IMPLEMENTATION OF 100% TOBACCO-FREE SCHOOL POLICIES IN NORTH CAROLINA SCHOOL DISTRICTS: FROM POLICY TO PRACTICE

Suzanne DePalma Morrison

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Approved by: Sandra Greene Sally Malek Janet Porter Kurt Ribisl Pam Silberman

Abstract

Suzanne DePalma Morrison

Implementation of 100% Tobacco-Free School Policies in North Carolina School Districts: From Policy to Practice

(Under the direction of Sandra Greene, DrPH)

A statewide campaign to reduce youth tobacco use has resulted in 78 of North Carolina's 115 school districts adopting a 100% Tobacco-free school policy (TFS). Research was conducted to determine whether three dimensions of policy implementation - policy communication, compliance monitoring, and policy enforcement – were associated with student smoking, and to elucidate the policy implementation process in middle and high schools across the state. Sixty-five principals from middle and high schools that had a 100% TFS policy and that had participated in the 2005 Youth Tobacco Survey (YTS) completed a survey of their schools' implementation of the 100% TFS policy. Using data from the survey, overall implementation ratings (IRs) that demonstrated the level of policy implementation of the 100% TFS policy at each school were created. The IRs were based on the schools' achievement of a set of eight objectives related to the three dimensions of policy implementation. The average school IR was 7.05 out of 9.0, with a range of 4.8 - 9.0. No correlation between IRs and current student smoking was found. Multiple regression was used to explore whether the communication, compliance monitoring, and enforcement subscale scores of the IR predicted the current student smoking rate at the school. A moderate positive association was found between the current student smoking rate and the communication subscale of the implementation rating.

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Further analysis was conducted on the various subscales. A one-way analysis of variance found a positive relationship between the amount of time that that a school has had a policy in place and the level of compliance monitoring at the school. Three categories of policy compliance violations were also analyzed: (a) the number of policy violations reported by the principal for the academic year, (b) student reports of smoking on campus or at campus events in the 30 days prior to taking the survey, and (c) student reports of school staff smoking on campus or at school events in the thirty days prior to taking the survey. A small negative correlation was found between the IR and the total number of policy violations for the academic year (as reported by principals) at both high schools and middle schools and a moderate negative correlation was found between the enforcement subscale and the number of policy violations at middle schools. A moderate negative correlation was also found between the percentage of students who reported smoking on school property or at school events and the communication subscale for both middle and high schools. Finally, a moderate negative correlation was found between the percentage of high school students who report seeing school staff smoke on campus or at campus-related events and the overall IR and the compliance monitoring subscale. Less than half of the schools offered education or remediation for students who were caught violating the school's tobacco policy. Eight key informant interviews were also conducted to identify community, organizational and individual factors that affect policy implementation. Factors that facilitated or hindered policy implementation included: attitudes of school principals, leadership and support, and resource availability or constraints. This research identified a need to provide support and resources to principals, school district leaders, and community stakeholders to improve or maintain already high levels of implementation in order to achieve the primary policy goal of reducing youth tobacco use.

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To Anna: There is no knowledge that is not power. *Ralph Waldo Emerson*

To Jeff: My deepest gratitude for your encouragement and support.

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List of Abbreviations

- ATS Alternative to Suspension
- BOE Board of Education
- CDC Centers for Disease Control and Prevention
- HWTF Health and Wellness Trust Fund
- IR Implementation Rating
- MTF Monitoring the Future
- NHIS National Health Interview Survey
- NC TPCB North Carolina Tobacco Prevention and Control Branch
- NC YTS North Carolina Youth Tobacco Survey
- SDFSC Safe and Drug Free School Coordinator
- SHAC School Health Advisory Committee
- TFS Tobacco-Free School
- US DHHS United States Department of Health and Human Services
- YTS Youth Tobacco Survey

Chapter 1: Introduction

In their 1994 *Guidelines for School Health Programs to Prevent Tobacco Use and Addiction (Guidelines),* the Centers for Disease Control and Prevention (CDC) recommend that each school district in the United States (US) develop, communicate and enforce a school policy on tobacco use, provide prevention education, and support cessation efforts among students¹. The *Guidelines* state that a clearly articulated policy that eliminates all tobacco use on campus and at school events, applied fairly and consistently, could help students decide not to use tobacco¹. Among other benefits, such a policy would also eliminate youth and staff exposure to secondhand smoke (SHS) and decrease youth access to tobacco products. Since that time, 78 out of 115 school districts in North Carolina (NC) have adopted a *100% tobacco-free school policy* (TFS) – one that bans all tobacco use, everywhere on a given school campus and at school-related events, at all times. The majority of these school districts have adopted the policy since 2000 when the NC Tobacco Prevention and Control Branch (TPCB), part of the NC Department of Health and Human Services (DHHS), along with state partners, began an initiative to increase the number of school districts in the state with a 100% TFS policy in place.

The objectives of this research are both theoretical and practical. First, a number of researchers have proposed that a link exists between the 100% TFS policy and student tobacco use. However, some researchers have found no association and, thus, any link is considered equivocal. One suggested reason for this finding has been that suboptimal implementation of the policy may have diminished the potential for its impact. No single study has examined the policy implementation process to determine whether or not successful or effective implementation is associated with reductions in student tobacco use. Thus, the primary question of this dissertation is: *Is an optimally*

implemented 100% TFS policy associated with reduced student tobacco use? To answer this question, this research provides a generalized model of the 100% TFS policy implementation that is appropriate for use within NC middle and high schools. Based on this model of implementation, a rating system for measuring the extent of policy implementation at each of the study schools has been designed and applied to a subset of schools that both participated in the 2005 NC Youth Tobacco Survey (NC YTS), a biannual survey of students in grades 6-12 attending public schools in NC, and have a 100% TFS policy in place. School implementation ratings are compared with current student smoking rates at each school, as determined by the 2005 NC YTS, to identify any possible relationship between policy implementation and policy impact. Thus, this research provides a snapshot of policy implementation across NC middle and high schools, leading to the second research question of this dissertation: *Is the 100% TFS policy being fully implemented at NC middle and high schools in school districts that have adopted the policy?* Finally, key informant interviews are conducted to answer the third research question: *What factors facilitate or hinder implementation of the 100% TFS policy?*

Data collection takes place in two stages. First, a survey is conducted of principals in 99 middle and high schools from school districts across NC. The sample of schools surveyed are those schools that participated in the 2005 NC YTS and are in a school district that had a 100% TFS policy in place at the time of the YTS. The questionnaire for this study examines three components of policy implementation – policy communication, compliance monitoring, and policy enforcement. Information on a number of other variables is also gathered. Surveys result in ratings that provide a basis for assessing the level of policy implementation. Next, through key informant interviews with eight principals in schools that are rated as 'high' and 'low' with regard to the level of policy implementation, factors that facilitate or hinder implementation of the schools' 100% TFS policy are identified and examined.

Why Study 100% TFS Policy Implementation?

Despite the dramatic increase in the number of policy adoptions and the importance of successful implementation to achieving 100% TFS policy goals, a comprehensive study of the 100% TFS policy implementation process itself has not been undertaken. This lack of research is not surprising. The literature on policy implementation shows that implementation tends to be a neglected phase of policymaking, with scholars often focusing on policy formulation or policy outcomes rather than on the processes that engage the specific policy ideas and efforts that may lead to desired effects². There are several reasons for this neglect of implementation. Policymakers may assume that policies are self-executing and that their adoption will automatically result in changed behavior, or they may view implementation as an "add-on" rather than an integral part of planning ^{2, 3}. For some, policymaking is seen as more prestigious and worthy of attention than policy implementation, which has been characterized as a series of mundane decisions and interactions "unworthy of scholarly attention"²⁻⁴. Studying implementation can also be "overwhelmingly complex", and scholars have been deterred by the methodological considerations³. Researchers also point out that it is often easier to organize around short-term objectives of enacting local policy than it is to sustain the momentum to monitor the longer-term implementation, because the policy adoption process has a shorter time-frame and tangible outcomes whereas the implementation process requires a very focused and sustained effort and a different skill set ⁵. Unlike the legislative and judicial arenas where, for example, votes are counted, the study of policy implementation requires attention to many and often vague actions, performed by a multitude of actors, over an extended period of time ⁶.

A strong rationale exists for conducting research on the implementation of 100% TFS policies. First, without information regarding implementation, it is impossible to know the processes that are undertaken from the time that the policy is adopted. Second, relating implementation quality to outcomes is critical for establishing any conclusions that may be drawn about the policy's role in effecting behavioral change. Researchers point out that if policy implementation is not adequately

planned, structured or managed, a subsequent dilution of policy efficiency and effectiveness will ensue ^{2,7}. Inconsistently implemented policies are likely to yield an diminished effect, leading to the assumption that the policy is not working when, in fact, negative outcome findings may be the result of shortcomings in service delivery ^{7,8}. Moreover, because some school districts may not be willing to maintain a policy that is seen as ineffective, potentially effective policies may be eliminated as a result. Third, understanding the dynamics and operations of the 100% TFS policy implementation process is necessary for continuous quality improvement. Ignoring the role of implementation allows mistakes to be repeated rather than avoided, and may negate the usefulness of cumulative and comparative knowledge of successful and less successful implementation experiences for program improvement. Understanding implementation advances knowledge on best practices and allows successful activities to be sustained and replicated.

Compelling ethical reasons for studying 100% TFS policy implementation are also evident because poor implementation can have very real and direct health and educational consequences for youth. First, inconsistently enforced policies have the potential to lead to differential treatment of youth. For example, a high achieving youth may be sanctioned for using tobacco on campus, while a low achieving youth in danger of school failure may be tolerated for the same offense. Alternatively, the low achieving youth may be sanctioned for tobacco use, while the same behavior by a high achieving youth is tolerated. If sanctions are remedial rather than punitive, the policy may allow one youth access to tobacco prevention or cessation services while denying another youth this advantage. In another scenario, school staff may use policy violations as a way to rid their school of a problem student while ignoring violations of other students. Dunbar et al. point out that students of color, particularly African-American and Latino students, are disproportionately affected by the unfair or inconsistent administration of zero-tolerance policies that address alcohol, tobacco and other drug use in the school setting ⁹. The second ethical implication involves the increased risk of a progression to regular usage of tobacco. Inconsistent enforcement implicitly suggests that the behavior should be tolerated, at least on occasion, and could even be viewed as a form of *enabling* tobacco use among

youth. Thus, inconsistent or differential enforcement of the policy can contribute to continued tobacco use and the possibility of lifelong addiction ⁷.

Previous Research on the 100% Tobacco-Free School Policy

The primary aim of the 100% TFS policy, and the issue that is the focus of this dissertation, is to decrease youth tobacco use. A secondary aim, which is briefly addressed in this dissertation, is to eliminate student and school staff exposure to secondhand smoke (SHS). A number of researchers who have examined the link between school tobacco policies and youth tobacco use over the past 20+ years have found that comprehensive policies are associated with less student smoking. Following are highlights of some of the research related to 100% TFS policies. A more comprehensive literature review is provided in Chapter 4.

