

*Interdisciplinary Journal of  
Research on Religion*

---

Volume 7

2011

Article 4

---

The Effect of Religious Background  
on Sexual Orientation

Jacob Felson\*

Department of Sociology, William Paterson University  
Wayne, New Jersey

---

\* felsonj@wpunj.edu

# The Effect of Religious Background on Sexual Orientation

Jacob Felson

Department of Sociology, William Paterson University  
Wayne, New Jersey

## Abstract

Does religious background influence sexual orientation? Research on the etiology of sexual orientation has focused almost exclusively on biological influences; however, the evidence suggests that biological influences are not deterministic. Family socialization could also play a role. In particular, parents' religion may have an impact, since religion has a powerful influence on attitudes about homosexuality. Using three nationally representative datasets, I examine the impact of parents' religion on the sexual orientation of their offspring. The findings suggest that people from Jewish and secular backgrounds are more likely to report homosexual attraction, identity, and behavior than are people from other backgrounds. By contrast, individuals who were reared in conservative Protestant homes are least likely to report homosexual attraction, identity, or behavior. These findings are suggestive rather than definitive, since differences between groups are not consistent in magnitude or significance across datasets. The influence of religious background on sexual orientation generally appears to be modest, except in the case of Jewish heritage, the effect of which is particularly pronounced among women.

The United States has been roiled in a debate about whether the states should recognize marriage contracts signed by same-sex partners. Opinions about the legality of same-sex marriage are closely related to opinions about the morality of sexual relations between same-sex adults (Olson, Cadge, and Harrison 2006). Attitudes about both of these issues are strongly influenced by religion and religiosity (Cochran and Beeghley 1991; Whitley 2009). Churchgoing conservatives tend to see same-sex sexual relations as a violation of basic values and oppose same-sex marriage, while liberals, who are generally more secular, tend to perceive homosexuals as a disadvantaged minority and see same-sex marriage as a civil rights issue. The arguments between these two sides have been referred to as a “culture war,” and the possibility of concessions by one side or the other seems unlikely if not impossible.

How powerful is the political movement opposing gay rights? Sociologists have found that political mobilizations are weaker when identity markers cross-cut each other than when they coincide. For example, Alesina, Glaeser, and Sacerdote (2001) found evidence that support for the welfare state is weaker in the United States than in Europe because class identities are cross-cut by racial identities in the former but not in the latter. With regard to the political debate over gay rights, the opposition movement will be weaker to the extent that religious divisions cross-cut sexual orientation. That is, if homosexuals are as likely to be born to conservative religious parents as to religious liberal and secular parents, then conservatives will have more difficulty mobilizing in favor of policies that negatively affect gays and lesbians. Very little research has examined whether religious socialization affects sexual orientation. This article addresses that issue.

#### *WHY THE QUESTION IS IMPORTANT*

The question of whether parental religion affects sexual orientation is important for several reasons. First, as was stated above, answering the question can help scholars to gauge the power and durability of the political movement opposing gay rights in the United States. If homosexuals are as likely to be reared in conservative religious families as in liberal religious and secular families, then as many conservatives as liberals will find themselves with gay relatives. The more nonheterosexuals there are in conservative families, the weaker the opposition to gay rights is likely to be. Group solidarity depends on strict boundary maintenance between groups, and boundaries between the right and left on gay rights will be weaker if conservatives have more gay members in their families. Perceptions of “us” and “them” will likely be lesser for conservatives who have gay family members. Furthermore, there is evidence that heterosexuals who have

more contact with homosexuals have more positive attitudes about homosexuality (Herek and Capitanio 1996).

Conservatives may be more likely to be influenced by contact with gay family members, in particular gay children, than by contact with gay neighbors or gay coworkers. People often see family members as extensions of themselves or at least as people with whom they have (or are expected to have) a natural allegiance. In particular, the connection felt by a parent to his or her child is typically the strongest of all human bonds. Faced with the choice between rejecting their child and rejecting their beliefs, at least some parents (and other relatives) may choose the latter. Though slow and unacknowledged at first, a shift in attitudes may eventually occur in some cases. Conservative religious parents with gay children might still oppose gay rights in principle but be less willing to take political action against same-sex marriage or other gay rights issues. For this reason, it is important to know whether conservative religious parents are as likely to have nonheterosexual children as liberal religious and secular parents are.

The question of whether parental religion affects sexual orientation also informs the larger debate about whether sexual orientation is a product of socialization or determined by prenatal biology. Most psychologists studying the issue believe that sexual orientation is largely the result of differences in exposure to androgens prenatally (Weill 2009). By contrast, several sociologists have argued that sexual orientation is partly the result of the degree to which parents socialize their children according to sex-specific norms and values (Bearman and Brückner 2002). The present study will provide further evidence about the relative influence of nature and nurture on sexual orientation. If it finds that religion has an effect on sexual orientation, then we can conclude that sexual desire is culturally malleable. On the other hand, if the study finds that religion has no impact on sexual orientation, then this provides further evidence that sexual orientation is a product of biology.

#### *CONCEPTUALIZING SEXUAL ORIENTATION*

Sexual orientation encompasses at least four overlapping components: attraction, sexual preference, sexual identity, and behavior. Same-sex (opposite-sex) attraction is defined as sexual arousal in response to same (different) gendered stimulus. Sexual attraction may be manifested as a physiological response to a stimulus or psychologically in terms of fleeting sentiments, fantasies, or romantic love. Although sexual preference and sexual identity are essentially synonymous in Western societies, the concepts are theoretically distinct. Sexual preference is determined by the gender(s) of the person(s) to whom one is attracted. By contrast, sexual identity is a reflected appraisal and a master status. In the context of the present study, sexual behavior refers to the gender(s) of one's sexual partners.

In this article, I examine how parental religion affects sexual attraction, identity, and behavior. First, I review the evidence on the incidence and etiology of sexual preference. I then review the evidence on the incidence and etiology of homoerotic behavior. Finally, I discuss how parental religion is expected to influence sexual orientation.

### *INCIDENCE OF SAME-SEX ATTRACTION AND PREFERENCE*

In the United States, about one in twenty men and one in six women report having experienced same-sex attraction (Savin-Williams and Ream 2006). Because these estimates rely on self-reports and there is considerable discomfort with homoeroticism in the United States, the actual percentage of people who experience same-sex sentiment may be higher. It is difficult to gauge the capacity of the population to experience same-sex arousal using survey data, since questions about attraction are likely to be interpreted through the lens of sexual identities that are perceived to be mutually exclusive. There is evidence that both women who identify as heterosexual and women who identify as lesbian are aroused to some extent by imagery of women as well as by imagery of men (Chivers et al. 2004). Meanwhile, arousal in men, as measured in response to stimuli by penile plethysmography, is dichotomous and consistent with self-identification (Chivers et al. 2004).

While same-sex attraction is more common among women than among men, same-sex preference is more common among men than among women. Approximately 2 to 4 percent of men prefer other men as sex partners, and about 1 to 2 percent of women prefer other women as sex partners (Weill 2009: 8). True bisexuality—or the lack of a gender preference—is rare among men but somewhat more common among women (Rahman and Wilson 2003).

Below, I review the literature about the etiology of sexual preference and discuss how this study will add to this literature. Since most recent research about the origins of sexual preferences focuses on biological forces, much of this review is devoted to explanations of this kind. I discuss the following possible explanations: neurohormonal theory, the maternal immunity hypothesis, evidence of genetic influence, other evidence of biological origins, and social psychological explanations.

### *BIOLOGICAL ETIOLOGY*

#### *The Neurohormonal Theory*

According to the dominant theory on the subject, sexual preference results from the influence of sex hormones (androgens) on the brain of the fetus as it develops

in the womb (Rahman 2005). Male fetuses are typically exposed to more androgens (primarily testosterone) than are female fetuses. It is believed that differential exposure to androgens is responsible for many of the physiological and behavioral differences that are observed between men and women. Males who were exposed to unusually low levels of androgens prenatally will tend to exhibit traits that are more typical of women, including a preference for male sex partners. By the same token, females who were exposed to unusually high levels of androgens prenatally will tend to exhibit traits that are more typical of men, including a preference for female sex partners. This account of sexuality is called the *neurohormonal theory*.

