

Theism, Secularism, and Sexual Education in the United States

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Abstract Substantial bodies of literature have examined public opinion about sexual education, the politicization of sexual education in public schools, and connections between population characteristics and social policies. At present, however, little is known about whether and how population characteristics predict the likelihood of specific sexual education policies. We analyze data at the state level in the USA to determine if and how specific religious aspects of states' populations influence the likelihood of specific sexual education policies. Results indicate that high levels of theism significantly increase the likelihood of sexual education policies stressing abstinence, while higher levels of individuals not actively participating in organized religion correlate with a significantly higher likelihood of having sexual education policy that mandates the coverage of contraception. We discuss these findings in a framework of symbolic politics and moral communities, focusing on the intersections of religion, politics, and sexuality.

Keywords Religion · Theism · Secularism · Sex education · Social policy

Introduction

The approach taken by public schools toward sexual education invokes issues involving religious communities and belief, the appropriate and constitutional links between church and state,

and not least of all the health and wellbeing of adolescents and young adults. Whether and how educators should address issues of sexuality raises contentious points in a number of areas such as pre-marital sex, contraception use, sexual knowledge, and information about sexually transmitted infections (STIs). Each of these questions has points of view articulated by religious traditionalists and public health officials that may be at odds with one another. Where religious advocates frame questions of sexuality and adolescence as issues of prudence and morality, medical experts primarily frame such issues in light of physical health and wellbeing (see Davis 1983).

In the USA, the adjudication between these frames of discourse and corresponding policy plays out primarily through state and local politics. Accordingly, the religious composition of local governments and populations, or what has been termed “moral communities” (e.g., Gusfield 1981; Lee and Bartkowski 2004; Stark 1996; Stark and Bainbridge 1996; Stark et al. 1982; Ulmer et al. 2008), may strongly influence policies about sexual education. This connection relies on a straightforward argument—that a large presence of religious (or secular) individuals and communities in a representative system of governance may result in social policies surrounding adolescent sexuality that reflect the interests of these communities. At present, however, more is known about the relationship between specific policies and population health outcomes than about the conditions under which certain types of policies addressing sexuality are likely to be enacted. At the same time, qualitative studies have analyzed the cultural and social dimensions of “abstinence-only” movements, and quantitative studies have begun mapping the demographic and structural predictors of a wide range of specific social policies.

We draw on and add to these lines of inquiry by addressing the relationship between the religious composition of populations and social policy about sexual education in public schools in the American states. Our intent is to outline how

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populations' religious characteristics make certain forms of social policy more or less likely; specifically, the relative importance of abstinence and contraception in prescribed parameters for sexual education programs in public schools.

Sexual (Education) Politics in the USA

When Gruenberg (1938) studied American secondary schools during the Great Depression, he noted that many had some form of sexual education. This could encompass anything from the physiology of puberty to intercourse (and the attendant moral and social connections), as well as family formation. Sexual education in the school system, however, did not become part of partisan political debates until the late twentieth century. By 1970, 36 % of all high schools, and 80 % of large district high schools had sex education as part of their curriculum (Luker 1996). Beginning in the late 1970s and especially early 1980s, claims of teenage sexuality as an epidemic began to politicize the issue of sexual education. These efforts were largely in response to the perceived waning of traditional values concerning gender and sexuality.

In the 1960s and 1970s, counterculture movements epitomized changing mores about sexuality and gender, while demographic and labor market trends began to undermine the nuclear family and “separate spheres” as dominant forms of family structure. Outlawed by Comstock purity laws in 1873, contraception became legal again in the USA through Supreme Court cases in 1965 (*Griswold v. Connecticut*) and 1972 (*Eisenstadt v. Baird*). A year later, *Roe v. Wade* legalized and protected abortion rights. These “post-virginal” changes to law occurred at the same time that overt sexuality was becoming a more acceptable form of self-expression (Doan and Williams 2008).

Youth were not unaffected by these changes. While teen pregnancies were not uncommon prior to the 1960s, most babies were born to married teenage parents. Without access to contraception or abortion, teens were forced to deal with unintended pregnancies through marriage, which remained the only means of legitimizing family formation. The aforementioned changes in sexual mores altered the conventional relationship between sex and marriage, making them partisan political issues (Luker 1996). The number of unmarried teenage pregnancies increased rapidly in the 1970s, along with abortions (Doan and Williams 2008). In response to these changes, sexual education rapidly became ideologically contentious, touching on myriad issues of sexual morality.¹ Contentions

¹ Notably, both liberal and conservative American ideologies support the notion of childhood innocence, leading to ideas of “youthful sexual innocence and irredeemable sexual corruption” (Fields 2005, p. 560). The use of rhetoric about innocent children being corrupted or harmed is a powerful and effective means of gaining political ground, regardless of the specific policy in question (Best 1990), but especially in cases involving girls' sexuality, such as sex education programs (see Egan and Hawkes 2008).

over traditional and progressive views of sexuality and gender came to play an integral role in the emergent “culture wars” (Hunter 1991). Although the culture wars are, nearly by definition, exaggerated (see DiMaggio et al. 1996; Williams 1997; Wuthnow 1996), matters of sexuality and reproduction are the areas of opinion and policy that generate the most division among the bundle of issues debated under this rhetoric.