- Analysis of the NC YTS from 2005 showed that current tobacco use rates of high school students varied depending on policy status and the length of time that the policy had been in place. Current tobacco use of high school students in schools without a 100% TFS policy was 22%. This finding is compared to 21.1% of high school students at schools where the policy has been in place for 2 years or less, and 13.3% for students at schools where the policy has been in place 3 or more years ¹⁰.
- Analysis of NC YTS data from 2003 also showed an association between the prevalence of youth tobacco use and the presence of a 100% TFS policy. Rates for middle and high school students who reported current tobacco use at schools that had the policy in place during the 2003 NC YTS were 13.2% and 28%, respectively, as compared to rates at middle and high schools that did not have the policy in place, where the prevalence of current tobacco use was 14.7% and 38.4%, respectively.
- A national survey by Kumar et al. found that permitting staff to smoke outdoors on school grounds was significantly positively associated with students' daily cigarette use, and was negatively associated with their disapproval of cigarette use ¹¹.

- Two studies in Denmark and Wales found increased smoking among students aged eleven to sixteen when peers smoked and when teachers were seen to smoke in or outside the school ¹².
- The Surgeon General's Report, *Reducing Tobacco Use*, found that comprehensive school-based programs that include a 100% TFS policy, combined with community and mass media efforts, can prevent or postpone smoking onset by 20 to 40% among US teenagers ¹³.
- A national study of secondary school students in Wales found that more comprehensive school tobacco policies (those covering a broader range of people, places and times) as reported by teachers, were significantly related to less self-reported daily smoking among students, even after accounting for individual risks such as parent and peer tobacco use ¹⁴.
- In a study of nearly 5,000 seventh graders in three California school districts, schools defined as having *more comprehensive* school-based smoking restrictions were associated with reduced uptake and decreased smoking prevalence among adolescents than schools with *less comprehensive* policies ¹⁵.
- An early study comparing the prevalence of smoking among recent former students of two public British boarding schools reported higher rates of smoking among those who attended the school with a more permissive tobacco use policy than those who attended the school with a strict anti smoking policy ¹⁶.

Despite these findings, the relationship between formal tobacco policies and student smoking is not always clear. Some researchers have suggested that simply having a comprehensive school tobacco policy in place may not affect student smoking ¹⁷⁻²⁰. In an Australian study, Clarke et al. suggested that staff and visitor smoking policies, and the presence or absence of signs promoting the policy, were unrelated to reports of student smoking on campus ¹⁷. In a representative national study of 15-year-old students in Scottish schools, researchers evaluated the relative impact of tobacco policy status on student perceptions of both student and teacher compliance with the school's tobacco policy. The study found no association between policy status and students' perceptions of smoking

in the bathrooms, and between policy status and reports of teachers smoking outdoors (however, in schools with written policies, there were fewer reports of students smoking outdoors)²⁰. In a study of New Zealand secondary school students and staff, Darling et al. found that having a school tobacco policy was unrelated to the prevalence of tobacco use among students ¹⁸. Finally, Rosendahl et al., in a representative regional follow-up study of fifth-grade students in Swedish schools, showed that school adoption of a formal anti-smoking policy was unrelated to student smoking in the sixth grade among those who had not smoked by the fifth grade ¹⁹. In summary, these researchers have found that other factors, in addition to policy status, may help distinguish between effective and ineffective school tobacco policies, as well as determine objectives that school tobacco policies can and cannot accomplish in terms of reducing student tobacco use. This research study proposes that variations in the extent to which 100% TFS policies have been implemented at the schools may influence the impact of the policy on student tobacco use.

Implementation Performance vs. Programmatic Performance

A central thesis of this dissertation is that a school is more likely to achieve the policy goal of reducing student tobacco use if the 100% TFS policy is effectively implemented. Clearly, the best method to measure whether 100% TFS policy goals are achieved is to directly observe whether schools with the policy in place actually do have fewer students using tobacco. Such observation would occur in a randomized controlled trial. This study design was initially considered, but upon further investigation, it was decided that the method was not feasible for two reasons. The primary reason was the lack of data that could identify the current student smoking rate at schools *prior to* policy implementation, which would serve for comparison with the current smoking rate *following* policy adoption. Data from the 2005 YTS survey, a biannual survey of youth tobacco use conducted in NC middle and high schools that began in 1999, are used for the current study. However, for each round of the YTS survey, new schools within participating school districts are selected to participate, with the probability of selection proportional to enrollment size. In considering this use of YTS data,

it was assumed unlikely that current student smoking rates for the same school both before and after policy adoption would be available. Even if data both before and after policy adoption at a particular school were available, there were additional concerns about bias. The YTS was not specifically designed to measure tobacco prevalence at the school level, but rather to generate statewide and regional tobacco prevalence estimates. Instead of surveying a random sample of students at each school, which would have been most appropriate for this study, a multi-stage cluster sample design was used to produce representative data of middle and high school students for all of NC. Classes at each participating school were randomly selected and all students in selected classes were eligible to participate. This means that, should a school have been selected twice for the YTS, during one year the YTS could have been conducted with a class of 9th graders, and two years later, the YTS could have been conducted with a class of 12th graders. As tobacco use rates typically increase with age, it would be challenging to relate changes in current student smoking to the implementation of the policy.

Based on these obstacles, a more pragmatic approach is taken herein that allows the intervention (implementation of the policy) to occur and then relies on quantitative and qualitative research methods to measure outcomes. It is now widely accepted that outcome data should be illuminated by an integral process evaluation that provides information on the ways in which an intervention is implemented and received, its strengths and weaknesses, and the activities that occur under various conditions. Given the association between some aspects of policy implementation (such as enforcement) and reduced youth tobacco use, if it can be demonstrated that NC schools are effectively implementing the 100% TFS policy, then these policies are more likely to achieve their goal of reducing student tobacco use. Thus, while the focus of this dissertation is on the characteristics of the implementation process rather than program impact, it is noteworthy that effective policy implementation is linked to achievement of policy goals. The effectiveness of the implementation process can be analyzed as a foundation upon which policy impact can be considered. Additionally, linking this study with 2005 NC YTS data provides an opportunity to

explore the association between policy implementation and current student smoking rates at various schools.

Benefits of this Research

While there has been a surge in the number of NC schools with 100% TFS policies in place over the past four years, no research to date has been undertaken to rate the stringency and comprehensiveness of policy implementation. In spite of existing research that shows 100% TFS policies are not always implemented effectively, little guidance is provided to help translate this research into meaningful strategies to improve implementation efforts. At present, public health leaders, school leaders and policymakers are not able to determine if they are achieving their policy objectives because no systematic way to assess implementation currently exists.

As a first step towards systematically determining the success of 100% TFS policy implementation and identifying the factors that may affect this process, this research contributes to the study of tobacco prevention in several ways. To start, it provides data on the level of policy implementation that is based on an established target, ideal or maximum value. Creating a meaningful and standardized assessment of 100% TFS policy implementation can help school and public health leaders recognize their accomplishments more clearly and evaluate the impact of their past efforts, identify additional assistance that is needed, and determine future policy direction based on the furnished data. Second, this research offers a unifying approach to the study of 100% TFS policy implementation, one that will facilitate comparisons across schools and school districts, potentially creating competition and "raising the bar" to encourage more effective implementation. Third, it offers a blueprint for tracking progress and systematically monitoring the impact of factors that facilitate or hinder implementation. Finally, this research provides support to school and public health leaders seeking to achieve key objectives outlined in the CDC's *Guidelines*.

Product of this Research: Standards and Guidelines for Implementation

As a part of this dissertation, guidelines for 100% TFS policy implementation are provided that are based on this newly designed model for implementation. These guidelines identify the critical components of implementation and offer strategies as to how these standards can be achieved. Public health and education leaders at the state or local level can use these standards and guidelines to plan, enhance and assess 100% TFS policy implementation. An optimal use may occur during the early policy formulation stage, when the policy is being considered for adoption and school leaders want to predict the likelihood of making the innovation work in their respective district or school settings. The proposed guidelines will allow school leaders to systematically plan for organizational and individual changes necessary to maximize implementation success. For example, they will help to identify up-front needs for training and technical assistance, identify strengths and barriers to successful implementation, allocate resources and make modifications to the process to fit specific settings. These guidelines may also be used after initial efforts to implement the policy have gotten underway. Use at this point allows school administrators to assess implementation success and identify areas that require further attention. Finally, the guidelines can be used after the new policy has been in operation for a period of time to identify barriers and strengths that may influence policy institutionalization.

Conclusion

When communicated, monitored, supported and enforced, 100% TFS policies appear to constitute a sound strategy for prevention and early intervention in youth tobacco use. By decreasing youth tobacco use, NC's 100% TFS policy initiative has the potential to make a significant and lifelong difference in the health of North Carolinians, but only if it is implemented effectively. As more North Carolina school districts advance the 100% TFS policy, a clearer understanding of how this statewide initiative is moving from policy to practice is critical. Understanding the complex issues surrounding 100% TFS implementation will lead to an improved readiness to implement the

policy, an increased likelihood of policy effectiveness, more efficient utilization of resources and, ultimately, an increased chance of achieving the policy goal of reducing youth tobacco use.

Chapter 2: The Burden of Tobacco Use

Tobacco in North Carolina

North Carolina is first in the nation in tobacco production and one of the centers of America's tobacco industry. Every stage of tobacco production, from tobacco growing to manufacturing the final products, can be found in this state. The majority (86) of NC's 100 counties produce tobacco. In 2004 more than 156,000 acres of tobacco were farmed, with an approximate annual income of \$587.8 million going to NC farmers. In that same year, about 255,000 people were employed in NC's tobacco industry, resulting in an economic impact of more than \$7.0 billion ²¹. Yet, while tobacco is a significant source of revenue for the state, and an important source of income for its residents, it also imposes a formidable economic burden. For example, annual health care costs in NC resulting directly from smoking are \$2.26 billion, of which only \$708 million are covered by the Medicaid program. The state and federal tax burden from government expenditures on smoking-caused illnesses is \$556 per household, and smoking-caused productivity losses in NC are \$3.04 billion per year ²². These amounts do not include health care costs attributable to exposure to secondhand smoke, smoking-caused fires, spit tobacco use, or cigar- and pipe-smoking. Thus, the health and economic costs are much higher than these figures indicate.

Tobacco Use Among Adults

Cigarette smoking is the leading cause of preventable death and disease in the US. In NC alone, researchers have found that 11,900 adults – or one in five – die annually from smoking. This number of people is more than those who will die from alcohol, AIDS, car crashes, illegal drugs, murder and

suicides combined ²³. Tobacco-related mortality across the US is also staggering; between 1997 and 2001 there were an estimated 438,000 premature deaths related to smoking. These deaths were primarily from cancer, cardiovascular diseases and respiratory diseases. During this same time period, smoking during pregnancy resulted in an estimated 910 infant deaths and an estimated 38,112 deaths from lung cancer and heart disease that were attributable to SHS ²⁴. In a 2005 report, the CDC estimated that smoking in the US resulted in 5.5 million years of potential life lost. Adult males who smoked lost an average of 13.2 years of life and adult females who smoked lost 14.5 years of life, relative to nonsmokers. Thousands more potential years of life were lost from other tobacco-related causes, such as exposure to SHS, smokeless tobacco use and fires caused by smoking ²⁵. Diseases and other adverse effects caused by tobacco use, including cancers, cardiovascular diseases, respiratory diseases, and reproductive effects, have resulted in serious illness among an estimated 8.6 million US citizens and are responsible for \$92 billion in productivity losses ²⁴. The list of diseases caused by smoking continues to expand as more and more epidemiologic studies assess the health risks faced by people who continue to smoke across their lifespan ²⁶.

