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## Tobacco Use and Smoking Intentions among U.S. Fifth-Grade Students

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### Abstract

**Purpose**—To identify risk- and protective-factors for cigarette smoking and future intentions among racially/ethnically diverse preadolescent children.

**Methods**—We analyzed data from 5,119 fifth-grade children living in three US metropolitan areas and their parents. Using multivariate logistic regression models, we examined how cigarette smoking and intentions to smoke within one year are associated with: (1) number of friends who smoke, (2) parental disapproval of smoking, (3) parental communication about not smoking, (4) performance in school, and (5) educational aspirations.

**Results**—Twenty-nine percent of children were black, 44 percent were Hispanic, 22 percent were white, and 5 percent were another race/ethnicity. Mean age was 11 years. The prevalence of ever smoking a cigarette among black, Hispanic, and white children was 9.8%, 5.6%, and 4.9%,

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respectively. In adjusted analyses, children were more likely to have smoked a cigarette if their friends smoked (aOR 5.1, 95% CI 3.8–6.9), they frequently had trouble with schoolwork (aOR 2.1, 1.5–3.1), or their parents were not college-graduates (aOR 2.0, 1.2–3.5 for high-school graduate). They were less likely to have smoked cigarettes if their parents disapproved of smoking (aOR 0.3, 0.1–0.6). Parental communication (aOR 0.1, 0.0–0.6) and disapproval (aOR 0.2, 0.1–0.7) had protective associations for future intentions among children who had ever and had never smoked, respectively.

**Conclusions**—Fifth-graders share many of the same risk-factors for smoking identified in older adolescents, some of which are modifiable. Anti-smoking policies and programs should be designed for preadolescents as well as adolescents, and campaigns targeting parents should place greater emphasis on communication and expressed disapproval of smoking.

**Implications and Contribution**—Our research shows that racially/ethnically diverse preadolescent children share many of the same risk factors for smoking that have been found in studies of older children. Therefore, antismoking policies and programs may be more effective if designed for preadolescents as well as adolescents.

## Introduction

Preventing adolescents from smoking cigarettes or using smokeless tobacco is central to eliminating tobacco-related morbidity and mortality. This goal is the focus of a major U.S. Surgeon General report<sup>1</sup> and is reinforced by the fact that over 40% of adult smokers report having tried cigarettes by 14 years of age, and 80% smoked by 17 years of age.<sup>1</sup> The public health risks associated with adolescent tobacco use have also motivated several U.S. health policy interventions, including school-based smoking bans, taxes on tobacco products, mass media campaigns, enforcement of age limits on purchasing, and advertising bans. In addition, researchers have identified numerous potential risk and protective factors in adolescents, some of which are modifiable, including friends and family who smoke,<sup>2</sup> parental disapproval of smoking,<sup>3</sup> performance in school,<sup>4</sup> educational aspirations,<sup>5</sup> and normative beliefs about the social and health implications of smoking.<sup>6</sup> However, comparatively less is known about risk factors in the preadolescent period, and while several studies of this population have been completed,<sup>7–12</sup> few have simultaneously evaluated a broad range of individual- or community-level contextual factors<sup>3,13,14</sup> or enrolled a racially/ethnically or geographically diverse population.

Because influences that emerge in preadolescence may play an important role in shaping future smoking behavior,<sup>7</sup> a better understanding of how risk factors develop and progress from preadolescence into later adolescence could inform the design of smoking prevention programs and tobacco control policies. Moreover, prior research has shown that children who begin smoking at earlier ages are at higher risk of continuing to smoke during adolescence and adulthood.<sup>1</sup> Therefore, we studied smoking behavior and smokeless tobacco use among a racially/ethnically diverse population of fifth-graders living in three U.S. metropolitan areas. Our work aims to inform how risk factors develop in children and how policies can be optimally designed to reduce smoking behavior.

## Methods

We analyzed data from Healthy Passages, a study of fifth-grade children and their parents interviewed between August 2004 and September 2006. Healthy Passages was designed to collect data informing health risk behaviors, health outcomes, and disparities.<sup>15</sup> Institutional review boards at each study site and the Centers for Disease Control and Prevention approved this study.