Sexual Education Policy and States' Religious Composition

Though teen pregnancy rates throughout the USA have decreased in recent years (United States Department of Health and Human Services 2014), the policy and practice of sex education remains a contentious issue. Politicians, interest groups, and researchers debate the effectiveness of abstinence-only versus comprehensive sexuality education programs, with mostly discouraging results for advocates of abstinence-only programs (Di Mauro and Joffe 2007; Kohler et al. 2008; Stanger-Hall and Hall 2011; Yang and Gaydos 2010; cf. Jemmott et al. 2010; Trenholm et al. 2008).² Yet, few studies have examined the factors leading to these sex education policies.

Extant quantitative studies of sexual education policies mainly focus on public opinion toward sex education. According to the General Social Surveys, support for sexual education in public schools among the general American public has increased from 82 % in 1974 to 91 % in 2014. A substantial majority of Americans (82 %) support programs that teach students about abstinence *and* alternative methods of pregnancy and disease prevention, with 69 % in favor of teaching about contraception. Only 36 % support abstinence-only curricula and over 50 % of Americans oppose such programs (Bleakley et al. 2006; also see Santelli et al. 2006). Looking more specifically at parents of school age children, clear majorities support having comprehensive sex education in public schools across different states (Constantine et al. 2007; Ito

² At the same time, experimental studies are limited in terms of external validity, while observational studies of policy implementation cannot offer definitive conclusions regarding causality, particularly where states with high levels of teen pregnancy institute stricter abstinence-only sexual education policies. For example, SB3310, a 2012 law passed in Tennessee forbids anything that promotes “gateway sexuality”; but also has a provision stating that ... if the most recent, annual data maintained by the department of health, state center for health statistics, indicate that pregnancy rates in any county exceeded nineteen and five tenths (19.5) pregnancies per one thousand (1,000) females aged eleven (11) through eighteen (18), then every [local education agency] within the county shall locally devise, adopt, and implement a program of family life education in conformance with the curriculum guidelines established for such programs by this section.

In such circumstances, the implementation of abstinence-only education and teen pregnancy outcomes may operate in a feedback loop of policy and demography. For full text of the bill, see <http://www.capitol.tn.gov/Bills/107/Bill/SB3310.pdf>.

et al. 2006; Welshimer and Harris 1994).³ Though support for comprehensive sexual education is generally high, certain factors do correlate with greater or lesser levels of support. In a study of California parents, those with lower education levels were less likely to support comprehensive sex education (Constantine et al. 2007; cf. Ito et al. 2006). Political orientation is also an important factor. Those with a liberal political orientation are more likely to support the inclusion of condom instruction in sex education courses (Bleakley 2010), while those who are more conservative are less likely to support comprehensive sexuality education (Eisenberg et al. 2008). There are mixed results on the influence of religious tradition on support for comprehensive sex education. Constantine et al. (2007) found that “born-again” California parents were no more or less likely to support comprehensive sex education; however, a survey of Minnesota parents showed that born-again Christians were significantly less likely to support comprehensive sex education (Eisenberg 2009). These differences may reflect the regional and demographic differences in expressions of religion (and their classification across places). In terms of religiosity, higher levels of attendance at religious services lead to higher support for abstinence-focused programs (Bleakley 2010). In general, previous research points to education levels, political views, urban/rural residence, and religiosity as potential predictors of individuals’ policy opinions on sexual education. Still, the majority of US adults support some form of comprehensive sex education that includes discussion of methods besides abstinence for preventing pregnancy and the transmission of STIs.

Yet, public sentiment on what should be included in sexual education curricula does not match the political and policy trends, as abstinence-only education programs have expanded rapidly in the past thirty years. Beginning in the 1980s, conservative activists switched from opposing sexual education completely to advocating for abstinence-focused content (Dailard 2001). By the 1990s, state and federal policies shifted toward abstinence sex education. Federal funding for abstinence-only education programs increased from four million dollars in 1996 to 176 million dollars in 2008 (SIECUS 2011). State legislatures pursued federal monies partially through legislating abstinence. In 1998, ten states required covering abstinence but not contraception, while 13 required

covering both abstinence and contraception (Andorfer et al. 1998). By 2015, 25 states had laws requiring that abstinence be stressed in sexual education, and 12 required coverage of abstinence as part of more comprehensive sexual education (Guttmacher 2015). Importantly, the issue is often more salient for those advocating abstinence education. Researchers have noted that what matters in determining the policy leanings of a state is the orientation of the politicians, school board leaders, and coordinated organizational networks (Kendall 2008b). To this list, we would add the religious composition of a state’s citizens, who form the pool of potential supporters or opposition to political actions targeting sexual education.

In a separate body of literature, social scientists have used population characteristics to predict a wide range of outcomes at the state level in recent years, including policies concerning the rights of same-sex couples (Lax and Phillips 2009; Lewis 2011; Lupia et al. 2010), abortion (Arceneaux 2002; Norrander and Wilcox 1999), education (Gibson 2004), electoral laws, health care policies, immigration, and law enforcement (Lax 2012). Generally speaking, this literature concentrates on the connections between public opinion about a specific policy and outcomes related to the policy in question, highlighting the contingent nature of public opinion and policy alignments (Burstein 2003; Erikson et al. 1993; Manza and Cook 2002; Shapiro 2011; Sharp 1999), which is also the case with sex education.

