contradictory beliefs and values in concert, even when they recognize them as such (Bassett et al., 2000; Bassett et al., 2005). Accordingly, the observed discrepancies across these sexual prejudice dimensions provoke me to wonder how emerging adults from the current study were able to coordinate these contradictory attitudes and messages. Yet, little is known about social reasoning specifically in relation to sexual prejudice and how it might impact on the judgments individuals make about sexual minority people or even the concept of same-sex sexuality. Therefore, it is critical that we explore the underlying social reasoning processes as they concern these specific relationships between dimensions of belief and sexual prejudice.

Social cognitive domain theory (Turiel, 1983, 1998) represents one key theoretical framework through which this kind of complex social reasoning has been previously explored. Broadly, social cognitive domain theory presents a developmental model describing the ways in which evaluative social judgments draw on reasoning within separate conceptual domains or categories (Turiel, 1998). In addition, these separate conceptual domains relate to the different sources of authority or sets of values to which individuals refer or defer when engaged in reasoning about social issues (Smetana, 1995; Turiel, 2002). Finally, social reasoning in this framework includes judgments not only about whether particular actions or behaviors are right or wrong but also determinations related to people’s ability to assert and enact their own autonomy or agency as an individual. These aspects make social cognitive domain theory particularly well suited for examining reasoning regarding sexual minorities and same-sex sexuality.

A better understanding of the specific role that reasoning plays in this association may guide the development of interventions that could target such reasoning processes. For instance,

it could be that individuals are able to hold seemingly contradictory beliefs and values concurrently because they reason about those issues using different sets of knowledge or schemas. This view would suggest that an individual is capable of reasoning about various complex social phenomena in several different ways, rather than always relying on the same source of authority or set of values when making his or her social judgments. If it was, in fact, the case that social reasoning about sexual prejudice was multi-faceted rather than uniform, then it is conceivable that people could be encouraged to think about sexual minority individuals and issues using a different set of schema. Further, this might facilitate lower levels of sexual prejudice on dimensions such as rights and treatment, while permitting individuals to maintain more “prejudiced” beliefs on dimensions such as acceptability. Such intervention efforts could ultimately serve to disrupt or attenuate the strength of many of the associations between religious belief and sexual prejudice observed here.

### **Predictors of Sexual Prejudice**

This study demonstrated unique patterns of association between the various dimensions of religious belief, participant demographics, personality-trait correlates, and sexual prejudice. It represents a novel approach to exploring the connection between these constructs in that it appears to be the first empirical paper to examine simultaneously multiple predictors of discrete dimensions sexual prejudice using SEM. As such, this paper contributes significantly to our understanding of the relationships between belief and prejudice.

**Hypothesized associations.** Three specific hypotheses regarding which aspects of religious belief would be significant predictors of sexual prejudice were tested. The first hypothesis that religious fundamentalism would significantly predict the emergent dimensions of sexual prejudice was partially supported. This hypothesis had been based primarily on Whitley’s

(2009) meta-analysis in which fundamentalism was found to be the most robust religious predictor of a uni-dimensional, composite measure of sexual prejudice. In the current study, fundamentalism was a significant predictor of acceptability and rights, but it only trended as a predictor of comfort. It was not significantly associated with the treatment dimension. This last finding indicates that participants high on fundamentalism did not differ from those who were low on that dimension in terms of their judgments about how sexual minorities should be treated. These results are consistent with other research that has found that people are comparatively less prejudiced on questions regarding the (mis)treatment of sexual minorities (Herek, 2000; Horn, 2006). Here again an examination of the social reasoning that underlies participants' judgments may help to explain why some aspects of belief are differentially associated with various domains of sexual prejudice.

The second hypothesis was that intrinsic religious orientation would significantly predict all emergent dimensions of sexual prejudice. This hypothesis was wholly unsupported. Intrinsic religious orientation was not a significant predictor of any of the four emergent dimensions of sexual prejudice. These findings contradict Whitley's (2009) meta-analysis, which had found a significant association between these two constructs. It is likely that the meta-analysis found this relationship because it only examined the univariate association between them. Given that the various dimensions of religious belief are highly correlated, however, intrinsic religious orientation may have appeared to be a significant predictor on its own when it was actually functioning as a proxy for some other dimension of religious belief. In the current study I explored the unique association between intrinsic religious orientation and multiple dimensions of sexual prejudice using multivariate analyses and found none. Accordingly, this study provides strong evidence that intrinsic religious orientation is not a unique predictor of sexual prejudice.

The third research hypothesis that extrinsic religious orientation would not be a unique predictor of any dimension of sexual prejudice was confirmed. An extrinsic religious orientation involves a utilitarian view of belief, rather than one that is specifically focused on the doctrine or dogma of a particular faith tradition (Allport & Ross, 1967). Because fundamentalism, which concerns the literal interpretation of religious doctrine as absolute truth, was a relatively reliable and robust predictor of sexual prejudice, it seems consistent that extrinsic religious orientation was not found to be. Although early work on extrinsic religious orientation demonstrated it to be a significant predictor of prejudice, the type of prejudice under investigation was almost always racial (e.g., Allport & Ross, 1967). Results from the current study are consonant, however, with other research that has found no difference in sexual prejudice as a function of extrinsic religious orientation (Herek, 1987; Whitley, 2009).

**Other associations with belief.** A few incidental findings regarding dimensions of religious belief that were significant predictors of sexual prejudice merit discussion here. First, it is notable that strength of religious belief and frequency of attendance were not unique predictors of any aspect of sexual prejudice. In other words, it is not how strongly one believes or how often one attends religious services, but rather other aspects of the religious experience that are associated with sexual prejudice. These findings seem to contradict other research that has found measures of religiosity and frequency of attendance to be positively associated with prejudice (e.g., Morrison & Morrison, 2002; Rowatt, LaBouff, Johnson, Froese, & Tsang, 2009; Schulte & Battle, 2004). In both of these cases, however, these dimensions were the only aspect of religious belief the researchers assessed. Again, the dimensions of belief are highly correlated; therefore, it may have been the case that strength and attendance were separately functioning as a general measure of religious belief, instead of their specific concepts. Accordingly, I would still expect

strength of faith and frequency of attendance to not be significant predictors of sexual prejudice when other aspects of belief and the correlates of prejudice are also being considered.

Second, specific faith or denomination emerged as a significant predictor of two dimensions of sexual prejudice. On the comfort dimension, Muslims were significantly more prejudiced than non-believers, whereas individuals who followed an Eastern religious tradition were marginally more prejudiced than the same reference group. Similarly, Christians were significantly more prejudiced than non-believers on the rights dimension. With regard to comfort, it is possible that these group differences resulted from a lack of exposure to sexual minorities or from having limited opportunities to develop personal relationships with them. Those who have a personal relationship with a sexual minority individual are significantly less sexually prejudiced than people who do not have such relationships (Heinze & Horn, 2009). With regard to rights, the finding that Christians were significantly more prejudiced than non-believers was surprising. It is possible the increased politicization of sexual minorities' rights in the contemporary "culture wars" in the United States has led Christian clergy to focus on gay rights. As a result, Christians may be hearing more messages at religious services that condone or even encourage prejudicial attitudes toward sexual minorities' rights. This could be particularly true for their attitudes regarding legal recognition of same-sex relationships through civil unions and marriage, which constitute key items on the rights dimension. Other items from that dimension relate to employment non-discrimination and students' ability to form gay-straight alliances at their schools, both of which have received considerably less media attention and political focus in recent year. Therefore, this association may have been driven by attitudes toward recognition of same-sex relationships. Additional research is needed, however, to better understand this incidental finding. By contrast, there were no faith or denominational differences

on the acceptability and treatment dimensions. Taken together, findings related to specific faith or denomination suggest that this dimension is a weak predictor of sexual prejudice and that other aspects of belief (e.g., fundamentalism) may better account for differences between faiths that have been observed in other studies.