In January 2000, the US Department of Health and Human Services (DHHS) launched *Healthy People 2010*, a comprehensive, nationwide health promotion and disease prevention agenda. Healthy People 2010 offers a framework for prevention for the nation and serves as a road map for improving the health of all people in the US during the first decade of the 21st century. It is a statement of national health objectives designed to identify the most significant preventable threats to health and to establish national goals to reduce these threats. Reducing illness, disability and death related to tobacco use and exposure to SHS is one of the goals. An objective – one of 21 related to this goal – is to reduce the prevalence of cigarette smoking among adults to less than or equal to 12% of the population ²⁷. Two surveys conducted by the CDC assess progress towards this objective. First is the National Health Interview Survey (NHIS). The NHIS was most recently administered in 2004 by personal interview of a representative sample of 31,326 US citizens who were at least 18 years old. The data indicated that in 2004 approximately 20.9% of US adults were current smokers, which is

defined as smoking one or more cigarettes over the past 30 days. This prevalence is lower than the 21.6% prevalence among adults in 2003 and the 22.5% prevalence in 2002. According to the NHIS, of people who currently smoke, 12.1% were considered heavy smokers, defined as smoking 25 or more cigarettes per day. Of those respondents who smoked every day, 40.5% reported that they had stopped smoking for at least one day during the previous 12 months because they were trying to quit. Among those who did not currently smoke, this study found that 50.6% were former smokers. In an article summarizing the NHIS results, the CDC concluded that tobacco use prevention and control measures appear to be effective in decreasing both the prevalence of cigarette smoking among adults is not sufficient to meet the national health objective for 2010 of reducing the prevalence of cigarette smoking among adults to less than or equal to 12% of the population. Furthermore, although the decline in smoking has been observed nationally, smoking prevalence varies substantially across population subgroups ²⁸.

A second study conducted by the CDC, the Behavioral Risk Factor Surveillance Survey (BRFSS), is a state-based, random-digit-dial telephone health survey of US adults 18 years and older. The purpose of this study is to monitor state-level prevalence of major behavioral risks that are associated with premature mortality and morbidity, including tobacco use. According to the 2004 BRFSS, the median adult smoking prevalence in the US was 20.9%. In NC, this number, at 23.2%, was significantly higher. In addition, 54.6% of US adults reported they had never smoked and 52.4% reported they had smoked in the past and had now quit. Again, these data are different for NC adults – with 55.5% reporting they had never smoked and 47.8% of people who had smoked in the past reporting that they had quit ²⁹. Data from the BRFSS suggest that while tobacco use prevention and control measures appear to be effective in increasing the number of people who quit smoking, many more people attempt to quit but do not succeed. To further decrease smoking prevalence among adults and to meet national health objectives, effective comprehensive programs and policies that address initiation and cessation must be widely implemented.

Tobacco Use Among Youth

Smoking has its roots early in life. Research shows that very few people initiate smoking or become habitual smokers after their teen years ³⁰. In the United States, nearly 9 out of 10 current adult smokers (89%) started their habit before the age of 19 years, with the average age of initiation being 13 years ³¹. Another study shows that as many as 63% of smokers began the practice before the age of 13 ³². The age at which youth begin smoking influences subsequent smoking patterns, including progression to regular or daily smoking ³³. Individuals who begin smoking as adolescents are more likely to become dependent, are more likely to progress to daily smoking, tend to use larger amounts of tobacco, over longer periods of time, and have more difficulty quitting than those who begin smoking later in life ^{34, 35}.

While these facts suggest that nicotine dependence plays a role in tobacco use among youth, there is a lack of consensus among the scientific community about the definition of the term 'nicotine dependence' when applied to youth, when onset of nicotine dependence among adolescent smokers actually occurs, and how its manifestations can be identified, defined or measured ³⁴. A conventional criterion for the diagnosis of nicotine dependence in adults, which includes tolerance, craving, withdrawal symptoms, and loss of control over the amount or duration of tobacco use, was not considered useful for identifying emerging dependence in youth ³⁶. One reason this definition was not considered useful is because scientific evidence indicates that brain development continues into adolescence. As a result, the adolescent brain may be more affected by nicotine, suggesting that juvenile onset nicotine dependence may represent a disruption in neurological functioning ³³⁻³⁵. As such, the onset and symptoms of nicotine dependence could be manifested differently among youths and adults.

New research, and in particular the Development and Assessment of Nicotine Dependence in Youth (DANDY) study, suggests a new framework for understanding adolescent tobacco dependence. The DANDY study, conducted by DiFranza et al., was a prospective study of the

natural history of nicotine dependence among 679 young people aged 12-13 years. Individual interviews were conducted three times annually in two urban school districts over 30 months to obtain detailed histories of tobacco use and dependence. Among 332 subjects who used tobacco, 40% reported symptoms of dependence, such as craving a cigarette, irritability, or difficulty in concentrating, with a median latency from the onset of monthly smoking of 21 days for girls and 183 days for boys. Of these respondents, 33% reported symptoms when smoking at the rate of one day per month, 49% when smoking one day per week, and 70% before the onset of daily smoking. This study also showed that adolescent tobacco dependence begins when full autonomy over tobacco use is lost, that is, when the physical or psychological sequelae of tobacco use present barriers to quitting, rather than when a proscribed amount of smoking takes place. The nicotine dose or the duration of use did not appear to be a prerequisite for symptoms to appear and the development of a single symptom of nicotine dependence strongly predicted continued use among study participants ³⁴. Furthermore, researchers found that the first symptoms of nicotine dependence can appear within a matter of days or weeks of the onset of intermittent tobacco use, such as two cigarettes one day per week ^{34, 36}.

Understanding adolescent nicotine dependence is important because this dependence can influence student behavior, which in turn may affect the implementation of a 100% TFS policy. This is illustrated by a research study about student nicotine dependence and school smoking conducted by Soteriades et al. To study the onset of the first symptoms of nicotine dependence, a cohort of 679 seventh-grade students were enrolled in a three-year prospective study. All schools in the study communities had 100% TFS policies in place. After three years of follow-up, smoking at school was reported by 10.3% of students. Among those who admitted to smoking at school, 63% reported that symptoms of nicotine dependence preceded their violation of the policy. Students who were nicotine-dependent were nine times more likely to smoke at school in violation of their school's smoking policy than those students who did not report any symptoms of nicotine dependence ³⁷. This

demonstrates that nicotine dependence can influence student behavior, and thus play a role in compliance with a school's tobacco policy.

Despite efforts to curtail smoking among adolescents, recent studies have shown that tobacco use among youth continues to be a major health concern. Each day, approximately 3,900 young people between the ages of 12 and 17 years begin cigarette smoking in the US. Furthermore, in this age group, each day an estimated 1,500 young people become daily cigarette smokers ³⁸. Research has identified a variety of individual factors associated with adolescent tobacco use. These include: use and approval of tobacco use by peers or siblings, smoking by parents or guardians, accessibility, availability and price of tobacco products, a perception that tobacco use is normative, lack of parental support or involvement, low levels of school involvement and academic achievement, lack of skills to resist influences to use tobacco, low self-image or self-esteem, and lack of self-efficacy to refuse offers of tobacco. This research also showed that rates of smoking vary within racial groups, between genders, and among youth of different socioeconomic status ³⁹⁻⁴².

Smoking cessation is not an easy task for many adolescent smokers. Youth tobacco users often want to quit and make multiple, unsuccessful attempts at cessation. Several studies illustrate the difficulties these youth face. In a national survey, Sussman et al. observed that although only 5% of high school daily smokers predicted they would not be smoking in five years, three-quarters (75%) of these youth were daily smokers seven to nine years later ⁴³. Another study found that among youth who smoked, 77% had made one or more serious quit attempts in the past year ⁴⁴. Burt and Peterson, in an analysis of data from the Hutchinson Smoking Prevention Project, a 15-year randomized trial supported by the National Cancer Institute (NCI), found that 67% of high school seniors who smoked stated that they had a serious intention to quit, and, of these, 60% made at least one quit attempt in the 12 months prior to the survey. Even among high school seniors who were current smokers and had no intention of quitting, 35% had made an unsuccessful quit attempt during the previous one-year period. However, only 21% of those who had attempted to quit in the past year were still abstaining at the time of the survey, and overall, merely 3% had achieved cessation beyond 12 months ⁴⁵. In

another study, Sargent et al. found that the cessation rate among youth who smoked 10 or more cigarettes a day was 6.8%, which was comparable to the cessation rate for adult smoked the same amount. Youth who smoked one to nine cigarettes on a daily basis experienced cessation rates of 12.3%. For those youth who were considered occasional smokers, the cessation rate climbed to 46.3% ⁴⁶. The National Youth Tobacco Survey (NYTS), a national biannual survey of youth tobacco use conducted by the CDC, also found considerable adolescent interest in quitting and unsuccessful attempts to quit, as well as low adolescent usage of cessation programs ⁴⁷. Moreover, focus groups with adolescent smokers found low awareness and usage of these services, as well as misconceptions about what they are and the sense that quitting is neither serious nor urgent ⁴⁸. These data emphasize the need for successful smoking cessation interventions targeted at youth who are making quit attempts with some limited, short-term success but who need additional resources and support to avoid relapse ⁴⁹.

The CDC states that, "programs that successfully assist young ... smokers in quitting can produce a quicker and probably larger short-term public health benefit than any other component of a comprehensive tobacco control program" ⁵⁰. Studies report that teen tobacco cessation interventions have been met with varying degrees of success. In 2006, two systematic reviews of the literature on teen smoking cessation were completed ^{51,52}. First, Sussman et al. conducted a meta-analysis of 48 teen cigarette smoking cessation studies from 1970 – 2003 to assess the effects of teen cigarette smoking cessation programs. The programs used multiple theories (e.g., social influence, motivational) and modalities (e.g., schools, families, multi-media) to deliver the programs. Only studies that included a controlled condition were selected. The primary outcome for the analysis was the percentage quit rate. Researchers found that participation in cessation programs increased the probability of youths' quitting by approximately 46% (9.14% vs. 6.24%). Various factors, including theoretical orientation, program length, the location where the program was held, and program content were important to the success. For instance, relatively higher quit rates were found in programs that included a motivational enhancement component, cognitive behavioral techniques, and

social influence approaches. Quit rates were also higher for programs consisting of at least 5 quit sessions, and for classroom-based programs linked to schools. Program effects appeared to hold up regardless of the length of follow-up. Researchers concluded that programs targeting teen cessation appeared to be effective ⁵¹. In a second study, Grimshaw and Stanton conducted a review of research studies reporting on youth tobacco cessation programs to evaluate the effectiveness of strategies that help young people under the age of 20 years to stop smoking. Their review included 15 controlled trials covering 3605 subjects. The programs used a variety of interventions (e.g., pharmacotherapy, education), in various locations (e.g., classrooms, homes, community), and incorporated different theoretical orientations (e.g., transtheoretical model, cognitive theory). The primary outcome was smoking status at six months' follow-up, among those who smoked at baseline. Researchers found that a transtheoretical approach achieved moderate long-term success when compared to various psychological or social interventions, with a pooled odds ratio (OR) at one year of 1.70 (95% CI 1.25-2.33) persisting at two-year follow up with an OR of 1.38 (95% CI .99 to 1.92). The pharmacological interventions did not achieve statistically significant results, nor did the psychological or social interventions. However, three of these interventions utilized the teen cessation program curriculum called Not On Tobacco (NOT). When these results were pooled, the OR of 2.05 (95% CI 1.10-3.80) suggested that the NOT curriculum had some measure of effectiveness ⁵². These reviews had a number of limitations. Standard definitions of baseline smoking and cessation were not used, suggesting that the studies may not adequately account for the episodic nature of much adolescent smoking. In most cases, results were not biochemically verified. There are also various types of data missing in the presentation of the studies and the number of studies in each category was often small. In many cases the studies were not randomized. Despite these methodological issues, the studies suggest that teen smoking cessation programs can be efficacious 48