There is no direct way to measure the level of androgens that human fetuses produce in the womb, so there is currently no way to test neurohormonal theory directly. Evidence for the theory comes in part from animal experiments. When researchers injected pregnant rats with testosterone, the genetically female offspring “display[ed] a level of mounting behavior comparable to that of normal males” and were less likely to assume the “female receptive posture” than were other female rats (Weill 2009: 34). By the same token, male rats who are deprived of testosterone during a critical period by castration “become sexually attractive to normal males and display the female receptive posture when mounted by a normal male” (Weill 2009: 35). When scientists injected pregnant rhesus monkeys with low doses of testosterone, they observe the female offspring engaging in more male-typical behavior (Wallen 1996).

Other evidence for the neurohormonal theory comes from rare conditions that affect testosterone exposure. Individuals with congenital adrenal hyperplasia (CAH) produce very high levels of testosterone, starting early in gestation. Studies have found that females with CAH exhibit a variety of more so-called masculine characteristics, including an attraction to other women, than do age-matched comparison females (Cohen-Bendahan, van de Beek, and Berenbaum 2005). Nonetheless, a majority of women with CAH are heterosexual, suggesting that testosterone exposure cannot explain sexual orientation entirely.

Observations of a condition called complete androgen insensitivity syndrome (CAIS) also suggest that testosterone exposure could influence sexual orientation. Individuals with CAIS are genetically male and produce testosterone but lack functioning androgen receptors and hence develop female genitalia and exhibit female-typical interests, including a preference for male sex partners (Hines, Ahmed, and Hughes 2003). Individuals with this condition are reared as female, and CAIS typically is not discovered until the age of menarche, when individuals with CAIS fail to menstruate. Because people with CAIS have female genitalia and are reared as female, we cannot rule out the possibility that social forces are responsible for their sexual preference. So the evidence from people with CAIS is consistent with both social and biological explanations of sexual orientation.

If the neurohormonal theory is true and prenatal androgen exposure is largely responsible for sex-typical characteristics, including attraction, then we should find an association between masculinity-femininity and sexual orientation. Homosexuals would be expected to exhibit more female-typical characteristics, while heterosexuals would be expected to exhibit more male-typical characteristics. The connection between masculinity-femininity and sexual orientation has been documented in many studies (Bailey and Zucker 1995) and across societies (Lippa 2007). Rieger and colleagues (2008) found an association between independent ratings of gender nonconformity in home videos from childhood and sexual orientation later in life. Lippa (2008) found that homosexual men and women were much more likely to recall gender nonconformity in their childhood than were heterosexual men and women. Homosexual men also had an affinity for occupations preferred by heterosexual women, while homosexual women had an affinity for occupations preferred by heterosexual men. Likewise, most studies show that homosexuals perform similarly on cognitive tests to opposite-sex heterosexuals and differently from same-sex heterosexuals (Weill 2009). On tasks involving mental rotation, homosexual men and heterosexual women tend to perform less well relative to heterosexual men. On tasks involving verbal fluency, homosexual men and heterosexual women tend to perform better than heterosexual men.

But the evidence linking sexual preference to sex-typical traits is more consistent for men than for women. Udry and Chantala (2006) found that masculinity-femininity among adolescents was related to sexual orientation among men but not among women. Bogaert (2010) found that homosexual men were consistently shorter and lighter than heterosexual men but that homosexual women were no different from heterosexual women in terms of height or weight.

Further complicating the matter, some aspects of sexual behavior are clearly unrelated to sexual orientation. For example, in terms of the number of preferred sex partners, homosexual men are similar to heterosexual men in preferring more, while homosexual women are similar to heterosexual women in preferring fewer.

Overall, the evidence suggests that the relationship between levels of prenatal androgen exposure and sexual orientation is far from deterministic. Neurohormonal influences may coincide with familial influences.

### *The Maternal Immunity Hypothesis*

The maternal immunity hypothesis was developed to explain the observation that homosexual men had more older brothers than straight men do (Bogaert 2000, 2003). According to the maternal immunity hypothesis, pregnant women develop an immune response to male fetuses in their wombs. When the fetus is male, the mother's body "interprets" it as foreign in some ways and develops antibodies

that cross the placental barrier and affect the sexual differentiation of the fetal brain. Female fetuses do not prompt an immune response, since they are not “interpreted” as foreign by the mother’s body. According to the maternal immunity hypothesis, each additional male offspring acts like a booster shot, bolstering the mother’s immunological response to later-conceived male fetuses and increasing the chances they will be homosexual.

The evidence for the maternal immunity hypothesis is weak. The relationship between homosexual attraction and older brothers did not show up in a Danish population dataset (Frisch and Zdravkovic 2008) or in a nationally representative dataset of adolescents in the United States (Bearman and Brückner 2002; Francis 2008a). Furthermore, there might be social reasons why homosexual men would have more older brothers than heterosexual men would. Boys who have more older brothers at home have more opportunity to experiment with homoeroticism and may develop an attraction to other males as a result (Bogaert 2003). As with neurohormonal theory, the evidence in favor of the maternal immunity hypothesis is not strong enough to rule out social explanations for sexual orientation.

### *Genetic Effects*

The evidence suggests that genetic effects on sexual orientation are relatively powerful but far from determinative. Heritability estimates for sexual orientation from twin studies using representative samples have varied from as low as 0 percent (Bearman and Brückner 2002) to as high as 39 percent (Långström et al. 2008). Genetic linkage studies that suggest a role for genes (Hamer et al. 1993; Hu et al. 1995) have not survived replication (Hamer et al. 1993; Hu et al. 1995; Rice et al. 1999).

The upshot of this research is that genes can account for the sexual orientation of only a minority of individuals. Concordance rates for monozygotic twins are surprisingly low (around 32 percent among adults in the United States and 7 percent among adolescents). Twin research also suggests that familial influence on sexual orientation is modest. Over half of the variation in sexual orientation occurs between siblings within the same families (Bailey, Dunne, and Martin 2000; Bearman and Brückner 2002; Kendler et al. 2000; Långström et al. 2008). In other words, the evidence suggests that family factors taken as a whole account for less than half of the variation in sexual orientation. For this reason, we would expect that the effect of parents’ religion on attraction will be modest.

### *Other Evidence*

Further evidence that biological forces play a role in the etiology of sexual orientation comes from studies linking sexual orientation to physiological differences.

LeVay (1991) found that a part of the brain that is believed to regulate male-typical sexual behavior, called the interstitial nucleus of the anterior hypothalamus (INAH), was significantly smaller in the brains of heterosexual women and homosexual men than in the brains of heterosexual men. However, the association between size of the INAH and sexual orientation was not particularly strong, and as LeVay acknowledged, causality could run in either direction.

Other research has found neurological differences between gay men and straight men (Allen and Gorski 1992; Swaab and Hofman 1990). But again, associations between brain anatomy and sexual orientation are relatively weak. Although several prominent researchers (Rahman and Wilson 2003; Weill 2009) have asserted that biological forces determine sexual preference, the evidence in support of biological forces is not strong enough at present to preclude the possibility of social forces having an influence as well.

#### *SOCIAL PSYCHOLOGICAL ETIOLOGY: GENDERED SOCIALIZATION*

While there has been considerable research examining biological causes of sexual orientation, there has been very little research examining psychosocial causes of sexual orientation. The results of several twin studies suggested that almost all of the familial resemblance that is observed for sexual orientation is attributable to genes, not family environment (Kendler et al. 2000). Nonetheless, there is some limited evidence suggesting that children who experience less gendered socialization are more likely to report same-sex attraction. Bearman and Bruckner (2002) found that males in opposite-sex twin pairs without older brothers were much more likely to report same-sex attraction than were other sibling pairs. They reasoned that male twins whose co-twins are female experience less gendered socialization because “equality norms put constraints on the extent to which parents and others engage in gender-socializing behavior toward opposite sex twins.” As a result, Bearman and Bruckner argued, males with female co-twins should tend to behave in less gender-typical ways in general and should be more likely to report same-sex attraction in particular. Meanwhile, Bearman and Bruckner reasoned that gender-neutral socialization of opposite-sex twins doesn’t affect the gender-typicality of female co-twins’ behavior, since gender norms are less stringent for girls than for boys.