Lastly, centrality of religious identity was a significant predictor of two dimensions of sexual prejudice. This concept has not previously appeared in the research literature on religious belief. Accordingly, this dimension could be capturing some unique aspect of religious belief that may not yet have been accounted for. Because this dimension was only measured by a single item, however, future research may need to explore this concept further. Specifically, a measure development study would be useful to further define, differentiate, and assess this idea of centrality of religious identity.

**Associations with covariates.** Although no specific hypotheses were made about them, four variables representing right wing authoritarianism and social dominance orientation were included in the structural regression models as covariates. They were included because previous research has shown these personality-trait characteristics are strongly associated with prejudice (Altemeyer, 2004; Poteat & Spanierman, 2010; Whitley, 1999). Across its three subtypes, right wing authoritarianism was the most consistent predictor of sexual prejudice in the current study. In fact, at least one of the three subtypes was significantly associated with each of the four dimensions of prejudice here. Moreover, the aggression subtype was a significant or trending predictor for all four. Although submission was not associated with any dimension, conventionalism significantly predicted both comfort and rights.

This pattern is consistent with the definitions of these three subtypes of authoritarianism: aggression concerns the use of force or punishment against those who violate the social order,



conventionalism is focused on tradition and social norms, and submission concerns attitudes toward authority (Dunwoody et al., 2009). Sexual prejudice may be uniquely associated with authoritarian aggression here because individuals high on that trait could be viewing sexual minorities as a group that threatens established authority. Furthermore, individuals who would sanction the use of force or punishment against such groups would likely exhibit a high degree of prejudice against them. Because conventionalism concerns attitudes toward tradition and social norms, its association with acceptability and rights but not comfort and treatment seems logical, as the former two dimensions are clearly aligned with notions of tradition and social norms, respectively. The fact that submission was not a significant predictor also seems reasonable as that subtype is comprised of attitudes about authority figures and society's relationship to its leaders. Attitudes about authority and leadership are not inherently connected to attitudes toward sexual minorities; therefore, it is understandable that submission was not predictive of sexual prejudice. Finally, few studies have examined the three subtypes of authoritarianism separately (Dunwoody et al., 2009), but the results presented here provide additional justification for doing so. Moreover, the specific associations between these three subtypes and the sexual prejudice dimensions are consistent with previous research that has actually examined the subtypes separately. These studies have shown authoritarian aggression to be the strongest predictor of prejudice among the three (Dunwoody et al., 2009; Poteat & Spanierman, 2010).

In contrast, social dominance orientation was only a significant predictor of the treatment dimension of sexual prejudice. Although the constructs are somewhat related, social dominance orientation differs from right wing authoritarianism in that the former concerns an individual's preference for social hierarchy over social egalitarianism, whereas the latter is focused on attitudes toward authority, leadership, and tradition (Sidanius & Pratto, 1999). Accordingly, the

unique connection between social dominance and treatment appears logical in that individuals high on social dominance would likely favor the unequal treatment of sexual minorities. One might also expect social dominance to be significantly associated with the rights dimension, however, which it was not. Previous research has demonstrated a strong correlation between authoritarian aggression and social dominance orientation (Dunwoody et al., 2009; Passini, 2008; Sidanius & Pratto, 1999). Therefore, it is possible that authoritarian aggression is accounting for the variance that these two may share in prejudice dimensions within the current study. Future research on sexual prejudice should continue to measure both of these personality-trait characteristics to fully account for the distinct differences between them.

Demographic variables were relatively weak and inconsistent predictors of sexual prejudice in the current study. Surprisingly, sexual orientation was never a significant predictor of sexual prejudice. One would reasonably expect non-heterosexuals to be less prejudiced than heterosexuals; however, there were only a small number of the former in the current sample, so such a difference may have been difficult to detect using this dataset. Race/ethnicity was the only clearly significant demographic predictor in this study. Participants selecting the “Other” category were significantly more prejudiced on the comfort dimensions. Closer inspection of the participants who selected this category revealed that they disproportionately identified their religious faith as Muslim. Recall that Muslims were also significantly more prejudiced on the comfort dimension; therefore, the “Other” category of race/ethnicity may have served primarily as a Middle Eastern or Arab group in the current study. Because of the large degree of overlap across these two demographic categories though, we might expect only one of them to have emerged as a significant predictor. That both of them were significant predictors of sexual prejudice is somewhat puzzling and not easily interpretable.

Two demographic variables were marginally significant predictors of sexual prejudice. Age trended as a predictor of rights such that older participants exhibited significantly more prejudice than younger participants. This result is consistent with several studies that have found a positive correlation between age and sexual prejudice (e.g., Herek, 2009b, 2009c; Hicks & Lee, 2006). It was somewhat surprising that age was a marginally significant predictor given the relatively restricted range of that variable within the current sample. The fact that it did, however, may suggest that substantial shifts in attitudes toward sexual minorities can occur even within a fairly short period of time or across a short span of years. Likewise, gender trended as a predictor of treatment. Females were marginally less prejudiced than males on this particular dimension. When they have been found, gender differences on sexual prejudice are always in this same direction, with females exhibiting less prejudice than males (e.g., Herek, 1988; Horn, 2006; Olson, Cadge, & Harrison, 2006).

Finally, it is also worth noting that, across dimensions, religious belief was a stronger predictor of acceptability, comfort, and rights than it was of the treatment dimension of sexual prejudice. In fact, there were no significant religious predictors of treatment. By contrast, two or three different aspects of belief significantly predicted each of the other three dimensions of sexual prejudice. This again shows that individuals' beliefs about the acceptability of same-sex sexuality and their comfort interacting with sexual minorities are discrete from their beliefs about how sexual minorities should be treated. Furthermore, it may be that concerns regarding harm and wellbeing trump religious considerations, especially with regard to the treatment of others. Future research could explore which of these considerations predominate among participants' reasoning or response justifications within each dimension of sexual prejudice. If it was the case that concerns about harm and wellbeing were associated with less prejudice, such differences

would be highly encouraging from an intervention standpoint. This would suggest that a potentially useful strategy for preventing or reducing sexual prejudice could involve discussion of the harm that it causes sexual minorities. Furthermore, by highlighting the actual harm done to sexual minorities who experience persistent inequality with regard to their legal rights and recognition (instead of simply pointing out the lack of fairness those situations create) may prove to be an effective route to reducing prejudice specifically on the rights dimension.

It stands to reason, however, that not all forms of sexual prejudice impact on sexual minorities equally or in the same ways. For instance, an individual's private belief that homosexuality is morally wrong likely has a much less profound impact on the wellbeing of the sexual minorities in his or her community than would that same individual's vote against same-sex marriage or in favor of politicians who are against gay rights. Similarly, someone who supports or condones the mistreatment of sexual minorities would likely inflict far greater harm on them than some other person who is simply uncomfortable around and avoids them. Accordingly, it seems as though the rights and treatment dimensions of sexual prejudice would have a more direct and profound impact on sexual minorities' welfare. Therefore, I believe that working to reduce prejudice on these two dimensions, in particular, should be prioritized over changing the specific beliefs and attitudes that make up the acceptability and comfort dimensions.

