



# HHS Public Access

Author manuscript

*J Relig Health*. Author manuscript; available in PMC 2017 December 01.

Published in final edited form as:

*J Relig Health*. 2016 December ; 55(6): 1907–1916. doi:10.1007/s10943-015-0128-0.

## Religious beliefs against smoking among Black and White urban youth

Adam C. Alexander, MS<sup>1</sup>, Leslie A. Robinson, PhD<sup>2</sup>, Kenneth D. Ward, PhD<sup>1</sup>, Amy S. Farrell, M.S.<sup>2</sup>, and Adam C. Ferkin<sup>3</sup>

<sup>1</sup>School of Public Health, University of Memphis, Memphis, Tennessee, USA

<sup>2</sup>Department of Psychology, University of Memphis, Memphis, Tennessee, USA

<sup>3</sup>Department of Psychology, Knox College, Galesburg, Illinois

### Abstract

This study explores the relation of religiosity to cigarette smoking in a sample of 4,776 Black vs. White adolescents. Findings show that Black adolescents have significantly stronger religious beliefs against smoking than do White students. Further, teens with strong or very strong religious beliefs are less likely to have smoked. The protective effect of religious beliefs against smoking was stronger for Whites than for Blacks. These findings suggest that efforts in the Black religious community to prevent cigarette smoking have been somewhat successful. Similar efforts in the White community might help stem the tide of tobacco use among White teens.

### Keywords

religiosity; religious beliefs; smoking; tobacco; adolescents

---

In the United States, smoking tobacco is primarily initiated during adolescence (Campaign for Tobacco-Free Kids, 2009; U.S. Department of Health and Human Services [DHHS], 1994; DHHS, 2012). Each day an estimated 3,200 adolescents under the age of 18 will smoke their first cigarette, and many of these adolescents will become occasional or daily cigarette smokers by the time they reach adulthood. For these youth the risk of dying prematurely will be considerably increased (DHHS, 2012; DHHS, 2014). To address this problem, researchers have identified and promoted factors that prevent the initiation of smoking by adolescents. Of these factors, religiosity (defined by religious activity, dedication, and belief) has emerged as a consistent and powerful deterrent to the initiation of smoking for many adolescents (Nonnemaker, McNeely, & Blum, 2003; Nonnemaker, McNeely, & Blum, 2006; Weaver, Flannelly, & Strock, 2005).

---

**CORRESPONDING AUTHOR** Leslie A. Robinson, PhD., Associate Professor, Department of Psychology, The University of Memphis, 400 Innovation Drive, Memphis TN, 38152, 901.678.1667 (telephone), 901.678.2579 (fax), Lrobinso@memphis.edu.

**Conflict of Interest:** The authors declare they have no potential conflicts of interest. The research was approved by The University of Memphis' Internal Review Board. Informed consent was obtained from parents, and adolescents provided assent to the research.

#### COMPLIANCE WITH ETHICAL STANDARDS

All procedures in this research were performed in accordance with the ethical standards as laid down in the 1964 Declaration of Helsinki and its later amendments or comparable ethical standards. Informed consent was obtained from all individual participants included in the study. The authors are not aware of any conflicts of interest other than the funding sources listed above for the research.

Weaver et al (2005) reviewed the literature on the effects of religiosity on adolescent tobacco use published from 1990 to 2003. Across 29 studies, religiosity was protective against all tobacco use (lifetime, occasional, and regular use) for adolescents. The researchers concluded that religiosity had the strongest beneficial effect in preventing smoking initiation (Weaver et al., 2005), compared with inhibiting other phases of tobacco use.

Given that Black adolescents are more religious and are less likely to smoke than Whites (Centers for Disease Control and Prevention [CDC], 1991; Donahue & Benson, 1995; Pierce, Choi, Gilpin, Farkas, & Meritt, 1996; Taylor, Chatters, & Levin, 2003; Tyas & Pederson, 1998), one might wonder whether the association between religiosity and smoking differs between these two racial groups. However, only one study has investigated potential racial differences in the relation between religiosity and smoking. Heath et al. (1999) conducted telephone interviews with 1,331 adolescent girls in Missouri throughout 1975 to 1987. They found that Black girls were less likely to smoke than White girls. However, religiosity was not associated with smoking for either Blacks or Whites. Heath et al.'s (1999) sample was composed of rural adolescent girls, so it is unknown whether a difference would emerge if a larger, more diverse sample were used.