We draw on two exceptions to the policy opinion-policy outcome strategy in the literature. Gibson (2004) examines how religious composition shapes education policies about science and Scheitle and Hahn (2011) show how movement organization among the Religious Right predicts policy outcomes concerning the rights of same-sex couples. Rather than focusing on how public opinion about specific policies relates to policy outcomes, these studies examine population characteristics related to, but not directly about specific social policies. In other words, by examining population characteristics hypothesized *to relate to policy outcomes* rather than using measures of a policy’s popularity. Gibson (2004) and Scheitle and Hahn (2011) do this by examining how evangelical Protestant adherence rate and evangelical political mobilization, respectively, correlate with policy outcomes. We build on this strategy by testing multiple, competing hypotheses and measures of population level religiosity to determine the most influential predictors of sexual education policies, as *which* (if any) aspects of populations’ religious characteristics are related to policy outcomes for sexual education is currently unknown. We employ an inductive analytic method to these problems, testing six distinct measures of religious characteristics at the state level to determine the best predictors of sexual education policies. We assess two policy outcomes: (1) stance of states on abstinence in sexual education; and (2) stance of states on whether contraception must be covered in sexual education.

³ Another facet of the current research on sexuality programs focuses on how instructors feel about teaching sex education. One challenge that teachers face is trying to present sexuality education in the midst of many restrictions: federal, state, and local. An exploratory study in New Jersey revealed that only 1/3 of teachers felt satisfied with their ability to teach “family life education” courses in the face of these restrictions (Firestone 1994). Meanwhile, a survey of teachers in public secondary schools found that a focus on abstinence by teachers correlated highly with decreased presentation of information on sexuality, contraception, and family planning (Landry et al. 2003). As such, the sexual attitudes of teachers are a noteworthy component of the delivery of sexual education (Kehily 2002).

Competing Hypotheses

Adherence and Service Attendance

First, general levels of religious adherence may influence sexual education policy outcomes. Studies using arguments about moral communities often employ adherence rates as a central measure of aggregate religiosity (e.g., Gault-Sherman and Draper 2012; Ovadia and Moore 2010). Accordingly:

- H1a: Higher levels of religious adherence in states' populations will correlate with a higher probability of legislation requiring abstinence-only sex education.
- H2a: Higher levels of religious adherence in states' populations will correlate with a lower probability of legislation requiring coverage of contraception in sex education.

Researchers have consistently found, across public opinion surveys, that an individual's religiosity, typically measured as frequency of religious service attendance, affects support for sex education in general, and also whether it should be comprehensive or abstinence-only. Bleakley (2010) found a positive relationship between attendance at religious services and a belief that abstinence education is effective at preventing pregnancy. Similarly, Constantine et al. (2007) found that parents who attended religious services less than once a month were more likely to support comprehensive sex education than those who attended more often. In a survey of rural parents, those who attended religious services were significantly less likely support having sex education at any grade level (Welshimer and Harris 1994). Accordingly, we test whether average level of religious service attendance at the state level is related to sex education outcomes:

- H1b: Higher average levels of religious service attendance in states' populations will correlate with a higher probability of legislation requiring abstinence-only sex education.
- H2b: Higher average levels of religious service attendance in states' populations will correlate with a lower probability of legislation requiring coverage of contraception in sex education.

Evangelical Protestants, Fundamentalists, and the Religious Right

Another possible source of variation in sexual education policy outcomes is the presence of specific types of religious individuals and communities, particularly a pronounced presence of Evangelical Protestants, fundamentalists, and Religious Right organizations. Indeed, the Christian pro-family movement mobilized to counter the liberalization of sexual mores and

strengthen "American moral values" (Luker 2006), with religious traditionalists continuing to hold strict prohibitions against non-marital sex. Education systems and curricula became major targets for the proposed redistribution of values, and thereby a source of political conflict. Understandably, efforts by states to regulate the sexual knowledge and practice of adolescents met with strong resistance from religious activists (Kendall 2008a). In these disputes, "moral victories are won by gaining legal authority to redistribute values in society via policy" (Doan and Williams 2008, p. 8). As conceptualized by the coalition of the Religious Right, teen pregnancy became a symbol of the fall of American society, and teen sexuality the site of efforts to combat liberal sexuality (Luker 1996, p. 80).

Communications scholars Domke and Coe (2010) outlined the increasingly prevalent use of the "God strategy" as an overt political tool in the USA over the past 30 years, a trend particularly applicable to disputes over sexual education. In debates over adolescent sexuality, rhetoric often becomes hyperbolic, with religion, morality, and dramatic narratives used for political leverage (Irvine 2000, 2002; Rose 2005). Overtly political uses of religion in connection with matters of sexual politics have produced increasingly consolidated voting blocs among theologically conservative religionists for the Republican Party, and among progressive secularists for the Democratic Party (see Green and Dionne 2008; Green et al. 1998; Layman 1999; Layman et al. 2010; Layman and Green 2006). Evangelicals comprise the largest bloc of the Religious Right, and are often the most active participants in movements aimed at incorporating abstinence education (Irvine 2002).

Accordingly, we test the following hypotheses, intended to assess the possible influence on sexual education policy outcomes of Evangelical Protestants, scriptural fundamentalists more generally, and the political mobilization of the Religious Right.

- H1c: Higher levels of Evangelical adherence rates in states' populations will correlate with a higher probability of legislation requiring abstinence-only sex education.
- H2c: Higher levels of Evangelical adherence rates in states' populations will correlate with a lower probability of legislation requiring coverage of contraception in sex education.
- H1d: Higher proportions of scriptural literalists in states' populations will correlate with a higher probability of legislation requiring abstinence-only sex education.
- H2d: Higher proportions of scriptural literalists in states' populations will correlate with a lower probability of legislation requiring coverage of contraception in sex education.
- H1e: Greater presence of Religious Right influence in states' Republican parties will correlate with a higher probability of legislation requiring abstinence-only sex education.