### **Limitations**

Several limitations to the current study warrant mention here. First, sexual prejudice as a construct has been studied considerably less in the research literature than religious belief. As a result, there exist far fewer measures of it that have been empirically developed and validated. Horn and colleagues therefore developed several of the measures of sexual prejudice that were

included in the existing dataset. From the standpoint of the statistical analyses used in the current study, it is unfortunate that several of the sexual prejudice items were measured on restricted response scales. For instance, almost all of the rights items were measured dichotomously (i.e., no/yes). Many of the advanced statistical analyses in use today, however, assume that individual items are measured on an ordinal or continuous scale and are approximately normally distributed. Although I attempted to address this limitation by using various estimators within Mplus that are robust to violations of these particular assumptions, ideally they would have been met. Therefore, future work might build on these results by further developing the sexual prejudice items into a single, multi-dimensional measure of sexual prejudice that uses a consistent and less restricted response scale.

Second, some of the sexual prejudice items may have been inconsistently interpreted by participants given their somewhat ambiguous wording. Specifically with regard to the comfort dimension of sexual prejudice, all three related items asked participants to assess their comfort interacting with “a gay or lesbian student” in a variety of school-related contexts. Accordingly, these items are ambiguous with regard to the gender of the target student in question. Previous research has found evidence that attitudes toward gays and lesbians differ significantly (Herek, 1987, 1994). In addition, gender differences have been found on levels of sexual prejudice (Herek, 1988; Horn, 2006; Olson, Cadge, & Harrison, 2006). Due to the wording of the sexual prejudice items, however, the current study was not able to explore how target gender affects sexual prejudice. Therefore, it remains unknown whether attitudes toward gay men would constitute a separate dimension of sexual prejudice using CFA than would attitudes toward lesbians following this same approach. Therefore, additional work should be done using SEM to examine whether the structure of sexual prejudice dimensions differ as a function of target or

victim gender. For example, a multi-group comparison method could be used to examine whether the factor structure for male targets may differ from the factor structure for female targets. Alternatively, in light of the fact that females were marginally less prejudiced on the treatment dimension than were males, this same method could be used to explore whether the dimensional structure of sexual prejudice differs as a function of participant gender.

Third, findings associated with the structural regression analyses should be interpreted with caution in light of the degree of model misfit observed. In fact, all four structural regression models demonstrated poor fit to the data. This was likely due to the large number of estimated but non-significant pathways that were included in these various models. Still, it is possible that the poor model fit in these analyses threatens the accuracy of the parameter estimates presented here (Kline, 2011). Therefore, these particular analyses would need to be replicated with another sample in order to be fully confirmed.

Fourth, the measures of belief included in the current study likely overlook some important aspects of the sweeping diversity of experiences and views that make up religious faith. For instance, because fundamentalism exists in relation to a particular dogma or doctrine, it may be difficult to assess this dimension across a wide range of different faith traditions. Indeed, review of the RRFS (Altemeyer & Hunsberger, 2004) items demonstrates that several of them are aligned with overtly Judeo-Christian beliefs about the afterlife, the nature of evil, and the divine. Collapsing specific faith denominations into a smaller set of broader, superordinate categories provides another example of this limitation. The Christian and Eastern faith categories, in particular, contain within them a wide range of religious traditions and potentially discrepant sets of beliefs. Accordingly, we should avoid extrapolating and overgeneralizing these results back onto all of the individuals within the various denominations and traditions that

comprise those superordinate categories, and instead recognize these findings as general trends. Lastly, the measures of religious belief included here do not appear to capture the more spiritual, transcendental, or egalitarian aspects of faith well. Egalitarian beliefs, however, are foundational principles for several faith traditions (e.g., Bahai, Unitarian Universalist) and may actually be associated with less sexual prejudice. Therefore, future research should examine the role of additional dimensions of belief that may not have been included in this study, especially those dimensions that might show an inverse relationship with sexual prejudice.

Finally, it remains unclear to what extent results of this study may generalize beyond the specific historical moment and setting in which these data had been collected. We should guard against interpreting these findings as indicative of the attitudes of all emerging adults, or worse, all people at all times. Because it is multi-dimensional, sexual prejudice is a construct that is subject to change, both in terms of what constitutes it, but also its prevalence and magnitude. For instance, the rights afforded to sexual minorities in the United States have recently undergone considerable and rapid changes, particularly with regard to the legal recognition of same-sex relationships (Harwood, 2013). With those changes has come increased support for same-sex marriage and acceptance of same-sex sexuality by a clear majority of Americans (Pew Research Center, 2013). Attitudes toward both of these controversial issues constitute part of the rights dimension of sexual prejudice. These shifts help to highlight the contribution of history and context to the definition and measurement of sexual prejudice.

## **Conclusions**

These limitations notwithstanding, this study presents strong evidence regarding the specific multi-dimensionality of religious belief and sexual prejudice. This was the first study to use CFA to establish the multi-dimensionality of both constructs. In addition, this study explored

the unique predictors of each dimension of sexual prejudice while simultaneously examining the effects of religious belief, demographics, and personality-trait correlates of prejudice. Results revealed that right wing authoritarianism was the most consistent predictor overall, whereas religious fundamentalism was the most consistent of the seven dimensions of religious belief included here. Centrality of religious identity was incidentally found to be a significant predictor of sexual prejudice. This particular finding presents an intriguing direction for future research. In contrast, participant demographics were relatively poor and inconsistent predictors of sexual prejudice. These findings also point to future directions in research that may lead to developing interventions aimed at reducing sexual prejudice. Taken together, results of this study demonstrate that the relationship between religious belief and sexual prejudice is far more complex and nuanced than previously considered.



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Table 1

*Religious Belief Items Descriptive Statistics*

Dimension	<i>M</i>	<i>SD</i>	Range		Skew	Kurtosis
			Potential	Actual		
Strength of Faith						
SCSRF Item 1	2.84	1.04	1-4	1-4	-0.49	-0.93
SCSRF Item 2	2.35	1.05	1-4	1-4	0.20	-1.16
SCSRF Item 3	2.83	1.00	1-4	1-4	-0.53	-0.75
SCSRF Item 4	2.81	1.05	1-4	1-4	-0.49	-0.95
SCSRF Item 5	2.41	0.96	1-4	1-4	0.12	-0.93
SCSRF Item 6	2.81	1.03	1-4	1-4	-0.48	-0.89
SCSRF Item 7	2.96	1.05	1-4	1-4	-0.70	-0.71
SCSRF Item 8	2.86	0.90	1-4	1-4	-0.64	-0.22
SCSRF Item 9	2.90	0.96	1-4	1-4	-0.65	-0.47
SCSRF Item 10	2.67	1.00	1-4	1-4	-0.20	-1.01
Intrinsic Orientation						
ROS Item 1	3.26	1.31	1-5	1-5	-0.38	-0.97
ROS Item 3 (R)	3.00	1.38	1-5	1-5	0.10	-1.25
ROS Item 4	3.33	1.32	1-5	1-5	-0.52	-0.94
ROS Item 5	3.22	1.36	1-5	1-5	-0.36	-1.01
ROS Item 7	3.07	1.37	1-5	1-5	-0.18	-1.19
ROS Item 10 (R)	3.20	1.31	1-5	1-5	-0.08	-1.18
ROS Item 12	2.56	1.35	1-5	1-5	0.43	-1.11
ROS Item 14 (R)	2.69	1.41	1-5	1-5	0.44	-1.12
Extrinsic Orientation						
ROS Item 2	2.12	1.14	1-5	1-5	0.74	-0.52