Bearman and Bruckner (2002) refute an alternative, neurohormonal explanation for the high proportion of same-sex attraction that is observed among opposite-sex twins. According to the neurohormonal theory, same-sex attraction could be more common among opposite-sex male twins because these twins are “feminized” by hormone transfer from their female co-twins in utero. However, Bearman and Bruckner (2002) found that the rate of same-sex attraction was elevated only among males in opposite-sex twin pairs who lacked older brothers.

Male twins with female co-twins who had an older brother were no more likely to report same-sex attraction than were nontwin males. Bearman and Bruckner reasoned that the existence of older brothers in the family provides parents with gendered scripts that are lacking for males in opposite-sex twin pairs who grow up without older brothers. Bearman and Bruckner argued that overall, the evidence supported the existence of social rather than biological explanations for the etiology of sexual orientation.

Bearman and Bruckner's findings are highly tentative. They speculated about, but found no direct evidence for, the effect of gender socialization on sexual orientation. There is in fact no evidence linking the gender socialization of parents to the sexual orientation of their children. One way to investigate this issue further is to look at rates of same-sex attraction reported by children of gay parents. Gay parents may be less likely than straight parents to emphasize conformity to sex-typed gender norms (Stacey and Biblarz 2001). If "gendered" parenting makes a difference, then we might expect higher rates of same-sex attraction among children reared by gay parents than among children reared by straight parents. The research has found that, by and large, children who were born to or adopted by lesbian mothers are no more likely to report same-sex attraction than are children reared in other families (Golombok and Tasker 1996; Patterson and Sutfin 2004).

However, there is evidence that women who grow up in environments that are more accepting of homosexuality are more likely to report same-sex attraction. Dickson, Paul, and Herbison (2003) found that rates of women reporting same-sex attraction were higher in New Zealand, where fewer people disapprove of homosexuality, than in the United States or in the United Kingdom, where attitudes about homosexuality are relatively disapproving. Rates of same-sex attraction among men were similar across the three nations.

If the environment affects the prevalence of same-sex experience, then we should find that the experience of same-sex attraction is more common among more highly educated people, since education is positively associated with acceptance of gays and lesbians. There is indeed some evidence that same-sex attraction is at least more commonly reported by more highly educated people than among less highly educated people (Dickson, Paul, and Herbison 2003; Laumann et al., 1994).

In light of previous research, I expected that people who grew up with conservative religious parents would be less likely to report same-sex attraction than would people who grew up with secular or liberal religious parents. However, I expected that the effect of parents' religion on same-sex attraction would be modest, given the evidence from twin studies suggesting that familial influence is weak.

### *INCIDENCE AND ETIOLOGY OF HOMOEROTIC BEHAVIOR*

Homosexual behavior is both more common (Wells, McGee, and Beauvais 2011) and more subject to cultural influence than is sexual preference. There is great variation in sexual networks across societies. The most common system is one in which culturally defined homosexuals have sex with the “typical” males in the society (Cardoso and Werner 2003). The system that is currently prevalent in the West, in which individuals of similar age who are defined as homosexuals tend to have sex with each other, is historically rare (Cardoso and Werner 2003).

Research has found that same-sex sexual behavior is more common in contexts in which the normative climate is more accepting of homosexuality. Between the late 1980s and early 2000s in the United States, as attitudes about homosexual sex became more accepting and legal sanctions on sex between same-gender individuals were removed (Loftus 2001; Summersgill 2007), the percentage of people reporting a recent same-gender sex partner increased (Butler 2005). The increase in same-gender partners was significantly greater among women than among men. In 1988, 0.2 percent of women reported having had a same-sex sexual partner in the last year. In 2002, the figure was 3.5 percent. Reports of same-sex sexual contact since age 18 also were higher among later birth cohorts of women than among earlier birth cohorts of women (Turner et al. 2005), perhaps owing to liberalizing attitudes. Reports of same-sex sexual experiences among women also seem to have increased in the Netherlands as attitudes about homosexuality became more positive in that country (Kuyper and Vanwesenbeeck 2009).

There is also suggestive evidence that the incidence of same-gender sexual behavior declines when the health risks of this behavior worsen (Francis 2008b). Francis found that men who had relatives with AIDS were much less likely to report same-sex attraction, behavior, and identity.

Because research has shown that sexual behavior is more culturally contingent than sexual preference is, I expected that parents’ religion would have a bigger impact on same-sex sexual behavior than on sexual preference. In light of previous research, I also expected that parents’ religion would have a larger effect on homosexual behavior among women than among men.

### *RELIGION AND HOMOSEXUALITY*

Religion has a powerful influence on attitudes about homosexuality in many nations (Adamczyk and Pitt 2009). Research has shown that people who identify with conservative Protestant denominations are more likely than Catholics or Jews to perceive sex between individuals of the same sex as immoral (Fisher et al.

1994). In general, people who show more religious commitment are more likely to believe that homosexual activity is immoral (Whitley 2009).

While there has been considerable research on religion and attitudes about homosexuality, there is very little research about religion and homosexuality itself. In one of the few existing studies on the topic, Sherkat (2002) found that men who had had sex with other men were more likely to attend religious services than other men were, after controlling for a variety of demographic characteristics. By contrast, Remafedi and colleagues (1992) found that religious junior and senior high school students in Minnesota were less likely to report homoerotic attraction or a nonheterosexual identity than were their secular counterparts. However, Remafedi and colleagues found no difference in reports of homoerotic fantasy by religiosity.

In previous examinations of the relationship between religion and sexual orientation, the causal ordering between variables was uncertain. It is possible that sexual orientation influences religious identity and religious sentiment, especially if gay youths reject their religion. In the present study, causal order will be clear, as I focus on the effect of parents' religion, which will almost always be established before their children's sexual orientation is.

### *THE PRESENT STUDY*

In this study, I examine the effects of parents' religion on sexual preference and same-sex sexual behavior using three nationally representative datasets. On the basis of the literature reviewed above, I expected that parents' religion would have a greater effect on the sexual orientation and the sexual behavior of their daughters than of their sons. As was discussed above, women's sexuality is more malleable and context-specific than men's sexuality is (Baumeister 2000). For this reason, I expected that women who grow up in secular or religiously liberal homes may be more likely than women who grow up in conservative religious homes to acknowledge experiences of same-gender sexual arousal.

I expected that parents' religion would have a greater impact on their children's same-gender sexual behavior than on their children's sexual preferences. Sexual behavior may be more subject to social control than sexual preferences are. Unlike sexual preference, sexual behavior requires privacy as well as the participation of another person. Individuals from conservative religious homes may acknowledge same-sex preferences but not act on them, owing to guilt or because they feel inhibited from seeking out communities of individuals who share their preferences. By contrast, individuals from secular or religiously liberal homes who acknowledge same-sex preferences will be more likely to act on their preferences without guilt or shame and will feel less inhibited from seeking out communities of others who share their sexual preferences.

In general, I expected the effect of parents' religion on their children's sexual orientation to be relatively modest. Twin studies have detected little or no influence of family shared environment on sexual orientation. Moreover, most children in the United States, whether their parents are religious conservatives or secular, will be exposed to an adolescent culture in which homosexuality is viewed with some negativity.

### *Data and Methods*

In this study, I use three surveys that contain questions about religion as well as questions about sexual orientation: the General Social Survey (GSS), the National Health and Social Life Survey (NHSLs), and the National Longitudinal Study of Adolescent Health (Add Health).

The GSS is a nationally representative, cross-sectional survey on wide-ranging topics of people 18 years of age and older living in noninstitutionalized settings in the United States. It was administered twenty-seven times by the National Opinion Research Center (NORC) between 1972 and 2008 (Davis, Smith, and Marsden 2008) Smith 2008).<sup>1</sup> The GSS employed only English-speaking interviewers until 2008, when it expanded to include Spanish-speaking interviewers. Because the incidence of homosexuality is relatively low, I chose to combine data from all years in which the GSS included relevant questions. My analysis includes data from 1989, 1990, 1991, 1993, 1994, 1996, 1998, 2000, 2002, 2004, 2006, and 2008.

The NHSLs is a nationally representative cross-sectional survey concerned mainly with sexual experiences that was conducted in 1992 by NORC (Laumann et al., 1992). The survey was designed to be representative of English-speaking people age 18 to 59 years living in the United States.