H2e: Greater presence of Religious Right influence in states' Republican parties will correlate with a lower probability of legislation requiring coverage of contraception in sex education.

H1f: Higher average levels of theism in states' populations will correlate with a higher probability of legislation requiring abstinence-only sex education.

H2f: Higher average levels of theism in states' populations will correlate with a lower probability of legislation requiring coverage of contraception in sex education.

Theism

Finally, we assess an interesting but under-analyzed dimension of population religiosity: theism. In his assessment of the boundaries of normality and deviance with regard to sexuality, social theorist Murray Davis (1983) outlined the most prominent worldviews with regard to sexuality. The view originating in the monotheistic religious traditions and maintained within conservative religious communities he termed “Jehovanist,” positing that a particular view of God associated with a corresponding set of moral boundaries about sex in regard to purity/filth. Describing the features of a Jehovanist (as compared to a naturalist) view of sex, Davis (1983, pp. 122–124) argued that:

To condemn sex as much as they do, therefore, Jehovanists must believe that ideally each human being has a self that is highly structured, sharply bounded, unique, integrated, pure, and separated from the selves of others completely and permanently.... The alien elements that intercourse can inject into an individual's essence may disrupt its existing structure and produce a new one that is incoherent, debased, or contaminated.... In the Jehovanist conception of the cosmos, then, the integration of the body is the physical analog of the integration of the self. The unity of the individual, in turn, is the psychological analog of the unity of society, the social analog of the unity of its monotheistic God.... Jehovanists have attempted to stop these repercussions at their root by enforcing sexual abstinence, which seals off the individual externally from the contamination of others.

In short, there may be socio-cognitive elements of theism itself that relate to particular views about the proper or improper role of sexuality in the lives of individuals, communities, and society at large. This hypothesis relies on a less overt connection than the others, and instead proposes that certain religious population characteristics may provide the cultural groundwork upon which moral and political entrepreneurs enact policies addressing sexuality. Population levels of theism provide a metric of the relative collective salience (or lack thereof) of monotheistic religious traditions, which, generally speaking, condemn expressions of sexuality outside the confines of marriage for the purposes of procreation as impure and dangerous (see DeRogatis 2009). Hence, our final hypothesis:

Methods

Dataset

To assess the relationship between the religious composition of states and policy outcomes, we created a unique dataset that uses states as cases with variable attributes. In essence, anything measured at the state level can be included as a variable, which allowed us to compile information from multiple sources, including Census counts, national surveys, previous academic literature, political characteristics, and policy reports.

Measures

Dependent Variables

To assign each state a policy position on abstinence and contraception in sexual education, we followed previous literature (Stanger-Hall and Hall 2011) and used a 2010 report published by the Sexuality Information and Education Council of the US (SIECUS) on state level sexual education policy.⁴ The report classifies states on whether legislation at the state level: (0) makes no mention of abstinence in sex education; (1) specifies that abstinence must be covered in sexual education; or (2) mandates that abstinence must be stressed (focal) in sex education. Seven states were classified as not mentioning abstinence, 14 require abstinence coverage, and 29 stress abstinence education. The report also classifies state policy concerning whether information on contraception must be covered (1) or not (0). Thirty-three states do not mandate coverage of contraception in sexual education, while 17 do.

Independent Variables

To measure average level of religious service attendance at the state level, we used the 2007 Pew Religious Landscape Survey (RLS), a national survey with sufficient size ($n=35,957$) to disaggregate by state and retain adequate sample size

⁴ Report available at: <http://www.siecus.org/document/docWindow.cfm?fuseaction=document.viewDocument&documentid=73&documentFormatId=73>.

(smallest $n=200$, for Alaska, Wyoming, and Hawaii).⁵ The sample was generated using random digit dialing, and surveys were collected via phone. In general, disaggregated survey data has proven a reliable method of estimating attitudinal variables at the state level (Brace et al. 2002; Norrander 2001; Norrander and Manzano 2010). The RLS included a measure of frequency of religious service attendance that read: “Aside from weddings and funerals, how often do you attend religious services?” Answer choices ranged from “more than once a week” (1) to “never” (6). We reverse coded this measure so that higher scores indicated more attendance, then gave each state a score based on the average attendance of the individuals in the survey.

To measure overall religious adherence and evangelical Protestant adherence rates (per 1000 residents) by state, we use the 2000 Religious Congregations and Membership Study (RCMS) collected by the Association of Statisticians of American Religious Bodies (see Jones et al. 2002). These data present the most reliable and comprehensive assessment of religious participation and composition in the American States and are publically available from the Association of Religion Data Archives.⁶ We use adjusted adherence rates that account for systematic undercounting of certain religious groups, such as black Protestant denominations that do not release information on their membership totals (see Finke and Scheitle 2005).

Regarding Evangelical adherence rates, what classifies an individual as an “evangelical” is a matter of much debate (cf. Hackett and Lindsay 2008; Smith et al. 1998; Wilcox 1986). We use the classification developed by Steensland et al. (2000) because it has become the standard in empirical studies of American religion and because data from the RCMS uses the scheme.