*Religious Belief Items Descriptive Statistics (continued)*

Dimension	<i>M</i>	<i>SD</i>	Range		Skew	Kurtosis
			Potential	Actual		
ROS Item 6	3.25	1.31	1-5	1-5	-0.53	-0.92
ROS Item 8	3.45	1.38	1-5	1-5	-0.67	-0.88
ROS Item 9	3.63	1.29	1-5	1-5	-0.87	-0.26
ROS Item 11	1.70	0.87	1-5	1-5	1.39	1.93
ROS Item 13	2.01	1.07	1-5	1-5	0.95	0.08
Religious Fundamentalism						
RRFS Item 1	5.02	2.58	1-9	1-9	-0.14	-1.20
RRFS Item 2 (R)	4.45	2.73	1-9	1-9	0.38	-1.11
RRFS Item 3	5.02	2.83	1-9	1-9	-0.13	-1.35
RRFS Item 4 (R)	4.60	2.74	1-9	1-9	0.16	-1.24
RRFS Item 5	4.60	2.43	1-9	1-9	0.03	-0.88
RRFS Item 6	4.06	2.61	1-9	1-9	0.34	-1.15
RRFS Item 7 (R)	4.50	2.59	1-9	1-9	0.37	-0.99
RRFS Item 8	4.46	2.73	1-9	1-9	0.28	-1.14
RRFS Item 9 (R)	5.48	2.64	1-9	1-9	-0.26	-1.11
RRFS Item 10 (R)	5.17	2.49	1-9	1-9	-0.05	-0.90
RRFS Item 11	5.22	2.52	1-9	1-9	-0.13	-0.92
RRFS Item 12 (R)	4.39	2.78	1-9	1-9	0.38	-1.10
Centrality of Identity						
Item 1	13.32	19.20	0-100	0-100	2.19	6.02
Frequency of Attendance						
Item 1 (R)	2.73	1.28	1-5	1-5	-0.10	-1.33

*Note.* (R) = Reverse-coded item. Higher values on each scale indicate greater religious belief.

Table 2

*Religious Faith Categories Descriptive Statistics*

Faith Tradition	<i>n</i>	%
Catholic	86	31.9
Protestant Christian	69	25.6
Muslim	34	12.6
Hindu/Buddhist	27	10.0
Other	11	4.0
Atheist/Agnostic	43	15.9

Table 3

*Sexual Prejudice Items Descriptive Statistics*

Dimension	<i>M</i>	<i>SD</i>	Range		Skew	Kurtosis
			Potential	Actual		
Acceptability						
Item 1	2.94	1.18	1-5	1-5	-0.15	-0.43
Comfort						
Item 1	1.36	0.80	1-4	1-4	2.26	4.13
Item 2	1.54	0.92	1-4	1-4	1.57	1.23
Item 3	2.14	1.15	1-4	1-4	0.42	-1.32
Rights						
Item 1	0.17	0.38	0-1	0-1	1.78	1.18
Item 2	0.22	0.41	0-1	0-1	1.38	-0.10
Item 3	0.14	0.35	0-1	0-1	2.03	2.15
Item 4	0.49	0.50	0-1	0-1	0.02	-2.01
Item 5	1.78	1.00	1-4	1-4	1.07	-0.07
Treatment						
Item 1	1.75	0.77	1-4	1-4	1.18	1.68
Item 2	2.13	0.86	1-4	1-4	0.61	-0.09
Item 3	1.73	0.81	1-4	1-4	1.04	0.70
Item 4	1.45	0.76	1-4	1-4	1.74	2.46
Item 5	1.07	0.37	1-4	1-4	6.48	45.42

*Note.* Response scales for all items on the Acceptability, Comfort, and Rights dimensions were reverse-coded such that higher values indicate greater sexual prejudice.



Table 4

*Descriptive Statistics for the Personality-Trait Correlates of Sexual Prejudice*

Measure	<i>M</i>	<i>SD</i>	Range		Skew	Kurtosis
			Potential	Actual		
RWAS						
Aggression	21.32	6.47	6-42	6-37	-0.21	-0.08
Conventionalism	24.57	5.72	6-42	6-40	-0.36	0.90
Submission	18.49	6.08	6-42	6-41	-0.04	-0.06
SDOS						
Scale Total	41.66	17.64	16-112	16-98	0.37	-0.67

*Note.* Items from the RWAS and SDOS were reverse-coded according to the scale developers' instructions.

Table 5

*Variances and Bivariate Correlations between Emergent Dimensions of Religious Belief, Sexual Prejudice, and Personality-Trait Covariates*

Measure	Religious Belief					
	SCSRF	Intrinsic ROS	Extrinsic ROS	RRFS	Freq. of Attendance	Centrality of Identity
SCSRF	0.79	-	-	-	-	-
Intrinsic ROS	.97**	1.17	-	-	-	-
Extrinsic ROS	.78**	.82**	0.80	-	-	-
RRFS	.78**	.84**	.63**	3.93	-	-
Freq. of Attendance	.64**	.68**	.50**	.59**	1.62	-
Centrality of Identity	.69**	.58**	.57**	.60**	.45**	3.69
Acceptability	.45**	.48**	.31**	.56**	.36**	.45**
Comfort	.20**	.21**	.19*	.28**	.05	.09
Rights	.44**	.47**	.35**	.53**	.28**	.30**
Treatment	.22*	.23*	-.05	.44**	.11	.25**
RWA Aggression	-.01	-.02	-.07	.10	-.04	-.09
RWA Conventionalism	.27**	.26**	.27**	.35**	.22**	.09
RWA Submission	.30**	.29**	.22**	.39**	.14*	.19**
SDOS	-.10 <sup>†</sup>	-.08	-.07	.01	-.13*	-.15**

<sup>†</sup>  $p < .10$ . \*  $p < .05$ . \*\*  $p < .01$ .

*Variances and Bivariate Correlations between Emergent Dimensions of Religious Belief, Sexual Prejudice, and Personality-Trait Covariates (continued)*

Measure	Sexual Prejudice				RWA			SDOS
	Accept.	Comfort	Rights	Treat.	Agg.	Convent.	Sub.	
SCSRF	-	-	-	-	-	-	-	-
Intrinsic ROS	-	-	-	-	-	-	-	-
Extrinsic ROS	-	-	-	-	-	-	-	-
RRFS	-	-	-	-	-	-	-	-
Freq. of Attendance	-	-	-	-	-	-	-	-
Centrality of Identity	-	-	-	-	-	-	-	-
Acceptability	1.40	-	-	-	-	-	-	-
Comfort	.44**	0.70	-	-	-	-	-	-
Rights	.89**	.55**	0.13	-	-	-	-	-
Treatment	.72**	.54**	.76**	0.20	-	-	-	-
RWA Aggression	.13*	.27**	.27**	.43**	1.67	-	-	-
RWA Conventionalism	.30**	.15*	.35**	.17 <sup>†</sup>	.20**	1.31	-	-
RWA Submission	.18**	.16*	.28**	.13	.18**	.28**	1.48	-
SDOS	.10	.24**	.24**	.52**	.50**	.13*	.24**	3.11

<sup>†</sup>  $p < .10$ . \*  $p < .05$ . \*\*  $p < .01$ .