The present study explored racial differences in religiosity as a correlate of smoking in a large urban sample from a mid-south school system. Notably, previous studies have operationalized religiosity in a variety of ways (e.g., strength of perceived belief, frequency of attendance at church services, and frequency of engaging in prayer) but to our knowledge, none have examined religious beliefs specifically against smoking (Weaver et al., 2005). Specific religious beliefs against smoking might be more strongly related to smoking behavior than religious belief or participation in general. Our goal was to determine whether the strength of religious beliefs against smoking differs between Blacks and Whites, and if the direction and/or magnitude of the association between these beliefs and smoking status differs between the two groups.

## **METHODS**

### **Overview**

This study used data from the Memphis Health Project (MHP), a longitudinal study of smoking in urban mid-south adolescents (Robinson, Klesges, Zbikowski, & Glaser, 1997). For this report, data were taken from the survey administered when the students were in the 11<sup>th</sup> grade.

### **Procedure**

Prior to survey administration, parents were sent information about the study and asked to contact the research team if they did not want their child to participate. Students whose parents did not consent to the study were withdrawn. Students were also provided with information about the study and asked to give their assent to participation. Students who did not want to participate were allowed to work quietly at their desks during the survey.

Teachers administered surveys to students in homeroom classes. Teachers were required to read a script that instructed students about their right to decline the survey and

confidentiality precautions. Students were asked to seal their completed survey in an unmarked envelope, and these envelopes were then gathered by the teachers and sealed in front of students in a box marked “Confidential Research Material.” Research assistants retrieved boxes of surveys within 24 hours to minimize the possibility that data could be lost.

The University of Memphis Institutional Review Board approved the research procedures.

## Participants

Approximately 5,076 11th grade students participated in this year of the longitudinal study. After selecting White and Black students only, the sample was reduced to 4,763 adolescents, with 2,104 males, and 2,659 females. Other ethnicities did not occur with sufficient frequency for analysis and were not included in this research. The participants were primarily Black (82.9%), as is typical for this mid-south, inner-city school system. Students were on average 17 years old, with Blacks significantly older than Whites,  $p < .05$ , although the absolute magnitude of the difference was small. Overall, 54% of the students had never smoked (See Table 1 for additional characteristics of the sample).

## Measures and Coding Items

Variables analyzed in this study included religious beliefs against smoking, cigarette use, and sociodemographics. All variables, except household education and income, were collected by self-report; a detailed description of the variables follows:

**Religious Beliefs against smoking**—Religious beliefs against smoking were measured using a single item: “Do you have any religious beliefs against smoking?” with four response options: “no religious beliefs against smoking” (0), “some religious beliefs against smoking” (1), “strong religious beliefs against smoking” (2), and “very strong religious beliefs against smoking” (3).

**Smoking**—Smoking was measured using a single item: “Which one is true?” with seven response options: “I have never smoked a cigarette, not even a few puffs” (0); “I have smoked a cigarette or a few cigarettes just to try, but I have not smoked in the past month” (1); “I used to smoke cigarettes regularly, but I quit” (2); “I smoke, but less than one cigarette per month” (3); “I smoke, but less than one cigarette per week” (4); “I smoke from 1 to 6 cigarettes per week” (5); and “I smoke at least one cigarette per day” (6).

A new variable was created that defined participants who “never smoked a cigarette, not even a few puffs” as *never smokers* (1) vs. participants who had any experience with smoking as *ever smokers* (0).