To estimate the percentage of states’ populations that are scriptural literalists, we again used data from the Pew RLS. For literalism, the RLS asked, “Which of the following comes closest to your view?” with answer choices of “The Bible (or Torah, Koran, or other holy book inserted based on the respondent’s religious tradition) is the word of God,” and “(Holy book) is a book written by men and is not the word of God.” For respondents answering that a holy book in a given tradition was the word of God, a second question asked: “And would you say that:”, with answer options of “(Holy book) is to be taken literally, word for word on all subjects,” and “Not everything in (the holy book) should be taken literally, word for word.” We used these two questions to generate estimates for the percentage of a state’s population that are scriptural fundamentalists.

⁵ These numbers combine respondents for the continental and Alaska and Hawaii datasets.

⁶ Data available at: <http://www.thearda.com/Archive/Files/Descriptions/RCMSCY.asp>.

To assess the potential connections between conservative religion and politics at the state level, we also test models with Conger and Green’s (2002) measure for the relative strength or weakness of Religious Right organizations in state Republican parties. This measure was based on over 400 interviews with state politicians’ about their perceptions of the strength of Christian Right organizations.

To estimate population levels of theism, we again used the Pew RLS. A very generalized, simple question about God was asked on the survey: “Do you believe in God or a universal spirit?” Answer choices were no (0) and yes (1). We gave each state a variable for the estimated percentage of its residents that believe in God.⁷

In addition to our predictors of interest, we control for a number of sociodemographic and political variables that could render bivariate connections between our religious predictors and outcomes spurious. For sociodemographics, we used the Measure of America project, which compiles data primarily from the US Census (see Lewis and Budd-Phillips 2010). From this source, we assigned each state an indicator of the percentage of residents who lived in urban areas, an educational attainment index for citizens, and the percentage of all families that lived below the poverty line in 2010. We also included a dummy variable for whether a state is in the South according to the Census Bureau.

Regarding political characteristics, we used data from the National Conference of State Legislatures to determine the percentage of a state’s legislators that were women in 2010, as the percentage of legislators that are women correlates with policy outcomes on families and children (Bratton 2005; Thomas 1991). To assess the political ideology of state governments and the public, we used Berry et al.’s (1998, 2007, 2010) measures of citizen and government ideology based on data from 1960 to 1999 for each state, derived from citizens’ voting patterns and the attributes of individuals running for and elected to public office for the state. Higher scores indicate more liberal ideologies among the citizenry and government.⁸ Descriptive information on all variables used in primary analyses for this study are presented in Table 1.

⁷ The Pew RLS asked two additional questions about God. The first asked theists to rate the level of certainty in their beliefs, from absolutely certain (1) to not at all certain (4). The second asked believers to choose which was closer to their view, that God was “A person with whom people can have a relationship” or an “impersonal force.” We used these to give states scores on mean levels of certainty and anthropomorphism among believers. We also standardized these metrics, along with the yes/no theism measure and created an additive index of theism that combined belief in general, certainty, and anthropomorphism. None of these metrics were as effective predictors of sexual education policy as the simple yes/no measure aggregated to the state level.

⁸ In addition to the controls presented, we also tested models controlling for levels of direct democracy in state legislatures, percentage white in the population, median age, sex ratios, and income inequality. None of these metrics altered the relative impact of our primary findings.

Table 1 Descriptive statistics for measures used

| | Mean | Standard deviation | Min | Max |
|----------------------------|--------|--------------------|-------|--------|
| Percent urban | 73.88 | 17.91 | 30 | 100 |
| Education index | 4.92 | 0.68 | 3.8 | 6.5 |
| Percent family poverty | 9.90 | 2.75 | 5.5 | 17.3 |
| South | 0.30 | 0.46 | 0 | 1 |
| Citizen ideology | 49.29 | 14.84 | 22.2 | 86.47 |
| Gov. ideology | 44.32 | 26.30 | 2.5 | 97.92 |
| Percent women legis. | 24.14 | 6.85 | 10 | 37.2 |
| Total adherence rate | 400.13 | 132.58 | 151.4 | 650.1 |
| Mean attendance level | 3.70 | .37 | 2.98 | 4.63 |
| Evangelical adherence rate | 145.40 | 114.84 | 16.19 | 431.48 |
| Percent literalist | 34.96 | 11.96 | 14.26 | 67.15 |
| Religious right influence | 2.05 | .53 | .89 | 2.86 |
| Percent theist | 94.07 | 2.79 | 85.6 | 99.1 |
| Abstinence policy | 1.44 | .73 | 0 | 2 |
| Contraception covered | .34 | .49 | 0 | 1 |

Data sources: 2010 Measure of America; Berry et al. (1998); 2010 National Conference of State Legislatures; 2000 RCMS; 2007 Pew Religious Landscape; Conger and Green (2002); 2010 SIECUS Report

Analytic Strategy

First, we provide means tests for our predictors of interest and outcomes by assessing the measures for religious characteristics by the three categories for states' positions on abstinence education and among the two categories for contraception education. We conducted one-way ANOVA and *t* tests on these outcomes, respectively. We then present cumulative logistic regression models predicting states' stances on abstinence education and binary logistic regression models predicting stance on contraception. All variables were mean centered before entry into multivariate models. We calculate and present standardized metrics for each predictor by multiplying the unstandardized coefficients by the standard deviation for each predictor, divided by the standard deviation of the dependent variable. We used Allison's (1999) simplifying assumption that the standard deviations of the logistic dependent variables were 1.8138. We used the unstandardized results of these logistic models to depict graphically the probability of specific policies based on the strongest religious composition predictor. To determine which among the competing hypotheses has stronger support, we compare *F* and *t* test scores in bivariate contexts, and *r*-squared and $-2 \log$ likelihood statistics in multivariate contexts.