Table 6

*Standardized Coefficients and Statistics for Predictors of Acceptability*

Predictor	$\beta$	S.E.	Z	p-value
Demographics				
Age	0.15	0.07	1.48	.139
Gender	-0.10	0.17	-1.56	.118
Race/Ethnicity				
Black vs. White	0.09	0.30	1.36	.173
Asian vs. White	-0.09	0.26	-1.00	.320
Latino vs. White	0.03	0.23	0.39	.696
Other vs. White	0.10	0.31	1.45	.146
Sexual Orientation	-0.07	0.29	-1.12	.264
Personality-Trait Correlates				
Authoritarian Aggression	0.12	0.07	1.73	.084
Conventionalism	0.23	0.08	3.29	< .001
Authoritarian Submission	-0.02	0.07	-0.21	.831
Social Dominance	0.09	0.05	1.28	.201
Religious Belief				
Centrality of Identity	0.34	0.05	4.37	< .001
Extrinsic Orientation	0.05	0.12	0.59	.552
Frequency of Attendance	0.12	0.08	1.64	.100
Fundamentalism	0.33	0.11	4.03	< .001
Intrinsic Orientation	-0.21	0.30	-0.92	.360
Specific Faith Tradition				
Catholic vs. None	0.03	0.32	0.24	.811
Protestant vs. None	0.15	0.33	1.33	.183
Muslim vs. None	0.15	0.37	1.50	.134
Eastern vs. None	0.11	0.41	1.15	.250
Other vs. None	-0.05	0.50	-0.64	.520
Strength of Faith	0.09	0.22	0.55	.586

Table 7

*Standardized Coefficients and Statistics for Predictors of Comfort*

Predictor	$\beta$	S.E.	Z	p-value
Demographics				
Age	0.02	0.06	0.17	.867
Gender	-0.10	0.19	-1.24	.213
Race/Ethnicity				
Black vs. White	0.11	0.33	1.34	.181
Asian vs. White	0.01	0.25	0.14	.890
Latino vs. White	-0.04	0.28	-0.41	.685
Other vs. White	0.17	0.34	2.16	.031
Sexual Orientation	-0.14	0.36	-1.66	.096
Personality-Trait Correlates				
Authoritarian Aggression	0.18	0.07	2.18	.029
Conventionalism	0.03	0.09	0.33	.741
Authoritarian Submission	0.05	0.08	0.58	.562
Social Dominance	0.10	0.06	1.12	.261
Religious Belief				
Centrality of Identity	-0.04	0.06	-0.45	.652
Extrinsic Orientation	0.03	0.12	0.29	.774
Frequency of Attendance	-0.03	0.08	-0.28	.779
Fundamentalism	0.21	0.14	1.77	.077
Intrinsic Orientation	0.11	0.33	0.39	.696
Specific Faith Tradition				
Catholic vs. None	0.18	0.34	1.34	.180
Protestant vs. None	0.15	0.35	1.10	.272
Muslim vs. None	0.35	0.43	2.82	.005
Eastern vs. None	0.19	0.41	1.77	.077
Other vs. None	0.08	0.45	1.01	.311
Strength of Faith	-0.07	0.23	-0.36	.723

Table 8

*Standardized Coefficients and Statistics for Predictors of Rights*

Predictor	$\beta$	S.E.	Z	p-value
Demographics				
Age	0.13	0.05	1.68	.093
Gender	-0.09	0.20	-1.25	.211
Race/Ethnicity				
Black vs. White	0.03	0.31	0.38	.706
Asian vs. White	-0.11	0.26	-1.30	.193
Latino vs. White	-0.08	0.27	-1.06	.289
Other vs. White	-0.02	0.37	-0.23	.819
Sexual Orientation	0.03	0.35	0.36	.717
Personality-Trait Correlates				
Authoritarian Aggression	0.20	0.08	2.70	.007
Conventionalism	0.16	0.09	2.18	.029
Authoritarian Submission	0.12	0.08	1.65	.100
Social Dominance	0.11	0.06	1.52	.130
Religious Belief				
Centrality of Identity	0.23	0.05	3.05	.002
Extrinsic Orientation	0.08	0.14	0.72	.470
Frequency of Attendance	0.08	0.09	1.02	.309
Fundamentalism	0.23	0.12	2.62	.009
Intrinsic Orientation	0.14	0.36	0.55	.585
Specific Faith Tradition				
Catholic vs. None	0.18	0.40	1.30	.195
Protestant vs. None	0.33	0.40	2.52	.012
Muslim vs. None	0.19	0.49	1.54	.124
Eastern vs. None	0.17	0.49	1.55	.122
Other vs. None	0.03	0.83	0.24	.812
Strength of Faith	-0.16	0.29	-0.76	.448

Table 9

*Standardized Coefficients and Statistics for Predictors of Treatment*

Predictor	$\beta$	S.E.	Z	p-value
<b>Demographics</b>				
Age	0.13	0.10	0.99	.321
Gender	-0.23	0.36	-1.95	.051
<b>Race/Ethnicity</b>				
Black vs. White	0.01	0.53	0.11	.916
Asian vs. White	-0.05	0.44	-0.40	.692
Latino vs. White	0.09	0.46	0.74	.459
Other vs. White	0.07	0.69	0.58	.564
Sexual Orientation	-0.02	0.48	-0.21	.836
<b>Personality-Trait Correlates</b>				
Authoritarian Aggression	0.28	0.15	2.20	.028
Conventionalism	0.07	0.15	0.63	.529
Authoritarian Submission	-0.08	0.14	-0.74	.459
Social Dominance	0.35	0.12	2.52	.012
<b>Religious Belief</b>				
Centrality of Identity	0.21	0.11	1.44	.149
Extrinsic Orientation	-0.18	0.21	-1.28	.200
Frequency of Attendance	-0.03	0.14	-0.21	.832
Fundamentalism	0.21	0.20	1.64	.101
Intrinsic Orientation	0.03	0.49	0.11	.916
<b>Specific Faith Tradition</b>				
Catholic vs. None	-0.14	0.59	-0.80	.427
Protestant vs. None	0.18	0.63	1.00	.320
Muslim vs. None	0.03	0.75	0.15	.881
Eastern vs. None	-0.11	0.72	-0.80	.423
Other vs. None	0.04	11.13	0.03	.980
Strength of Faith	0.02	0.38	0.07	.947

Table 10

*Standardized Coefficients for the Significant and Marginal Predictors of Sexual Prejudice*

Predictor	Sexual Prejudice Dimension			
	Acceptability	Comfort	Rights	Treatment
Demographics				
Age	0.15	0.02	<b>0.13<sup>†</sup></b>	0.13
Gender	-0.10	-0.10	-0.09	<b>-0.23<sup>†</sup></b>
Race/Ethnicity				
Black vs. White	0.09	0.11	0.03	0.01
Asian vs. White	-0.09	0.01	-0.11	-0.05
Latino vs. White	0.03	-0.04	-0.08	0.09
Other vs. White	0.10	<b>0.17*</b>	-0.02	0.07
Personality-Trait Correlates				
Authoritarian Aggression	<b>0.12<sup>†</sup></b>	<b>0.18*</b>	<b>0.20**</b>	<b>0.28*</b>
Conventionalism	<b>0.23**</b>	0.03	<b>0.16*</b>	0.07
Social Dominance	0.09	0.10	0.11	<b>0.35*</b>
Religious Belief				
Centrality of Identity	<b>0.34**</b>	-0.04	<b>0.23**</b>	0.21
Fundamentalism	<b>0.33**</b>	<b>0.21<sup>†</sup></b>	<b>0.23**</b>	0.21
Specific Faith Tradition				
Catholic vs. None	0.03	0.18	0.18	-0.14
Protestant vs. None	0.15	0.15	<b>0.33*</b>	0.18
Muslim vs. None	0.15	<b>0.35**</b>	0.19	0.03
Eastern vs. None	0.11	<b>0.19<sup>†</sup></b>	0.17	-0.11
Other vs. None	-0.05	0.08	0.03	0.04

<sup>†</sup>  $p < .10$ . \*  $p < .05$ . \*\*  $p < .01$ .