Two of the Healthy People 2010 national objectives related to youth tobacco are: (a) to reduce the prevalence of any tobacco use – including smoking and spit tobacco – by students in grades 9-12

during any given month from the 1999 baseline of 40% to 21% or less by 2010; and (b) to reduce the prevalence of cigarette smoking by students in grades 9-12 during any given month from the 1999 baseline of 35% to 16% or less by 2010²⁷. Several national studies have tracked and reported progress towards these objectives. First, the NYTS conducted in 2004 reported that tobacco use among adolescents had stopped decreasing, with rates remaining stable from the last NYTS, which was conducted in 2002. Middle school students had a decrease in pipe use only, and cigarette smoking among high school students had remained steady at 28%⁵³. In a second study, data were analyzed from the CDC's Youth Risk Behavior Survey (YRBS), a national, school-based survey of a representative sample of students in grades 9-12 that, like the NYTS, is conducted every two years. The YRBS was developed to monitor priority health risk behaviors, such as tobacco use, that contribute markedly to the leading causes of death, disability and social problems among youth and young adults in the US. Researchers found that in 2005, the prevalence of current cigarette use, defined as having smoked one or more cigarettes over the past 30 days, was 21.9%. Of students who had reported smoking, approximately one-tenth (9.7%) had smoked during 20 or more of the past 30 days. Like the YTS, there was no significant change in current cigarette use from 2003 to 2005⁵⁴. In a third study, data from the 2004 MTF survey identified some positive trends. Researchers found that smoking rates among teens continued an eight-year-long decline in 2004 from peak levels in the mid-1990. Current smoking rates, defined as having smoked one or more cigarettes in the past 30 days, fell by one-half among 8th and 10th grade students, and by one-third among 12th grade students. However, not all the news was positive. The data showed that the decline in smoking during the study period had decelerated sharply when compared to the decline of the previous study periods. Furthermore, the number of teen smokers was still unacceptably high. According to the survey, 9% of 8th grade students, 16% of 10th grade students, and 25% of 12th grade students were current smokers in 2004⁵⁵.

Tobacco Use Among North Carolina Youth

More than 17,000 youth become new daily smokers in NC each year, and more than 200,000 children under the age of 18 and alive in NC today will die prematurely from smoking ^{22, 56}. Two state-wide studies have helped to create a picture of the problem of youth tobacco use in NC: the NC Youth Tobacco Survey (YTS), a state-based survey based on the CDC's national survey of the same name, and a state-based version of the CDC's YRBSS (NC YRBSS). The NC YTS survey conducted in 2005 showed that more than one-third of middle school students (32.8%) and more than one-half of high school students (58.7%) reported that they had tried or used some tobacco product in the past, with cigarettes the most commonly tried product. Of these students, 28.5% of high school and 10.5% of middle school students currently used some tobacco product (cigarettes, smokeless, cigars). More than one-fifth of NC high school students (20.3%) and one-twentieth (5.8%) of middle school students reported they currently smoked cigarettes. Furthermore, more than 20% of nonsmoking middle school students and more than 25% of nonsmoking high school students reported that they have considered smoking in the future, suggesting that many students are at risk. In addition, the NC YTS established that about half of the young people in NC who used tobacco wanted to quit, and many were trying. In the year prior to the survey, 55.5% of high school smokers and 69.5% of middle school smokers reported that they had made at least one serious attempt to quit ⁵⁷. Results from the NC YRBSS offered additional insight into the problem of tobacco use among NC's youth. These data showed that 25% percent of the students surveyed smoked cigarettes during the 30 days prior to the survey, and 12% smoked during at least 20 of those 30 days. These studies illustrate that, despite clear state decreases in high school smoking from 1999 to 2005, tobacco use, especially among high school students, remains a serious problem for NC youth.

Dangers of Secondhand Smoke

One goal of NC's 100% TFS initiative, and a national Healthy People 2010 objective, is to decrease youth exposure to secondhand smoke (SHS) at school. Health hazards resulting from

exposure to SHS demonstrate that it is a leading preventable cause of death in the US ⁵⁸. SHS is comprised of the side stream smoke that is generated between puffs from a burning tobacco product, such as a cigar or cigarette, and mainstream smoke, which is exhaled by the smoker. SHS is involuntarily inhaled by non-smokers and lingers in the air for hours after smoked tobacco has been extinguished. SHS consists of nearly 5000 compounds, 43 of which are known carcinogens. While a nonsmoker is typically exposed to less tobacco smoke than an active smoker, mainstream and side stream smoke contain dangerous levels of toxic compounds and carcinogens, including ammonia, nitrogen oxides, and benzene ⁵⁹. SHS is estimated to kill between 38,000 and 65,000 nonsmokers nationwide each year ⁶⁰. The cost of SHS to the US economy is nearly \$10 billion a year, ranging from medical bills to hours lost on the job ⁶¹

SHS causes or is associated with a range of health problems in adults. For example, the risk of lung cancer is 30% greater for nonsmoking spouses of smokers than for nonsmoking spouses of nonsmokers. Furthermore, each year, SHS exposure causes an estimated 3,000 new cases of lung cancer and 35,000 deaths from heart disease. A link also exists between SHS and an increased risk of stroke, with research suggesting that regular exposure to SHS may heighten one's chance of stroke by 80% ^{59, 62, 63}. In 2004, new studies prompted the CDC to conduct a thorough literature review of SHS and heart disease. The CDC concluded that even brief exposure to SHS has immediate and damaging effects, and may precipitate a heart attack in someone with heart disease risk factors or known heart disease. It was recommended that these patients avoid all indoor environments that permit smoking ⁶⁴. To date, no threshold has been established for SHS below which no measurable health risks exist, leading to the recommendation that "the prudent public health measure is to protect nonsmokers from *any* exposure" ⁵⁹.

Strong evidence also shows the health impact of SHS on children and youth. It has been determined to be a cause of respiratory diseases, such as lower respiratory infections and asthma, and middle ear infections. It is also associated with Sudden Infant Death Syndrome (SIDS), behavioral problems, reduced cognitive abilities, and metabolic disorders in youth and adolescents ^{59, 65-67}.

Children exposed to SHS are also more likely to start smoking as adolescents ⁶⁸. Despite this risk, many NC youth are exposed to SHS on a regular basis. According to NC YTS 2005, 42.6% of high school students and 40.5% middle school students live in a household where at least one person smokes. Further, 66.3% of high school students and 50% of middle school students reported being in the same room or car with a smoker in the week prior to taking the survey ⁵⁷.

Conclusion

Health consequences of tobacco use are pervasive, expensive and deadly and it is the leading cause of preventable death and illness in NC and the US. More than 17,000 children and youth under age 18 become new daily smokers in NC each year, and more than 200,000 children under 18 and alive in North Carolina today will ultimately die prematurely from smoking ^{22, 56}. Exposure to SHS also poses an immediate and long-term health risk to youth and adults. Despite decades of national and local prevention efforts, prevalence of adult and youth tobacco use remains unacceptably high, presenting an enormous health and economic burden to NC.

Chapter 3: The Movement Towards 100% Tobacco-Free Schools Anti-Smoking Legislation and Regulations

The regulation of tobacco products is a controversial public policy topic at all levels of government, and highlights the tension between individual liberties and governmental intervention to protect the public's health. Significant anti-smoking legislation was not enacted until the second half of the 19th century. This early anti-tobacco legislation was characterized by two themes. One theme focused on the fire hazard created by smoking. This resulted, for example, in legislation banning smoking on public streets due to fire hazards associated with wooden structures. The second theme concentrated on the morality of smoking, and particularly the "demoralizing" effects that tobacco use had on women and children. By the late 1880's and early 1900's, many states had passed laws banning the production, sale, advertisement and use of tobacco products within their boundaries. Yet, smoking continued to grow in popularity. Anti-tobacco laws were often not enforced and many were ultimately repealed as opposition to smoking on safety and moral grounds was swept aside by the economic benefits associated with tobacco production and consumption. This resulted in a dramatic increase in cigarette smoking in the early-to-mid 20th century ⁶⁹.

Along with this increase in smoking popularity, scientific evidence regarding its ill effects began to be published. By the 1940's, researchers had associated cigarette smoking with cancers, heart disease and other adverse health effects. In 1964, with the publication of the first *Surgeon General's Report on Smoking and Health* following decades of mounting evidence of the health effects of smoking, opposition to smoking on health grounds became the center of the legislative debate. Since then, other Surgeon General's Reports have provided scientific support for these conclusions. As the majority of adult smokers started in their teens, Surgeon General's Reports began to emphasize the need to reduce youth access to tobacco products⁶⁹.

In the early-to-mid 1990's, the terms of the legislative debate on tobacco once again shifted, this time towards a focus on the effects of smoking on children. As a result, Congress became more active in legislating tobacco controls where children were involved. In 1992, the federal government enacted a key piece of legislation, the 1992 Alcohol, Drug Abuse and Mental Health Agency Reorganization Act, requiring states to enact and enforce laws against the sale and distribution of tobacco products to individual's younger than eighteen years of age. Known as the Synar Amendment, this legislation, which became effective in 1995, made block grant funding allocations to the states conditional on compliance with these provisions ⁷⁰. Then in 1994, Congress enacted the Pro-Children's Act of 1994^{1,31}. The Pro-Children's Act required all federally-funded schools to prohibit smoking in any indoor facility used for "provision of routine or regular kindergarten, elementary, or secondary education or library services to children" including schools and libraries, as well as centers for day care and early childhood development programs. This legislation still permitted tobacco use outside on school property, and in other buildings not used for educational purposes. States, however, had the discretion to enforce stricter policies. In addition to federal legislation, the Surgeon General's reports on tobacco, with their meticulous accumulation of scientific evidence on the dangers of tobacco use, and the recommendations by the CDC, were important contributing factors in the emergence of a policy environment receptive to the 100% TFS policy. For example, the 1994 Surgeon General's Report, Preventing Tobacco Use Among Young *People*, recommended public policies, such as required tobacco prevention education in schools, advertising restrictions, smoking bans on school grounds, enforcement of prohibitions of tobacco sales to minors, and tax increases, as effective, state-of-the-art measures for preventing youth tobacco use. The CDC's *Guidelines*, published in 1994, were developed, in part, to help state and local agencies plan, implement, and assess effective school-based tobacco control programs and school policies to prevent tobacco use and addiction among youth. The Guidelines included seven recommended strategies and provided suggestions to help implement these strategies and assess their

effectiveness. The first recommendation was to "develop and enforce a school policy on tobacco use"¹.