### Study population

Study participants were recruited from 10 contiguous public school districts in and around Birmingham, Alabama; the largest public school district in Houston, Texas; and 25 contiguous public school districts in Los Angeles County, California. Schools that enrolled at least 25 fifth-grade students were eligible for inclusion (this threshold represents over 99% of all students enrolled in public schools in each of the three sites). We randomly sampled schools with probabilities that accounted for a school's racial/ethnic mix and were designed to achieve a balanced sample of children who were non-Hispanic black, Hispanic, and non-Hispanic white. A parent/guardian of each fifth-grader at each school received a letter requesting permission for contact by study personnel.

Among 11,532 fifth-grade students enrolled in 118 sampled schools, the parents of 6,663 students agreed to be contacted, and 5,147 students participated in the study and were interviewed (77% participation rate). Both the children and their primary caregivers completed computer-assisted personal interviews in English or Spanish and audio-computer-assisted self-interviews for sensitive questions, such as those about drug use, familial conflict, and sexual behaviors. Audio-computer-assisted self-interviews were used for these questions because they have been shown to increase the validity of reporting.<sup>15</sup> Interviews were completed at parents' homes, study centers, or other preferred locations. Parents provided informed consent for themselves and their children; children also gave assent. Parents and children were interviewed separately. A parental interview was missing for 28 parent-child dyads, yielding a final sample of 5,119.

### Tobacco use measures

Tobacco use was measured using questions that are standard in assessing adolescent smoking behavior.<sup>16</sup> To assess whether children had ever smoked cigarettes, we asked, "Have you ever tried cigarette smoking, even one or two puffs?" (*yes* or *no*). Students who responded "yes" were then asked how many days they smoked cigarettes in the preceding 30 days; a response of one day or more was used to define current smokers. To assess smokeless tobacco use, students were asked, "Have you ever used chewing tobacco, snuff, or dip, such as Redman, Levi Garrett, Beechnut, Skoal, Skoal Bandits, or Copenhagen?" (*yes* or *no*). Follow-up questions and definitions for current smokeless tobacco users were similar to those for cigarette smoking.

To assess students' attitudes and intentions about smoking in the future, we asked, "Do you think you will smoke cigarettes at any time during the next year?" (*yes*, *no*, or *maybe*). As in past work, we only considered students to have no intentions to smoke if they responded

“no.”<sup>6,17</sup> This analysis was performed separately for students who had and had not smoked in the past in order to identify differences in risk and protective factors between these two populations. In an additional analysis designed to examine susceptibility to smoking, we analyzed responses to the question, “If one of your closest friends offered you a cigarette, would you smoke it?” (*yes, no, or maybe*). We considered students to not be susceptible to smoking if they responded “no.”

### Potential risk and protective factors

We assessed multiple individual and contextual factors previously shown to be associated with smoking in older adolescents. Studies identifying these factors were based on several social theories of behavior, including Social Cognitive Theory, Theory of Planned Behavior, and Problem Behavior Theory, among others,<sup>4</sup> but share many common measures. Based on prior work, we assessed perceived smoking prevalence and normative beliefs by asking students, “How many of your closest friends do you think have ever smoked cigarettes? (*none, a few, many*).<sup>18,19</sup> We pooled students who responded “a few” (12%) or “many” (1%). To examine school performance, we used a question from the Pediatric Quality of Life Inventory (PedsQL) that asked children whether they had difficulty keeping up with schoolwork.<sup>20</sup> Students who “often” or “almost always” had trouble were considered to have poor school performance. Educational aspirations were assessed by asking, “Do you expect to go to college?” (*yes or no*).<sup>21</sup> Symptoms of depression, a risk factor for tobacco use in adolescents,<sup>22–24</sup> were identified using six questions from the depression subscale of the Diagnostic Interview Schedule for Children Predictive Scales (DPS).<sup>25</sup> The DPS comprises a total of 84 items and we included the questions focused only on depressive symptoms. As in prior work, we considered children to be depressed if their score exceeded the 90<sup>th</sup> percentile for the total sample (a score of 5 out of 6 symptoms for depression).<sup>26</sup>

We measured parental communication about not smoking by asking children, “How many times have your parents ever told you not to smoke cigarettes?” and, “How many times have your parents ever talked to you about how to say no when other kids ask you to smoke cigarettes?” (*never, once or twice, lots of times*).<sup>27</sup> Communication was considered frequent if students reported “lots of times” for either question. Of the remaining students, those who reported “once or twice” to either question were grouped together, as were those who reported “never” to both questions. Parental disapproval of smoking was measured with the question, “How upset would your parents feel if they found out you smoked cigarettes?” (*not upset, a little upset, pretty upset, and very upset*). We considered children who perceived that their parents would be “pretty upset” or “very upset” to have strong parental disapproval, similar to prior work.<sup>3</sup>