**Race**—Whites coded as 0 and Blacks as 1.

**Covariates**—Covariates for analyses included age, gender, neighborhood household income ( \$9,999, \$10,000—\$19,999, \$20,000—\$29,999, \$30,000—\$39,999, \$40,000—\$49,999, \$50,000) and education (high school diploma or GED, some college, bachelor's degree, and graduate/professional school). Neighborhood household income and education were estimated from the 1990 United States population census, based on each adolescent's

zip code. For our purposes, neighborhood household income and education level were dichotomized for analysis. Thus, we compared teens whose parents had at least some college (0) vs. no college (1) and income at or over \$30,000 (0) vs. income less than \$30,000 (1), respectively.

### Overview of Statistical Analyses

We conducted a series of logistic regression analyses. The first model used race to predict religious beliefs against smoking. Religious beliefs against smoking had four levels: no religious beliefs (referent), some religious beliefs, strong religious beliefs, and very strong religious beliefs. In our analyses, we compared other levels of religious beliefs to no beliefs, which served as the referent. Gender (“male” served as referent), age, household income (“at least some college” served as referent) and education (“\$30,000” served as referent) were included in the model as covariates.

A second logistic regression model used religious beliefs, race, and their interaction to predict smoking. The same covariates described above were included. All post-hoc tests were completed using logistic regression models.

## RESULTS

### Characteristics of Missing Participants

The original sample for this report was comprised of 4,776 participants; however, only 4,225 participants answered all of the questions relevant for analysis. In order to determine whether participating students differed significantly from those who did not provide sufficient data, we conducted a logistic regression predicting presence or absence from the study. Results indicated that being Black ( $OR = 2.47$ , 95%  $CI=1.77 - 3.46$ ) or male ( $OR=2.29$ , 95%  $CI=1.88 - 2.78$ ) was associated with a greater odds for producing missing data. Neighborhood household income, neighborhood household education, and age were not predictive of missingness.

### Racial Differences in Religious Beliefs

Using race to predict religious beliefs through logistic regression, we found (in both unadjusted models and those adjusted for covariates) that Black adolescents were more than twice as likely as Whites to have very strong religious beliefs against smoking vs. no beliefs (unadjusted  $OR$  [95%  $CI$ ] =2.57 [1.82–3.64] and adjusted  $OR=2.05$  [1.41–3.00]). No racial differences emerged when some or strong religious beliefs were compared with no beliefs (See Table 2).

### Racial Differences in the Association between Religious Beliefs and Smoking

We then conducted logistic regressions to predict smoking using religious beliefs, race, their interaction, and our covariates. As shown in Table 3, there were significant effects of both race and religious beliefs in the prediction of smoking. Blacks were more than three times as likely to be nonsmokers than Whites. Further, those with very strong religious beliefs against smoking were more than four times as likely to remain never smokers than those with no religious beliefs against smoking.

However, these findings were superseded by the presence of a significant interaction between these two independent variables (see Table 3). In both unadjusted and (to a lesser extent) in adjusted models, the interaction between race and religious beliefs was predictive of smoking when students had at least strong or very strong religious beliefs against smoking. To decompose this interaction, we regressed smoking status on religious beliefs for each race separately. As shown in Table 4, among Blacks, students with very strong religious beliefs against smoking were more than twice as likely to remain a never smoker than were students with no beliefs ( $OR=2.22$ ; 95%  $CI=1.74-2.84$ ). In contrast, the effect for Whites was much stronger: White adolescents with very strong religious beliefs against smoking were more than four times as likely to never smoke than those with no beliefs ( $OR=4.63$ ; 95%  $CI=2.27-9.47$ ). In addition, Whites with strong religious beliefs were almost three times as likely to never smoke than those with no beliefs ( $OR=2.80$ ; 95%  $CI=1.33-5.92$ ).

## DISCUSSION

This study examined differences in religious beliefs against smoking, and their association with smoking status among Black and White eleventh grade students. The findings revealed that very strong religious beliefs against cigarette smoking were more common among Blacks than Whites. Further, both very strong and strong religious beliefs against smoking were associated with reports of never smoking for both races, but the association was stronger for Whites. In other words, the relation between strong and very strong beliefs against smoking and actual smoking behavior was weaker for Blacks than for Whites, although it was significant for both groups.