Add Health is a longitudinal survey of a nationally representative sample of adolescents who were in grades 7 through 12 during the 1994–1995 school year in the United States.<sup>2</sup> Add Health consists of four waves of data. I use information from the first and third wave; as I do not have access to data from the fourth wave.

---

<sup>1</sup> The codebook for the cumulative GSS is available at <http://www.norc.uchicago.edu/GSS+Website/Documentation/>

<sup>2</sup> Add Health is a program project directed by Kathleen Mullan Harris and designed by J. Richard Udry, Peter S. Bearman, and Kathleen Mullan Harris at the University of North Carolina at Chapel Hill and funded by grant P01-HD31921 from the Eunice Kennedy Shriver National Institute of Child Health and Human Development, with cooperative funding from twenty-three other federal agencies and foundations. Special acknowledgment is due to Ronald R. Rindfuss and Barbara Entwisle for assistance in the original design. Information on how to obtain the Add Health data files is available on the Add Health website (<http://www.cpc.unc.edu/addhealth>).

*Measures*

In this study, I measure three dimensions of sexual orientation: attraction to people of the same sex, sexual behavior with people of the same sex, and sexual identity. The NHSL had two measures of same-sex attraction: whether the respondent found homoerotic sex appealing and whether the respondent was attracted to someone of the same gender. I examined each of these measures separately. Survey questions and coding for attraction, behavior, and identity are described in Table 1, Table 2, and Table 3, respectively.

**Table 1: Measures of Sexual Attraction**

<b>Dataset</b>	<b>Question</b>	<b>Coding</b>
NHSL	On a scale of 1 to 4, where 1 is very appealing and 4 is not at all appealing, how would you rate each of these activities ... having sex with someone of the same sex? Card indicated that 1 = "very appealing," 2 = "somewhat appealing," 3 = "not appealing," and 4 = "not at all appealing."	Answers of 1 or 2 were coded 2; answers of 3 were coded 1; answers of 4 were coded 0.
	(For women) In general, are you sexually attracted to ... only men, mostly men, both men and women, mostly men and women, mostly women, only women? (When the question is asked of men, the order of the categories is reversed.)	Any attraction to same gender was coded 1; attraction only to different gender was coded 0; no sexual attraction was coded 0.
Add Health	Have you ever had a romantic attraction to a male? (yes/no) Have you ever had a romantic attraction to a female? (yes/no)	Any attraction to same gender was coded 1; attraction only to different gender was coded 0; no sexual attraction was coded 0.

**Table 2: Measures of Sexual Behavior**

<b>Dataset</b>	<b>Question</b>	<b>Coding</b>
NHSL	<p>(For each sex partner within the last year mentioned by respondent) what is [partner's] gender?</p> <p>Have your sex partners in the last five years been ... exclusively male, both male and female, (or) exclusively female?</p> <p>(Among partners from previous years) how many of these partners were [male/female]?</p> <p>Have you ever performed oral sex on another [man/woman]?</p> <p>Has another [man/woman] ever performed oral sex on you?</p> <p>Have you ever done anything else sexual with another [man/woman]?</p>	<p>Respondents reporting any same-sex sexual activity were coded 1; respondents reporting only opposite-sex sexual partners were coded 0; respondents reporting no partners were coded 0.</p>
GSS	<p>Now thinking about the time since your 18th birthday (including the past 12 months) how many [male/female] partners have you had sex with?</p>	<p>Respondents with at least one same-gender sex partner were coded 1; those whose partners were all opposite-gender were coded 0; those with no partners were coded 0.</p>
Add Health	<p>Wave III roster of "any romantic and sexual relationships" between 1995 and 2001.</p>	<p>Respondents reporting at least one same-gender sexual partner were coded 1; those reporting only opposite-gender sexual partners were coded 0; those who reported no sex partners were coded 0.</p>

**Table 3: Measures of Sexual Identity**

<b>Dataset</b>	<b>Question</b>	<b>Coding</b>
NHSL	Do you think of yourself as ... heterosexual, homosexual, bisexual, or something else?	“Homosexual” and “bisexual” were coded 1; “heterosexual” and “straight/normal” were coded 0.
Add Health	Please choose the description that best fits how you think about yourself. 100% heterosexual, mostly heterosexual but somewhat attracted to people of your own sex, bisexual—that is, attracted to men and women equally, mostly homosexual (gay) but somewhat attracted to people of the opposite sex, 100% homosexual (gay), not sexually attracted to males or females	“Mostly heterosexual,” “bisexual,” “mostly homosexual,” and “100% homosexual” were coded 1; “100% heterosexual” and “asexual” were coded 0.

The independent variables in this study are religious identity and frequency of attending religious services during adolescence. The data on frequency of attending services during adolescence were available only in the Add Health survey. Religious identities were categorized into six groups: conservative Protestants, mainline Protestants, Catholics, Jews, other religions, and unaffiliated.<sup>3</sup> When possible, I followed the advice of Steensland and colleagues (2000) in categorizing self-report denominations into these broader categories. These measures are described in more detail in Table 4.

<sup>3</sup> Ideally, one would subdivide respondents with a Jewish heritage into those from Orthodox Jewish families and those from non-Orthodox Jewish families, since any effects of parenting are likely to be radically different for these two groups. However, this was not possible with the NHSL data and was not practical with the Add Health data. The GSS does contain information that would allow one to specify Jewish tradition. However, only about 15 percent of respondents with Jewish backgrounds came from Orthodox families. To keep the coding relatively consistent across datasets, I grouped all individuals with Jewish heritage in the same category in the GSS analyses. I footnote the results of regressions that were run with respondents of Orthodox heritage excluded.

**Table 4: Measures of Parent's Religion and Religiosity**

<b>Dataset</b>	<b>Question</b>	<b>Coding</b>
NHSL	In what religion were you raised?	Verbatim responses were categorized into six groups, roughly following Steensland et al. (2000).
GSS	[If Protestant] what specific denomination is that, if any?	
Add Health	(Wave I, respondents were in grades 7–12) What is your religion?	Never, occasionally, almost regularly, regularly
	(Wave I, respondents were in grades 7–12) In the past 12 months, how often did you attend religious services?	

I controlled for four factors that could confound the effect of religion on sexual orientation: region (South), race, education of the respondent's mother, and age (in years) (see Table 5). Southern region is controlled for because the population of the South is disproportionately religious and conservative Protestant (Iannaccone and Makowsky 2007) and the Southern region may be particularly inhospitable to open homosexuality. Mother's education is controlled for because more educated families are both less likely to be religious conservatives and less likely to disapprove of homosexuality. Age is controlled for in the models that were estimated with the GSS and NHSL because year of birth, which is completely confounded with age in cross-sectional data, may relate to religious identity as well as to homosexual behavior, at least among women (Turner et al. 2005). I also controlled for age in models that were estimated with Add Health data in an effort to control for variation in the opportunity to come out as homosexual as well as for variation in the opportunity to leave the parental home and the sphere of parental influence. Because respondents in Wave III of Add Health were between the ages of 18 and 25, there is great variation among these respondents in the opportunity to "come out" and in the opportunity to leave the parental home.

**Table 5: Descriptive Statistics**

<b>Variable</b>	<b>Category</b>	<b>NHSL</b>	<b>GSS</b>	<b>Add Health</b>
Religious upbringing	Evangelical	0.353	0.34	0.307
	Mainline	0.244	0.218	0.24
	Catholic	0.333	0.307	0.268
	Jewish	0.019	0.022	0.007
	Other religion	0.051	0.047	0.056
	Unaffiliated		0.067	0.122
	Never			0.163
Service attendance (among youth)	Occasionally			0.202
	Almost regularly			0.209
	Regularly			0.425
Gender of sex partners	All different gender	0.932	0.944	0.972
	At least one same gender	0.068	0.056	0.028
Gender attracted to	All different gender	0.945		0.907
	At least some same gender	0.055		0.093
Appeal of homosexual sex	Not at all appealing	0.876		
	Not appealing	0.073		
	Somewhat/very appealing	0.052		
Sexual identity	Heterosexual	0.979		0.968
	Homosexual/bisexual	0.021		0.032
Mother's education	Mother does not have four- year degree	0.888	0.825	0.754
	Mother has four-year degree	0.112	0.175	0.246
Gender	Female	0.563	0.564	0.528
	Male	0.437	0.436	0.472
Black	Other race	0.832	0.881	0.775
	Black	0.168	0.119	0.225
South	Non-South	0.8	0.813	0.628
	South	0.2	0.187	0.372
Age		36.6	44.7	22.0
Survey year		1992	1989–2008	2001
Sample sizes		3,277	20,811	14,322

### *Methods*

I used logistic regression to examine the effect of parents' religion on measures of sexual orientation, conditional on the control variables. Data are weighted by using the weight variables provided by the organizations that conducted the surveys. My models include interactions between parents' religion and gender, since previous research suggests that the etiology of sexual orientation is distinct for men and women.