### Other variables

We also adjusted for socioeconomic measures and potential factors influencing disparities, including age, gender, race/ethnicity (non-Hispanic black, Hispanic, non-Hispanic white, and other), parental marital status, highest household education (no high school degree, high school degree, some college, and college degree or greater), and annual household income (<\$25,000; \$25,000–\$49,999; \$50,000–\$99,999; \$100,000). To capture temporal trends in smoking, we also adjusted for the year that the interview was administered.

## Statistical analysis

All analyses accounted for the effects of design and nonresponse weights, clustering of children within schools, and stratification by site.<sup>15</sup> We performed descriptive data analysis and used simple logistic regressions, including ordinal and multinomial models, to compare characteristics of children who did or did not use tobacco. We also estimated multivariable logistic regression models to examine differences in odds of lifetime cigarette smoking and smoking intentions while controlling for potential confounders. Multivariate models were not constructed for the risk of being a current smoker or lifetime smokeless tobacco use because of low event rates. For each of these analyses, the independent variables comprised sociodemographic characteristics (primarily asked of parents) and potential risk and protective factors. We added a “missing” category for income (8% missing) and used mean imputation for missing values for highest household education (1%) and marital status (<1%). All analyses were performed with Stata (version 11, College Station, Texas).

## Results

### Sample characteristics

Twenty-nine percent of the children were black, 44% were Hispanic, 22% were white, and 5% were another race/ethnicity. Mean age was 11.1 years, median family income was \$25,000 to \$49,999, and 23% of parents had less than a high school education.

### Prevalence of tobacco use and future intentions

Overall, 6.7% of children had ever smoked, and 0.9% were current smokers; 1.8% had ever used chewing tobacco or snuff, and 0.3% were current users. Among black, Hispanic, and white children, the prevalence of ever smoking a cigarette was 9.8%, 5.6%, and 4.9%, and the prevalence of intentions to smoke in the future was 19.2%, 19.8%, and 25.6% among children who had ever smoked in the past, and 3.3%, 2.9%, and 1.7% among children who had never smoked, respectively. The prevalence of ever using chewing tobacco or snuff among black, Hispanic, and white children was 2.2%, 1.4%, and 2.1%, respectively.

In unadjusted analyses, children who had smoked, as compared with those who had never smoked, were slightly older (mean age, 11.3 vs. 11.1 years); more likely to be black (43% of smokers vs. 28% of nonsmokers) vs. white and to live in a family with a lower education (15% of smokers lived with a college-educated parent vs. 30% of nonsmokers) or a lower household income (54% of smokers lived in households with income less than \$25,000 vs. 41% of nonsmokers) ( $p<0.01$  for age;  $p<0.001$  for all other comparisons) (Table 1). Similar patterns were found for intentions to smoke in the future and smokeless tobacco.

Among children who had smoked within the past 30 days, 21% smoked on more than 2 days including 5% who smoked on 10 days or more. Twenty-nine percent of these children smoked more than one cigarette on days they smoked at all and 7% reported smoking six or more.

## Adjusted analyses of tobacco use and future intentions

Because rates of current smoking (within 30 days) and smokeless tobacco use were low, our adjusted analyses focus on lifetime cigarette smoking experience and future smoking intentions (Table 2). In adjusted analyses, children were more likely to have smoked a cigarette if parental communication to not smoke happened frequently (“lots of times”) versus not at all (aOR 2.3, 95% CI 1.0 to 5.0), any versus none of their friends smoked (adjusted odds ratio, aOR 5.1, 95% CI 3.8 to 6.9), they frequently had trouble with schoolwork (aOR 2.1, 95% CI 1.5 to 3.1), or their parents were not college graduates (aOR 2.0, 95% CI 1.0 to 3.8 for some high school; aOR 2.0, 95% CI 1.2 to 3.5 for high school graduate; aOR 1.8, 95% CI 1.1 to 2.9 for some college). They were less likely to have ever smoked cigarettes if their parents disapproved of smoking (aOR 0.3, 95% CI 0.1 to 0.6).

