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Understanding the Effects of Personal and School Religiosity on the Decision to Abort a Premarital Pregnancy*

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Although much research has examined the relationship between religion and abortion attitudes, few studies have examined whether religion influences abortion behavior. This study looks at whether individual and school religiosity influence reported abortion behavior among women who become pregnant while unmarried. Hierarchical Logistic Models are implemented to analyze two waves of data from the National Longitudinal Study of Adolescent Health. Findings show that personal religiosity is unrelated to reported abortion behavior. However, conservative Protestants appear less likely to obtain abortions than mainline Protestants, Catholics, and women of non-Christian faiths. Regardless of personal religious affiliation, having attended a school with a high proportion of conservative Protestants appears to discourage abortion as women enter their twenties. Conversely, women from private religious high schools appear more likely to report obtaining an abortion than women from public schools.

Much research has revealed that religion has a powerful influence on abortion attitudes (Jelen and Wilcox 2003). However, less attention has been devoted to whether religion influences young women's abortion behavior. If abortion attitudes are any indication of the link between religion and abortion behavior, we would expect that religious women would be less likely than secular women to obtain abortions. However, in making an abortion decision, young women (i.e., women in their teens and early twenties) must consider a number of social, financial, and health-related factors, all of which can make it difficult for them to act according to religious values. It is, therefore, unclear how personal religiosity influences the

pregnancy resolutions of young, never-married women.

Prior research has also suggested that religious contexts can influence behaviors (Adamczyk and Felson 2006; Stark and Bainbridge 1996). One factor that may be particularly important for young women's abortion behaviors is related to students from her high school. Other teens can play a major role in shaping young people's attitudes and values (Giordano 2003). These attitudes may include the personal importance of motherhood and academics, and beliefs about the appropriate timing of parenthood and the morality of abortion. Beliefs formed at this time could have an influence on later abortion behavior. Additionally, how women choose to resolve pregnancies may be shaped by the type of high school they attended. Students from private religious high schools may face a different set of costs and benefits for getting an abortion than students from public schools.

Little research has addressed the relationship between religion and abortion behavior, in part because there is a very high level of abortion underreporting in general surveys (Fu et

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al. 1998; Jagannathan 2001; Jones and Forrest 1992; Udry et al. 1996). To overcome this challenge, researchers have surveyed women getting clinic abortions and then compared them to women in the general population (Henshaw and Kost 1996; Henshaw and Silverman 1988; Torres and Forrest 1988). However, with abortion clinic surveys, it is difficult to determine the causal ordering between beliefs and behaviors, and young pregnant women who obtain abortions tend to differ from those in the general public on a number of characteristics, such as marital status, successful contraceptive use, and extramarital sex behavior (Harper, Henderson, and Darney 2005; Torres and Forrest 1988).

This study uses two waves of the National Longitudinal Study of Adolescent Health (commonly referred to in the literature as Add Health) to examine how personal religiosity, school religious context (e.g., level of schoolmates' religious involvement), and school sector influence the pregnancy resolution decisions of young (age 26 and younger), never-married women who become pregnant. Although Add Health has some of the same underreporting issues as other general surveys, it includes certain skip patterns and privately recorded questions that can reduce abortion reporting bias (Fu et al. 1998; Jagannathan 2001; Jones and Forrest 1992; Udry et al. 1996). Additionally, diagnostic tests are used to check for social desirability bias on the basis of religion, and all models include measures that help control for abortion underreporting.

THEORY AND EVIDENCE

Personal Religiosity and Abortion

Much research has found that religion is related to the timing of first sex and other sex behaviors. Religion may reduce the probability of an abortion by limiting the chances of premarital pregnancy, which is the most common situation for women who abort first pregnancies (Adamczyk and Felson 2008; Torres and Forrest 1988). In contrast to more secular teens, religious adolescents tend to delay first sex, sometimes until marriage (Rostosky et al. 2004). Research has also found that religious women are sexually active outside of a marital relationship for a shorter period of time because they start having sex later than secular women (Adamczyk and Felson 2008; Billy, Brewster, and Grady 1994). Religious women may also have fewer sex partners (Adamczyk

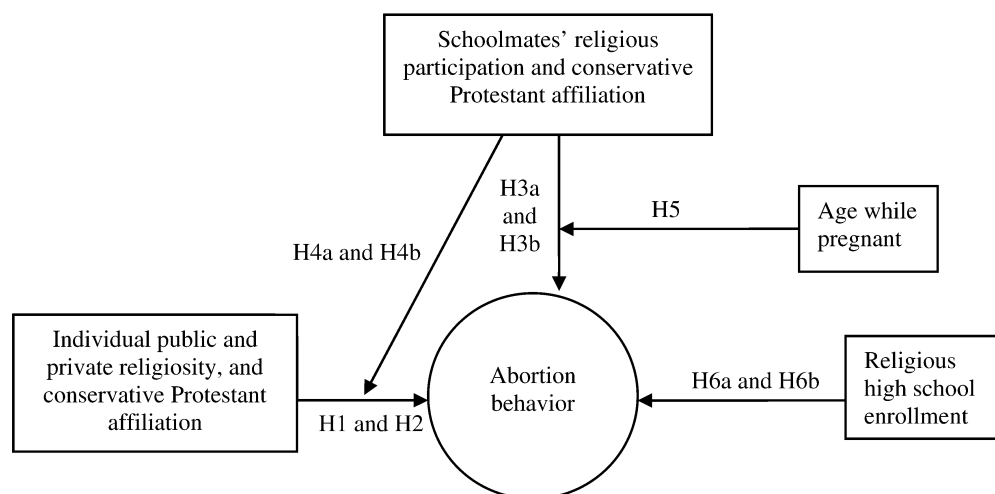
and Felson 2008; Davidson, Nelwyn, and Ullstrup 2004; but see Jones, Darroch, and Singh 2005). Although the relationship between religion and birth control remains unclear (Rostosky et al. 2004), factors like fewer sex partners and a shorter time-period between first sex and marriage could limit the probability that more religious women become pregnant while unmarried.