Missing cases in each of the three datasets were handled via multiple imputation. Multiple imputation can provide estimates that are less biased and more efficient than listwise deletion. Using Stata's multiple imputation commands, I replaced all missing values with imputed values. Imputed values are essentially educated guesses of what the missing values might have been, given what we know about the interrelationships between the nonmissing parts of the variables. I created ten hypothetically "complete" datasets containing imputed values and then ran models on these datasets. Results from the ten datasets were combined by using Rubin's rules (Rubin 1987).

### *Results*

Table 6 presents the results of ordinal logistic regressions predicting whether the respondent reported that sex with same-gendered people was "very"/"somewhat" appealing, "not appealing," or "not at all appealing." The coefficients are expressed as odds ratios. Model 1 of Table 6 shows the effects of parents' religion, in addition to the effects of control variables. Conservative Protestant parents are the reference category. People who were reared Jewish as well as people who were reared in Catholic homes are significantly more likely than people who were reared in conservative Protestant homes to report that sex with same-gendered people is appealing.

Model 2 of Table 6 shows the effects of the interaction between gender and religious heritage. There is suggestive evidence that the effect of Jewish heritage and the effect of a secular upbringing are both much stronger among women than among men. This finding matches theoretical expectations.

**Table 6: Ordinal Logistic Regressions of Whether Respondent Finds Sex with Same-Gendered Person Appealing**

	NHSL	
	1	2
Conservative Protestant	[ref]	[ref]
Mainline Protestant	1.01	0.95
Catholic	1.40*	1.38
Jewish	3.34**	5.61***
Unaffiliated	1.54	2.28*
Mainline Protestant × male		1.13
Catholic × male		1.04
Jewish × male		0.24+
Unaffiliated × male		0.40
Male		0.80
Black	1.14	1.13
College-educated mother	1.14	1.14
Age	0.99+	0.99+
Southern region	0.72+	0.73+
Threshold 1	6.62***	5.81***
Threshold 2	17.38***	15.35***
<i>N</i>	3,277	3,277

Based on multiply imputed, weighted data.

+  $p < 0.10$ ; \*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ .

Table 7 shows the results of logistic regressions predicting whether an individual reports ever having been sexually attracted to a person of the same gender. Using NHSL data, model 1 shows the effect of parental religion, and model 2 shows the effect of the interaction between parental religion and gender. The same succession of regressions is shown in models 3 and 4 for Add Health data. Models 5 and 6, also using Add Health data, show the effects of attendance at religious services as a youth, first without and then with an interaction by gender. All six models include the effects of religious background, as well as four control variables: black, college-educated mother, age, and southern region.

**Table 7: Logistic Regressions of Whether Individual Experienced Sexual Attraction to a Person of the Same Gender**

	NHSL		Add Health			
	1	2	3	4	5	6
Conservative Protestant	[ref]	[ref]	[ref]	[ref]	[ref]	[ref]
Mainline Protestant	1.27	1.16	1.24+	1.35*	1.23+	1.23+
Catholic	1.74*	1.66	1.12	1.06	1.12	1.16
Jewish	4.04**	9.70***	1.67*	2.00+	1.66*	1.73*
Other religion			1.29	1.36	1.28	1.36
Unaffiliated	2.22*	2.66+	1.49**	1.83***	1.42+	1.52
Mainline Protestant × male		1.17		0.83		
Catholic × male		1.09		1.33		
Jewish × male		0.13*		0.70		
Other religion × male				1.01		
Unaffiliated × male		0.73		0.65		
Never attend					[ref]	[ref]
Occasional attendance					0.87	0.68*
Almost regular attendance					0.97	0.64**
Regular attendance					0.87	0.55***
Occasional attendance × male						1.44
Almost regular attendance × male						2.72**
Regular attendance × male						2.41**
Male		1.67		0.38***		0.19***
Black	0.86	0.90	0.82	0.82	0.83	0.83
College-educated mother	1.52+	1.53+	1.19+	1.20+	1.20+	1.22*
Age	0.99	0.99	0.97	0.97	0.96	0.97
Southern region	0.61+	0.60+	0.89	0.92	0.89	0.94
Constant	0.06***	0.05***	0.19**	0.22*	0.21*	0.36
<i>N</i>	3,277	3,277	14,322	14,322	14,322	14,322

Based on multiply imputed, weighted data.

+  $p < 0.10$ ; \*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ .

Several patterns are evident. First, people who were reared in conservative Protestant households are consistently the least likely of any group to report same-sex attraction, even though differences between people with mainline and conservative Protestant backgrounds are not always significant. On the other end of the spectrum are people with Jewish heritage and people from secular backgrounds. People with Jewish heritage are especially likely to report same-sex

attraction. The likelihood of people of Catholic heritage reporting same-sex attraction tends to fall somewhere in between the likelihood for those with Protestant parents and the likelihood for those with Jewish and unaffiliated parents.

There is some evidence from models 2 and 4 of Table 7 that the effect of Jewish parents on same-sex attraction is much higher for women than for men. Although the interaction effect “Jewish parents  $\times$  male” is not significant in the Add Health data (model 4), the coefficient is in the expected direction. The “Jewish parents  $\times$  male” interaction might not be consistently significant because of low power. Both the independent variable (Jewish parents) and the dependent variable (homosexual attraction) are severely skewed.

Model 5 of Table 7 shows no effect of attending services as a youth. However, model 6 shows that there is a negative effect of service attendance in youth on same-gender sexual attraction but that this effect is limited to women. Women who grew up attending services are less likely to report same-sex attraction than are women who did not attend services in their youth.

Table 8 shows the results of logistic regressions predicting whether respondents report a homosexual or a bisexual identity. The independent variables and succession of models are the same in Table 8 as they were in Table 7. By comparing model 2 with model 4, we can see that the effects of religious heritage on sexual identity are not consistent across datasets. In the NHSL, women with a Jewish background are significantly and substantially more likely to claim a nonheterosexual identity than are women with a conservative Protestant heritage. There is suggestive evidence that the effect of a Jewish background is greater among women than among men, since the coefficient for the “Jewish  $\times$  male” interaction is 0.16 (although not significant). However, the same pattern does not hold in the Add Health data. Owing to the inconsistency of findings about sexual identity across datasets, I refrain from making further conclusions about models 1 through 4 in Table 8.

Models 5 and 6 of Table 8 show the effect on sexual identity of service attendance while growing up. The effect of youth service attendance on sexual identity is similar to the effect of youth service attendance on sexual attraction. Females who attended services when young are less likely to report a nonheterosexual identity than are females who did not attend services in their youth. However, it should be noted that this effect is not significant in every case.

**Table 8: Logistic Regressions of Whether Respondent Reports a Homosexual or Bisexual Identity**

	NHSL		Add Health			
	1	2	3	4	5	6
Conservative Protestant	[ref]	[ref]	[ref]	[ref]	[ref]	[ref]
Mainline Protestant	0.85	0.57	1.27	1.29	1.28	1.26
Catholic	1.65	1.27	1.58*	1.37	1.58*	1.62*
Jewish	3.10	7.19*	1.22	0.59	1.25	1.26
Other religion			1.15	1.23	1.15	1.19
Unaffiliated	0.81	0.82	1.33	1.71+	1.33	1.38
Mainline Protestant × male		1.80		1.00		
Catholic × male		1.52		1.46		
Jewish × male		0.16		3.92		
Other religion × male				0.91		
Unaffiliated × male		0.98		0.54		
Never attend					[ref]	[ref]
Occasional attendance					0.95	0.74
Almost regular attendance					1.00	0.55*
Regular attendance						
Occasional attendance × male						1.69
Almost regular attendance × male						3.76**
Regular attendance × male						2.64*
Male		1.80		0.58*		0.28***
Black	0.32+	0.34+	0.65+	0.65+	0.65+	0.66+
College-educated mother	1.07	1.07	1.02	1.02	1.01	1.02
Age	0.97**	0.97**	0.97	0.98	0.98	0.98
Southern region	0.50	0.50	1.09	1.12	1.09	1.13
Constant	0.07***	0.05***	0.05***	0.05***	0.04***	0.07**
<i>N</i>	3,277	3,277	14,322	14,322	14,322	14,322

Based on multiply imputed, weighted data.