According to the *Guidelines*, school policies applied fairly and consistently could help students decide not to use tobacco. Beyond the health benefits for students, a school environment free from tobacco could also decrease discipline problems related to student smoking, improve compliance with local and state smoking ordinances, protect students, staff and visitors from exposure to SHS, and improve upkeep and maintenance of school facilities and grounds. To be effective the *Guidelines* recommended that school districts' 100% TFS policy include the following elements:

- A clear rationale for preventing tobacco use
- Prohibitions against all tobacco use, everywhere on school property and at school-related events, by everyone
- Prohibitions against tobacco advertising
- Requirements that all students receive preventive education
- Access to cessation programs for students and staff
- Procedures for communicating the policy
- Provisions for enforcing the policy

Other recommendations, health initiatives and research related to 100% TFS policies have followed. For example, the 1997 Congressional Advisory Committee on Tobacco Policy and Public Health reiterated the Surgeon General's and CDC's guidelines by recommending that schools adopt and enforce a "zero-tolerance" policy against tobacco use that applies both to students and school staff, and includes no tobacco use at school, on school grounds, or at any school-sanctioned activities ⁷¹. In January 2000, the US DHHS launched Healthy People 2010, which is, as noted previously, a comprehensive, nationwide health promotion and disease prevention agenda. This document also recommended a 100% TFS environment ²⁷. These policies, guidelines and recommendations have provided a foundation for states and communities to address tobacco use in schools.
North Carolina's 100% Tobacco-Free Schools Movement

The NC legislature does not require school districts or schools to have a 100% TFS policy in place. The decision to adopt this policy rests with local school districts' Boards of Education (BOE). In January of 1994, when the Pro-Children's Act was legislated and the CDC's *Guidelines* were published, only five of NC's 117¹ school districts had a 100% TFS policy in place. Following the passage of the Pro-Children's Act and the promotion of the *Guidelines* later in that same year, this number minimally increased. By the start of 2000, 9% (10) of NC school districts had adopted a 100% TFS policy, as compared to 67.6% of districts across the country ⁷².

In January of 2000, due to concern over rising youth tobacco use rates, Governor James B. Hunt convened a summit of more than 800 students, public health, community and educational leaders to address the issue. The goal of the summit was to empower youth by engaging them in advocacy activities in their local schools and communities to prevent and reduce youth tobacco use. During the summit, participants reviewed and proposed evidence-based strategies and distributed a petition calling on local and state leaders to support the adoption of 100% TFS policies. Following the summit, student advocates presented the Governor with a petition that included over 1,800 signatures calling for all schools in NC to adopt a 100% TFS policy. In response, the Governor sent a letter to every school superintendent, principal, board chair and PTA chair urging them to consider the policy. Statewide media coverage followed, raising awareness of the issue of adolescent tobacco use and highlighting the support for 100% TFS policies by NC's leaders. The summit and the Governor's letter, combined with media coverage, advocacy by students and community leaders, and the support from the public health community launched the 100% TFS policy movement in NC.

In an effort to capitalize on the growing advocacy and support for a 100% TFS policy, in April 2000, the NC TPCB developed and disseminated the *Grassroots Guide for Tobacco-Free Schools (Grassroots Guide)* to school and public health leaders across the state ⁷³. The *Grassroots Guide* was

¹ Since that time, two school districts have consolidated, resulting in 115 school districts.

a comprehensive resource that included a model 100% TFS policy, strategies to facilitate policy adoption, suggested implementation measures, guidelines for policy enforcement, and resources that school and community leaders could use to support this policy. The TPCB also provided consultation, training and technical assistance to school district staff as they worked towards the policy change. These resources, services and support, along with the advocacy of youth and community leaders resulting from the Governor's Summit, resulted in several additional school districts' adopting the 100% TFS policy by the end of 2000, bringing the total to 14 districts with a policy in place ⁷⁴.

In 2001, the TPCB developed *Vision 2010: North Carolina's Comprehensive Plan to Prevent and Reduce the Health Effects of Tobacco Use*, a comprehensive tobacco control plan based on the CDC's Best Practices for Tobacco Control ^{50, 75}. An objective of this plan was to increase the number of 100% TFS districts in the state so that by 2010 all school districts would have a 100% TFS policy in place. To accomplish this objective, a primary strategy identified by the TPCB was to engage youth as tobacco prevention and control advocates. This strategy was consistent with the TPCB's emphasis on youth empowerment, and was reinforced with additional funding from the CDC and the American Legacy Foundation and led to the creation of the 100% Tobacco-Free Schools Program within the TPCB.

Between 2000 and 2004, the NC Health and Wellness Trust Fund (HWTF) designated \$28 million of the state's Master Settlement Agreement funds towards teen tobacco use prevention and cessation, with approximately \$345,000 of the \$28 million designated to support the 100% TFS movement ⁷⁶. Since that time, funding for the 100% TFS initiative has steadily increased and, as of May of 2006, funding designated specifically for the Tobacco-Free Schools Program exceeded \$1.5 million ⁷⁷. In addition, a network of local grantees received millions of dollars in funding to initiate youth tobacco prevention activities. The majority of grantees elected to focus on local 100% TFS adoption and implementation ⁷⁴. This funding has allowed program staff to expand resources and enhance activities across the state. For example, funds have been used to convene a series of regional

workshops designed to provide training and technical assistance to teams from local school districts interested in adopting the policy, provide signage to all school districts that adopt a 100% TFS policy, and hold media events around the state to garner more news coverage. Public support for the 100% TFS policy by NC leaders, including Governor Michael Easley and Lieutenant Governor Beverly Perdue, have kept the issue in the news, helping to raise awareness about the values and benefits of the policy across the state. These efforts have been additionally supported by the passage, in 2003, of *North Carolina Senate Bill 583: Tobacco Use in Schools* (SB 583) which slightly expanded upon the Pro-Children's Act by prohibiting all tobacco use (that is, not only smoking) in all school buildings used for educational purposes during regular school hours ⁷⁸. However, the real significance of SB 583 was that it eliminated perceived barriers among school districts as to whether they had the legal authority to adopt a 100% TFS policy. Preemptive legislation in NC prohibited communities from enacting tobacco control laws that were more stringent than, or vary from, state laws by virtue of a provision that preempts local ordinances in specific settings (such as governmental workplaces) ⁷⁹. However, SB 583 clarified that NC school districts were exempt from these preemptive provisions and could, in fact, adopt 100% TFS policies.

By the end of 2002, 18 school districts had a 100% TFS policy in place. The increased funding, ongoing support, new legislation and continuing technical assistance resulted in many more NC school districts adopting a 100% TFS policy from January 2003 until October 2006, bringing the total, as of October 2006, to 78 out of 115 school districts. Now, nearly 63% of all NC school districts in the state have the policy in place. Furthermore, more than half (60%) of NC students and more than half (60%) of school district employees now learn and work in a tobacco-free environment. This is shown in Figure 1.



Figure 1. Districts, students and staff covered by a 100% TFS policy as of 10-29-06

The 100% TFS Policymaking Process in North Carolina

Decisions about school tobacco policies are made by NC's 115 district-level BOEs, the majority of which are elected. Local BOEs are composed of a minimum of five members elected by the voters of the county or city where the school district is located. Their primary responsibility is to control and supervise all matters pertaining to the public schools in their respective district ⁸⁰. Most BOEs work with their respective communities as they establish such programs and policies. While BOEs are required to set direction through policy, school district superintendents and staff are responsible for policy implementation ⁸¹. Thus, the BOEs make the decision as to whether or not a school district will adopt a 100% TFS policy, and the school district superintendent and their staff are responsible for setting the policy into motion.

The most useful way to conceptualize a process as complex and intricate as the one in which 100% TFS policies are adopted and implemented in local school districts is through a schematic model of the policymaking process. For the purposes of this research, a general model of the public policymaking process, developed by Longest, is used to characterize 100% TFS policymaking ⁸². This model is presented in Figure 2. Longest's model has several features that make it especially relevant to NC's 100% TFS policymaking process. First, the three phases of the policymaking

process – formulation, implementation and modification – are interactive and interdependent and, as such, accurately reflect local school district policymaking. The model is also distinctly cyclical; that is, a circular flow of the relationships among the various components of the model reflects a continuous cycle of policymaking in which all decisions are subject to subsequent modification. This cyclical characteristic of the model is congruent with local school district policymaking in NC because enacting the 100% TFS policy involves modifications to existing policies that relate to tobacco use at schools and school-related events. Finally, the policymaking process in Longest's model is an open system that interacts with and is affected by events and political, economic and cultural circumstances in its external environment. Again, this characteristic is also found in the NC 100% TFS policymaking process in that cultural and political issues are often important factors in the decision to adopt the policy. Figure 2 presents an overview of this process.



Figure 2. Longest's policymaking process (2002)

Phase One: Policy Formulation

According to Longest's model, the first phase of 100% TFS policymaking, *policy formulation*, has two distinct and sequentially related parts. The first part, agenda setting, is the action(s) that triggers or initiates the adoption of the 100% TFS policy. Agenda setting allows an issue to gain salience, or to emerge as a problem to be addressed through policy. The second part of this phase is the development of draft legislation, which in this case is the 100% TFS policy ⁸².

John Kingdon has developed an interesting approach to agenda-setting and policy formulation. In his view, agenda setting as a function of the confluence of three variables or "streams" of activities: (1) a problem stream, consisting of information about real world problems and the effects of past government interventions; (2) a policy stream which consists of possible solutions and alternatives to the problems, (3) a political stream, consisting of elections, legislative leadership, and other political circumstances⁸³. In Kingdon's conceptualization, when problems, solutions and political circumstances flow together in a favorable alignment, a "policy window" opens and the issue may emerge from the set of competing issues with a place on the policy agenda. Here, the mere existence of problems – even ones such as youth tobacco use that are widespread and have acknowledged serious implications – do not necessarily lead to policies that attempt to address them. For this to happen, at least one potential solution to the problem must also exist. At the same time, the existence of a problem, even in combination with a viable policy solution, is not sufficient to move the issue along the policymaking process. According to Kingdon, "political will" is also necessary in order for policymakers to take substantive action on a problem/solution combination. Political will is shaped by public attitudes, personal attitudes, the positions and views of key policymakers or other influential people involved in the process, and interest group involvement. External factors, such as upcoming school board elections or the adoption of a 100% Tobacco-free policy by a local hospital may diminish or heighten the political will to address the issue. The media also play an important role in agenda setting by highlighting certain issues and ignoring others. Only

when the existence of a problem is acknowledged, the possible solutions have been defined, and favorable political circumstances exist, can the policymaking "window of opportunity" open ⁸³.