Children who had smoked in the past were more likely to state that they intended to smoke or felt they might smoke in the future if any friends smoked (aOR 5.5, 95% CI 2.8 to 10.6). Frequent parental communication about not smoking (aOR 0.1, 95% CI 0.0 to 0.6) had a protective association.

Children who had never smoked in the past were more likely to state that they intended to smoke or felt they might smoke in the future if any friends smoked (aOR 2.5, 95% CI 1.6 to 3.9), they frequently had trouble with schoolwork (aOR 2.1, 95% CI 1.0 to 4.4), were older (aOR 1.6 for each additional year, 95% CI 1.0 to 2.3) or depressed (aOR 2.5, 95% CI 1.6 to 2.9), or their parents were not high school graduates (aOR 2.6, 95% CI 1.0 to 6.9 for some high school versus college graduates). However, only parental disapproval (aOR 0.2, 95% CI 0.1 to 0.7) had a protective association.

## Sensitivity Analysis

We evaluated the impact of separately analyzing the effect of parents telling their children not to smoke and parents telling their children how to say no when asked to smoke. When communication occurred “lots of times,” both factors remained statistically significant (aOR for “don’t smoke” 0.1, 95% CI 0.0 to 0.5; aOR for “how to say no” 0.20, 95% CI 0.1 to 0.6) in our models of smoking intentions among children who had ever smoked in the past. However, they were not significant in the model of lifetime smoking experience. We also developed a model that assessed factors associated with students’ susceptibility to smoke if offered a cigarette by a close friend. Our results were similar to those from our primary models of smoking intentions, with students who had smoked in the past more likely to be susceptible if their friends smoked (aOR 5.8, 95% CI 2.5–13.7). Children were also more likely to be susceptible if their parents did not attend college (aOR 8.0, 95% CI 1.6 to 39.5 for some high school; aOR 2.2, 95% CI 2.2 to 34.8 for high school graduate). Similarly, students who had not smoked in the past were more likely to be susceptible if their friends smoked (aOR 1.9, 95% CI 1.0–3.5). Unlike our findings for smoking intentions, among both children who had and had not smoked in the past, parental communication about not smoking and parental disapproval were no longer significant factors.

## Discussion

We found that lifetime smoking and smokeless tobacco rates were 6.7% and 1.8%, respectively, among fifth-grade students. Very few fifth-grade students had intentions to smoke in the future, even recent smokers. After adjustment for individual and contextual factors, parental disapproval was associated with lower rates of smoking and intentions to smoke in the future among children who had never smoked, and parental communication also had protective associations for future intentions among children who had smoked. We also found strong evidence of differences in smoking related to parental education in adjusted analyses, though lower income was also an important factor in unadjusted analyses. Depression, which has rarely been examined in studies of preadolescent tobacco use, was also associated with future intentions among children who had never smoked. To the best of our knowledge no previous study of racially/ethnically diverse preadolescents has examined as broad a range of individual and contextual factors as are available in Healthy Passages.

Because we found many of the same risk and protective associations in preadolescents that have been reported in older adolescents, our study supports the notion that antismoking policies and programs should be designed for preadolescents as well as adolescents. However, we also note that little is known about the comparative impact of antismoking programs on preadolescents versus adolescents, or the feasibility of incorporating such programs into school curricula. Our results also suggest that several psychosocial antecedents to adolescent tobacco use may begin to exert their influence during preadolescence, thus highlighting an important opportunity to mobilize salient, effective, and developmentally appropriate interventions. Our findings related to parental influence could potentially inform the design of antismoking interventions in preadolescents. Parental disapproval has generally been found to be associated with a lower risk of smoking,<sup>6,22</sup> but only a few studies have explicitly assessed parental communication about smoking and its relationship to adolescent smoking. Studies that have been performed have yielded conflicting results, with some suggesting that parental communication reduces the risk of cigarette experimentation in children,<sup>2,28</sup> while others have found that it may be associated with increased risk<sup>29,30</sup> or no benefit at all in certain environments.<sup>31</sup> Our findings suggest that communication between parents and their preadolescent children about not smoking may have a protective association for future smoking intentions among some children. While more frequent parental communication was also associated with smoking in the past, we believe this may reflect an increase in communication among parents who observe or otherwise suspect that their children are smoking. Because 98.9% of children reported that their parents disapprove of smoking, this may be a reasonable explanation. However, the cross-sectional nature of our data suggests that this relationship should be further studied, preferably in a longitudinal study. It is also important to note that, because most children reported frequent parental communication about smoking, our analysis does not inform the potential impact of unusually intensive communication.