+  $p < 0.10$ ; \*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ .

Table 9 displays the results of logistic regressions predicting whether the respondent reported engaging in homoerotic behavior. Models 1, 3, and 5 show the effects of parents' religion in each of the three datasets. In models 2, 4, and 6, I

tested interactions between parents' religion and gender. All models include control variables.

**Table 9: Logistic Regressions of Whether Respondent Engaged in Homoerotic Behavior on Religious Background**

	NHSL		GSS		Add Health	
	1	2	3	4	5	6
Conservative Protestant	[ref]	[ref]	[ref]	[ref]	[ref]	[ref]
Mainline Protestant	1.16	0.96	1.12	1.06	1.14	1.11
Catholic	1.31	1.28	1.15	1.26+	1.27	0.83
Jewish	3.38**	3.82*	1.02	1.20	1.19	1.03
Other religion			0.98	1.06	1.38	1.24
Unaffiliated	0.98	1.66	1.35*	1.51*	1.22	1.34
Mainline Protestant × male		1.36		1.12		1.13
Catholic × male		1.06		0.82		2.65*
Jewish × male		0.89		0.70		1.53
Other religion × male				0.84		1.43
Unaffiliated × male		0.42		0.79		0.86
Male		2.28**		1.17		0.48*
Black	0.97	1.05	1.23+	1.25+	0.61*	0.61*
College-educated mother	0.86	0.83	1.14	1.14	1.33+	1.33+
Age	1.00	1.00	0.99***	0.99***	1.00	1.00
Southern region	0.91	0.91	0.88	0.88	1.10	1.11
Constant	0.06***	0.04***	0.08***	0.08***	0.03***	0.03***
<i>N</i>	3,277	3,277	20,811	20,811	14,322	14,322

Based on multiply imputed, weighted data.

+  $p < 0.10$ ; \*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ .

Again, the results do not appear to be consistent across datasets. For example, in the NHSL, respondents of Jewish descent were much more likely than conservative Protestants to report homoerotic behavior, but in the GSS and Add Health, respondents of Jewish descent were not significantly different from respondents

of conservative Protestant descent.<sup>4</sup> We should keep in mind that the measure of homoerotic behavior in the NHSL is far more inclusive than are measures of such behavior in the GSS or Add Health. In the NHSL, all respondents were asked whether they had performed oral sex on a person of the same gender. Individuals who responded that they had done so were coded as having had at least one same-sex partner. GSS respondents were not asked specifically whether they had ever engaged in oral sex with someone of the same gender. In Add Health, questions about sexual activities were asked only in reference to specific sexual partners whom respondents identified. It is likely that some respondents who had engaged

**Table 10: Logistic Regressions of Whether Respondent Engaged in Homoerotic Behavior on Church Attendance in Youth**

	Add Health	
	1	2
Conservative Protestant	[ref]	[ref]
Mainline Protestant	1.13	1.12
Catholic	1.26	1.29
Jewish	1.17	1.16
Other religion	1.39	1.42
Unaffiliated	1.25	1.24
Never attend	[ref]	[ref]
Occasional attendance	1.04	1.13
Almost regular attendance	1.26	0.86
Regular attendance	1.02	0.95
Occasional attendance × male		0.70
Almost regular attendance × male		2.01
Regular attendance × male		0.98
Male		0.61
Black	0.61*	0.61*
College-educated mother	1.33	1.32
Age	0.99	1.00
Southern region	1.09	1.13
Constant	0.03***	0.03***
<i>N</i>	14,322	14,322

Based on multiply imputed, weighted data.

+  $p < 0.10$ ; \*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ .

<sup>4</sup> In an analysis that is not shown here, I subdivided people with Jewish heritage into those who were reared Orthodox Jewish and those who were reared as non-Orthodox Jewish. None of the sixty-one people who were reared Orthodox Jewish reported having engaged in homoerotic behavior. Nevertheless, the Jewish effect for the GSS analysis did not change appreciably when I excluded people with Orthodox Jewish heritage.

in clandestine and/or fleeting sexual activities with people of the same gender would not identify such individuals as sexual partners and hence would not report any homoerotic activity. Indeed, the prevalence of same-gender sexual activity is higher in the NHSL (6.9 percent) than in either the GSS (5.2 percent) or Add Health (4.6 percent). It is not surprising that the results are different across datasets, given that measures of sexual behavior are different across datasets.

Table 10 shows the effects of service attendance in youth on homoerotic behavior when controlling for parents' religion. Model 2 shows the effect of the interaction between youth service attendance and gender. The effects of service attendance in youth on homoerotic behavior are small and not significant.

### *CONCLUSION*

I set out to estimate the effect of religious background on sexual orientation. In a review of the literature about the etiology of sexual orientation, I argued that biological explanations are dominant in the field but that the evidence supporting biological explanations does not preclude the possibility of familial influences. Religious background is one type of familial influence that we might expect to find, given the powerful influence of religion in shaping attitudes about deviant sexual orientations.

Using data from three surveys, I examined the effects of both parents' religious identity and parents' religiosity on three aspects of sexual orientation: attraction, identity, and behavior. I expected that individuals who were reared in liberal religious backgrounds as well as individuals from secular backgrounds would be less likely to report homosexual attraction, identity and behavior than would individuals who were reared in more conservative religious backgrounds. I anticipated that religious background would exert a greater influence on behavior and identity than on attraction. I also expected that religious background would have a stronger effect on the sexual orientation of women than of men.

There was considerable inconsistency in results across datasets. The inconsistency in results across datasets may be due to any or all of three factors. First, all measures of sexual orientation are highly skewed. Second, measures were sometimes quite disparate, particularly in terms of sexual behavior, as described above. Third, differences between the results from Add Health and the results from the other two surveys could in part reflect the fact that Add Health respondents are much younger and from a different birth cohort than respondents in the two other datasets.

Despite the lack of consistency in the findings across datasets, there are several patterns that merit further study. Individuals with a Jewish background appear to be much more likely than those with Protestant and Catholic backgrounds to admit having nonheterosexual feelings and a nonheterosexual identity.

The effect of Jewish background on sexual orientation seems to be especially strong among women. People with secular backgrounds also seem to be more likely than those with Protestant or Catholic backgrounds to admit having experienced nonheterosexual attraction, to adopt a nonheterosexual identity, and to admit to having engaged in homoerotic sex.

On the other end of the spectrum, individuals with conservative Protestant parentage appear relatively unlikely to associate themselves with deviant sexual orientations. However, the difference between those with conservative Protestant heritage and those with mainline Protestant heritage appears modest.

It is possible that the apparent effects of religious background reflect different degrees of social desirability bias rather than true differences in the propensity to experience and act on nonheterosexual attraction. Individuals from conservative Protestant backgrounds may be as likely to experience arousal in response to same-gender sexual stimuli as those from Jewish backgrounds; the former may simply be less likely than the latter to admit these experiences in a computer-assisted survey. Yet the distinction between social desirability bias and real differences is not entirely clear. Individuals who experience, but are not willing to admit, having experienced arousal in response to same-gender sexual stimuli in the context of a survey are probably also unlikely to admit having such experiences in other contexts or possibly even to admit such experiences to themselves. Those who experience homoerotic arousal but do not classify it as such will be less likely to act on it and more likely to ignore or suppress it. For this reason, although our findings may be entirely generated by differences in social desirability bias, this bias does not necessarily preclude the existence of meaningful differences.

If there is an effect of religious background on sexual orientation in the United States, it is an effect that reaches meaningful magnitude only in the case of a highly distinctive minority: Jews. The disparities that I found in the various aspects of sexual orientation between different kinds of Protestant descent and between Protestant and Catholic descent are much less consistent and much smaller in magnitude than the differences that I found between people with Christian backgrounds and those with a Jewish background.