There is a paucity of literature investigating whether religious beliefs are associated differently with smoking behavior for Blacks and Whites, but two studies have explored ethnic differences and religiosity as predictors of general substance use (Amey, Albrecht, & Miller, 1996; Wallace, Brown, Bachman, & LaVeist, 2003). Amey et al. (1996), reported that for White adolescents, religiosity was inversely associated with all forms of drug use except alcohol, but for Blacks, religiosity was only associated with smoking. Wallace et al. (2003) investigated whether Black youth were more likely to abstain from substance use because they were more religious than White youth were. Blacks were more religious than Whites, but highly religious Whites were more likely to abstain from substance use than highly religious Blacks were. Our research extends these studies on general drug use by showing that the same pattern of results appears when cigarette smoking specifically is examined.

Other researchers have suggested that religiosity might have its strongest effects on smoking in communities in which religious beliefs are most prominent, such as the Black community (Stark et al., 1982). However, both Amey et al. (1996) and Wallace et al. (2003) highlight how the multiple roles of the Black church (Ellison & Sherkat, 1995; Ellison & Sherkat, 1999) may overshadow the social control aspects of the Black church, thereby limiting the effect that religiosity has on smoking for Blacks. Our study measures only individuals' religious beliefs related specifically to smoking; it is possible that there may be other factors outside the church that weaken the effect that religiosity has on smoking for Blacks.

Previous studies have operationalized religiosity as the perceived importance of religion, attendance or participation in religious services, or denominational preference (Weaver et al., 2005). In our study, we queried participants specifically about religious beliefs about smoking. Therefore, this study provides additional support for the robustness of construct of religiosity as a deterrent to smoking for adolescents. Further, it provides support for Weaver's (2005) contention that religiosity works to prevent the initiation of tobacco use through the prohibitive influences of religiosity on smoking.

This study has a few limitations. First, the sample of Whites (17%) in this study is relatively small compared to Blacks (83%). However, the sample sizes were relatively large for both racial groups (819 Whites and 3,957 Blacks) in comparison with other studies. Given that we obtained statistically significant findings, it is unlikely that limited power was an issue. Second, participants included in this study were from the South, lived in urban environments, and attended urban schools. It is unknown how well these results might generalize to student populations in other parts of the United States. However, research suggests that urban youth engage in risk behaviors (i.e. smoking) no more frequently than their nonurban counterparts (Levine & Coupey, 2003).

A third limitation involves missing data. Overall, 12% of participants were excluded from analyses due to missing data. Males and Blacks were more likely to have missing data, a finding that is not surprising, given their higher risk for expulsion, absenteeism, high school dropout, and school relocation (Skiba, Michael, Nardo, & Peterson, 2002). It should be noted that participants who had missing data were more likely to smoke, and thus the rate of tobacco use in this sample may be under-estimated. However, it is unlikely that missing data substantially affected the relations identified in this study between smoking, religious beliefs against smoking, and race.

This research has important implications for religious and community leaders. It is widely known that the Black community and its ministers have worked together to resist efforts to market cigarettes within the African American neighborhoods. Further, Black youth possess on average stronger religious ties, reflecting the longstanding outreach of community leaders and the Black church (Hatcher, Clay, & Burley, 2009). As a result, they have established social norms that discourage cigarette use among their youth. Clearly, similar collaborations are needed in the White community to battle that infiltration of tobacco into the lives of White adolescents. By working together, communities and their religious leaders can play a significant role in protecting the health of the next generation.

## ACKNOWLEDGMENTS

The study was supported by National Heart, Lung, and Blood Institute grant HL50723 and a Centers of Excellence grant awarded by the State of Tennessee to the Department of Psychology, University of Memphis.

**Funding:** The study was supported by National Heart, Lung, and Blood Institute grant HL50723 and a Centers of Excellence grant awarded by the State of Tennessee to the Department of Psychology, University of Memphis.