Our study also has implications for mass media campaigns and school-based interventions aimed at reducing smoking, primarily because we found that experimentation with smoking, and to a lesser degree, smokeless tobacco, is already underway in fifth-grade students. State and national media campaigns such as the American Legacy Foundation's "truth" campaign

have largely targeted audiences between the ages of 12 and 17 years.<sup>32</sup> However, research in children as young as 11 years old suggests that they are equally likely to respond to antismoking media.<sup>33,34</sup> This is particularly relevant considering that few states have met the Centers for Disease Control and Prevention's recommended funding levels for tobacco prevention programs.<sup>35</sup> One report estimates that states will collect \$25.7 billion in revenue from the Master Settlement Agreement in 2013 but spend only 1.8% of it on programs to prevent children from smoking and to help smokers quit.<sup>36</sup> Targeted funding for preadolescent prevention, including monitoring and evaluation of the rising marketing and use of electronic cigarettes, may further reduce adolescent and adult smoking rates, though the cost-effectiveness of this strategy should be compared to alternate policy approaches, as some researchers have done recently in adults.<sup>37</sup> However, because smoking profoundly harms population health and significantly increases healthcare costs, we believe effective programs could have considerable impact on public health. We also note that the prevalence of smoking among black, Hispanic, and white persons rises from 10%, 18%, and 23% in adolescence to 25%, 20%, and 28% in adults.<sup>1</sup>

Our study has several important limitations. Because our data are cross-sectional, we are unable to infer causal relationships between smoking behavior and the individual or contextual factors we examined. Longitudinal studies that incorporate these factors simultaneously among preadolescent children are needed to better elucidate causality. Also, study participants lived primarily in metropolitan areas, so our results may not be generalizable to other settings. In addition, we did not assess parents' smoking status or children's self esteem, or exposure to tobacco industry advertisements. Because these have been shown to be risk factors for adolescent smoking,<sup>14,38</sup> their omission may bias our results. Further, our measures were gathered through self-report by children and their parents. Errors or inaccuracies in self-report could therefore affect our results, though prior studies using biochemical verification of self-reported smoking status in adolescents has confirmed its reliability.<sup>39,40</sup> In addition, because of inadequate statistical power, we were unable to assess whether preadolescents who use smoking to cope with depression or school difficulties may be less affected by their parents' disapproval of smoking. Finally, our finding that older age is a risk factor for future intentions to smoke among nonsmokers may reflect the effects of longer exposure and/or that adolescents who have repeated grades (with associated socioeconomic and mental difficulties) may be more susceptible to smoking. We were unable to include these measures in our analysis.

In conclusion, preadolescent fifth-graders share some of the same risk factors for smoking that have been found in prior studies of older adolescents, and parental disapproval and communication about not smoking may dampen future intentions to smoke. Preventive school-based anti-smoking programs and mass media campaigns, which have largely focused on older adolescents, may have similar benefits—and greater cost-effectiveness—if directed at preadolescents. In addition, campaigns targeting parents of young adolescents that emphasize parental influence in the context of communication and expressed disapproval of smoking may also be beneficial.



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Table 1

Baseline characteristics of children and use of cigarettes and smokeless tobacco\*

	No. of participants	Ever smoked (N=319), %	Never smoked (N=4,800), %	P value	Intentions to smoke in future (N=192), %	No intentions to smoke in future (N=4,927), %	P value	Ever used chewing tobacco or snuff (N=80), %	Never used chewing tobacco or snuff (N=5,033), %	P value
City <sup>†</sup>										
Birmingham	1584	37	31	.	35	31	.	45	31	.
Houston	1781	36	35	0.39	38	35	0.87	24	35	0.04
Los Angeles	1754	28	35	0.03	27	35	0.17	31	34	0.10
Gender										
Male	2524	52	51	.	57	51	.	50	51	.
Female	2595	48	49	0.88	43	49	0.14	50	49	0.87
Ethnicity <sup>‡</sup>										
White	1249	16	22	.	16	22	.	26	22	.
Black	1748	43	28	<0.01	37	29	0.04	36	29	0.91
Hispanic	1802	37	45	0.58	44	44	0.28	35	45	0.26
Other	320	4	5	0.60	3	5	0.90	2	5	0.17
Child's age <sup>§§</sup>										
<10 years	23	0	0		0	0		0	0	
10 years	2276	35	43		31	43		32	43	
11 years	2467	49	49		49	49		57	49	
>11 years	353	16	7	<0.01	20	7	<0.01	11	8	0.06
Highest household education <sup>€</sup>										
8th grade or some high school	937	27	23		33	23		29	23	
High school diploma or GED	1020	31	21		26	22		31	22	
Some college	1371	27	25		25	25		23	25	
College degree	1725	15	30	<0.01	16	30	<0.01	18	30	0.03
Household income <sup>¶¶</sup>										
<\$25,000	1810	54	41		52	41		55	41	
\$25,000-\$49,999	1210	29	27		30	27		22	27	