The findings of this study are consistent with the idea that sexual orientation is primarily—but not entirely—rooted in biological forces. Recall that twin studies of sexual orientation leave little room for nongenetic familial influences (Långström et al. 2008). Consistent with findings from twin studies, I found that the vast bulk of the variation in sexual orientation could not be explained by religious background. Although the effect of a Jewish background appears to be relatively large, its influence affects less than 3 percent of the U.S. population. A large effect on a very small percentage of the population is unlikely to show up in

the estimates of nongenetic familial influence (e.g., shared environment) that are produced by twin studies.

The finding that the effect of Jewish background may be greater among women than among men is consistent with research showing that female sexuality is more flexible and culturally contingent than male sexuality is (Butler 2005). Chivers and colleagues (2004) found that sexual arousal in response to same-gender and different-gender stimuli was bimodal among men but more uniformly distributed among women. Perhaps the more accepting attitudes of Jewish families toward homosexuality and bisexuality affect daughters more than sons because the daughters' experiences of arousal are more subject to interpretation than are the sons' experiences of arousal.

I expected to find that religious background would have a bigger impact on sexual behavior and sexual identity than on sexual attraction. I reasoned that attraction was more hardwired than either sexual identity or sexual behavior and hence was less susceptible to social influences. Contrary to these expectations, I found that the effect of Jewish background on sexual attraction did not appear smaller than its effect on sexual identity or sexual behavior. Perhaps the reason is that answers to questions about attraction reflect appraisals based on memories of past behavior. Individuals decide whether they are attracted to others of the same-gender in part on the basis of whether or not they have engaged in sexual activities with people of the same gender. For this reason, we cannot assume that reported sexual attraction measures the hardwired aspect of sexual orientation very precisely.

What is it about a Jewish background that makes Jewish children more likely to report nonheterosexual feelings, identities, and behavior? For one, most Jews are much more likely than people of other religions to approve of homosexual behavior (Adamczyk and Pitt 2009). In addition, Jewish parents are particularly flexible with their children and particularly likely to encourage their children to think for themselves (Starks and Robinson 2005). Finally, people from a Jewish background who have been taught the history of the Jewish people may be more likely than others to identify with a minority status, nonconformity, and victimhood. Individuals who have been taught to embrace rather than to avoid nonconformity may be more amenable to deviant sexual orientations.

In this article, I set out to determine whether religious background affects sexual orientation. I provided two reasons why this question is important. First, the answer to the question may help us to gauge the strength of the opposition to gay rights in general and to gay marriage in particular. Opposition to gay rights comes in large part from conservative religious people. But conservative religious people with gay children, as well as their religious friends and relatives, may be less inclined than other religious conservatives to mobilize in opposition to gay marriage. The anti-gay rights movement might be stronger to the extent to which

conservative religious parents are less likely to raise gay children than are secular and liberal religious parents.

The study found that conservative religious parents in my sample were in fact less likely to raise children with nonheterosexual feelings, identities, and behavior. However, these effects were not particularly robust, nor were they particularly strong. One might go out on a limb and conclude that conservative religious parents are almost as likely to discover that their children are gay as are many secular and liberal religious parents. The only exception to this is Jewish families, whose distinctiveness was described above. Thus we can expect that the ranks of the anti-gay movement will continue to be “infiltrated” by the opposition within their very families, although this “infiltration” will be unusual given the rarity of nonheterosexuality in general.

In the introductory section of this article, I argued that another reason why the effect of religious background on sexual orientation is important is because the answer bears on the enduring debate about the relative power of nature and nurture. If sexual orientation is not entirely rooted in biology but also influenced by family and culture, then religious background would be the most obvious place to look for an effect. The findings about respondents with a Jewish background suggest that the effect of religious background is intensive but not extensive. In other words, religious background appears to have a substantial effect on a small minority of people. This finding may follow a more general pattern regarding the relative influence of culture and biology on sexual orientation. Biology sets the ground rules, yet culture can occasionally be distinctive enough and powerful enough to violate those rules.

## REFERENCES

- Adamczyk, Amy, and Cassidy Pitt. 2009. “Shaping Attitudes About Homosexuality: The Role of Religion and Cultural Context.” *Social Science Research* 38: 338–351.
- Alesina, Alberto, Edward Glaeser, and Bruce Sacerdote. 2001. “Why Doesn’t the United States Have a European-Style Welfare State?” *Brookings Papers on Economic Activity* 2: 187–254.
- Allen, Laura, and Roger Gorski. 1992. “Sexual Orientation and the Size of the Anterior Commissure in the Human Brain.” *Proceedings of the National Academy of Sciences of the United States of America* 89: 7199–7202.
- Bailey, J. Michael, Michael Dunne, and Nicholas Martin. 2000. “Genetic and Environmental Influences on Sexual Orientation and Its Correlates in an Australian Twin Sample.” *Journal of Personality and Social Psychology* 78: 524–536.
- Bailey, J. Michael, and Kenneth Zucker. 1995. “Childhood Sex-Typed Behavior and Sexual Orientation: A Conceptual Analysis and Quantitative Review.” *Developmental Psychology* 31: 43–55.
- Baumeister, Roy F. 2000. “Gender Differences in Erotic Plasticity: The Female Sex Drive as Socially Flexible and Responsive.” *Psychological Bulletin* 126: 347–374.

- Bearman, Peter, and Hannah Brückner. 2002. "Opposite-Sex Twins and Adolescent Same-Sex Attraction." *American Journal of Sociology* 107: 1179–1205.
- Bogaert, Anthony. 2000. "Birth Order and Sexual Orientation in a National Probability Sample." *Journal of Sex Research* 37: 361–368.
- Bogaert, Anthony. 2003. "Number of Older Brothers and Sexual Orientation: New Tests and the Attraction/Behavior Distinction in Two National Probability Samples." *Journal of Personality and Social Psychology* 84: 644–652.
- Bogaert, Anthony. 2010. "Physical Development and Sexual Orientation in Men and Women: An Analysis of NATSAL-2000." *Archives of Sexual Behavior* 39: 110–116.
- Butler, Amy. 2005. "Gender Differences in the Prevalence of Same-Sex Sexual Partnering: 1988–2002." *Social Forces* 84: 421–449.
- Cardoso, Fernando L., and Dennis Werner. 2003. "Homosexuality." In *Encyclopedia of Sex and Gender: Men and Women in the World's Cultures*, Volume 1: *Topics and Cultures A–K*, edited by Carol R. Ember and Melvin Ember, 204–215. New York: Kluwer Academic/Plenum Publishers.
- Chivers, Meredith, Gerulf Rieger, Elizabeth Latty, and J. Michael Bailey. 2004. "A Sex Difference in the Specificity of Sexual Arousal." *Psychological Science* 15: 736–744.
- Cochran, John K., and Leonard Beeghley. 1991. "The Influence of Religion on Attitudes Toward Nonmarital Sexuality: A Preliminary Assessment of Reference Group Theory." *Journal for the Scientific Study of Religion* 30: 45–62.
- Cohen-Bendahan, Celina C. C., Cornelieke van de Beek, and Sheri A. Berenbaum. 2005. "Prenatal Sex Hormone Effects on Child and Adult Sex-Typed Behavior: Methods and Findings." *Neuroscience and Biobehavioral Reviews* 29: 353–384.
- Davis, James A., Tom W. Smith, and Peter V. Marsden. 2008. *General Social Surveys, 1972–2008* [Cumulative File]. [Computer file]. ICPSR25962-v2. Storrs, CT: Roper Center for Public Opinion Research, University of Connecticut; Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributors], 2010-02-08.
- Dickson, Nigel, Charlotte Paul, and Peter Herbison. 2003. "Same-Sex Attraction in a Birth Cohort: Prevalence and Persistence in Early Adulthood." *Social Science & Medicine* 56: 1607–1615.
- Fisher, Randy D., Donna Derison, Chester F. Polley, Jennifer Cadman, and Dana Johnston. 1994. "Religiousness, Religious Orientation, and Attitudes Towards Gays and Lesbians." *Journal of Applied Social Psychology* 24: 614–630.
- Francis, Andrew. 2008a. "Family and Sexual Orientation: The Family-Demographic Correlates of Homosexuality in Men and Women." *Journal of Sex Research* 45: 371–377.
- Francis, Andrew. 2008b. "The Economics of Sexuality: The Effect of HIV/AIDS on Homosexual Behavior in the United States." *Journal of Health Economics* 27: 675–689.
- Frisch, Morten, and Slobodan Zdravkovic. 2008. "Body Size at Birth and Same-Sex Marriage in Young Adulthood." *Archives of Sexual Behavior* 39: 117–123.
- Golombok, Susan, and Fiona Tasker. 1996. "Do Parents Influence the Sexual Orientation of Their Children?: Findings from a Longitudinal Study of Lesbian Families." *Developmental Psychology* 32: 3–11.