The emergence and subsequent movement of an issue such as the 100% TFS policy to the agenda of the local school board is often controversial. Many school-related problems or issues are on the agenda to be considered by a BOE at any given time. For the reasons noted above, only some of these will come to the attention of the board members as actionable issues. Due to increased advocacy for 100% TFS policies throughout the state, growing public awareness about the health risks of tobacco use and SHS exposure to youth and employees, and a political environment that has more and more become favorable to smoke-free bans in health care settings, entertainment venues and other places in the community, the need for a 100% TFS policy is increasingly gaining a place on BOEs' agendas. However, it can take months and even years for this to occur. Once on the agenda, supporters and opponents have an opportunity to share their views on the values, benefits and any disadvantages of the policy. This open forum usually occurs during regular BOE meetings when, according to state legislation, the public is permitted to comment on school-related issues ⁸⁰. Supporters and opponents may also lobby BOE members individually. The BOE may request that expert testimony be provided by neutral parties, such as the local health director, to enable examination of both sides of the issue. In short, obtaining a place on the agenda of a BOE meeting is a crucial first step within the first phase of policy formulation.

Furthermore, in many school districts, the issue of 100% TFS policy has proven to be controversial, and BOE members must balance the need for the policy with concerns of school staff, community members, advocates and stakeholders. A qualitative study by Goldstein et al. that examined factors associated with the passage of the first 14 100% TFS policies in NC illuminated a number of these concerns. In this study, forty telephone interviews were conducted with a purposive sample of key informants in 14 NC school districts that adopted a 100% TFS policy prior to December 2001. Most of the respondents were school employees and many had first-hand knowledge of the policy adoption process. One frequently cited concern was that communities with tobacco

farming or manufacturing interests would show little support for the policy. Another was that the policy would alienate school staff, community members or their constituents who use tobacco. Some respondents also suggested that adopting such a policy would infringe on the rights of school staff or visitors who choose to use tobacco, which is a legal product, and would be a hardship for staff who are addicted to tobacco and unable to quit, possibly resulting in the loss of teachers who are tobacco users. Finally, some respondents expressed concern that the policy would be difficult to enforce. Despite these concerns, researchers found little evidence that these obstacles materialized in school districts that adopted a 100% TFS policy ⁸⁴.

Having a place on the BOE's agenda does not guarantee that the issue will move forward to the policy development stage. Following public discussion, the BOE may decide, for various reasons, that the issue should be tabled and reconsidered in the future. Or, policy advocates may see that they lack necessary support and request that the issue be withdrawn from further consideration. In this situation, policy supporters may engage in additional advocacy activities to gain further support, and then once again work to get the issue on the agenda. Finally, once the 100% TFS policy is on the BOE agenda, the issue can move forward into the next part of this phase.

The second part of the policy formulation phase, according to the model developed by Longest, is the development of draft legislation which, in this case, is the 100% TFS policy ⁸². Generally, the policy subcommittee of the BOE, or the School Health Advisory Committee (SHAC), a district-level committee made up of school administrators and community health leaders that is mandated to plan and monitor the school districts' coordinated school health plan, is charged with drafting the policy. To facilitate this process and to encourage the adoption of a comprehensive 100% TFS policy – one that meets the criteria of "no tobacco use anywhere on school campus or at school-related events, at any time" – state government staff affiliated with TPCB or local advocates provide consultation, technical assistance and resources to those responsible for crafting the policy. Once a policy is drafted, further opportunity for public comment emerges, usually through a series of two or three public readings where school staff and citizens are encouraged to voice their opinions on the issue ⁸⁰.

Interest group pressure, for example, from school staff who want to continue to use tobacco on campus, or advocacy efforts from policy supporters during this stage, can result in changes and modifications to the draft policy. The policy formulation phase concludes with a formal vote to determine whether the policy will be enacted or set aside.

Phase Two: Policy Implementation

The second phase of the policymaking process, *implementation*, is the process through which policies can have their intended impact ⁸². In the Longest model, implementation formally begins after the 100% TFS policy has been adopted and continues until the policy achieves its intended goals or is discontinued. Therefore, implementation is an action-oriented and goal-oriented administrative process that unfolds over time. As can be seen from Figure 2, the relationship between a 100% TFS policy and its implementation is not linear, clear or direct. Like policy formulation, the implementation phase also involves two interrelated parts. The first part is the establishment of formal guidelines and procedures that are necessary so that the intent embedded in the newly crafted policy may be eventually achieved. The second part of the implementation phase involves the actual conduct or running of the programs and processes developed in the first part of the implementation phase in order for the policy to realize its impact.

Enacted policies seldom contain explicit language to guide their implementation completely. Rather, they are often vague about the initial implementation details, leaving it to the manager in the implementing agency to develop and communicate the rules or regulations that will actually put the policy in effect ⁸⁵. As a result, the development of procedures and guidelines to implement the 100% TFS policy effectively occurs in several stages. First, general guidelines related to the implementation of the policy may be embedded within the policy itself by the board members responsible for crafting the policy. For example, guidelines on the use of signs to communicate the policy, or the provision of cessation services to aid students and staff who use tobacco may be included in the policy document. However, as these tend to be couched in a degree of generality that provides principles for

implementation rather than specific directives, a second stage of policy guidance is necessary in order to make guidelines more specific. This stage is usually overseen by the school superintendent or another senior administrator. He or she establishes procedures that are based on the intent of the policy and that can be operationalized at a specific school to serve a more designated purpose. These guidelines and procedures are communicated to the school principals, who are the actual policy implementers, in the form of internal implementation guidelines. Thus, there is a third stage, which is establishing guidelines and procedures for implementation of the policy at the individual schools within the district based on the guidance provided by the superintendent and the intent embedded in the policy.

School principals generally have the latitude to develop their own sets of guidelines and procedures to guide policy implementation at their respective schools and many factors mediate the ways in which principals interpret and operationalize the guidance provided by the superintendents. These factors include the content of the policy, attitudes and abilities of the principals and others involved in school-level implementation, the political and cultural context in which the policy is introduced, school district organizational parameters and characteristics, and the resources that are available to support implementation. According to Stone, those leaders responsible for designing rules seek a balance between "precision and flexibility"⁶. They want to formulate precise and enforceable rules that ensure fairness by treating people alike, eliminating arbitrariness and discrimination in officials' behavior, creating predictability and encouraging automatic compliance. At the same time, they want rules that are sensitive to context and individual differences, allowing those charged with enforcement to respond creatively to new situations, and generating efficiency by letting officials use their knowledge of particular situations ⁶. Not surprisingly, these differences in interpretation can lead to significant variation in the ways in which the 100% TFS policy is eventually implemented from school to school.

The second part of the implementation phase is operations. The operations stage involves the actual conduct or running of the programs and processes embedded in the policy in order to realize its

impact, based on the guidelines and procedures that were developed by the BOE, superintendent and principal. Although this stage is overseen by the school principal, it may involve many others, such as school staff, youth leaders, parents, and outside agencies that may provide programs or services to support implementation. Activities in the operations stage may include: policy communication; school staff training; compliance monitoring; policy enforcement; and establishment of programs and services that support implementation.

Phase Three: Policy Modification

The final phase in the Longest policymaking process is *modification*. Here, results of the policy, including both intended and unintended outcomes, are reviewed. Based on this information, as well as any new information that may have come to light (such as changes in demographics), modifications to the existing policy are made ⁸². Stone points out that no rule or set of rules is written as a final word. Instead, rules acquire their meanings and their effects as they are "applied, enforced, challenged, and revised"⁶. Thus, the modification phase is a crucial feature of the 100% TFS policymaking process. In fact, all 100% TFS policies in NC represent a modification of prior policies that address tobacco use in schools, rather than the initiation of new policies. The modification phase is, therefore, a feedback loop that acknowledges mistakes or omissions that may be present at any stage of the process – from formulation to implementation – and allows necessary changes that can rectify or enhance the policymaking process. For example, through feedback, policymakers may find that policies that are appropriate at one time may be inadequate another time due to changing demographics, new information, or shifts in cultural, legal and social norms. Policy modification may entail minor rule revisions or involve a return to the original agenda-setting phase of the process. One example of a proposed modification is an effort by interest groups, such as tobacco growers or school staff who use tobacco, to modify a school districts' 100% TFS policy so that it no longer reflects a total ban on tobacco. Specifically, from 2002 - 2004, school boards in six NC school districts that had adopted a 100% TFS policy were asked by interest groups to consider modifications

to the policy to allow school staff and school visitors to use tobacco on school grounds ⁷⁴. Although none succeeded, this represents how policies may be continually challenged, reconsidered, and revised.

Conclusion

North Carolina's 100% TFS Initiative, funded (in part) by the NC HWTF, directed by the NC TPCB, and supported by NC's leaders, has seen tremendous change in the number of school districts that have adopted the policy since 2000. The 100% TFS policymaking process is based on a model developed by Longest and features three phases: formulation, implementation, and modification. The model is interactive, interdependent, and distinctly cyclical, thus accurately reflecting local NC school district policymaking on tobacco use.

Chapter 4: Review of the Literature

The following literature review addresses two primary content areas important to this dissertation. Part I addresses the general topic of *tobacco use in schools*. As a foundation for studying 100% TFS policies, this review begins with a summary of the impact of tobacco bans. The focus then turns to the role of 100% TFS policies in preventing youth tobacco use. This is followed by an overview of the theoretical basis for 100% TFS school policies and a summary of the research that has been conducted on these policies. Part II of the literature review examines the general topic of *policy implementation*. A definition is provided, and the importance of implementation planning is considered. Various implementation research approaches and factors that affect policy implementation and are relevant to this research are also reviewed.

Part I: Tobacco Use and Schools

The Impact of Smoke-Free Bans

A 100% TFS policy is one of many variations of smoke-free bans that have been implemented across the country over the past few decades. Although these regulations and policies are intended, primarily, to reduce exposure to SHS, research has demonstrated that they have other benefits, as well ^{59, 86, 87}. As a result, many restaurants, bars, entertainment venues, schools and other public places have implemented local smoking bans. Following is a brief summary of the key research illustrating the benefits of smoke-free bans.

Research shows that smoke-free bans can have an impact on respiratory health by improving air

quality. A cohort study employing a random sample of 53 bartenders from 25 bars in California assessed changes in respiratory health before and after the introduction of smoke-free legislation in California. The study measured self-reported respiratory symptoms, sensory irritation and lung function. The mean number of days between baseline and follow-up assessments was 56 days. After introduction of the smoke-free legislation in January, 1998, bartenders reported a dramatic reduction in exposure to SHS, with a decrease from a median of 28 hours to 2 hours per week. In addition, the number of bartenders reporting respiratory symptoms decreased from 74% to 32%, and those reporting sensory irritation declined from 77% to 19%. Bartenders who reported no exposure to SHS at follow-up had significant improvements in pulmonary functioning ⁸⁸.

Studies also suggest that smoking bans may lead to reductions in morbidity and mortality related to cardiac health. Between December, 1997, and November, 2003, Sargent et al. retrospectively examined the number of hospital admissions due to myocardial infarction for the geographically isolated community of Helena, Montana. Starting on June 5, 2002, Helena had a local law that banned smoking in public and in workplaces. Opponents won a court order suspending enforcement on December 3, 2002. During the six-month period that the ban was enforced, a 40% decline in hospital admissions for acute myocardial infarction was reported. After the law was suspended, the rate of admission for myocardial infarction increased to the level observed prior to enactment of the law ⁸⁹. While this study was limited by its small sample size and observational design, researchers suggested that comprehensive smoking bans may be associated with immediate changes in morbidity and mortality from heart disease.