	No. of participants	Ever smoked (N=319), %	Never smoked (N=4,800), %	Intentions to smoke in future (N=192), %	No intentions to smoke in future (N=4,927), %	Ever used chewing tobacco or snuff (N=80), %	Never used chewing tobacco or snuff (N=5,033), %	P value	P value
\$50,000-\$99,999	945	10	19	12	18	10	18		
\$100,000	780	7	14	6	14	12	13	<0.01	0.06
Marital status of responding parent									
Married or living with partner	3276	60	67	61	66	60	66		
Other	1829	40	33	39	34	40	34	0.25	0.32

Abbreviation: GED, general equivalency diploma.

\* Values represent the percent of participants within each group based on their tobacco status, e.g., 37% of children who smoked lived in Birmingham. Percents may not sum to 100 because of rounding. P values calculated with Wald chi-square test from simple ordinal (age, education, income) or binomial/multinomial (gender, city, ethnicity) logistic regression models comparing children reporting use of tobacco to children who do not.

† Reference group is Birmingham

‡ Reference group is white children

§ P value reported for overall likelihood of being older

€ P value reported for overall likelihood of higher household education. Does not sum to total sample size because of missing data.

⌘ P value reported for overall likelihood of higher household income

// Smokeless tobacco includes chewing tobacco, snuff, and dip

Other category includes parents who are divorced, separated, widowed, or never married. Does not sum to total sample size because of missing data.

Table 2

Prevalence and adjusted odds of smoking or having intentions to smoke within one year\*

	All children				Children who have smoked in past				Children who have never smoked				
	No. of participants	Ever smoked, %	Adj. OR	95% CI	P value	Smoking intentions, %	Adj. OR	95% CI	P value	Smoking intentions, %	Adj. OR	95% CI	P value
City													
Birmingham	1584	7.9	1.0			24.8	1.0			2.6	1.0		
Houston	1781	6.8	1.0	0.7 to 1.5	0.99	18.5	0.6	0.3 to 1.6	0.35	3.2	1.1	0.6 to 2.1	0.72
Los Angeles	1754	5.4	1.0	0.7 to 1.4	0.95	19	0.6	0.2 to 1.9	0.40	2.2	0.9	0.5 to 1.9	0.85
Gender													
Female	2595	6.6	1.1	0.8 to 1.6	0.41	19.4	1.3	0.6 to 3.0	0.46	2.3	0.8	0.5 to 1.3	0.34
Male	2524	6.7	1.0			22.5	1.0			3.1	1.0		
Ethnicity													
White	1249	4.9	1.0			25.6	1.0			1.7	1.0		
Black	1748	9.8	1.1	0.7 to 1.8	0.70	19.2	0.8	0.3 to 2.0	0.61	3.3	1.3	0.7 to 2.4	0.47
Hispanic	1802	5.6	0.6	0.3 to 1.0	0.06	19.8	1.0	0.3 to 3.8	1	2.9	0.9	0.4 to 2.2	0.88
Other	320	6.0	1.1	0.6 to 2.3	0.71	32.6	1.7	0.2 to 15.7	0.62	0.8	0.4	0.1 to 1.4	0.17
Child's age (per year) <sup>†,‡,§</sup>													
Mean 11.1 years		0–13.3	1.3	1.0 to 1.6	0.10	0–31.2	1.5	0.9 to 2.6	0.13	0–6.6	1.6	1.0 to 2.3	0.03
Highest household education													
8th grade or some high school	937	7.4	2.0	1.0 to 3.8	0.04	18.1	1.1	0.3 to 3.8	0.89	4.4	2.6	1.0 to 6.8	0.05
High school diploma or GED	1020	9.3	2.0	1.2 to 3.5	<0.01	19.6	0.7	0.2 to 2.2	0.54	3.1	1.6	0.7 to 3.7	0.31
Some college	1371	7.5	1.8	1.1 to 2.9	0.02	25	1.3	0.4 to 4.1	0.70	2.2	1.3	0.6 to 2.8	0.57
College degree	1725	3.4	1.0			20.7	1.0			1.4	1.0		
Household income													
<\$25,000	1810	8.7	1.0			19.6	1.0			3.6	1.0		
\$25,000–\$49,999	1210	7.2	1.0	0.7 to 1.4	0.93	25.9	1.4	0.6 to 3.6	0.47	2.8	1.1	0.6 to 2.0	0.69
\$50,000–\$99,999	945	3.8	0.6	0.3 to 1.0	0.07	23.9	2.4	0.8 to 7.4	0.14	1.8	0.9	0.4 to 2.1	0.79
\$100,000	780	3.3	0.7	0.4 to 1.1	0.13	16.8	1.5	0.3 to 7.3	0.59	1.4	0.9	0.3 to 2.8	0.80
Marital status of responding parent													