Results

Table 2 shows the mean levels of the religious composition predictors by whether states' policies do not require, require,

Table 2 Means for religious predictors of state policy on abstinence coverage in sexual education

| Variable | Not required | Covered | Stressed | <i>F</i> |
|----------------------|--------------|---------|----------|----------|
| Total adherence rate | 564.18 | 574.96 | 620.52 | .85 |
| Average attendance | 3.40 | 3.61 | 3.82 | 4.83* |
| Evang. adherence | 66.12 | 114.27 | 179.56 | 3.87* |
| Percent literalist | 25.27 | 32.21 | 38.63 | 4.62* |
| Religious right | 1.76 | 1.87 | 2.21 | 3.48** |
| Percent theist | 89.96 | 93.40 | 95.17 | 14.05*** |

*** $p \leq .001$; ** $p \leq .01$; * $p \leq .05$

or stress abstinence in sexual education. Average level of service attendance, Evangelical adherence rate, proportion literalist, and strength of the Christian Right in state Republican parties were all significantly related to abstinence policy; however, the proportion of the population that was theist was by far the strongest religious composition predictor, with an *F* value of 14.05. The second strongest predictor was average attendance level with an *F* value of 4.83.

Table 3 shows the results of independent samples *t* tests using whether states do or do not require the coverage of contraception in sexual education as the grouping categories and the religious composition measures as outcomes. Only overall adherence rate and influence of the Religious Right were significantly associated with state policy on contraception, with adherence having a slightly stronger relationship (*t* value of 2.57 compared to 2.27).

Table 4 presents ordinal logistic regression models predicting states' stances on the role of abstinence in sex education. Evangelical adherence rate, Religious Right influence in state Republican parties, and proportion of the population that is scripturally literalist were all significant predictors of states' stances on abstinence in sexual education; however, the proportion of states' populations that are theist was the strongest predictor of abstinence policy. Model 6, which included the measure of theism, was easily the model best fit to the data, with an *r*-squared of .5, compared to the second strongest model using literalism as a predictor, which had an *r*-squared value of .33.

Table 3 Means for religious predictors of state policy on contraception coverage in sexual education

| Variable | Not required | Required | <i>t</i> |
|-----------------------|--------------|----------|----------|
| Total adherence rate | 632.51 | 536.52 | 2.56* |
| Average attendance | 3.75 | 3.59 | 1.51 |
| Evangelical adherence | 157.68 | 121.54 | 1.06 |
| Percent literalist | 35.69 | 33.54 | .59 |
| Religious right | 2.17 | 1.83 | 2.27* |
| Percent theist | 94.36 | 93.14 | 1.60 |

*** $p \leq .001$; ** $p \leq .01$; * $p \leq .05$

Table 4 Ordinal logistic models predicting likelihood a state requires or stresses abstinence in sexual education (standardized coefficients)

| Variable | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 |
|-------------------|---------|---------|---------|---------|---------|----------|
| % urban | .122 | .106 | .175 | .195 | .106 | .349† |
| Education index | .243 | .266 | .233 | .587* | .383 | .381 |
| % family poverty | .431 | .413 | .222 | .278 | .387 | .338 |
| South | -.042 | -.237 | -.218 | -.562 | -.142 | -.350 |
| Citizen ideology | -.188 | -.164 | .049 | -.196 | .106 | -.180 |
| Gov. ideology | .006 | .087 | -.101 | .029 | .058 | .087 |
| % women legis. | -.287 | -.155 | -.212 | -.162 | -.355 | -.110 |
| Adherence rate | .013 | | | | | |
| Mean attendance | – | .478† | | | | |
| Evang. rate | – | – | .696 | | | |
| % literalist | – | – | – | 1.120* | | |
| Rel. right index | – | – | – | – | .571† | |
| % theist | – | – | – | – | – | 1.086*** |
| Model Stats | | | | | | |
| Constant (cut 1) | -2.215 | -2.287 | -2.294 | -2.437 | -2.392 | -2.955 |
| Constant (cut 2) | -.473 | -.473 | -.505 | -.528 | -.472 | -.550 |
| N | 50 | 50 | 50 | 50 | 50 | 50 |
| R-Squared | .215 | .270 | .266 | .326 | .278 | .498 |
| -2 log likelihood | 84.657 | 81.742 | 81.932 | 78.568 | 81.286 | 67.226 |

Source: Compiled and aggregated dataset of American states

*** $p \leq .001$; ** $p \leq .01$; * $p \leq .05$; † $p \leq .1$

Figure 1 graphically displays the predicted probability of different state policies on abstinence in sexual education by levels of theism. At the lowest levels of theism, the probability of a state policy stressing abstinence is less than .01, while it is .98 at the highest levels of theism. In effect, the distribution of theism by state covers nearly the entire probability distribution of states' likelihood of enacting policy stressing abstinence in

sex education programs. Overall, population levels of theism are a strong predictor of policies about abstinence in sexual education.