The effects of workplace smoking bans on employee smoking behavior has also been the focus of research. These studies have shown that stringent smoking bans reduce smoking prevalence, reduce the amount that people smoke, and promote cessation ⁵⁹. A recent review quantified the impact of smoking restrictions on behavior by focusing on studies conducted in the US since 1985. According to Levy and Friend, comprehensive clean indoor air laws not only reduced smoking prevalence among workers, but also reduced population prevalence of smoking and consumption rates by an

estimated 10% ⁹⁰, a claim that is consistent with tobacco industry predictions². In other research, a nationally representative sample of 100,000 workers was surveyed on the impact of having a completely smoke-free workplace. Researchers found a 5.7% decline in the prevalence of smoking and a 14% decline in the average number of cigarettes consumed daily among current smokers when their workplaces became completely smoke free. These bans reduced smoking in all demographic groups and in nearly all industries ⁹². Other researchers have also concluded that smoke-free public and workplace bans not only protect workers from SHS, but also encourage smokers to reduce the amount they smoke or to quit entirely ^{59, 91, 93-95}.

Smoke-Free Bans and Youth Tobacco Use

Laws and policies that prohibit all tobacco use in indoor public places benefit youth in two ways. First, research shows that smoke-free bans can have an impact on the health of adolescents by reducing their exposure to SHS. Findings from the Global Youth Tobacco Surveys (GYTS) conducted in 132 countries between 1999 and 2005 indicate that more than half of all students surveyed were exposed to smoke in public places. Furthermore, one-fifth of all students said that most or all of their best friends smoked, and nearly one-half were exposed to smoke at home and had one or more parents who smoked ⁹⁶. Closer to home, the 2005 NC YTS reported that SHS exposure among NC students is very high. Nearly 7 in 10 students were in the same room with a smoker during any given week ⁵⁷. Thus, these bans protect youth by minimizing exposure to SHS.

Second, there is evidence that these laws and policies may reduce youth tobacco use by influencing youth smoking behavior. The following studies illustrate how this has occurred. First, in a survey of 9,762 students and 1,586 parents in Minnesota communities, researchers found an association between the frequency that youth observe smoking in various locations and the perception that smoking is socially acceptable. These researchers suggested that smoke-free policies –

² In 1992, the Philip Morris Tobacco Company privately estimated that if all workplaces were smoke-free, total consumption would drop about 10% through a combination of quitting and "cutting down" **91.** Fichtenberg C, Glantz SA. Effect of smokefree workplaces on smoking behavior: A systematic review. *British Medical Journal*. Jul 27, 2002;325(7357):188..

particularly in highly visible public places – could counter the normative association of smoking in the community and lead to a decrease in youth tobacco use ⁹⁷. In another study, Wasserman et al. found that increasing state restrictions to the most comprehensive level could reduce youth tobacco consumption per smoker by over 40% by influencing teenagers not to start smoking ⁹⁸. In a third study, using a national cross-section of 17,287 teenagers, researchers demonstrated that stronger restrictions on smoking at home, at school, and in public places were associated with a lower probability of smoking uptake and with a lower smoking prevalence among teens ⁹⁹. A fourth study, an analysis of the 1992-1993 and 1995-1996 Current Population Surveys which included 17,185 teenagers ages 15-17, showed that teens who live in smoke-free households or work in smoke-free worksites were less likely to be smokers ¹⁰⁰. Finally, in the first longitudinal study to examine the effect of local restaurant smoking regulations on progression to established smoking among adolescents, Siegel et al. found that youth living in towns with smoke-free restaurant laws that completely banned smoking had substantially lower rates of progression to smoking (about a 60%reduction) after two years of follow-up as compared to youth living in towns with weaker or no laws. More than 2,600 youth, ages 12-17 years, were interviewed via a random-digit dial telephone survey in 2001-2002 and followed up two years later. Effects were stronger when smoke-free laws had been in place for longer, and were not explained by a large number of possible individual or community level covariates ¹⁰¹. These studies suggest that strong and fully enforced smoke-free bans are an effective intervention to reduce youth smoking.

The Role of the School Policy Environment in Preventing Student Tobacco Use

The power of the school environment to shape adolescent behavior is well documented ^{39, 102-104}. The school setting is important because it represents a critical arena in which learning, development and socialization takes place. As most adolescents attend school, the school setting offers an opportunity to reach a very large and broad cross-section of youth with relative ease. The school environment has also been shown to have an impact on child health and well-being and many

smoking prevention programs are school-based. Several recent reviews conclude that students' problem behaviors, such as alcohol, tobacco and drug use, are influenced by the school environment, thus making policies and their effective implementation important measures to improve health outcomes ^{18, 105-107}. One such study, conducted by Sellstrom et al., was a systematic review of 17 cross-sectional or longitudinal studies of school contextual effects on four student outcomes: smoking, well-being, problem behavior and school achievement. Four main *school effects* on student outcomes were identified; a health policy or tobacco policy, a good school climate, high average socioeconomic status, and an urban location all had a positive effect on student outcomes ¹⁰⁷. A second review, by Aveyard et al., examined evidence that school characteristics influenced youth tobacco use. They claimed that smoking bans and enforcement were effective methods by which to deter student smoking ¹⁰⁵. Finally, Evans-Whipp et al. conducted a review of school policies on tobacco, alcohol and other illicit drugs in schools in the US and Australia. They found that more comprehensive and strictly enforced school policies were associated with less student smoking ¹⁰⁶. These studies highlight the crucial role that schools play in preventing youth tobacco use and in implementing anti-tobacco policies and prevention programs ^{39, 106, 108, 109}.

School health policies, such as those requiring 100% TFS settings, influence student tobacco use in a number of ways. One way is through the development of normative environments that socially sanction tobacco use and reinforce healthy behaviors ^{39, 110}. Norms of behavior, as reflected by the overall general attitude of students and school staff towards tobacco use, describe an existing social environment of approval or disapproval towards tobacco use. They represent a more macro-level influence, as opposed to the more individual or micro-level influence that arises out of an individual's attitudes and beliefs. Norms can provide opportunities for or create barriers to the use of tobacco on campus by students, school staff and visitors. For example, a school with a strongly enforced 100% TFS policy would likely have a norm that strongly disapproves of tobacco use on campus and those students who are inclined to use tobacco must go against the norms of the school. Moreover, where the prevailing norm in a school is one of disapproval of tobacco use, students will find it difficult to

procure tobacco products. A school with a weak or inconsistently enforced policy may have a norm that suggests approval or tolerance of tobacco use and thereby create a more supportive environment for youth to try or use tobacco ^{102, 106, 110}.

The importance of a normative environment in preventing youth tobacco use has been demonstrated by a number of studies. The following three effectively illustrate this concept. Using a nationally representative sample of students who participated in the MTF study, Kumar et al. examined the relationship between school norms of substance use disapproval and student use of cigarettes, alcohol and marijuana. They found that school level norms of disapproval of smoking were negatively related to student tobacco use. Further, a school environment that showed disapproval of cigarette use was found to create a protective environment for those students in the 8th and 10th grades who did not disapprove of daily cigarette use ¹⁰². In another study, Sussman found that youth at a school where the general attitude towards tobacco use was favorable perceive, correctly or incorrectly, that many of their peers use and approve of tobacco use. The mere existence of a designated smoking area on campus was seen to legitimize tobacco use and convey to students the message that smoking is acceptable¹¹¹. Finally, Ennet et al. examined the relation of school and neighborhood contexts to rates of alcohol, cigarette, and marijuana use among fifth and sixth graders in 36 elementary schools. The authors found that the use of these substances was higher among elementary school students who were in an environment where the general attitude towards substance use was favorable. Further, they found that students' smoking behavior was more similar among students within schools rather than between schools, suggesting that the school context influenced use more than the neighborhood contexts ¹¹².

A second way that school health policies can mediate health behavior is through peer contexts. The idea is that the decision of an individual to pursue a given activity depends on the actions of the other individuals in the person's referent or peer group. It is hypothesized that an increase in the prevalence of a given behavior at the peer level may lead to an increased probability of such behavior at the individual level. Thus, any change that affects the peer group, such as the adoption of a policy

to prevent tobacco use, will have an impact on individual behavior ¹¹³. A limited number of studies have examined the impact of peer effects on smoking behavior. Overall, the literature suggests that having friends in a peer network who smoke is one of the strongest correlates of adolescent smoking initiation and continued tobacco use ¹¹². Alexander et al. used a nationally representative schoolbased sample of 2,525 adolescents to investigate the impact that popularity, best friend smoking, and cigarette smoking within peer networks had on current smoking. They found that the risk of current smoking was significantly associated with peer networks where at least half of the members smoked, with having one or two best friends who smoked, and with increased rates of school smoking prevalence ³⁹. Leatherdale et al., in a cross-sectional study about how school and student characteristics in Ontario are related to tobacco onset among students, found that smoking prevalence of older students (e.g., grade 12) at a school is directly related to smoking onset among younger students (e.g., grades 9-11) at that school ¹¹⁴. Powell et al. also found that peer effects play a significant role in youth smoking decisions. Their results showed that moving a high school student from a school where no students smoked to a school where one-quarter of the students smoked increased the probability that he or she would smoke by about $14.5\%^{113}$. Thus, by reducing the number of friends that use tobacco, school health policies can lead to a reduction in youth tobacco use. Furthermore, to achieve a sustainable behavior change, intervention strategies must include the target audience's social context.

As well as creating normative environments and moderating peer contexts, a third way that 100% TFS policies influence youth tobacco use is by moderating the behavior of teachers. Research shows that teachers can influence students' perceptions of tobacco and their actions regarding tobacco use by serving as role models for healthy or unhealthy behavior ^{11, 115, 116}. For example, based on a random sample of Danish school students, Poulson et al. demonstrated that students' exposed to teachers smoking outdoors on the school premises were significantly more likely to smoke themselves. They concluded that exposure to smoking by potential role models can influence

adolescent smoking, and those teachers who smoke outdoors in front of students serve as role models¹².

A fourth way that 100% TFS policies influence youth tobacco use is by moderating access to tobacco products. Studies show that one-half to three-quarters of young people purchase their own cigarettes, which leaves a substantial proportion of adolescent smokers who acquire their cigarettes through noncommercial sources, such as friends or family members ¹¹⁷. Studies have demonstrated that other adolescents are an important source of cigarettes for many young smokers, and that these peer markets also serve a recruitment function for new smokers ^{118, 119}. For example, one study of middle school students in NC found that close to one-third of students who reported smoking during the previous 30 days had "borrowed" the cigarettes from someone else ¹²⁰. When adolescents first begin experimenting with cigarettes, they tend to obtain the cigarettes they smoke mostly from social sources, such as friends. Not until they are smoking on a daily basis do young people typically buy the cigarettes they smoke, either themselves or through an intermediary ¹²¹. Thus, being around peers and adults who use tobacco increases youth access to tobacco products ¹¹⁵. Schools that adopt and enforce 100% TFS policies may discourage adolescents from smoking by diminishing access to tobacco products.

