Research Article

# Student and Principal Perceptions of School Tobacco Policy

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**ABSTRACT**

***Background:*** *Enforcement of no-tobacco policies is critical to providing a safe, healthy environment for students.* ***Purpose:*** *The purposes of the study were to: (1) describe and compare student and principal perceptions of enforcement of school tobacco policy in a school district with a tobacco-free policy, and (2) explore perceived barriers to enforcement and factors related to enforcement beliefs and perception of smoking.* ***Methods:*** *Students (N = 774) in five high schools in a southeastern city completed a survey. Administrators from those schools were interviewed.* ***Results:*** *Student and principal perceptions varied dramatically concerning tobacco policy enforcement. Only 8% of students said students followed the rules about smoking all/most of the time. Many students reported problems with secondhand smoke. The percentage of smokers was overestimated by nearly three-quarters of students (73%). Predictors of beliefs about number of tobacco rules were: smoking status, number of places students were seen smoking and number of problems reported with smoking. Barriers identified by principals included lack of supervisory help and that tobacco is physically addicting.* ***Discussion:*** *Student perception of how well tobacco policies are enforced should not be ignored by administrators because it is related to smoking behavior. Teachers, students, staff, administrators and parents must be enlisted to help enforce tobacco policy.* ***Translation to Health Education Practice:*** *To change the culture in schools, teachers, students, staff, administrators and parents must be educated about the tobacco policy, and tobacco rules must be consistently enforced.*

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## BACKGROUND

Due to increased awareness of the health consequences, tobacco control policies have been increasing over the years.[1] There has been more emphasis on establishing smoke-free businesses and public areas, especially since the 2006 Surgeon General's Report. This Report has had a major impact on policy decisions in both public and private sectors.[2] There has also been increased interest in extending tobacco-free policies to schools. The primary reason for this interest is to provide a safe environment for students. A major conclusion of the Surgeon General's Report on The Health Consequences of Involuntary Exposure to Tobacco Smoke[3] was that "…secondhand smoke exposure causes disease and premature death in children and adults who do not smoke." The Report further states that separating smokers from nonsmokers, cleaning the air, and ventilating buildings cannot eliminate nonsmokers' exposure to secondhand smoke. In addition, the Pro-Children Act of 2001 prohibits smoking within indoor facilities that provide services to children (such as schools) that

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receive federal funding.[4]

The consequences of students smoking at school do certainly threaten health. A recent study[5] measured indoor fine-particle air pollution in a rural Kentucky high school boys' student restroom and found that concentrations were 19 times higher in the restroom than the National Ambient Air Quality Standard for outdoor air. This level of secondhand smoke was worse than bars in the local area prior to the local smoking ban. Other reasons for establishing strong no-tobacco school polices include ensuring that all students are provided with a smoke-free school that is consistent with health education messages,[6] promoting health behavior through role modeling[6] and establishing social norms unfavorable to tobacco use.[7]

Because of the importance of establishing comprehensive no-tobacco policies, several researchers have examined how these policies are established[8] and to what extent they exist.[9-11] In general, researchers have found that many schools have tobacco policies but fewer have policies considered to be comprehensive that prohibit all types of tobacco use by students, faculty, staff and school visitors at any school-related activities.[9-11] The existence of a school policy without proper enforcement of that policy likely would have little effect on tobacco use. Thus, studies have been conducted to determine if school policies were actually being enforced. School administrators reported high rates of enforcement[12] and compliance.[10] Adams et al[13] found that enforcement of school tobacco policies (as reported by administrators) was related to fewer observations of student tobacco use and lower rates of smoking. When teachers reported the level of enforcement, daily and weekly smoking were lower in schools where student smoking restrictions were always enforced.[14] Other researchers have examined enforcement of school tobacco policies by asking students their perception of enforcement. In three separate studies, students' perception that a school strongly enforced or complied with antismoking rules predicted school smoking prevalence.[15-17]

## PURPOSE

The existence of a no-tobacco policy in schools is very important for promoting the health of children and staff. Perhaps more important is how the policy is implemented and enforced since strong enforcement is related to the prevalence of smoking. Some studies have used administrators to report strength of enforcement while others have used student perception of enforcement. This study extends previous work by comparing administrator and student perceptions of enforcement and examining principal perceptions in a qualitative manner. More specifically, the purposes of the study were to: (1) describe and compare student and principal perceptions of enforcement of school tobacco policy in a school district with a tobacco-free policy, (2) examine the perceived barriers to enforcement of school tobacco policies as stated by principals, and (3) explore factors related to enforcement beliefs and perception of smoking. This study was of particular interest since the study schools were located in a city that had recently passed a smoke-free law prohibiting people from smoking in public places.