Table 5 presents the results of binary logistic regression models predicting whether a state mandates coverage of contraception in sexual education. Of the six different measures of population level religious characteristics, only overall

Fig. 1 Probability of abstinence sex education policy outcomes by percent theist

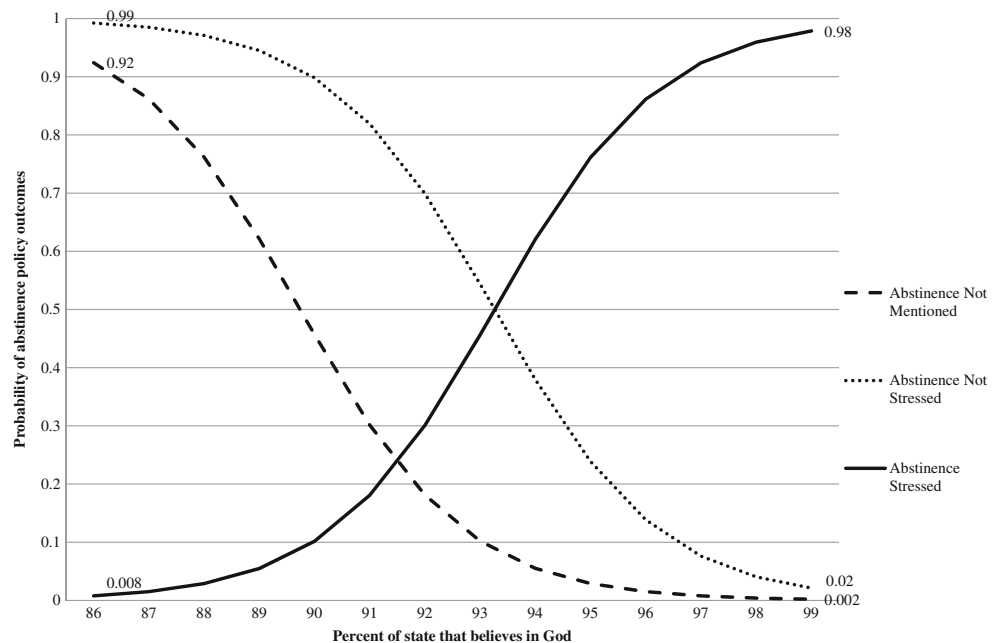


Table 5 Binary logistic models predicting likelihood a state mandates coverage of contraception in sexual education (standardized coefficients)

| Variable | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 |
|-------------------|---------|---------|---------|---------|---------|---------|
| % urban | -.048 | -.049 | -.062 | -.018 | -.040 | -.052 |
| Education index | .491 | .072 | .060 | .147 | .042 | .046 |
| % family poverty | .263 | .036 | .056 | -.076 | -.003 | .008 |
| South | .454 | .536 | .493 | .300 | .436 | .442 |
| Citizen ideology | .475 | .393 | .360 | .442 | .385 | .417 |
| Gov. ideology | .101 | .174 | .246 | .232 | .203 | .203 |
| % women legis. | -.064 | .215 | .280 | .344 | .302 | .268 |
| Adherence rate | -.731* | | | | | |
| Mean attendance | – | -.285 | | | | |
| Evang. rate | – | – | -.190 | | | |
| % literalist | – | – | – | .295 | | |
| Rel. right index | – | – | – | – | -.088 | |
| % theist | – | – | – | – | – | -.107 |
| Model Stats | | | | | | |
| Constant | -.896 | -.825 | -.807 | -.815 | -.824 | -.832 |
| N | 50 | 50 | 50 | 50 | 50 | 50 |
| R-Squared | .466 | .350 | .341 | .44 | .338 | .339 |
| -2 log likelihood | 43.596 | 49.550 | 49.944 | 49.838 | 50.110 | 50.037 |

Source: Compiled and aggregated dataset of American states

*** $p \leq .001$; ** $p \leq .01$; * $p \leq .05$; † $p \leq .1$

adherence rate significantly predicted the likelihood of state policy requiring the coverage of contraception. The r -squared and -2 log likelihood statistics were slightly stronger for adherence rate (.47 and 43.6, respectively) compared to the second strongest model, which used proportion literalist as a predictor (.44 and 49.8). Because the effect of adherence rate is negative for predicting coverage of contraception, it is effectively a high level of *non*-adherents (see Baker and Smith 2009) that predicts a high probability of states having a sexual education policy that mandates the coverage of contraception.

Figure 2 graphically displays the probability that a state mandates coverage of contraception in sexual education by overall adherence rate. At the lowest levels of religious adherence, i.e., the most secular states, the probability of contraception coverage being required is .94. Meanwhile, at the highest levels of religious adherence, the probability is .006.