In those cases where a woman does conceive while unmarried, will personal religiosity influence abortion behavior? Religious importance, involvement, and affiliation with a conservative denomination are associated with "pro-life" attitudes (for a review see Jelen and Wilcox 2003). If behavior is consistent with attitudes, we would expect that more religious women would be less likely to seek and obtain abortions than secular women. Rohrbaugh and Jessor (1975) identify several processes of internalized social control through which personal religiosity may influence behavior. As they explain, religion sensitizes individuals to moral issues and acceptable standards of behavior, and it offers a deity as a source of punishment and wrath. Since pro-life is the political position taken by many American religious groups, we can expect that women who are actively religious will get more exposure to pro-life attitudes. Active religious involvement should also foster an interest in abiding by religious precepts. Independent of religious participation, we might expect that women who find religion personally important and pray frequently will be less likely to disobey the rules of their faith because they have greater fear of divine punishment. These ideas lead to the first hypothesis, which is also illustrated in Figure 1:

H1: Among women who conceive while unmarried, those who have high levels of private and/or public religiosity will be less likely than secular women to obtain an abortion.

Religious affiliation may also influence the decision to abort. Because America has such a large number of religions and denominations, scholars (Alwin et al. 2006; Steensland et al. 2000) tend to group people into larger religious categories (e.g., mainline Protestant, conservative Protestant, Catholic) on the basis of their specific religious affiliation (e.g., Methodist, Southern Baptist). The categories are intended to reflect both the beliefs and orientations of a

FIGURE 1. Hypothesized Paths of the Relationships between Personal and School Religious Influences and Abortion Behavior



group's members, while also shaping and influencing those beliefs and orientations (Steensland et al. 2000). Placement within a particular religious category should reflect exposure to that larger group's general ideological orientation.

Affiliation with a conservative Protestant faith, which includes evangelicals and fundamentalists, may be particularly important for understanding young women's abortion behaviors. More so than members of any other large American religious group, conservative Protestants have stressed conformity to traditional morality and orthodox religious belief (Ammerman 1987; Petersen and Donnenwerth 1997). While members of other religious groups (e.g., Catholics, mainline Protestants) have become more liberal on issues such as sexual morality, conservative Protestants have sought more separation from the broader culture and have remained steadfast in their traditional beliefs (Petersen and Donnenwerth 1997). As a result, conservative Protestants tend to be more pro-life than other religious groups (Jelen and Wilcox 2003), view child-rearing as a central mission of family life (Luker 1984; Wilcox 1998), and value motherhood over academic and career achievement (Darnell and Sherkat 1997; Lehrer 1999). These characteristics lead to the next hypothesis:

H2: Women who affiliate with a conservative Protestant faith will be less likely to obtain abortions than women who affiliate with a

Catholic, mainline Protestant, or other religious faith.

Schoolmates' Religiosity

In addition to personal religiosity and conservative Protestant affiliation, the high school religious environment may also influence the decision to abort a premarital pregnancy. Social learning and socialization theories posit that young people acquire attitudes toward behaviors through exposure to other people's attitudes and behaviors (Akers 1985; Miller and Fox 1987; Sutherland 1960). Since adolescents spend so much time with each other, schoolmates' religious attitudes may be particularly important for how women think about abortion. Young women who attend schools with a high proportion of actively religious or conservative Protestant students should have more interaction with "pro-life" teens and get less exposure to "pro-choice" perspectives. As a result, women from more religiously conservative school contexts should have greater exposure to both the idea that abortion is immoral and the emphasis on the importance of motherhood over academic or career achievement, either of which may influence later abortion decisions.

Even women who are not themselves religious may assimilate the pro-life attitudes of their schoolmates. In his work on attitude change, Kelman (2006) argues that individuals may adopt others' attitudes without accepting the rationale for the attitudes in order to main-

tain their sense of self and increase the likelihood of a desirable relationship with others. He calls this process identification. Through a process of identification, women from more religious school contexts may adopt the abortion proscriptions of their schoolmates, even if they are not personally religious, to preserve relationships while attending school and maintain a self-image based on school reference group expectations. Attitudes and beliefs formed at this time about the importance of motherhood and the morality of abortion could have an influence on later decisions about whether to obtain an abortion, which leads to the following hypotheses:

H3a: Women from high schools with more religiously active schoolmates will be less likely to obtain abortions than women from schools with more secular schoolmates.

H3b: Women from high schools with a higher proportion of conservative Protestant schoolmates will be less likely to obtain abortions than women from schools with a lower proportion of conservative Protestants.

We might also expect that school religious context will moderate the effect of personal religiosity on the decision to abort. Drawing on Durkheim's ([1897] 1951) ideas, the moral communities hypothesis posits that, through interactions with other people, individuals sustain and form interpretations of norms (Stark and Bainbridge 1996). If religious people interact with others who are religious, then religious considerations should enter into the process by which they accept and justify norms. Through interactions with schoolmates who share their affiliation or practices, religious and conservative Protestant women should get more support for attitudes about abortion and motherhood. These suppositions lead to the next two hypotheses:

H4a: The influence of conservative Protestant affiliation on abortion behavior will be greater for women who attended schools with a higher proportion of conservative Protestants.

H4b: The effect of religious involvement on abortion behavior will be greater for women who attended schools with a higher proportion of religiously active students.

The importance a woman places on conservative Protestant attitudes about abortion may depend on the cost of compliance. Research suggests that, in addition to religious concerns, women weigh the psychic, social, and economic costs of a pregnancy in deciding whether to obtain an abortion (Finer et al. 2005). At very young ages (e.g., 14) the social and economic costs of having a premarital birth are particularly high because educational attainment may be jeopardized. Additionally, as female workforce participation has increased and greater numbers of women have entered college, very young motherhood has increasingly become stigmatized (Whitley and Kirmayer 2007; Wilson and Huntington 2005). Even women who attend a school with a high proportion of conservative Protestants are likely aware of the high educational costs to very young motherhood and may associate feelings of shame or embarrassment with teenage motherhood. However, as women graduate from high school and approach age 25, the average age at first birth (Martin et al. 2003), it may become easier to comply with conservative Protestant ideology about abortion and motherhood. Thus, attitudes formed in conservative Protestant school contexts should influence the abortion decisions of women entering their mid-twenties to a greater extent than it should influence the abortion decisions of younger women who face particularly high costs for having children. These ideas lead to the next hypothesis:

H5: The influence of conservative Protestant schoolmates on abortion behavior will be greater for older women than for younger women.