## METHODS

### *Participants*

The participants were 774 high school students drawn from the five public high schools in a city in the southeastern United States. State law mandates that a person must be 18 to purchase, use, or possess cigarettes.[18] The adult smoking prevalence rate before a county-wide smoking ban was adopted was 25.7%. The percentage of adult smokers in the county dropped to 17.5% in the months following the ban's enactment.[19] The schools involved in this study ranged in student population from 1399 to 2268 students. All five high schools were located in the same school district which had district-wide no smoking policy that included a ban on smoking both inside the school and anywhere on school property. The sample was 50% male and 50% female with ethnicity of 62% white, 21% black, 5% Hispanic, 3% Asian and 10% other ethnicities (Table 1). The survey was administered in required health education classes that are traditionally taught in the 10th grade; however students in other grades were sometimes enrolled in the classes due to variations in scheduling. Therefore, the sample was composed of 86% 10th graders, 7% 11th graders, 4% 12th graders and 3% 9th graders. According to self-reports, 18% of the students had smoked at least once in the last 30 days. In this sample of students, smokers tended to be older than nonsmokers; among smokers, 55% were age 16 or above, while 41% of nonsmokers were 16 or older ($\chi^2 = 7.9$, $P = 0.005$). Nearly all students who reported being current smokers were below the legal age of 18 (98%).

**Table 1. Demographic Characteristics of the Sample (N = 774)**

| Characteristic | N | (%) |
|---|---|---|
| Sex | | |
| Male | 370 | (49.5%) |
| Female | 377 | (50.5%) |
| Race | | |
| Black | 157 | (20.6%) |
| White | 467 | (61.4%) |
| Other | 137 | (18.0%) |
| Grade | | |
| 9th | 25 | (3.3%) |
| 10th | 648 | (85.8%) |
| 11th | 51 | (6.8%) |
| 12th | 31 | (4.1%) |
| Smoking status | | |
| No | 586 | (82.3%) |
| Yes | 126 | (17.7%) |

In addition to surveys of students, principals or assistant principals at each of the five high schools were interviewed. These principals had been in their administrative position at least two years. Principals were chosen to be interviewed because they were the primary instructional leaders of the school and because in these schools, principals were the primary enforcers of tobacco policy.

### *Instruments*

The student survey consisted of 29 questions that inquired about students'

knowledge of the rules regarding smoking at school, knowledge of penalties for smoking, where students had seen students or school staff smoking, students' opinions about the rules about smoking, student perception of the percentage of students in their grade who smoke, and demographic information. Students were also asked about any problems they may have had with smoking at school such as bathrooms smelling like smoke, bathrooms locked to keep smokers out and having to walk through areas where people are smoking. Demographic items were taken from the National Youth Tobacco Survey (2004).[20] Survey items regarding where students had seen smokers and smoking policy issues were adapted from items in the school tobacco policy survey conducted with principals by Hahn et al.[10] The primary smoking question was "On how many days in the past 30 days have you smoked at least one cigarette?"[21] This was modified slightly from a standard item used on the high school YRBS. In addition, this question was used by Noland et al.[22] in their tobacco surveys. All questions addressed simply "smoking" and did not specify what product was being smoked. For example, one question was, "Where at school are students most likely to smoke?" The exception to asking about smoking in a generic fashion was when we asked about students' own smoking behavior. In that case, the question was specific to smoking cigarettes (see above). School officials limited the class time allowed for the survey, so more items could not be added to the survey.

The administrator interview consisted of 11 open-ended questions and 4 close-ended questions regarding tobacco enforcement. The interview questions were adapted from questions utilized in a study by Hahn et al.[10]

*Procedure*

The principal interviews took place in the summer, while the student survey was conducted during the months of October and November of the same year. Principals were contacted by e-mail or phone to determine their willingness to participate and were interviewed at their schools. Five principals were interviewed at five schools (100% response rate). One or two health education teachers at each school were contacted via e-mail or phone to determine their willingness to participate. All teachers contacted were willing to participate, except those who were not teaching health education during the data collection period. All the students present in that teacher's class on the day of the survey were asked to complete the survey.