## Biography

Adam C. Alexander earned B.A. and M.A. degrees in psychology at The University of Memphis. He is currently enrolled in The University of Memphis' doctoral program in Public Health. His primary interests include racial discrimination and its effects on mental and physical health in African Americans. Dr. Leslie A. Robinson is an Associate Professor of Psychology at the University of Memphis, and Dr. Kenneth D. Ward is Professor of Public Health. Dr. Robinson has a long record of research concerning the onset, trajectories, and cessation of adolescent smoking. Dr. Ward has published extensively on adult tobacco use and cessation. Adam C. Ferkin is pursuing his undergraduate degree in psychology at Knox College.

## REFERENCES

- Amey CH, Albrecht SL, Miller MK. Racial differences in adolescent drug use: The impact of religion. *Substance Use & Misuse*. 1996; 31(10):1311–32. [PubMed: 8879076]
- Campaign for Tobacco-Free Kids. The path to smoking addiction starts at very young ages. Campaign for Tobacco-Free Kids; Washington: 2009.
- Centers for Disease Control and Prevention (CDC). Differences in the age of smoking initiation between blacks and whites--united states. *Morbidity and Mortality Weekly Report*. 1991; 40(44): 754–757. [PubMed: 1944121]
- Donahue MJ, Benson PL. Religion and the well-being of adolescents. *Journal of Social Issues*. 1995; 51(2):145–160.
- Ellison CE, Sherkat DE. The “semi-involuntary institution” revisited: Regional variations in church participation among black Americans. *Social Forces*. 1995; 73(4):1415–1437.
- Ellison CE, Sherkat DE. Identifying the semi-involuntary institution: A clarification. *Social Forces*. 1999; 78(2):793–802.
- Hatcher, S.; Clay, KS.; Burley, JT. The role of black faith communities in fostering health.. In: Braithwaite, RL.; Taylor, SE.; Treadwell, HM., editors. *Health Issues in the Black Community*. 3rd Ed.. Jossey-Bass; San Francisco, CA US: 2009. p. 507-522.
- Levine SB, Coupey SM. Adolescent substance use, sexual behavior, and metropolitan status: Is 'urban' a risk factor? *Journal of Adolescent Health*. 2003; 32(5):350–355. doi:10.1016/S1054-139X(03)00016-8. [PubMed: 12729984]
- Nonnemaker JM, McNeely CA, Blum RW. Public and private domains of religiosity and adolescent health risk behaviors: Evidence from the national longitudinal study of adolescent health. *Social Science & Medicine*. 2003; 57(11):2049–2054. [PubMed: 14512236]
- Nonnemaker JM, McNeely CA, Blum RW. Public and private domains of religiosity and adolescent smoking transitions. *Social Science & Medicine*. 2006; 62(12):3084–3095. [PubMed: 16423435]
- Pierce JP, Choi WS, Gilpin EA, Farkas AJ, Meritt RK. Validation of susceptibility as a predictor of which adolescents take up smoking in the United States. *Health Psychology*. 1996; 15(5):355–361. [PubMed: 8891714]
- Robinson LA, Klesges RC, Zbikowski SM, Glaser R. Predictors of risk for different stages of adolescent smoking in a biracial sample. *Journal of Consulting and Clinical Psychology*. 1997; 65(4):653–662. [PubMed: 9256567]
- Skiba RJ, Michael RS, Nardo AC, Peterson RL. The color of discipline: Sources of racial and gender disproportionality in school punishment. *The Urban Review*. 2002; 34(4):317–339.
- Stark R, Lori K, Doyle DP. Religion and delinquency: The ecology of a “lost” relationship. *Journal of Research in Crime and Delinquency*. 1982; 19(1):4–24. doi:10.1177/002242788201900102.
- Taylor, RJ.; Chatters, LM.; Levin, J. *Religion in the lives of African Americans: Social, psychological, and health perspectives*. SAGE Publications; Thousand Oaks, California: 2003.
- Tyas SL, Pederson LL. Psychosocial factors related to adolescent smoking: A critical review of the literature. *Tobacco Control*. 1998; 7:409–420. [PubMed: 10093176]