School Sector and Abortion

Abortion behavior may also be influenced by attendance at secondary schools that are religiously affiliated. Along with conservative Protestant denominations, the Catholic Church has taken a strong stance against abortion. Religious schools typically offer classes on religion and provide sex education that is consistent with conservative religious precepts. As a result, religious school students should be more likely than public school students to hear about pro-life perspectives. Through socialization and social learning processes (Akers 1985; Sutherland 1960; Miller and Fox 1987) we might expect that students from religious

schools would be more likely than public school students to develop pro-life perspectives, and therefore be less likely to abort a pregnancy conceived while unmarried. This logic is the basis of the next hypothesis:

H6a: Among women who conceive while unmarried, students from religious schools will be less likely than students from public schools to obtain abortions.

On the other hand, there are reasons to expect that women who attend and graduate from religiously-affiliated schools will be more likely to obtain abortions than women from public schools. Religious school students are often not required to adhere to the school's denominational affiliation, and religious school attendance may not reflect students' personal religious orientations. Many students may attend religious high schools for nonreligious reasons, such as parental desires for a stronger academic environment or stricter discipline. Bryk, Lee, and Holland (1993) found that there was greater student involvement in learning and class attendance in Catholic schools than in public schools. As a result, academic achievement and college attendance tend to be higher among Catholic school students (Neal 1997).

We know much more about Catholic schools than non-Catholic religious schools. Nevertheless, there is reason to think that many of the elements that make Catholic school students academically strong—orderly classroom environment, small schools, strong teacher commitment—are also found in other religious schools. Among women who conceive while unmarried, academic and career achievement are some of the most important reasons given for obtaining an abortion (Finer et al. 2005). Additionally, women enrolled in college are more likely to abort a premarital pregnancy than to carry it to term (Coverdill and Kraft 1996). In deciding whether to get an abortion, pregnant women may weight the academic costs of carrying a premarital pregnancy to term higher than their religious high school's proscriptions on abortion.

Additionally, students at religious schools may face higher social sanctions for premarital births. Research on Catholic schools shows that they tend to produce strong social ties among students and teachers (Bryk et al. 1993). Strong social ties are associated with a greater stake in conformity, and a greater con-

cern for reputation (Hirschi 1969). Although both abortion and premarital pregnancy violate conservative religious precepts, an abortion is easier to conceal than a premarital birth. Because religious schools produce influences that both discourage and possibly inadvertently encourage abortion, this study also examines Hypothesis 6b as an alternative to Hypothesis 6a:

H6b: Among women who conceive while unmarried, students from religious schools will be more likely than students from public schools to obtain abortions.

DATA AND MEASUREMENT

To test the relationship between religion and abortion, this study uses the National Longitudinal Study of Adolescent Health (Add Health),¹ a three-wave school-based study of adolescents' (grades 7 to 12) health-related behaviors. Investigators primarily recruited high schools with some linked middle schools, for a total of 132 schools. This study relies on a subgroup of the original in-school sample where respondents were randomly selected for more extensive and multi-wave in-home interviews. All sensitive questions were asked using audio-computer assisted, self-administered interview (audio-CASI). There was only a gap of one year between waves one and two. To capture more pregnancies and establish the correct causal ordering, religion is measured at the first wave (W1) and pregnancy resolution is measured at the third wave (W3). Wave 1 in-home interviews took place in 1994 and 1995 when the average respondent was 16 years old ($SD = 19$ months). Wave 3² in-home interviews occurred in 2001 and 2002 when the average respondent was age 23.

This study focuses on the resolution of first pregnancies that occurred to unmarried and never-divorced women between W1 and W3 ($N = 1,732$).³ Women ranged in age from 14 to 26 when they discovered that they were pregnant. First premarital pregnancies are examined because the majority of young women who aborted their first pregnancy (97%) were not married, and only about 2 percent of married women reported aborting their first pregnancy, making a meaningful analysis difficult to conduct. All variables are calculated using W1 information, except for the following: reported abortion behavior, age at end of pregnancy, school status when pregnancy was dis-

covered, and interviewer questions about the respondents' candidness and embarrassment, all of which are calculated from W3 interviews. Listwise, deletion resulted in an analytic sample of 1,504 women from 125 different schools.

Dependent Variable

The dependent variable is a nominal measure indicating whether a woman who conceived her first pregnancy without ever having been married obtained an abortion or carried it to term. The abortion variable is taken from a direct question that asks respondents how their pregnancies ended. This information is couched in a series of relationship questions in which respondents are asked to list all persons with whom they have had a sexual relationship since 1995 when W1 interviews were conducted. Women were then asked a series of questions about each relationship, including whether they married the person, conceived with him, and how any pregnancies ended. Marriage and pregnancy dates are used to determine if women conceived while single, and questions about how the pregnancy ended are used to determine whether she had a live birth or obtained an abortion.

Twenty-five percent of women in the analytic sample reported an abortion, which is likely an underestimate. Rather than verbally reporting abortion behavior, Add Health respondents used self-reports that were recorded privately, which previous research has found reduces reporting bias (Fu et al. 1998; Jagannathan 2001; Udry et al. 1996). Additionally, Add Health employs a skip pattern where respondents first report a pregnancy and then how it was resolved, which previous research has suggested could decrease reporting bias (Jones and Forrest 1992). So far, researchers (Regnerus and Smith 2005) have not found that religious respondents are more inclined to give socially desirable responses. Nevertheless, if religion is associated with carrying a pregnancy to term, then more religious or conservative Protestant women may be less likely to report an abortion.

I conducted several diagnostic tests to check for reporting bias on the basis of religion. I looked at whether religion influenced the likelihood of reporting an abortion versus not answering questions that asked about pregnancy and its outcome. There were no significant differences on the basis of private and public religiosity, affiliation with a conser-

vative Protestant faith, school sector, school proportion conservative Protestant, and the school's level of religious participation. Since some women may report an abortion as a miscarriage (Fu et al. 1998), I examined the differences related to the individual and school religion measures. A *t*-test showed that the only significant difference in reporting an abortion versus a miscarriage was for women who identified as conservative Protestant and the corresponding school context measure.