Once the classes to be surveyed had been identified, they were given to school officials who identified the names and home addresses of the students enrolled in each class. School officials sent a letter to the students' homes via U.S. Mail. Parents/guardians were informed that their student would be participating in an anonymous survey regarding tobacco policy unless they returned the form to remove their child from the study. At least one week was allowed for return of the form. Business-reply envelopes were provided so that postage was prepaid. Following this one-week period, one of the investigators and/or trained research assistants visited the classrooms to administer the student survey. Surveys were administered in one day at each school. A few parents returned the letter withdrawing their student from the study ($N$=11; 1%) and some letters were undeliverable to parents so these students were not allowed to participate ($N$=17; 2%). These students went to study hall. A student assent form was attached to the front of the survey. Student participation was voluntary and anonymous. The classroom teacher remained in the room, but did not participate in data collection. These procedures were approved by the university Institutional Review Board. In addition, research officials at the school district approved the procedures and each school principal gave permission for his/her school to participate.

Tobacco education in the five schools was part of a required, semester-long health education class. Tobacco education was included in the alcohol, tobacco and drug unit and generally received a few instructional days. Because topics presented in class centered on the health effects of tobacco with much smaller emphasis, if any, on the social and policy aspects of tobacco use, the impact of the tobacco education on survey responses was probably minimal.

*Data Analysis*

Principal data that resulted from open-ended questions were assessed qualitatively. Notes were taken from the principal interviews and analyzed for themes. Student data from surveys and principal data from close-ended questions were analyzed quantitatively, including use of frequencies and percentages. These descriptive techniques were used to describe and compare student and principal perceptions of enforcement (Purpose 1) and to explore the perceived barriers to enforcement of school tobacco policies as stated by principals (Purpose 2).

As one element of Purpose 3 (explore factors related to enforcement beliefs and perception of smoking), smokers were compared to nonsmokers using two-sample t-tests on the number of places students were seen smoking, number of places staff were seen smoking, and number of problems associated with smoking. The Mann-Whitney U test was used to compare smokers and nonsmokers on their perception of how often students followed their school's rules about smoking.

To further explore factors related to enforcement beliefs and perception of smoking; logistic regression models were developed to identify factors related to: (1) how many rules the school should have about smoking, (2) how strictly rules about smoking should be enforced, and (3) students' estimate of the percentage of 10$^{th}$ graders who smoke. For the variable of how many rules the school should have, responses were collapsed into two categories: the school should have more rules versus school rules should stay the same, or the school should have fewer rules. For the variable of how strictly rules should be enforced, responses were collapsed into the two categories of rules should be more strict versus rules should not change or be less strict. A binary version also was used for students' estimate of the percentage of 10$^{th}$ graders who smoke: $\leq$ 20% versus > 20%, since this cutoff was the closest to the actual prevalence in the schools

(i.e., the actual prevalence was estimated at 18%). The nine predictor variables used in the logistic regression models were sex, race, smoking behavior (at least once in the last 30 days), student perception of how well students followed the rules regarding smoking, knowledge of the rules about smoking, number of places students saw other students smoking, number of places students saw staff smoking, number of problems students reported with smoking, and how students perceived the city tobacco ban's effect on school enforcement.

## RESULTS

### *Description and Comparison of Student and Principal Perceptions*

*Descriptive analysis of quantitative student data*. Students were generally aware of the rule against smoking indoors but were less aware of the rule banning smoking outdoors on school property (Table 2). Nearly one-third (29%) said no ban existed or had no knowledge of the rule. Only 8% said students followed the rules about smoking all of the time or most of the time. Over half (53%) said students never followed the rules. Students were very unaware of the penalties when caught smoking (66% didn't know for the first offense and 74% didn't know for the second offense). Many students reported problems with others' smoking at school. The most common problems reported were "Bathrooms smell like smoke" (56%); "Don't like going in bathrooms where people are smoking" (48%); and "Don't like walking through areas where people are smoking" (31%).