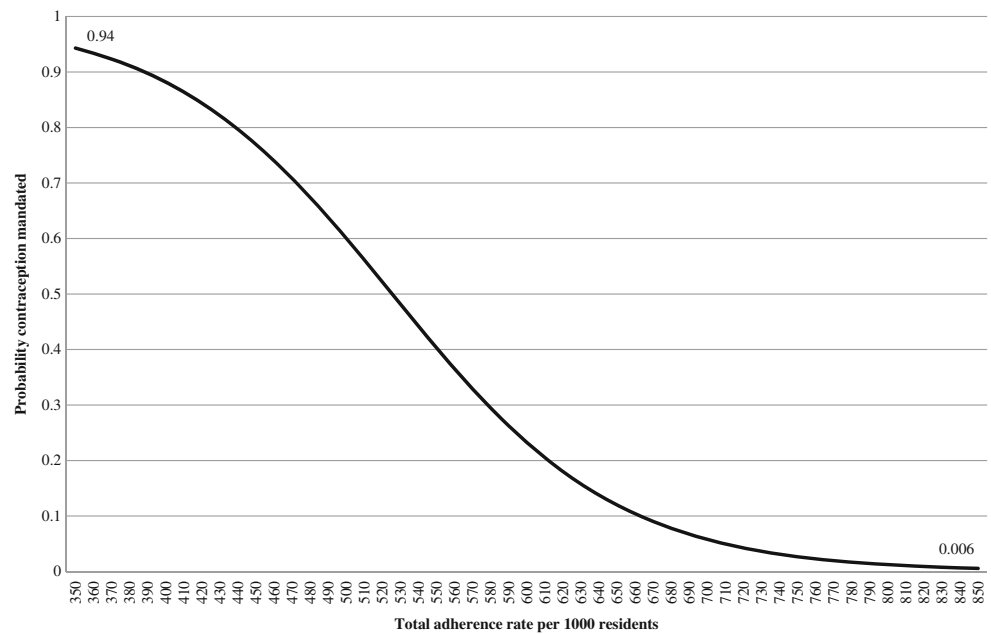
Discussion

Religious composition is a strong predictor of sexual education policy at the state level, with both theists and secularists exerting influence—albeit on different policies. This provides empirical support to the commonsense notion that battles over sexual education often pit religious traditionalists against progressive secularists regarding policy outcomes, and isolates which aspects of religiosity at the population level exert influence on sexual education policies.

Although we were interested in testing the population measure of theism for theoretical reasons, we were genuinely surprised by its much stronger covariance with abstinence policy relative to the measures of participation and fundamentalism. Notably, all American states have relatively high population levels of theism. Even in Connecticut, the state with the lowest level of theism, 85.6 % of respondents to the Pew RLS were theists. Still, few would argue that Connecticut has a far different religious culture and moral community compared to states at the high end, such as Mississippi, where 99.1 % of respondents were theist. It seems that while there are low levels of absolute variation in theism at the aggregate level, states' relative positioning remains quite telling with regard to religious cultural context. In essence, the yes/no God question may be crude theologically, but it can still be a powerful metric of moral community. This raises both promise and questions for future research investigating theism at the aggregate level. Examining aggregate theism in more contexts and in relation to a greater variety of social and political outcomes is warranted.

Because our analyses were performed in a cross-sectional manner, an important aspect of abstinence-only education has remained just out of the picture. Namely, many states had high levels of theism prior to the 1990s, but few of them had mandated abstinence-only sex education programs. What has changed since the 1990s (beginning in the late 1970s and 1980s) is the political meaning of religion in the USA (Domke and Coe 2010; Layman 1999). This shows that population religious characteristics are not a sufficient condition of

Fig. 2 Probability of state mandating coverage of contraception in sexual education by religious adherence rate



specific sex education policy outcomes, but rather necessary pre-conditions that structure where specific changes occur as the political landscape evolves. As federal block grants for abstinence education became available in the 1990s, states were fiscally incentivized to pursue abstinence-only policies (see Doan and MacFarlane 2012). Locations with higher levels of population theism are primarily where such policies and funding were pursued.

Specific aspects of religiosity among mass publics, namely levels of theism and the presence of non-adherents, create cultural contexts in which certain policy efforts can be politically profitable.⁹ In locations where theism is a given, opportunistic and religiously motivated politicians can enact policies aimed at abstinence, while in locations where there are greater numbers of secular citizens, opportunistic or public health minded politicians can enact policies aimed at contraception. For policy makers, these results indicate locales where varying types of policies will be more or less likely to succeed, but also suggest potentially successful options for framing opposition to specific policies. For instance, opposition to abstinence-only education policies emphasizing public health concerns for adolescents has a greater chance of success than framing based on separation of church and state, as the latter would only feed into the perception that non-abstinence programs are inherently opposed to religious views.

Although our analyses provide an empirical evaluation of the links between states' religious compositions and policy outcomes, they necessarily miss much of the variation in sexual

education policy. Although states often set general parameters for what can, must, or must not be taught in sexual education, local school districts typically retain latitude on how, if at all, sexual education curricula will be administered. For this reason, a more localized assessment would improve the current findings (see Landry et al. 1999). While demographic and religious data at the county level are readily available, a compilation of sexual education policy at the county level is needed to undertake a more localized empirical assessment.

We have offered a decidedly empirical perspective on the debate about sexual education, which has relevance for both policy makers and scholars. Concerning policy making, we have outlined some of the cultural parameters that influence where particular sexual education policies are enacted. On a strategic level, these findings can be used to identify locations where attempts to enact particular types of sex education policies may be more (or less) successful. The fact that general theism was the best predictor of abstinence policy over measures of the presence of specific religious traditions or theological positions suggests a broad base upon which abstinence advocates can draw. For advocates of comprehensive sex education, this indicates the need for a broad coalition as countermovement. Discursively, this may mean focusing on comprehensive sex education for the safety and wellbeing of students, while leaving related matters of sexual politics and liberation aside—at least if political efficacy is the goal. Concerning research, scholars in diverse fields are coming to an understanding that religious composition can influence a variety of social, political, and health outcomes; however, connections to social policy remain largely unexplored. We have outlined an instance of these connections, in the hopes that many more will follow.

⁹ The relative consistency of levels of literalism for predicting both outcomes of interest suggest that this facet of population religiosity also warrants further inquiry.

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