I further examined this relationship by looking at the odds of reporting a miscarriage for the six religious groups—Catholic, conservative Protestant, mainline Protestant, other Protestant faith, other religion, and no religion—included in this study. If there is social desirability bias in the reporting of abortion on the basis of religious affiliation, then the greatest difference in the odds of reporting a miscarriage versus an abortion should be between conservative Protestants and unaffiliated women, which was not found. The only significant ($p < .05$) differences in the odds of reporting a miscarriage versus an abortion were between conservative Protestants and Catholics, followed by women who affiliated with a non-Christian religion.⁴

These diagnostic tests suggest that religion is not systematically related to reporting a miscarriage or not answering questions about a pregnancy or how it was resolved. If women claimed to have a live birth rather than an abortion, they would have then been asked detailed questions about the child, including birth date, weight, and length, which should have discouraged faulty reporting. Nevertheless, to further address the possibility of social desirability bias on the basis of religion, all analyses include two measures of inclination to give socially desirable responses. After W3 surveys, which is when women answered questions about pregnancy resolution, the interviewer was asked to report whether the respondent appeared candid or embarrassed by any of the survey questions. All models include a dichotomous measure of these questions (coded 0 = "no"; 1 = "yes").

Independent Variables

The three individual-level religion variables included in the analysis are private religiosity, public religiosity, and denominational affiliation. Private religiosity is calculated from a four-category question, "How important is re-

ligion to you?" (coded 1 = "very important" to 4 = "not important at all"), and a five-category question, "How often do you pray?" (1 = "at least once a day" to 5 = "never"). I reverse-coded and standardized both variables so that each has a mean of zero and a standard deviation of one; for each, higher values indicate greater religiosity. Together they produce an alpha of .825. Public religiosity is calculated from two four-category (1 = "once a week or more" to 4 = "never") questions: "In the past 12 months, how often did you attend religious services?" and "In the past 12 months, how often did you attend [religious] youth activities?" As with the public religiosity measures, I reverse-coded and standardized both variables so that each has a mean of zero and a standard deviation of one. These items produced an alpha of .731.⁵

Add Health's religious affiliation question asked respondents, "What is your religion?" On the basis of Steensland et al.'s (2000) classification scheme, I created six religious groupings (Catholic, mainline Protestant, other Protestant, other religion, no religion, and conservative Protestantism [reference]) from an initial 32 response categories (e.g., Southern Baptist, Methodist, Jewish, Catholic).⁶ Although the denominational approach is the most common way to measure religious identity (Alwin et al. 2006), any religious-affiliation effects should be taken as conservative estimates because teenagers may not know the specific name of their religious denomination (e.g., Missouri Synod Lutheran vs. Evangelical Lutheran Church), which could increase measurement error making it *more* difficult to get significant results.

In addition to social desirability, all models⁷ include controls that account for academic aspirations and achievement, age, race, and parents' socioeconomic status. I include measures associated with academic achievement and aspirations because women who are more invested in their education are more likely both to delay first sex (Schvaneveldt et al. 2001) and to abort a premarital pregnancy (Coverdill and Kraft 1996). Additionally, more religiously-involved teens tend to make greater academic progress (Muller and Ellison 2001). Academic aspirations is measured as the mean of two questions that ask respondents to rank college-related aspirations on a scale of 1 to 5 (where 1 is low and 5 is high): (1) "How much do you want to go to college?" and (2) "How likely is it that you will go to college?" I include an av-

erage of self-reported grades from four academic subjects (math, English, science, and history or social studies; 1 = D or lower; 4 = A). All models also have a measure of education during pregnancy. On a twelve-point scale, women were also asked, "How far had you gone in school when you got pregnant?" Responses were recoded into four categories where 1 = "less than high school" and 4 = "college graduate." Twenty-five percent of women in the sample had obtained more schooling than a high school degree when they discovered their pregnancy.

I include both age at W1 and age while pregnant because older women have typically been sexually active longer than younger women (Henshaw and Kost 1996), and pregnancy resolution decisions may depend on a woman's ability to support a child, which would be associated with her age. Age during W1 interviews is measured in months and the pregnancy end date is a woman's age in years when her pregnancy ended. On average, women were 20 years old (SD = 2.05) when their pregnancies ended. The correlation between age at W1 and age while pregnant is .53.

Whereas survey research (Coverdill and Kraft 1996; King, Myers, and Byrne 1992) has suggested that unmarried blacks have lower abortion rates than unmarried whites, comparisons between survey research and fertility data suggest that nonwhites may be less likely to report abortions (Udry et al. 1996). I therefore include a nominal measure of race, measured as a set of five racial-ethnic dummy variables: white (reference group in regression analyses), black, Hispanic, Asian, and other.

Finally, research has found that parents' socioeconomic status is related to the timing of first sex (Schvaneveldt et al. 2001). I include a dummy variable indicating whether a parent is receiving public assistance, along with the mean number of years of schooling earned by the respondent's parents (1 = "8th grade or less"; 9 = "beyond a 4-year college or university").⁸

School-level Variables⁹

The school proportion conservative Protestant, mean level of public religiosity (attendance and youth group participation) within a school, and school sector are the key school-level variables. The school proportion conservative Protestant refers to the proportion of students within each school who affiliate

with a denomination that, according to Steensland et al. (2000), would be classified as conservative Protestant. I created the measure of school level of public religiosity from individual-level responses to the public religiosity questions. I used all surveyed students to create the aggregate school-level variables. Using the W1 school administrator questionnaire, I specified four school sectors: public school (reference), Catholic, other religious school, and other school type. Whereas Catholic school sector is not significantly correlated with school religious participation, "other religious school" has a modest correlation of .174 ($p < .05$) with school proportion conservative Protestant, and it has a correlation of .342 ($p < .05$) with school religious participation.