When the students were asked what they thought should be done about the tobacco rules at school, about half said they thought the school should have more rules (48%);more than half thought the rules should be more strictly enforced (51%); while nearly one-fourth said they didn't know what should be done about enforcement (23%). About a year before this study was conducted, a smoke-free law was passed that prohibited smoking in all public places in the city in which all the study high schools were located. As part of the survey, students were asked what effect this new law had on enforcement of tobacco rules at school. About 44% said there had been no change in enforcement since the law was passed and 35% said they didn't know. Since the study sample was composed of almost all 10th graders, the students were asked what percent of 10th graders in their school smoked. The actual percentage (self-report) of smokers was 18%; only 27% of students correctly estimated (≤ 20%) the actual percentage of smokers in their grade. Thus, the percentage of smokers was overestimated by nearly three-quarters of the students (73%).

*Summary of qualitative principal data.* Principals were asked to what extent students complied with existing smoking policies and two said "all the time," two said "most of the time" and one said "sometimes." Most schools assigned someone in addition to the principal to help monitor tobacco rules, but one school only used principals to enforce the policy. These qualitative findings from principals contrast sharply to those expressed by students, the majority of whom indicated that the rules about smoking were never followed by students.

### *Perceived Barriers to Enforcement of School Tobacco Policies*

Principals identified multiple barriers to enforcement of tobacco policies (Table 3). Some of the issues identified were the addictive nature of tobacco and not enough help to properly enforce school policies. As possible solutions, principals said they needed more personnel to help enforce and stricter consequences. Principals were also asked what had helped them enforce the rules regarding tobacco. Some of the things mentioned were making students aware of the presence of supervision; enforcement by all stakeholders, including parents, teachers, custodians, and others; and students turning in other students.

### *Factors related to enforcement beliefs and perception of smoking*

*Bivariate comparisons.* Two-sample t-tests were used to compare smokers and nonsmokers on variables related to enforcement of smoking rules (Table 4). These tests demonstrate the link between smoking status and "exposure" to smokers or problems with smoking at school. Smokers indicated a significantly greater number of places they had seen both students and staff smoking. Nonsmokers indicated a significantly higher number of problems associated with smoking, many of which pertained to secondhand smoke exposure. Cohen's d for the comparison of smokers and nonsmokers was 0.4 for both the number of places students were seen smoking and the number of places staff were seen smoking. Cohen's d for the number of problems associated with smoking when comparing smokers and nonsmokers was 0.8. The comparisons between smokers and nonsmokers on these enforcement indicators suggested medium to large effect sizes. Nonsmokers were more likely to perceive that students followed the school's smoking rules, compared with smokers (Mann-Whitney U test = 10.8, $P = 0.001$). Half of the nonsmokers said that students never follow the rules about smoking, while two-thirds of smokers indicated that students never follow smoking rules.

*Logistic regression results.* Table 5 displays the results of three separate logistic regression models used to predict students': (1) beliefs about how many rules the school should have about smoking, (2) beliefs about how strictly rules about smoking should be enforced, and (3) estimates of the percentage of 10th graders who smoke. For the first model, the Hosmer and Lemeshow goodness of fit test was 14.9, with P=.06, indicating the model fit the data reasonably well. The three significant predictors were smoker (coded ever = 1; never = 0), number of places students were seen smoking, and number of problems with smoking. Compared to nonsmokers, nonsmokers were 10 times more likely than smokers to hold the belief that there should be more rules. This likely reflects the phenomenon that smokers were more likely to see students smoking in more places and were less likely to support additional rules about smoking. With each additional problem at school related to smoking, the student was two times more likely to indicate there should be more rules at school. Since nonsmokers were more