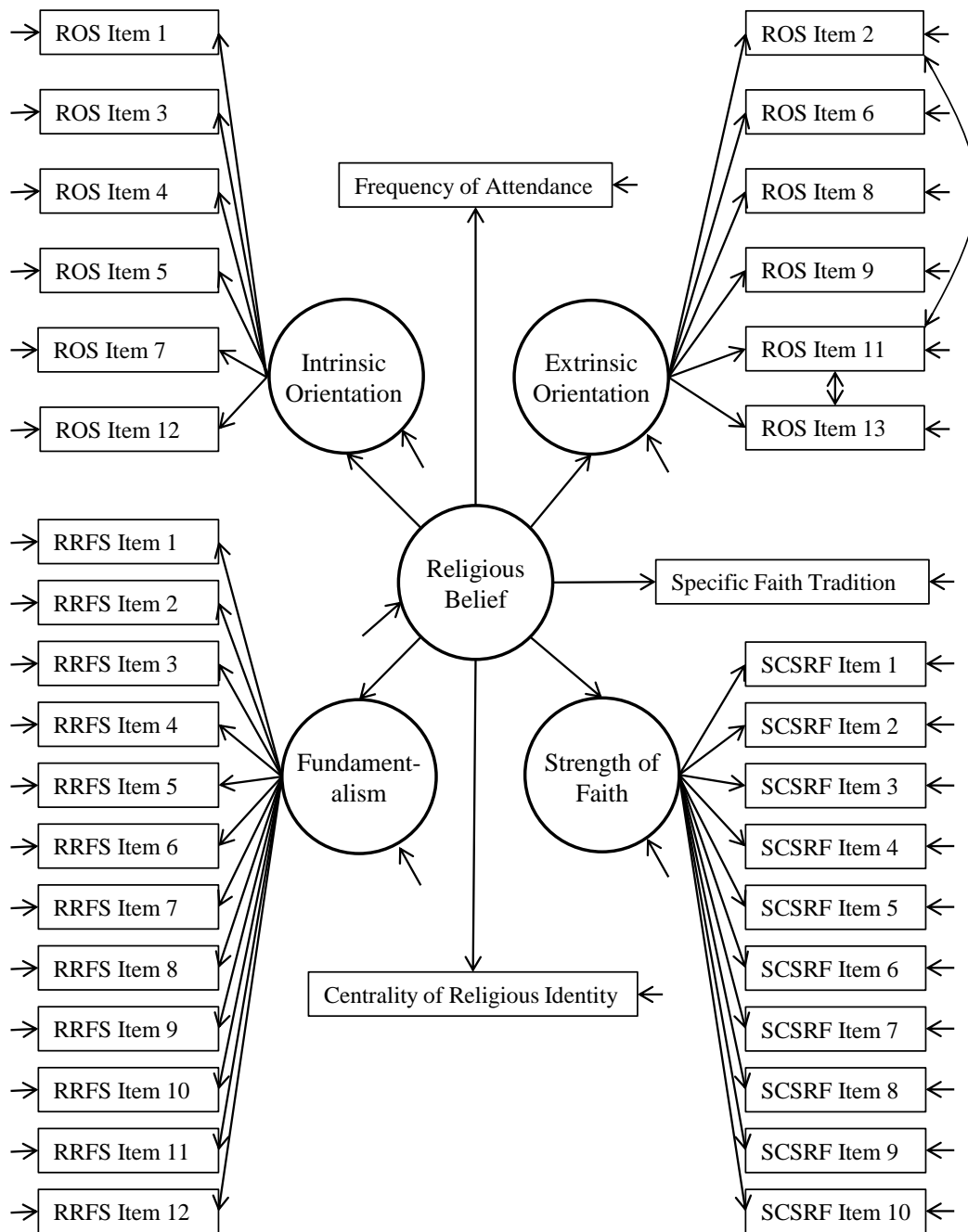


Figure 1. Final measurement model of religious belief.

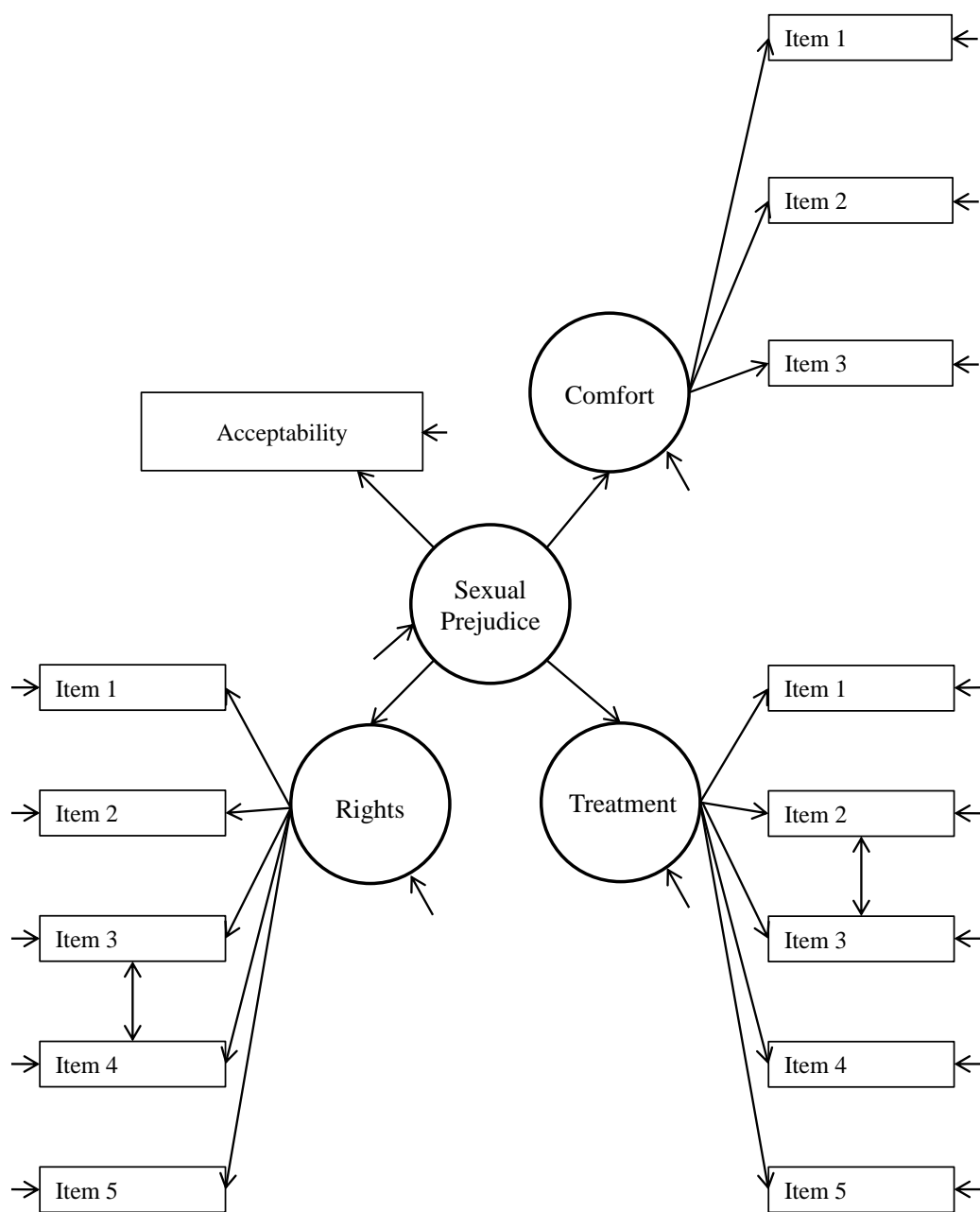


Figure 2. Final measurement model of sexual prejudice.

**APPENDICES**

## Appendix A

## Comfort Dimension of Sexual Prejudice

**INSTRUCTIONS:** In this next part of the survey you will be asked a number of questions about your attitudes and beliefs about homosexuality and lesbian and gay people. Once again, there are no right or wrong answers to these questions. We are interested in the diverse viewpoints that exist in society about these issues, so please answer honestly.