I also include contextual controls¹⁰ associated with school demographic characteristics and abortion access. Students attending schools where parents on average have higher incomes may be more likely to get an abortion since academic achievement is related to income and the decision to abort (Finer et al. 2005; Torres and Forrest 1988). Likewise, the percentage black may be important since blacks tend to be economically and residentially segregated. Thus, health outcomes in these schools may be poorer and reflect higher rates of unintended pregnancies (Massey and Denton 1993). The proportion black and mean school income are created from individual-level responses to questions about race and parents' income.

Finally, I include measures of clinic availability and state abortion funding because they could affect abortion access (Finer and Henshaw 2003; Henshaw and Kost 1996). Using the Alan Guttmacher Institute files (1992), Add Health investigators created a measure of clinic availability (0 = no clinic in county; 1 = clinic in county). The measure of public funding for abortion is based on state policies where a respondent's school is located (coded 1 = public funding only in cases of life endangerment, rape, or incest; 2 = public funding only in cases of life endangerment, rape, incest, and under limited health circumstances; 3 = public funding in all or most circumstances).

Analytic Strategy

I use hierarchical logistic models to examine the influence of schoolmates' conservative Protestant affiliation, level of public religiosity,

and school sector on abortion behavior. In contrast to conventional regression models, hierarchical modeling correctly estimates the standard errors of the contextual variables (Bryk and Raudenbush 1992). This method adjusts for the correlated errors among individuals within the same context (e.g., school) and uses the appropriate degrees of freedom for school-level units. The model simultaneously estimates coefficients at the individual and contextual levels. Aside from dummy variables, all variables in the analysis are centered (mean = 0), which means that the intercept term represents the average odds of reported abortion behavior for women who are assigned the suppressed category (i.e., the reference) for all dummy variables and the average value on all others.

The analysis begins by estimating the effects of individual-level variables on reported abortion behavior. I then examine school-level direct effects and cross-level interactions between individual and school-level variables. I ran all regression models in HLM 6, a program written by Raudenbush, Bryk, and Congdon (2004). As recommended by Add Health investigators, I weighted all analyses to represent the demographics of American adolescents.

RESULTS

Models 1 through 3 in Table 1 show the influence of individual characteristics on reported abortion behavior.¹¹ Model 1 presents the effects of the individual-level control variables. Parents' education, academic grades, college aspirations, education when pregnancy was discovered, and whether the respondent was embarrassed by interview questions were significantly and positively related to reporting an abortion. Women who had at least one parent receiving public assistance were more likely to report carrying to term a pregnancy conceived while unmarried. In contrast to younger women, older women who conceived their first pregnancy while unmarried reported that they were more likely to carry it to term.

Model 2 examines the effect of public and private religiosity on reported abortion behavior. Since conservative Protestants tend to have higher levels of religious participation than other groups, I examine the effect of religiosity before including denominational affiliation (Alwin et al. 2006). Neither religiosity variable is significant, which is contrary to the first hypothesis: women with high levels of religiosity

TABLE 1. The Influence of Individual Religion on Reported Abortion Behavior among Unmarried Women who Conceived First Pregnancies while Age 14–26: Hierarchical Logistic Regression Models (Odds ratios are reported); Individual *N* = 1,502; School *N* = 125

	Model 1		Model 2		Model 3		Model 4	
	Odds	SE	Odds	SE	Odds	SE	Odds	SE
Intercept	.28***	.36	.26***	.30	.41***	.28	.34***	.30
Individual-level variables								
Age	1.00	.00	1.00	.00	1.00	.00	1.00	.00
Hispanic	.82	.28	.61.84	.25	.88	.26	.83	.26
Black	.72†	.19	.84	.17	1.07	.15	1.06	.20
Asian	1.15	.63	1.01	.55	.96	.47	.94	.45
Other	1.08	.45	1.12	.39	1.19	.33	1.32	.36
Parents' education	1.22***	.05	1.15***	.04	1.13***	.04	1.12**	.04
H.S. Grades	1.56***	.09	1.49***	.08	1.49***	.07	1.56***	.08
College aspirations	1.23**	.07	1.20**	.07	1.15*	.06	1.16*	.06
Parents' welfare status	.63*	.19	.61*	.16	.68*	.14	.67*	.15
Embarrassed in interview	1.99*	.33	2.11*	.31	1.86*	.30	2.03*	.30
Candidness during interview	1.08	.36	1.17	.30	.99	.28	1.01	.29
Education when pregnancy discovered	1.28**	.09	1.24**	.08	1.21**	.08	1.20*	.08
Age while pregnant	.83***	.04	.85***	.04	.86***	.04	.84***	.04
Public religiosity			.82†	.12	.85	.11	.87	.12
Private religiosity			.94	.09	.86	.13	.86	.14
Catholic					.90	.24	.86	.25
Conservative Protestant					.49***	.17	.52***	.18
Other Protestant					.55*	.30	.49*	.31
Other religion					.97	.25	.97	.26
No religion					.59†	.32	.57†	.33
Level-2 variables								
Mean proportion black							1.34	.31
Mean parents' income							1.03***	.01
No public abortion funding							.65***	.14
Abortion clinic availability							1.64***	.15
Variance estimates								
Individual variance	.78		.70		.64		.64	
Intercept variance	1.13***		1.32***		1.79***		1.21***	
Slope variance: Age while pregnant	.08***		.10***		.10***		.10***	
Slope variance: Public religiosity			.78***		.91***		1.05***	
Slope variance: Conservative Protestant					1.88†		2.38	

† < .10; * < .05; ** < .01; *** < .001

will be less likely to obtain an abortion than more secular women. Consistent with Hypothesis 2, model 3 shows that conservative Protestant women are less likely to report an abortion than women who identify as mainline Protestant. Switching the reference category, I found that conservative Protestants are also less likely than Catholics and women of other religious faiths to report an abortion. In a supplementary analysis, interactions between religiosity (public and private) and religious affiliation were not significant.

Model 4 in Table 1 introduces the school-level control variables. Other things being equal, women attending schools where parents have higher incomes are more likely to report obtaining an abortion. Additionally, women who do not live near an abortion clinic or live

in a state that has more restrictive public abortion funding have lower odds of reporting an abortion.

Model 1 of Table 2 shows that schoolmates' religious participation is not significantly related to reported abortion behavior, which is contrary to Hypothesis 3a. Consistent with Hypothesis 3b, model 2 shows that women who conceived their first pregnancy while unmarried and were from schools with a higher proportion of conservative Protestants are less likely to report an abortion.