**Table 2. Frequency Distribution for School Smoking Items (*N* = 774)**

| Item | Percent |
|---|---|
| How often do students follow the rules about smoking? | |
| All of the time | 1.3 |
| Most of the time | 6.3 |
| Some of the time | 39.5 |
| Never | 52.9 |
| What problems have you had with smoking at school?[a] | |
| No problems | 27.1 |
| Bathrooms smell like smoke | 56.5 |
| Don't like going in bathrooms where people are smoking | 40.3 |
| Bathrooms are locked to keep smokers out | 20.1 |
| Don't like walking through areas where smokers are | 31.3 |
| Rules about going to the bathroom are more strict because of smokers | 13.6 |
| Smell smoke inside the school from smokers outside the school | 17.7 |
| Other | 4.0 |
| In the past year, where have you seen smoking, either inside or outside the school?[a] | |
| Haven't seen smoking | 5.9 |
| Behind/beside school | 69.1 |
| In front of school | 51.0 |
| Parking lot | 58.8 |
| Bathroom | 71.1 |
| Hallway | 6.1 |
| Gym | 3.6 |
| Gym dressing room | 8.0 |
| Outdoor athletic facilities | 34.4 |
| Other | 5.3 |
| What do you think should be done about the rules for smoking at school? | |
| Rules should stay the same | 17.6 |
| Should have more rules | 47.8 |
| Should have less rules | 13.9 |
| Don't know[b] | 20.6 |
| What do you think should be done about the enforcement of rules for smoking at school? | |
| Enforcement of the rules should not change | 13.4 |
| The school should more strictly enforce the rules | 51.3 |
| The schools should be less strict in the enforcement of rules | 12.1 |
| Don't know[b] | 23.4 |
| How do you think the local tobacco ban has affected enforcement of tobacco rules at school? | |
| Enforced more since the law was passe | 15.5 |
| Enforced less since the law was passed | 5.7 |
| No change in enforcement since the law was passed | 43.9 |
| Don't know[b] | 35.0 |
| What percent of 10th graders in this school do you think smoke? | |
| 10% or less | 9.8 |
| 20% | 17.6 |
| 30% | 22.8 |
| 40% | 20.7 |
| 50% or more | 29.1 |

[a]Students were allowed to mark more than one answer
[b]Don't know responses were recoded to missing prior to the logistic regression analyses

likely to report problems related to smoking, this likely reflects the phenomenon of nonsmokers being more supportive of increased rules.

For the model with beliefs about how strictly the rules should be enforced as the dependent variable, the Hosmer and Lemeshow goodness of fit test was 7.3, with $P = 0.50$, indicating the model fit the data well. The significant predictors were smoker and number of problems with smoking that were reported. Compared to smokers, nonsmokers were 10 times more likely to say they thought the rules should be more enforced. For every additional problem at school related to smoking, the respondent was twice as likely to indicate he/she thought the rules should be more strictly enforced.

For the model with students' estimates of 10th graders who smoke as the outcome variable (with the percentage dichotomized at 20%), the Hosmer and Lemeshow goodness of fit test was 10.9, with $P = 0.20$, indicating the model fit the data well. There were two significant predictors: being male and knowledge of the rules. Males were twice as likely as females to correctly indicate that 20% or fewer smoked. For every one point increase in knowledge, the respondent was only .9 times as likely to respond that 20% or fewer smoked. This indicates that those who had better knowledge of the rules regarding smoking were more likely to overestimate the percentage of 10th graders who smoked.

**Table 3. Principal-Identified Barriers and Possible Solutions to Enforcement of Tobacco Rules (*N* = 5)**

| Barriers to Enforcement |
|---|
| ▪ Tobacco is physically addicting<br>▪ Catching students-can't be everywhere-not enough help to enforce<br>▪ Board attorney told us penalties too harsh-now kids can smoke twice before being suspended<br>▪ This is a societal issue-some parents let their children smoke |
| **What has helped with enforcement of the rules in the past?** |
| ▪ Making students aware of the presence of supervision<br>▪ Enforcement by all stakeholders-parents, teachers, custodians<br>▪ Students turn other students in<br>▪ Supervision has increased<br>▪ Being diligent |
| **Possible Solutions to Enforcement** |
| ▪ More people for enforcement<br>▪ Stricter consequences<br>▪ Help students quit<br>▪ Smoke alarms might work at smaller schools |