	1 - Really uncomfortable, it would/does bother me a lot	2 - Somewhat uncomfortable	3 - Somewhat comfortable	4 - Absolutely comfortable, it wouldn't/doesn't bother me at all
1. On a scale from 1 to 4, how comfortable would you be having a gay or lesbian student in one of your classes?				
2. On a scale from 1 to 4, how comfortable would you be having a gay or lesbian student as a study partner?				
3. On a scale from 1 to 4, how comfortable would you be having a gay or lesbian student as your roommate in the dorm?				

## Appendix B

## Rights Dimension of Sexual Prejudice

**INSTRUCTIONS:** In this next part of the survey you will be asked a number of questions about your attitudes and beliefs about homosexuality and lesbian and gay people. Once again, there are no right or wrong answers to these questions. We are interested in the diverse viewpoints that exist in society about these issues, so please answer honestly.

	0 - No	1 - Yes
1. Do you think lesbian and gay people who are in committed relationships should legally be allowed to get married?		
2. Do you think lesbian and gay people should be legally protected from losing their jobs because of their sexual orientation?		
3. Do you think HIGH SCHOOL students should be allowed to form support groups or clubs focusing on sexual orientation and sexual identity at school, such as Gay-Straight Alliances?		
4. Do you think MIDDLE SCHOOL students should be allowed to form support groups or clubs focusing on sexual orientation and sexual identity at school, such as Gay-Straight Alliances?		

	1 - Completely Wrong	2 - Somewhat Wrong	3 - Somewhat All Right	4 - Completely All Right
5. In my opinion I think gay marriage is				

## Appendix C

## Treatment Dimension of Sexual Prejudice

**INSTRUCTIONS:** The survey will begin with stories about some things that might happen on a college campus. These are not necessarily things that have actually happened on this campus, but are things that might happen to students on campus. There are no right or wrong answers to these questions, so please be as honest as possible.

Remember, you can choose not to answer any question and you can choose to stop the survey at any time if you are feeling anxious or uncomfortable.

	1 - Completely Wrong	2 - Somewhat Wrong	3 - Somewhat Right	4 - Completely Right
<p>1. Mark is an out gay student at UIC. He is a pretty good student and is fairly involved in campus activities, particularly student leadership. At a campus conference for student leaders some of the other UIC students at the conference don't invite Mark to go to lunch with them.</p> <p>On a scale from 1 to 4 how wrong or right do you think it is that the other students didn't invite Mark to lunch with them?</p>				
<p>2. Robbie and Nick are both freshman who have just met at UIC. At a study group in the UIC library working on an assignment for class Robbie expresses his frustration about the assignment, "This text book is so gay. I hate this class!"</p> <p>On a scale from 1 to 4 how wrong or right do you think this is?</p>				
<p>3. What if someone in the study group in question 2 was an out gay man or lesbian?</p> <p>On a scale from 1 to 4 how wrong or right would it be to make this type of statement?</p>				
<p>4. Marvin, who is an openly gay student, is taking a religious studies course. The course has about 50 students in it. One day during class when Marvin returned from break, he found a pamphlet placed only on his desk that was titled, "Freedom from the sins of homosexuality, how finding God can help save your soul," that someone placed there during the break.</p> <p>On a scale from 1 to 4 how wrong or right do you think that it was for someone to leave this pamphlet on Marvin's desk?</p>				
<p>5. Jason is a student at UIC and lives in the residence halls. Jason is gay and most of the other students in the dorm know about his sexual orientation. One night Jason comes back from the library to find that someone tore down the poster and SAFE zone sticker he had on his dorm door and wrote on the white board, "Faggot go home."</p> <p>On a scale from 1 to 4 how wrong or right do you think this was?</p>				

## TIMOTHY B. TASKER

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### UNIVERSITY OF ILLINOIS AT CHICAGO

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## EDUCATION

### UNIVERSITY OF ILLINOIS AT CHICAGO

CHICAGO, IL

*Doctoral Student*, August 2010 – Present  
Major: Psychology, Community & Prevention Research  
Minor: Statistics, Methods, and Measurement

### UNIVERSITY OF ILLINOIS AT CHICAGO

CHICAGO, IL

*Master of Arts*, December 2013  
Major: Psychology, Community & Prevention Research

### NORTHWESTERN UNIVERSITY

EVANSTON, IL

*Bachelor of Arts*, December 2001  
Majors: Psychology; Religion

## RESEARCH INTERESTS

Community-based mental health services, assessing the evidence-based practice movement, and decision making about program adoption and adaptation. In addition, projects focused on the rights and status of sexual minorities: the association between religious belief and sexual prejudice, the impact of discrimination and prejudice on sexual minority communities, and bullying and harassment prevention programs.

## RESEARCH PUBLICATIONS

Peter, C. R., **Tasker, T. B.**, & Horn, S. S. (n.d.). Parent attitudes toward inclusive and comprehensive sexuality education: Parents beliefs about sexual health topics and forms of curricula. *Manuscript submitted for publication*.

**Tasker, T. B.**, Peter, C. R., & Horn, S. S. (in press). Parents' attitudes about safe schools policies and practices: Repositioning parents as youth allies through a rights-based framework. *Sexuality Research and Social Policy*.

Horn, S. S., Peter, C. R., **Tasker, T. B.**, & Sullivan, S. (2013). Moving past assumptions: Recognizing parents as allies in promoting the sexual literacies of adolescents through a university-community collaboration. *Community Literacy Journal*, 8(1).

Matthews, A. K., Li, C. C., Kuhns, L. M., **Tasker, T. B.**, & Cesario, J. A. (2013). Results from a community-based smoking cessation treatment program for LGBT smokers. *Journal of Environmental and Public Health*, 2013, 1-9.

## CONFERENCE PRESENTATIONS

- Tasker, T. B., & Trickett, E. J.** (2013, June). Study validity and the link between academic achievement and social and emotional learning programs. In E. J. Trickett (Chair), *Evidence-based practice and thriving: A critical assessment*. Symposium conducted at the biennial meeting of the Society for Community Research and Action, Miami, FL.
- Tasker, T. B.** (2013, June). Closing the evaluation loop: Helping community partners effectively plan for, interpret, and act on their results. In E. J. Trickett (Chair), *The community as teacher: Learning how to help community organizations thrive*. Symposium conducted at the biennial meeting of the Society for Community Research and Action, Miami, FL.
- Romeo, K. E., **Tasker, T. B.**, Schriber, S., & Horn, S. S. (2013, June). *Nuancing the consequences of specific forms of bias-based bullying*. Paper presented at the annual meeting of the Jean Piaget Society, Chicago, IL.
- Tasker, T. B., & Horn, S. S.** (2013, June). *Religious belief, sexual prejudice, and the role of social reasoning*. Paper presented at the annual meeting of the Jean Piaget Society, Chicago, IL.
- Tasker, T. B.** (2013, May). *Exploring the multidimensionality of constructs in community psychology*. Roundtable discussion conducted at the annual meeting of the Midwestern Psychological Association, Chicago, IL.
- Tasker, T. B., Peter, C. R., & Horn, S. S.** (2013, April). Parental attitudes about making schools safe for LGBTQ youth: A rights and protections framework. In S. D. Snapp (Chair), *The impact and process of adopting school-based supports for sexual minority youth*. Symposium conducted at the biennial meeting of the Society for Research in Child Development, Seattle, WA.
- Peter, C. R., **Tasker, T. B.**, & Horn, S. S. (2013, April). *Parent attitudes toward inclusive sexuality education: Beliefs about what adolescents should know and who should teach them*. Poster presented at the biennial meeting of the Society for Research in Child Development, Seattle, WA.
- Tasker, T. B.** (2012, June). Universal social and emotional learning programs and academic achievement: Not a simple link. In E. J. Trickett (Chair), *Community psychology meets evidence-based practice: A critical appraisal*. Symposium conducted at the biennial International Conference of Community Psychology, Barcelona, Spain.
- Romeo, K. E., & **Tasker, T. B.** (2012, May). *How young people construct gender and moral responsibility through discussion of peers' sexual interactions*. Poster presented at the annual meeting of the American Psychological Society, Chicago, IL.
- Tasker, T. B., Horn, S. S., Hochberg, M. J., & Romeo, K. E.** (2012, March). *The relationship between religious identity & beliefs and attitudes about homosexuality among emerging adults*. Poster presented at the biennial meeting of the Society for Research on Adolescence, Vancouver, BC, Canada.
- Tasker, T. B.** (2011, October). Exploring indirect effects of acculturation for older, Soviet immigrants. In M. E. Wellman (Chair), *Acculturation and adjustment of immigrants: An exploration of mediators and moderators*. Symposium conducted at the annual Midwest Ecological and Community Psychology Conference, Chicago, IL.