The slope variance for conservative Protestant in model 1 is not significant, which indicates that there is no significant variation to be explained by including a cross-level interaction between individual and school proportion conservative Protestant. Model 3 includes the in-

TABLE 2. The Influence of Individual and School Religion on Reported Abortion Behavior among Unmarried Women who Conceived First Pregnancies while Age 14–26. Hierarchical Logistic Regression Models (Odds ratios are reported); Individual $N = 1,502$; School $N = 125$

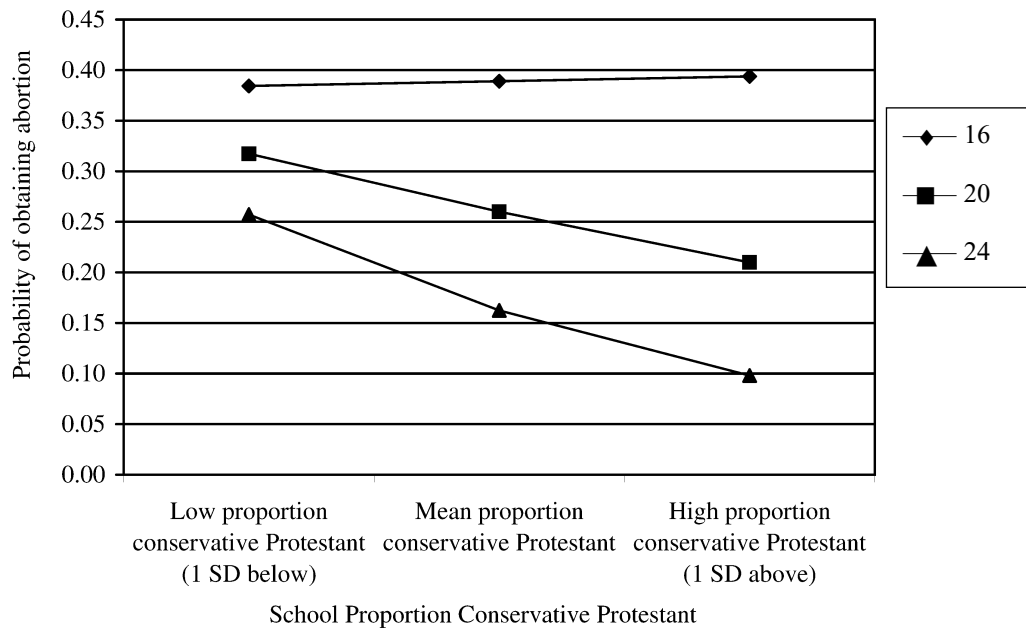
	Model 1		Model 2		Model 3		Model 4		Model 5	
	Odds	SE	Odds	SE	Odds	SE	Odds	SE	Odds	SE
Intercept	.34***	.30	.34***	.30	.34***	.30	.35***	.30	.35***	.29
Individual-level variables										
Age	1.00	.00	1.00	.00	1.00	.00	1.00	.00	1.00	.00
Hispanic	.84	.26	.82	.26	.82	.26	.83	.26	.86	.27
Black	1.06	.20	1.05	.19	1.05	.20	1.07	.20	1.05	.20
Asian	.93	.45	.92	.45	.92	.45	.92	.45	.93	.44
Other	1.31	.35	1.30	.34	1.30	.34	1.30	.34	1.25	.31
Parents' education	1.11**	.04	1.11**	.04	1.11**	.04	1.11**	.04	1.11**	.04
H.S. Grades	1.56***	.08	1.57***	.08	1.57***	.08	1.56***	.08	1.55***	.08
College aspirations	1.16*	.06	1.17**	.06	1.17**	.06	1.17**	.06	1.18**	.06
Parents' welfare status	.67**	.15	.66**	.15	.66**	.15	.66**	.15	.65**	.15
Embarrassed in interview	2.02*	.31	2.03*	.30	2.04*	.30	2.03*	.30	2.01*	.31
Candidness during interview	1.02	.29	1.04	.29	1.03	.29	.99	.29	.97	.29
Education when pregnancy discovered	1.20*	.08	1.20*	.08	1.20*	.08	1.21*	.08	1.20*	.08
Age while pregnant	.84***	.04	.84***	.04	.84***	.04	.84***	.04	.83***	.04
Public religiosity	.87	.12	.88	.12	.88	.12	.87	.12	.89	.12
Private religiosity	.85	.14	.86	.14	.86	.13	.86	.13	.85	.14
Catholic	.85	.25	.83	.25	.83	.25	.83	.25	.82	.25
Conservative Protestant	.50***	.18	.54***	.18	.54***	.19	.56***	.19	.55***	.19
Other Protestant	.49*	.31	.49*	.32	.49*	.32	.49*	.32	.49*	.32
Other religion	.97	.26	.97	.26	.97	.26	.97	.26	.99	.26
No religion	.56†	.33	.57†	.33	.58†	.33	.59†	.33	.60	.33
Level-2 variables										
Mean proportion black	1.16	.35	1.66	.35	1.65	.35	1.63	.35	2.12*	.34
Mean parents' income	1.03***	.01	1.03***	.01	1.03***	.01	1.03***	.01	1.03***	.01
No public abortion funding	.62***	.14	.68**	.15	.67**	.15	.67**	.14	.69**	.14
Abortion clinic availability	1.75***	.17	1.60**	.16	1.60**	.16	1.59**	.16	1.34*	.14
Level of school religious participation	1.47	.31	1.92†	.34	1.98†	.37	1.92†	.37	1.14	.28
School proportion conservative Protestant			.30*	.52	.30*	.53	.31*	.52	.35*	.41
Catholic school									5.62*	.64
Other religious school									4.91***	.30
Other school (nonreligious)									.59†	.32
Cross-level interactions										
Interaction: public religiosity by level of school religious participation					.83	.33	.80	.34	.72	.35
Interaction: age at pregnancy end by school proportion conservative Protestant							.72*	.14	.71*	.14
Variance estimates										
Individual variance	.64		.64		.65		.67		.68	
Intercept variance	1.23***		1.16***		1.16***		1.12***		1.00***	
Slope variance: Age while pregnant	.10***		.11***		.10***		.08**		.09**	
Slope variance: Public religiosity	1.09***		1.15***		1.15***		1.14***		1.23***	
Slope variance: Conservative Protestant	2.50		2.48		2.49		2.63		2.36	

† $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

teraction between public religiosity and the level of school religious participation, which is not significant. Contrary to Hypotheses 4a and 4b, the school religious context does not appear to strengthen the influence of individual religiosity or conservative Protestant affiliation on reported abortion behavior.