	All children				Children who have smoked in past				Children who have never smoked				
	No. of participants	Ever smoked, %	Adj. OR	95% CI	P value	Smoking intentions, %	Adj. OR	95% CI	P value	Smoking intentions, %	Adj. OR	95% CI	P value
Married or living with partner	3276	6.0	1.2	0.8 to 1.7	0.40	20.8	0.6	0.3 to 1.5	0.31	2.5	1.0	0.7 to 1.6	0.87
Other	1829	7.8	1.0			21.5	1.0			3.0	1.0		
Depressed													
Yes	367	11.3	1.3	0.9 to 1.9	0.15	28.9	1.4	0.5 to 4.3	0.53	6.9	2.5	1.6 to 3.9	<0.01
No	4752	6.3	1.0			19.8	1.0			2.4	1.0		
Friends smoke													
Yes	621	22.2	5.1	3.8 to 6.9	<0.01	36.1	5.4	2.8 to 10.5	<0.01	7.0	2.5	1.6 to 3.9	<0.01
No	4498	4.4	1.0			9.9	1.0			2.2	1.0		
Trouble in school													
Yes	335	15.5	2.2	1.5 to 3.2	<0.01	23.8	1.1	0.3 to 4.1	0.91	7.1	2.1	1.0 to 4.4	0.04
No	4784	6.0	1.0			20.5	1.0			2.4	1.0		
Plan to attend college													
Yes	5036	6.6	1.4	0.7 to 3.1	0.35	20.5	0.7	0.1 to 6.4	0.76	2.6	0.4	0.1 to 1.1	0.07
No	83	8.1	1.0			43.4	1.0			8.8	1.0		
Parents disapprove of smoking													
Yes	5064	6.5	0.3	0.1 to 0.6	<0.01	19.4	0.2	0.0 to 1.3	0.10	2.6	0.2	0.1 to 0.7	<0.01
No	55	24.0	1.0			58.4	1.0			12.8	1.0		
Parents communicate "don't smoke" or how to say no													
Lots of times	4409	6.7	2.3	1.0 to 4.9	0.04	17.6	0.1	0.0 to 0.6	<0.01	2.5	0.6	0.3 to 1.5	0.31
Once or twice	546	6.8	2.4	0.9 to 5.9	0.06	44.7	0.6	0.1 to 3.3	0.54	3.3	0.9	0.3 to 2.7	0.91
Never	164	3.7	1.0			61.4	1.0			4.7	1.0		

Abbreviations: CI, confidence interval; GED, general equivalency diploma

\* Multivariate regression models adjusted for the sociodemographic, individual, and contextual factors reported in the Table.

† Prevalence of ever smoking was 0, 5.6, 6.6, 13.3 percent in children less than 10, 10, 11, and older than 11 years-old, respectively.

‡ Among children who had ever smoked, prevalence of intentions to smoke was 0, 17.5, 20.2, 31.2 percent in children less than 10, 10, 11, and older than 11 years-old, respectively.

§ Among children who had never smoked, prevalence of intentions to smoke was 0, 2.0, 2.7, 6.6 percent in children less than 10, 10, 11, and older than 11 years-old, respectively.