## DISCUSSION

Students were unaware of some rules and penalties when caught. Schools need to make students, administrators, and all staff including teachers, custodians, cafeteria workers, bus drivers and law enforcement officers aware of the rules and penalties for smoking. Without this communication, the policy is unlikely to be enforced. Students had a clear perception that the rules regarding student smoking were not being enforced, since only 8% of students said that students followed the rules 'all the time' or 'most of the time.' Student perceptions were very different from principal perceptions; most principals said students complied with existing policies most or all of the time. This finding is consistent with research conducted by Gingiss et al.[12] and Hahn et al.[10] that found that principals report very high rates of enforcement. A unique feature of this study is that we compared student and administrator perceptions of enforcement. Other studies have asked students OR principals but not compared their perceptions. This comparison is of interest in that principals said that most students complied and the students said the opposite. This is important for two reasons: (1) If principals think most students comply, they will not be motivated to change their enforcement methods, and (2) if students feel that no one is following the rules and they see many smokers, then there is an atmosphere that promotes smoking. The discrepancy between student and principal perceptions is especially important in light of prior research that indicates that students' perception of compliance with rules prohibiting smoking was related to smoking prevalence in schools.[15-17] In spite of the fact that principals said that students complied with existing policies most of the time, principals indicated that they did not have enough help to properly enforce. This barrier to enforcement was consistent with the students' beliefs that rules were not being properly enforced.

The finding that students' perceptions that rules were not being followed is also consistent with the finding that nearly three-fourths of students overestimated the number of students in their grade who smoked. When students see others smoking at school, this behavior stands out and thus may contribute to students' overestimation of how many of their peers smoke. This overestimation may establish smoking as a norm at school and thus may have an impact on actual smoking behavior. Adolescents' overestimations of smoking prevalence have been consistently shown to be associated with smoking.[23-25] The results of this study suggest that when school administration acquiesces to smoking on campus by not enforcing smoke-free policy, the school culture establishes a social norm that smoking is visible, allowed and acceptable.

Principals noted in their interviews that more help was needed with supervision. This is consistent with previous research.[7] Principals are too busy to try to enforce this

policy alone and need the help of all adults in the school. There was disparity among the principals about how committed they were in enforcing no-tobacco rules and how willing they were to call on all school staff to enforce these rules. Another barrier identified by principals is that in-school or out-of-school suspension takes students out of class and could negatively impact their academic success. A third barrier is that when considering the immediate danger of tobacco use relative to other behavioral problems at school, tobacco use may be seen as less harmful.[8] Two principals out of five in this study indicated that enforcement of tobacco rules was less important than enforcement of rules related to drugs and alcohol. Students and principals agreed that the city's smoke-free law had little effect on enforcement at school. In the city where this study took place, the smoke-free law in all public places is being strictly enforced, whereas the tobacco-free policy in high schools is not being effectively enforced. A consistent smoke-free message is very important for young people since the majority of smoking begins during the high school years, yet these youth are being exposed to smoking at school on a daily basis.

While this study has some interesting findings, the study's limitations should not be overlooked. A limitation to this study is that data were collected in one school district with a small number of principals in the population. Thus, generalizability of the findings may be limited. With that in mind,

**Table 4. Two-Sample T-Tests Comparing Smokers (*N* = 126) and Nonsmokers (*N* = 586) on Indicators of Enforcement of Smoking Rules**

| Indicator | Smokers M (SD) | Nonsmokers M (SD) | *t* | (*P* value) |
|---|---|---|---|---|
| Number of places students seen smoking | 3.5 (2.1) | 3.1 (1.9) | 2.3 | (.02) |
| Number of places staff seen smoking | 0.6 (1.0) | 0.2 (0.7) | 3.7 | (.0003) |
| Number of problems associated with smoking | 0.9 (1.3) | 2.1 (1.7) | 8.7 | (<.0001) |