- U.S. Department of Health and Human Services. Preventing Tobacco Use among Young People: A Report. U.S. Department of Health and Human Services Centers for Disease Control and Prevention, Office on Smoking and Health; Atlanta: 1994.
- U.S. Department of Health and Human Services. Preventing Tobacco Use among Youth and Young Adults: A Report of the Surgeon General. .S. Department of Health and Human Services, Centers for Disease Control and Prevention, Office on Smoking and Health; Atlanta: 2012.
- U.S. Department of Health and Human Services. The Health Consequences of Smoking– 50 Years Of Progress: A Report of the Surgeon General. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health; Atlanta: 2014.
- Wallace JMJ, Brown TN, Bachman JG, LaVeist TA. The influence of race and religion on abstinence from alcohol, cigarettes, and marijuana among adolescents. *Journal of Studies on Alcohol and Drugs*. 2003; 64(6):843–848.
- Weaver AJ, Flannelly KJ, Strock AL. A review of research on the effects of religion on adolescent tobacco use published between 1990 and 2003. *Adolescence*. 2005; 40(160):761–776. [PubMed: 16468670]



**Table 1**

Characteristics of the Study Population

	Total	Blacks	Whites	p
	(n = 4,776) N (%)	(n = 3,957) N (%)	(n = 819) N (%)	
Gender (% of Males)	2,104 (44.1%)	1,701 (43.1%)	403 (49.3%)	<.001
Household Income				
\$9,999	124 (2.6%)	124 (3.1%)	—	
\$10,000–\$19,999	1,014 (21.3%)	976 (24.8%)	38 (4.7%)	
\$20,000–\$29,999	1,338 (28.1%)	1,195 (30.3%)	143 (17.6%)	
\$30,000–\$39,999	1,547 (32.5%)	1,352 (34.3%)	195 (24%)	<.001
\$40,000–\$49,999	466 (9.8%)	242 (6.1%)	224 (27.6%)	
\$50,000	265 (5.6%)	54 (1.4%)	211 (26%)	
Missing value <sup>a</sup>	22 (.004%)	14 (.003%)	8 (.01%)	
Household Education				
Some High School or Less	73 (1.5%)	73 (1.9%)	—	
High School Diploma or GED	3,083 (64.9%)	2,804 (71.1%)	279 (34.4%)	<.001
Some College / Post H.S.	1,572 (33.1%)	1,066 (27%)	506 (62.4%)	
Bachelor's Degree	24 (0.5%)	—	24 (3%)	
Graduate / Professional School	2 (.0%)	—	2 (.2%)	
Missing value <sup>a</sup>	22 (.004%)	14 (.003%)	8 (.01%)	
Smoking Status				
Never Smoked	2464 (54%)	2221 (59.1%)	243 (30.1%)	<.001
Smoked Once Or Twice	1119 (26.3%)	1019 (27.1%)	180 (22.3%)	
Used to Smoke	280 (6.1%)	181 (4.8%)	99 (12.3%)	
Smoked < Once/Month	120 (2.6%)	88 (2.3%)	32 (4.0%)	
Smoked < Once/Week	65 (1.4%)	47 (1.3%)	18 (2.2%)	
Smoked 1-6/Week	107 (2.3%)	66 (1.8%)	41 (5.1%)	
Smoked 1/Day	331 (7.2%)	136 (3.6%)	195 (24.1%)	
Missing value <sup>a</sup>	210 (.04%)	199 (.05%)	11 (.01%)	
Religious Beliefs Against Smoking				
No Beliefs	3309 (74.7%)	2688 (73.7%)	621 (79.3%)	
Some Beliefs	468 (10.6%)	374 (10.3%)	94 (12%)	
Strong Beliefs	205 (4.6%)	174 (4.8%)	31 (4%)	<.001
Very Strong Beliefs	449 (10.1%)	412 (11.3%)	37 (4.7%)	

	Total	Blacks	Whites
<i>p</i>	345 (.07%) ( <i>n</i> = 4,776) <i>N</i> (%)	309 (.08%) ( <i>n</i> = 3,957) <i>N</i> (%)	36 (.04%) ( <i>n</i> = 819) <i>N</i> (%)
	Missing value <sup>a</sup>		

Note. *N* = 4,776

<sup>a</sup>Missing value represents participants who failed to report data for this variable.