Model 4 finds support for Hypothesis 5: The influence of conservative Protestant school-mates on reported abortion behavior is greater for older women than for younger women.¹² As Figure 2 illustrates, the predicted probability of a sixteen year-old woman obtaining an abortion is about 40 percent, regardless of the school proportion conservative Protestant.

FIGURE 2. Predicted Probabilities of Reported Abortion Behavior at Different Levels of School Proportion Conservative Protestant by Age while Pregnant



Notes: The chart presents predicted probabilities for white females who identified with a mainline Protestant denomination, resided with two parents who were not receiving public assistance, and lived in a county without an abortion clinic. All other coefficients were centered at their mean. This predicted probabilities model does not include the variable for school status at the onset of pregnancy because controlling for this variable while varying age from 16 to 24 would generate nonsensical predicted probabilities.

However, for a 24 year-old woman who attended a high school with a high proportion of conservative Protestants the probability of reporting an abortion is 10 percent, compared to 25 percent for a 24 year-old woman who attended a high school with a low proportion of conservative Protestants.

Model 5 examines the effect of school sector on reported abortion behavior. Among those who become pregnant while unmarried, women who are currently attending or have attended religious schools are more likely to report obtaining an abortion than women from public schools, all else being equal. In an analysis not shown here I found that women from Catholic schools were no different in their reported abortion behavior than women from other religious schools. Additionally, the school sector effect did not depend on a woman's age while pregnant. These findings support Hypothesis 6b, that unmarried pregnant women who attended religious school are more likely to obtain abortions than women from public schools.

CONCLUSION

At the individual level, personal religious importance and involvement do not appear to influence reported abortion behavior. The lack of influence of public and private religiosity can partially be explained by the behaviors leading to conception while unmarried. To conceive while unmarried, young women had to have engaged in premarital sex and either not used contraception or used it unsuccessfully. Since personal religiosity delays the timing of first sex, and religious women may be sexually active outside of marriage for shorter periods of time, they may be less likely than secular women to conceive while unmarried (Adamczyk and Felson 2008; Billy et al. 1994; Rostosky et al. 2004). Once pregnant, however, other factors such as grades and parents' education matter more for getting an abortion than generic religiosity.

While public or private religiosity did not have an effect, conservative Protestants appear less likely to report an abortion than mainline Protestants, Catholics, and women with non-

Christian religious affiliations. Compared to other American religious groups, conservative Protestant ideology tends to prioritize motherhood relative to academic achievement (Darnell and Sherkat 1997; Lehrer 1999). Women who belong to a faith that places such a high value on motherhood may perceive the cost of having a child while unmarried as lower than women of other faiths.

Although support was not found for schoolmates' religious participation on reported abortion behavior, the norms and values of conservative Protestant schoolmates appear to have an effect. The influence of conservative Protestant school context on reported abortion behavior appears for women in their twenties, but not for teenagers, suggesting that conservative Protestant norms are more likely to limit abortion behavior when the educational and economic costs are lower. Contrary to the moral communities hypothesis, neither school religiosity nor a conservative Protestant school context increased the influence of personal religiosity or conservative Protestant affiliation on reported abortion behavior.

Finally, this study found that women who are attending or have graduated from private religious schools were more likely to obtain abortions than women from public schools. Religious school students tend to have more educated parents (Neal 1997), which may be related to abortion behavior through women's own academic achievement (Finer et al. 2005; Torres and Forrest 1988). Although this study included family and academic characteristics, there may be other factors that were not captured with these measures. Because students may attend religious schools for nonreligious reasons, religious school attendance is not necessarily indicative of conservative religious beliefs. Additionally, the religious and moral mission typical of religious schools tends to generate high levels of commitment and strong social ties among students, parents, and school staff, which could increase feelings of shame and foolishness associated with an extramarital birth (Bryk et al. 1993).

There are some methodological concerns related to the sample and use of self-report data that merit further comment. Since the women in this sample had an average age of 20 when they conceived, we do not know whether religion is related to the abortion behavior of older women. With age, motherhood, and additional pregnancies the role of religion for abor-

tion decisions may change. Additionally, the abortions in this study could have occurred up to seven years after religion was measured. Personal religiosity may have changed between the time of measurement and the decision to get an abortion.¹³ The findings in this article should, therefore, be considered conservative estimates of individual and contextual effects of religion on reported abortion behavior.

Because abortion behavior is such a sensitive issue, there is likely a high level of underreporting in any abortion study using self-reported data. In this study several steps were taken to assess and limit religion-related social desirability bias. First, rather than verbally report their responses, women privately recorded their abortion behavior, which previous research has found reduces reporting bias (Fu et al. 1998; Jagannathan 2001; Udry et al. 1996). Second, diagnostic tests did not find any logical pattern of social desirability reporting bias related to religion in obtaining an abortion versus not reporting information about a pregnancy, or reporting a miscarriage instead. Finally, all models included interviewer reports of respondent candidness and embarrassment, which should further control for social desirability reporting bias.

While it may seem that religious individuals would be more prone to social desirability reporting bias, research in this area has not found that they are (Regnerus and Smith 2005). Nevertheless, to further account for potential bias future researchers might consider including a scale measuring respondents' propensity to give socially desirable answers (see Adamczyk and Felson 2008). Reporting bias may also be reduced by adding skip patterns related to doctor visits. Of course, data that link a woman's medical history to self-reported religion information could eliminate concerns about reporting bias. At the very least, additional representative studies are needed to replicate the relationship (or lack thereof) between religion and abortion behavior.