**Table 5. Logistic Regression Models* for Each of Three Outcomes**

| Potential predictors | How many rules should the school have about smoking (*N* = 380)[a] | | | How strictly should rules about smoking be enforced (*N* = 381) | | | What percentage of 10th graders smoke (≤ 20 vs. > 20) (*N* = 439) | | |
|---|---|---|---|---|---|---|---|---|---|
| | OR | 95% CI for OR | χ2 (*P* value) | OR | 95% CI for OR | χ2 (*P* value) | OR | 95% CI for OR | χ2 (*P* value) |
| Male | 1.2 | 0.7 - 2.0 | 0.3 (.6) | 1.2 | 0.7 - 2.1 | 0.3(.6) | 2.1 | 1.3 - 3.3 | 9.9 (.002) |
| White | 1.2 | 0.7 - 2.2 | 0.4 (.5) | 1.4 | 0.7 - 2.6 | 1.0 (.3) | 0.7 | 0.4 - 1.1 | 2.9 (.09) |
| Smoker | 0.1 | 0.0 - 0.2 | 25.1(<.0001) | 0.1 | 0.0 - 0.2 | 33.5(<.0001) | 0.9 | 0.5 - 1.7 | 0.1 (.8) |
| How often students follow rules | 0.7 | 0.4 - 1.2 | 1.9 (.2) | 1.1 | 0.6 - 2.0 | 0.2 (.7) | 1.3 | 0.8 - 2.0 | 1.2 (.3) |
| Knowledge of rules | 0.9 | 0.7 - 1.1 | 1.7 (.2) | 0.8 | 0.7 - 1.0 | 3.3 (.07) | 0.9 | 0.7 - 1.0 | 4.5 (.03) |
| No. places students seen smoking | 0.8 | 0.7 - 1.0 | 4.6 (.03) | 0.9 | 0.8 - 1.1 | 1.9 (.2) | 0.9 | 0.8 - 1.1 | 1.4 (.2) |
| No. of places staff seen smoking | 0.7 | 0.4 - 1.2 | 2.0 (.15) | 0.8 | 0.5 - 1.4 | 0.5 (.5) | 0.8 | 0.6 - 1.2 | 0.9 (.3) |
| No. of problems with smoking | 2.1 | 1.6 - 2.6 | 35.9(<.0001) | 2.0 | 1.6 - 2.5 | 30.9(<.0001) | 1.1 | 0.9 - 1.2 | 1.0 (.3) |
| Effect of SF law on enforcement | 0.7 | 0.3 - 1.2 | 1.7 (.2) | 0.6 | 0.3 - 1.1 | 3.0 (.08) | 0.8 | 0.4 - 1.4 | 0.7 (.4) |

* Note: OR = odds ratio; CI = confidence interval.

[a] Sample sizes for the models were smaller than the overall sample size of 774 since any student with missing values for the outcome or any predictor was omitted from the logistic regression model.

the reader should apply our results to their own school districts with caution. This study does have something unique to offer in that it compared student and principal perceptions of enforcement of tobacco policy and found great disparities. In addition, the results of this study support other research studies that indicate that when smoking takes place in schools, students may overestimate the number of smokers and this misperception may contribute to increased smoking. Further, the problems in enforcing tobacco rules in schools are not unique and exist in many communities, so lessons can be learned from the quantitative results of this study and from the principals' observations about barriers and possible solutions.

In this study, beliefs about the number of rules and the enforcement of the rules were related to being a smoker, the number of places students were seen smoking, and the number of problems reported from smoking. These results are expected given that smokers would be more likely to see others smoking since smokers tend to congregate in locations where they think they will not be caught. Also, since nonsmokers are more likely to be bothered by secondhand smoke, it is logical that they would report more problems associated with smoking and believe there should be more rules to prohibit smoking. Students who had knowledge of the rules were more likely to overestimate the percentage of smokers. Perhaps this is because students who are aware of the rules about smoking notice it more when they see a violation and therefore overestimate the number of smokers.

## TRANSLATION TO HEALTH EDUCATION PRACTICE

Student perceptions regarding enforcement should not be ignored by administrators, because these perceptions are related to actual smoking behavior. Since principals are the primary leaders in the schools, the principal must be committed to enforcement for tobacco policy to be effective. Sometimes principals are reluctant to require teachers to participate in enforcement, but all school staff should be required to participate in enforcement and should receive training regarding appropriate enforcement methods. To change the culture in schools that have problems with smoking, all teachers, students, staff, administrators and parents must be educated about the tobacco policy, and tobacco rules must be consistently enforced. Students should be educated about how many people their age actually do smoke to combat the misperception that "everybody smokes." Students could be involved in the efforts to reduce smoking at school by being involved in a social marketing campaign that discourages smoking and raises awareness of the effects of secondhand smoke on nonsmokers. Cessation programs should be initiated and allowed during the school day if necessary. Parents who are concerned about smoking at school should advocate with the superintendent, the school board, and principals for enforcement of the rules and establishment of cessation programs.

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