**Tasker, T. B.,** Bynum, L. R., Trickett, E. J., & Vinokurov, A. (2011, June). *Acculturative stress: Community, acculturative, and demographic predictors among former Soviet adolescents and elderly*. Poster presented at the biennial meeting of the Society for Community Research and Action, Chicago, IL.

## INVITED PRESENTATIONS

Horn, S. S., **Tasker, T. B.,** Peter, C. R., & SafeSPACES Collaborative (2013, October). *Parents as allies in the safe schools movement: A research to practice strategy*. Invited lecture presented at the University of Illinois at Chicago, Community and Prevention Research Division Colloquium, Chicago, IL.

Horn, S. S., Chico, E., Peter, C. R., Romeo, K. E., Darcangelo, N., Bellinger, L. B., & **Tasker, T. B.** (2013, October). *Exploring young people's experiences of sexuality and gender-based harassment*. Invited lecture presented at the University of Illinois at Chicago, Real Talk Brown Bag Series, Chicago, IL.

Horn, S. S., **Tasker, T. B.,** & Peter, C. R. (2012, November). *Parents as allies in the safe schools movement: A research to practice strategy*. Invited presentation at the annual convening of the National Safe Schools Roundtable, Chicago, IL.

## WORK EXPERIENCE

**PUBLIC SERVICE INTERN, PERFORMANCE AND QUALITY IMPROVEMENT DIVISION** **CHICAGO, IL**  
*Chicago Department of Public Health, September 2012 – September 2013*

- Conducted an organizational assessment of the Division and Department using an ecological framework
- Created multiple program evaluation tools for the Quality Improvement Learning Collaboratives
- Designed, implemented, and analyzed the first-ever Department-wide survey on employee satisfaction
- Evaluated program effectiveness and outcomes related to various Department training initiatives

**ASSOCIATE RESEARCH COORDINATOR, WEST PROGRAM / M-TREM STUDY** **WASHINGTON, DC**  
*Community Connections, January 2008 – August 2010*

- Directed informed consent procedures for enrolling mental health consumers into research studies
- Recruited, trained, and supervised research staff to administer interventions and standardized interviews
- Developed tools and procedures for conducting all aspects of data collection, management, and reporting
- Managed finances for personnel, purchasing, and participant incentives for a multi-million dollar grant

**COMMUNITY SUPPORT WORKER, CORE SERVICE AGENCY** **WASHINGTON, DC**  
*Green Door, July 2007 – December 2007*

- Created and enacted comprehensive, rehabilitative treatment plans for adults with severe mental illness
- Educated clients on issues such as medication, transportation, nutrition, and activities of daily living
- Maintained detailed, computer-based progress notes and supplemental paper records for caseload of 25
- Advocated for clients in matters of employment, housing, medical care, substance abuse, and benefits

**COMMUNITY HEALTH PROGRAM REPRESENTATIVE, PEDIATRICS** **SACRAMENTO, CA**  
*University of California – Davis Medical Center, August 2004 – August 2006*

- Reviewed medical charts of over 500 patients annually to maintain detailed neonatal patient database
- Facilitated ongoing contact with grieving parents and families to assess their continued need for support
- Convened meetings with medical staff and social workers to ensure patients received critical referrals
- Coordinated several educational outreach programs for community hospitals and research centers

**RESEARCH ASSISTANT, INFORMATION SERVICES****EVANSTON, IL***Evanston/Skokie School District 65, June 2003 – January 2005*

- Assembled, prepared, and analyzed data for various state and District-established student assessments
- Collaborated with department team to design and produce effective data reporting methods and media
- Evaluated the effectiveness of innovative District programs and curricula through testing and surveys
- Assisted in development of grant proposals for such programs as arts/technology classroom integration

**RESEARCH ASSISTANT, DEPARTMENT OF PSYCHOLOGY****EVANSTON, IL***Northwestern University, January 2001 – June 2001*

- Developed novel experimental methodology to study stereotype effect on cognitive performance
- Recruited, coordinated, and conducted experimental procedures for study with over 100 participants
- Recorded, compiled, and analyzed research data in conjunction with faculty advisor and research team
- Detailed literature review, experimental procedures, and data analysis in comprehensive research paper

**TEACHING EXPERIENCE****TEACHING ASSISTANT**

- *Laboratory in Developmental Psychology*, 3 Semesters (Spring 2012, Fall 2012, Fall 2013)
- *Psychology of Interviewing*, 3 Semesters (Summer 2011, Fall 2011, Spring 2012)
- *Community Psychology*, 3 Semesters (Spring 2011, Summer 2012, Summer 2013)
- *Abnormal Psychology*, 2 Semesters (Fall 2010, Spring 2011)
- *Field Work in Applied Psychology*, 1 Semester (Fall 2011)

**HONORS & AWARDS**Sexuality and Social Justice Doctoral Research Fellowship, *Ford Foundation & UIC*, 2012–2015Conference Travel Award, *International Conference of Community Psychology*, 2012Traveling Scholar, *Committee on Institutional Cooperation*, 2003FLEP Scholar, *Committee on Institutional Cooperation*, 2002–2003DERU Senior Honorary Leadership Society, *Northwestern University Inductee for service*, 2000Northwestern Advance, *Northwestern University directive for community building*, 2000 & 2001Weinberg College of Arts & Sciences Dean's List, *Northwestern University*, Multiple QuartersNational Merit Scholarship Recipient, *Northwestern University*, 1997–2001**VOLUNTEER & SERVICE ACTIVITIES**Evaluation Consultant, *The People's Music School YOURS Project*, 2013 – PresentEvaluation Consultant, *Illinois Safe Schools Alliance*, 2012 – PresentProgram Organizer, *UIC Qualitative Research Discussion Group*, 2012 - PresentStudent Member, *Diversity Advancement Committee Student Advisory Board*, 2012 - PresentDivision Assistant, *Community & Prevention Research Division*, 2010 – PresentConference Planner, *Midwest Ecological and Community Psychology Conference*, 2013Conference Volunteer, *Biennial Conference of the Jean Piaget Society*, 2013Student Representative, *Community & Prevention Research Division*, 2011 – 2013Conference Volunteer, *Biennial Conference of the Society for Community Research and Action*, 2011Research Department Volunteer, *Whitman Walker Clinic*, 2006 – 2007Research and Evaluation Department Volunteer, *Evanston/Skokie School District 65*, 2002Multiple Leadership Positions, *Northwestern University Bisexual, Gay & Lesbian Alliance*, 1998 – 2001

## **PROFESSIONAL AFFILIATIONS**

American Psychological Association

Society for Community Research and Action (*APA Division 27*)

Society for the Psychological Study of Social Issues (*APA Division 9*)

Society for the Psychological Study of Lesbian, Gay, Bisexual and Transgender Issues (*APA Division 44*)

Midwestern Psychological Association