- Hamer, Dean, Stella Hu, Victoria L. Magnuson, Nan Hu, and Angela M. L. Pattatucci. 1993. "A Linkage Between DNA Markers on the X Chromosome and Male Sexual Orientation." *Science* 261: 321–327.
- Herek, Gregory, and John Capitanio. 1996. "'Some of My Best Friends': Intergroup Contact, Concealable Stigma, and Heterosexuals' Attitudes Toward Gay Men and Lesbians." *Personality and Social Psychology Bulletin* 22: 412–424.
- Hines, Melissa, S. Faisal Ahmed, and Ieuan Hughes. 2003. "Psychological Outcomes and Gender-Related Development in Complete Androgen Insensitivity Syndrome." *Archives of Sexual Behavior* 32: 93–101.
- Hu, Stella, Angela M. L. Pattatucci, Chavis Patterson, Lin Li, David W. Fulker, Stacey S. Cherny, Leonid Kruglyak, and Dean H. Hamer. 1995. "Linkage Between Sexual Orientation and Chromosome Xq28 in Males but Not in Females." *Nature Genetics* 11: 248–256.
- Iannaccone, Laurence, and Michael Makowsky. 2007. "Accidental Atheists?: Agent-Based Explanations for the Persistence of Religious Regionalism." *Journal for the Scientific Study of Religion* 46: 1–16.
- Kendler, Kenneth, Laura Thornton, Stephen Gilman, and Ronald Kessler. 2000. "Sexual Orientation in a U.S. National Sample of Twin and Nontwin Sibling Pairs." *American Journal of Psychiatry* 157: 1843–1846.
- Kuypers, Lisette, and Ine Vanwesenbeeck. 2009. "High Levels of Same-Sex Experiences in the Netherlands: Prevalences of Same-Sex Experiences in Historical and International Perspective." *Journal of Homosexuality* 56: 993–1010.
- Långström, Niklas, Qazi Rahman, Eva Carlström, and Paul Lichtenstein. 2008. "Genetic and Environmental Effects on Same-Sex Sexual Behavior: A Population Study of Twins in Sweden." *Archives of Sexual Behavior* 39: 75–80.
- Laumann, Edward O., John H. Gagnon, Robert T. Michael, and Stuart Michaels. 1992. *National Health and Social Life Survey, 1992* [United States]. [Computer file]. ICPSR06647-v2. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], 2008-04-17.
- Laumann, Edward, John Gagnon, Robert Michael, and Stuart Michaels. 1994. *The Social Organization of Sexuality in the United States*. Chicago: University of Chicago Press.
- LeVay, Simon. 1991. "A Difference in Hypothalamic Structure Between Heterosexual and Homosexual Men." *Science* 253: 1034–1047.
- Lippa, Richard A. 2007. "Sex Differences and Sexual Orientation Differences in Personality: Findings from the BBC Internet Survey." *Archives of Sexual Behavior* 37: 173–187.
- Lippa, Richard A. 2008. "The Relation Between Childhood Gender Nonconformity and Adult Masculinity–Femininity and Anxiety in Heterosexual and Homosexual Men and Women." *Sex Roles* 59: 684–693.
- Loftus, Jeni. 2001. "America's Liberalization in Attitudes Toward Homosexuality, 1973 to 1998." *American Sociological Review* 66: 762–782.
- Olson, Laura R., Wendy Cadge, and James T. Harrison. 2006. "Religion and Public Opinion About Same-Sex Marriage." *Social Science Quarterly* 87: 340–360.

- Patterson, Charlotte, and Erin Sutfin. 2004. "Sexual Orientation and Parenting." In *Handbook of Parenting: Theory and Research for Practice*, edited by Masud Hoghugh and Nicholas Long, 130–145. London: Sage.
- Rahman, Qazi. 2005. "The Neurodevelopment of Human Sexual Orientation." *Neuroscience & Biobehavioral Reviews* 29: 1057–1066.
- Rahman, Qazi, and Glenn Wilson. 2003. "Born Gay?: The Psychobiology of Human Sexual Orientation." *Personality and Individual Differences* 34: 1337–1382.
- Remafedi, Gary, Michael Resnick, Robert Blum, and Linda Harris. 1992. "Demography of Sexual Orientation in Adolescents." *Pediatrics* 89: 714–721.
- Rice, George, Carol Anderson, Neil Risch, and George Ebers. 1999. "Male Homosexuality: Absence of Linkage to Microsatellite Markers at Xq28." *Science* 284: 665–667.
- Rieger, Gerulf, Joan A. W. Linsenmeier, Lorenz Gygax, and J. Michael Bailey. 2008. "Sexual Orientation and Childhood Gender Nonconformity: Evidence from Home Videos." *Developmental Psychology* 44: 44–58.
- Rubin, Donald. 1987. *Multiple Imputation for Nonresponse in Surveys*. New York: John Wiley and Sons.
- Savin-Williams, Ritch C., and Geoffrey L. Ream. 2006. "Prevalence and Stability of Sexual Orientation Components During Adolescence and Young Adulthood." *Archives of Sexual Behavior* 36: 385–394.
- Sherkat, Darren E. 2002. "Sexuality and Religious Commitment in the United States: An Empirical Examination." *Journal for the Scientific Study of Religion* 41: 313–323.
- Stacey, Judith, and Timothy Biblarz. 2001. "(How) Does the Sexual Orientation of Parents Matter?" *American Sociological Review* 66: 159–183.
- Starks, Brian, and Robert V. Robinson. 2005. "Who Values the Obedient Child Now?: The Religious Factor in Adult Values for Children, 1986–2002." *Social Forces* 84: 343–359.
- Steensland, Brian, Jerry Z. Park, Mark D. Regnerus, Lynn D. Robinson, W. Bradford Wilcox, and Robert D. Woodberry. 2000. "The Measure of American Religion: Toward Improving the State of the Art." *Social Forces* 79: 291–318.
- Summersgill, Bob. 2007. "Sodomy Laws in the United States." Retrieved January 29, 2011, from <http://www.sodomylaws.org/usa/usa.htm>.
- Swaab, Dick, and Michel Hofman. 1990. "An Enlarged Suprachiasmatic Nucleus in Homosexual Men." *Brain Research* 537: 141–148.
- Turner, Charles F., Maria A. Villarreal, James R. Chromy, Elizabeth Eggleston, and Susan M. Rogers. 2005. "Same-Gender Sex Among U.S. Adults." *Public Opinion Quarterly* 69: 439–462.
- Udry, J. Richard, and Kim Chantala. 2006. "Masculinity–Femininity Predicts Sexual Orientation in Men but Not in Women." *Journal of Biosocial Science* 38: 797–809.
- Wallen, Kim. 1996. "Nature Needs Nurture: The Interaction of Hormonal and Social Influences on the Development of Behavioral Sex Differences in Rhesus Monkeys." *Hormones and Behavior* 30: 364–378.
- Weill, Cheryl. 2009. *Nature's Choice: What Science Reveals About the Biological Origins of Sexual Orientation*. New York: Routledge.

- Wells, J. Elisabeth, Magnus A. McGee, and Annette L. Beautrais. 2011. "Multiple Aspects of Sexual Orientation: Prevalence and Sociodemographic Correlates in a New Zealand National Survey." *Archives of Sexual Behavior* 40: 155–168.
- Whitley, Bernard. 2009. "Religiosity and Attitudes Toward Lesbians and Gay Men: A Meta-Analysis." *International Journal for the Psychology of Religion* 19: 21–38.