Previous research on abortion has suggested that when the economic and educational costs of carrying a pregnancy to term are high, women are more likely to obtain an abortion (King et al. 1992). While conservative Protestant norms appear to influence the abortion behavior of women in their twenties, they do not seem to affect the behavior of teenagers, whose pregnancy decisions will weigh much more heavily on the course that their lives take.

Additional research is needed to investigate whether the effect of religion on reproductive behaviors is generally higher when the economic and educational consequences of these behaviors are lower. Findings from this study suggest that the effect of contextual religiosity on pregnancy decisions may be lower among single mothers or among married women facing divorce. By contrast, religious norms may have a greater impact on the abortion decisions of women who have already attained their desired level of education.

Social costs also appear to play an important role in understanding abortion behavior. The strong social ties that are cultivated in Catholic and other religious schools may accentuate the negative social sanctions associated with an extramarital birth, inadvertently boosting the likelihood that a pregnant woman will obtain an abortion. Future research might investigate the extent to which ties to people within religious educational institutions contribute to feelings of shame that may accompany an extramarital birth. Adamczyk and Felson (2006) found that network characteristics, like friendship group density, can increase the likelihood that friends' religiosity will delay the timing of first sex. For abortion research, the level of network density among people within religious schools and colleges may accentuate the level of shame associated with an extramarital pregnancy.

Attitudinal research has found that religious affiliation, involvement, and importance are all significant for understanding abortion attitudes (Jelen and Wilcox 2003). Findings from this study suggest that, for understanding abortion behavior, researchers should focus on differences between religious groups (e.g., conservative vs. mainline Protestant) in how they view abortion and unplanned motherhood. Indeed, the effect of conservative Protestant affiliation did not depend on religious importance or involvement. Even if a woman does not affiliate with a conservative Protestant faith, high school attendance with conservative Protestant schoolmates appears to shape her reported abortion behavior after she leaves high school. These findings underscore the salience of conservative Protestant rhetoric about abortion and unplanned motherhood for young single women's reported abortion behavior.

NOTES

1. The Add Health program project was de-

signed by J. Richard Udry, Peter S. Bearman, and Kathleen Mullan Harris, and was funded by a grant P01-HD31921 from the National Institute of Child Health and Human Development, with cooperative funding from 17 other agencies. Special acknowledgment is due Ronald R. Rindfuss and Barbara Entwisle for assistance in the original design. Persons interested in obtaining data files from Add Health should contact Add Health, Carolina Population Center, 123 W. Franklin Street, Chapel Hill, NC 27516 (addhealth@unc.edu).

2. Wave 3 interviews were conducted at the respondents' homes and did not exclude women who dropped out of school after their W1 interviews due to pregnancy or any other reason.
3. Out of an initial sample of 10,490 women, the following individuals were excluded: 187 respondents whose first pregnancies occurred before W1 interviews; 159 respondents who were pregnant for the first time during W3 interviews; 20 respondents who reported pregnancy dates that fell prior to their self-reported age of menarche; 421 respondents who were part of a convenience sibling sample and did not have sampling weights; 1,083 respondents who only had information from W1 interviews; 1,392 who only had information from W1 and W2 interviews; and 216 respondents who did not have the information needed to construct the abortion behavior variable. Out of the remaining 7,228 women, 975 reported being virgins until marriage, 4,023 reported having premarital sex but did not conceive while unmarried, 275 said they miscarried their first pregnancy, and 1,732 reported conceiving their first pregnancy while unmarried and either reported an abortion or live birth.
4. I used the individual-level conservative Protestant measure to construct the school context measure, which is why the *t*-test also showed that women from schools with a higher proportion of conservative Protestants were more likely to report a miscarriage.
5. Respondents who answered "no religion" or "do not know" to the question, "What is your religion?" were assigned the lowest category for public and private religiosity measures because interviewers did not ask

these respondents any more religion questions.

6. Denominations coded conservative Protestant include Adventist, African Methodist Episcopal, Assemblies of God, Baptist, National Baptist, Holiness, and Pentecostal. Mainline Protestants include Disciples of Christ, Congregationalist, Episcopalian, Lutheran, Methodist, Presbyterian, United Church of Christ, and Quaker. Other Protestants were Protestants whose denomination was not ascertained. Other religions include Christian Scientist, Jehovah's Witness, Mormon, Baha'i, Buddhist, Eastern Orthodox, Hindu, Muslim, Jewish, Unitarian, and respondents with an unspecified "other" religion. Because sample size was small, disaggregating other religions was not practical. Because the dummy variables for black Protestant and black race were highly correlated, I did not follow Steensland et al.'s (2000) advice in creating a separate category for black Protestants.
7. I considered, but did not include, closeness to parents, living in a two-parent family, and mother's religiosity. A separate analysis showed that none of these variables was significant, except for mother's religiosity, which was only significant in Table 1, model 1. The exclusion of these variables did not alter any key relationships.
8. A measure of parents' household income was also considered, but parents' income was not significant in any of the models, and 30 percent of respondents were missing information on this variable.
9. Among school-level variables, the biggest correlation was between school proportion conservative Protestant and the mean level of public religiosity ($r = .650$). Correlations among the school-level coefficients were smaller, with the largest correlation being between school proportion conservative Protestant and school proportion black ($r = .052$). All variables except dummy variables are centered, which should limit multicollinearity, and no unreasonable changes to the school-level coefficients appeared when school-level variables were added or removed.
10. I also considered state proportion conservative Protestant and the unemployment rate and density in the community where the school is located. State proportion conservative Protestant was not significant in any of the models. Before the cross-level interaction terms were included (i.e., Table 2, model 2), density and the unemployment rate were significant. However, when they were included with the cross-level interaction terms (i.e., Table 2, model 5), the model would not converge, in part because of a small school sample size and moderate correlations between level-2 variables.
11. Seventy-nine percent of the variation in reported abortion behavior is within schools, and 21 percent of the variation is between schools.
12. In a separate analysis I tested an interaction between the measures of age when pregnant and schoolmates' religious participation. The interaction was not significant.
13. For comparing abortion decisions of pregnant vs. non-pregnant women, Add Health data could be used to examine W1 religiosity for abortion behaviors that occurred one year later (see, for example, Coleman 2006).

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