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

**Table 2**  
**Results of Unadjusted and Adjusted Logistic Regression Analysis Using Race to Predict Religious Beliefs**

	Unadjusted				Adjusted <sup>a</sup>			
	Wald Score	Odds Ratio	95% CI	p	Wald Score	Odds Ratio	95% CI	p
Religious Beliefs								
No Beliefs								
Some Beliefs	.464	.92	.72 1.17	.496	.028	1.02	.78 1.34	.868
Strong Beliefs	1.689	1.23	.88 1.92	.194	.430	1.15	.75 1.77	.512
Very Strong Beliefs	28.4	2.57	1.82 3.64	<.001	13.829	2.05	1.41 3.00	<.001

Note. N = 4,225. Race was coded so that Black = 1 and White = 0. Religious belief was coded using no beliefs as the referent (0). Each level of belief (some, strong, very strong) was coded 1 in order to compare it with no beliefs (0) in 3 separate analyses.

<sup>a</sup> Analysis was adjusted for sex (male = 0), age, household education (at least some college = 0), household income ( \$30,000 = 0), and smoking status (current smoker = 0).

**Table 3**  
**Results of Unadjusted and Adjusted Logistic Regression Analysis to Predict Smoking using Religious Beliefs and Race**

	Unadjusted				Adjusted <sup>a</sup>			
	Wald Score	Odds Ratio	95% CI	p	Wald Score	Odds Ratio	95% CI	p
Race								
Whites (0)								
Blacks	166.238	3.59	2.95 4.36	<.001	138.230	3.40	2.77 4.17	<.001
Religious Beliefs								
No Beliefs (0)								
Some Beliefs	.090	1.08	.67 1.74	.765	.039	1.05	.65 1.70	.843
Strong Beliefs	7.976	2.85	1.38 5.89	.005	6.171	2.55	1.22 5.35	.013
Very Strong Beliefs	18.747	4.73	2.34 9.54	<.001	17.731	4.60	2.26 9.36	<.001
Religious Beliefs × Race								
No Beliefs (0)								
Some Beliefs	.363	.85	.50 1.44	.547	.266	.869	.51 1.48	.606
Strong Beliefs	5.012	.40	.183 .893	.025	4.043	.438	.20 .98	.044
Very Strong Beliefs	3.828	.48	.23 1.01	.050	3.628	.482	.227 1.02	.057

Note. N= 4,225. In this analysis the referent is indicated by 0. Race was coded so that Black = 1 and White = 0. Religious belief was predicted using no beliefs as the referent (0). Each level of belief (some, strong, very strong) was coded 1 in order to compare it with no beliefs (0) in 3 separate analyses. Smoking was coded with smokers = 0 and nonsmokers = 1.

<sup>a</sup> Analysis was adjusted for sex (male = 0), age, household education (at least some college = 0), household income ( \$30,000 = 0), and smoking status (current smoker = 0).

**Table 4**

Associations of Religious Beliefs with Smoking among Blacks and Whites Separately

	Blacks			Whites		
	Odds Ratio	95% CI	p	Odds Ratio	95% CI	p
Religious Beliefs Against Smoking						
No Beliefs (0)						
Some Beliefs	.92	.73 1.15	.445	1.09	.66 1.77	.730
Strong Beliefs	1.12	.81 1.54	.508	2.80	1.33 5.92	.007
Very Strong Beliefs	2.22	1.74 2.84	<.001	4.63	2.27 9.47	<.001

Note: N = 4,225. Religious belief was coded using no beliefs as the referent (0). Each higher level of belief (some, strong, very strong) was coded 1 in order to compare it with no beliefs (0) in 3 separate analyses. Smoking was coded with smokers = 0 and nonsmokers = 1.

<sup>a</sup> Analysis was adjusted for sex (male = 0), age, household education (at least some college = 0), household income ( \$30,000 = 0), and smoking status (current smoker = 0).