Finally, 100% TFS policies can serve as an organizational mechanism that reinforces and supports teachers' health promotion activities, as well as creates programs and services to assist students and school staff who use tobacco and want to quit ^{116, 122}. School-based prevention programs are the most commonly used intervention modality to transmit anti-tobacco messages to students. Many different approaches to tobacco use prevention education have been implemented and evaluated with varying degrees of success ¹²³. Tubman and Vento suggest that the degree to which a program is backed by an official anti-tobacco policy is linked to its effectiveness ¹¹⁶. The policy itself may also serve as an organizational measure by mandating that students who violate the policy attend educational programs or participate in counseling regarding their tobacco use. Again, these measures may lead to a decrease in youth tobacco use. For example, Penz et al. found that the severity of

punishment for policy violations had no effect on student smoking behaviors, whereas emphasis on prevention and cessation were both related to lower amounts of adolescent smoking and, less consistently, to lower smoking prevalence rates ¹⁵. Hamilton et al. found that the use of education or counseling as a strategy for dealing with students caught smoking on campus in violation of the school's smoking ban was associated with reduced smoking when compared to discipline-only measures ¹²⁴. Policies that mandate this approach could, therefore, have an impact on youth tobacco use. Thus, these 100% TFS policies play an important role in creating a supportive, consistent environment that reinforces tobacco prevention and provides intervention activities both inside and outside the classroom.

Theoretical Basis for 100% Tobacco-Free School Policies

An understanding of the ecological perspective, as well as theories and models of human behavior, is essential in order to conceptualize the role of school policies in preventing student tobacco use. An ecological perspective considers the connection between people and their environments. This concept suggests that health behaviors are influenced, both directly and indirectly, by the interaction of multiple levels of individual, intrapersonal, social, cultural, and environment variables. Therefore, to understand behavior, we need to examine: (a) the larger social and cultural system in which people operate, such as their community, (b) the more proximal environment, such as the school setting, (c) characteristics of the individual, such as attitudes and beliefs, and (d) the interaction among these factors ¹⁰². Considering these influences as they relate to 100% TFS policies is important because they can help build an understanding of the complex web of causation that leads to youth tobacco use. The ecological perspective is also useful in understanding how environmental factors moderate the effects of school-based tobacco prevention and cessation programs, as well as how they can be manipulated to achieve health policy goals ¹²⁵.

Much of the research that provides the rationale for 100% TFS policies is based on theories and models of human behavior, rather than on an ecological perspective. As such, many of these theories

focus on one or two of the factors outlined by ecological theorists. However, behavioral change theory still plays an important role in the promotion of health by enabling a better understanding of the processes underlying adolescent smoking behavior, which can, in turn, lead to the development of more effective programs and policies. Three theories offer a framework for considering the influence of the school environment on youth tobacco use and the impact of tobacco prevention and control strategies, including policies, on student tobacco use: social cognitive or social learning theory, diffusion of innovation theory, and the theory of reasoned action. Although cast as distinct, in application, these theories overlap to a considerable extent. All three are based on a collection of assumptions that are supported by long-term empirical studies: (a) adolescent tobacco use is a socially learned behavior; (b) exposure to role models in peer and school settings who use tobacco contributes to adolescent tobacco use; and (c) socio-environmental norms influence decisions made by adolescents to engage in tobacco use.

Social cognitive theory, also called social learning theory (SCT/SLT), is a broad theory that explains behavior and behavioral change by integrating cognitive, emotional and behavioral factors, with factors in the outside world. One of the defining constructs of SCT/SLT is that of *reciprocal determinism*, which posits a dynamic interaction among the person (that includes his or her emotions and cognitions), his or her behavior, and the environment in which the behavior is performed. These elements form a unique, interacting and interrelated triad that is constantly changing. Among the crucial personal factors are the individual's capabilities to anticipate the outcomes of behavior, to learn by observing others, to have confidence or a sense of self-efficacy in performing the behavior, to self-regulate or self-determine the behavior, and to reflect and analyze the experience ^{125, 126}.

An underlying assumption of SCT/SLT is that adolescents acquire positive attitudes towards tobacco use from friends, parents and others who either use tobacco or express favorable attitudes towards its use. With SCT/SLT, one individual learns from another by means of observational modeling. Modeling is thought to set an example, stimulate imitation, and provide social reinforcement for the behavior through approval by key persons. In regard to the school setting,

adolescent smoking behavior can be acquired through observing the behavior of role models, such as teachers or influential peers, who are using tobacco on campus. Adopting, communicating and enforcing 100% TFS policies can create an environment in which there is not an opportunity to model, promote or support this behavior. SCT/SLT also suggests that conformity to group norms is an important yardstick for explaining individual behavior. In this theoretical framework, an adolescent's fundamental desire to belong to a group fuels the effect of social norms on individual attitudes, values and behaviors. For example, if the social norm among students is to smoke cigarettes, then popularity or social prestige will be closely aligned with this behavior. Students must then adopt the norms of the group in order to feel a sense of belonging, even if it means engaging in health-risking behavior. This phenomenon suggests that the development and rigorous enforcement by schools of a 100% TFS policy for students, school staff and visitors will not only reduce visibility of role models who use tobacco, but will also reinforce a tobacco-free norm as a standard of behavior for adults and youth.

Diffusion of innovation theory also provides a useful framework for studying the influence of schools on student tobacco use. *Diffusion of innovation* refers to the process in which is an idea, practice, or object that is perceived as new by an individual is communicated through certain channels over time among the members of a social system ¹²⁷. For example, in this context, tobacco use is considered an innovation, the adopters are students, and the social system is the collection of people around the student – such as peers, coaches or teachers – who influence their behavior. Diffusion studies have found that the way targeted adopters perceive the attributes of an innovation is critical to their decision of whether to adopt the behavior. The compatibility of an innovation, and its relative advantage to the adopter, are also predictors of innovation adoption ¹²⁸. Additionally, the social environment influences the diffusion of an innovation through its norms and other system-level qualities that influence the behavior of its members. Applied to student tobacco use, diffusion theorists suggest that once peers or other role models begin to use tobacco, other students will follow. Reinforcement of smoking behavior, for example, occurs by seeing others use tobacco, and by being

in a social environment that supports smoking through lack of sanctions, or through the perceived 'promotion' of smoking by the dedication of areas where it is permitted or tolerated. A well-enforced 100% TFS policy eliminates opportunities for observational learning by changing social norms and by structuring the social system so that it impedes the diffusion of smoking behavior.

Finally, the theory of reasoned action (TRA) asserts that the most important determinant of behavior is a person's behavioral intentions. An individual's behavioral intentions are predicted by his or her attitude towards performing the behavior. Attitude is determined by the person's beliefs about the outcomes or attributes of performing the behavior, weighted by his or her evaluation of those outcomes. An individual who believes that a positive behavior will result from a particular action will have a positive attitude towards the behavior. Conversely, a person who anticipates that a poor outcome will result from a particular behavior will have a negative attitude towards it. Behavioral intentions are also predicted by a person's normative beliefs with respect to the expected behavior or actions of influential people or *referents* – such as peers or teachers – in a specific situation, weighted by his or her motivation to meet the expectations of these referents. Thus, TRA assumes a causal chain: behavioral beliefs and normative beliefs are linked to behavioral intentions and behavior via attitudes and subjective norms ¹²⁵.

Attitudes towards the target behavior and subjective norms – that is, the extent of pressure perceived from others to perform the target behavior – acting through behavioral intentions are the most proximal determinants of behavior ¹⁰². It could be argued that students in a school where smoking restrictions are absent or poorly enforced would see influential peers or teachers using tobacco and perceive smoking to be acceptable as well as safe. This perception could result in an intention to assume the behavior. Conversely, in a school where sanctions are consistently applied when policy violations occur, students may see that a negative outcome could result from using tobacco on campus and may develop a negative attitude towards the behavior. Thus, consistently enforced 100% TFS policies can influence social norms and reinforce sanctions associated with the behavior, leading to a decrease in youth tobacco use. That is to say, some behavioral theories, such

as SCT/SLT, diffusion of innovation theory and the TRA, support and recognize that 100% TFS policies have the ability to influence youth tobacco use.

Research on School Policies Related to Tobacco Use

For the past two decades, researchers have been seeking evidence regarding the relationship between school policy and student tobacco use. This has resulted in research that broadly focuses on two areas: the relationship between student tobacco use and policy comprehensiveness; and the relationship between student tobacco use and 100% TFS policy implementation. Following is an overview of the primary research studies addressing these topics.

School Tobacco Policy Comprehensiveness

The impact of federal legislation such as the Pro-Children's Act of 1994 ¹²⁹ along with recommendations such as the CDC's Guidelines ¹ and Healthy People 2010 ²⁷, have prompted most school districts in the US to create policies that address school tobacco issues. These approaches, however, still have not led to all school districts adopting a 100% TFS policy. This inconsistency is illuminated by several national and state studies. First, in 2000, researchers conducting the School Health Policy and Program Study (SHPPS), a national study to assess school health policies and programs at the district, school and classroom levels, found that six years after the Pro-Children's Act, the CDC's *Guideline* and the Healthy People 2010 objectives were introduced, most states and school districts had some elements of a 100% TFS policy in place. However, only 24.5% of states, 45.5% of school districts and 44.6% of schools had a policy that was consistent with the CDC's *Guidelines* and Healthy People 2010 recommendations. Moreover, according to Small et al., schools with policies that were consistent with these recommendations needed to take steps to assure that the policies were being enforced in order to obtain a truly Tobacco-free environment ⁷².

In another study, Tompkins et al. examined the consistency between West Virginia's schoolbased tobacco control policies and the CDC *Guidelines*. Researchers found that school tobacco

policies were lacking in many elements recommended in the CDC's *Guidelines*, particularly in areas of enforcement procedures and access to cessation programs ^{130, 131}. Stephens et al., in a similar review of school tobacco policies in New York state schools, also found that many school districts had policies that did not follow CDC's *Guidelines* for providing comprehensive Tobacco-free environments for students, and many were not in compliance with state and federal laws ¹³⁰. Researchers reviewed 471 (67%) of NY school district policies using a rubric to assess degrees of difference among the policies and systematically quantify these differences. Overall, policy review scores were low. Furthermore, only 21.8% of the districts were compliant with all relevant tobacco laws, and 54% were compliant in identifying how the tobacco policy was enforced and those responsible for its enforcement.

The studies by Stephens et al. and Tompkins et al. were limited in that they were based solely on a review of paper policies. These researchers noted that many of the policies were outdated and/or appeared to be incomplete. Although a rubric was used to enable consistency in scoring, the researchers noted that some variance in interpretation did occur. Despite these limitations, these studies suggested that many school district policies are not comprehensive, are not always in compliance with relevant tobacco laws, and do not always support consistent enforcement ^{130, 131}.

In a third study, a cross-sectional telephone survey conducted with principals at middle and high schools in Kentucky, researchers examined factors associated with 100% TFS policies and tobacco cessation ¹³². Calls were made to 691 (67%) schools representing 117 of Kentucky's 120 counties. These researchers found that although nearly all schools prohibited smoking on school grounds for students, less than one-half banned employee smoking on campus, less than one-third provided smoking cessation services for students and employees, and only one-fifth had a comprehensive 100% TFS policy, as recommended by the Healthy People objectives and the CDC *Guidelines* ¹³². In summary, while most schools have some aspects of a 100% TFS policy in place, far fewer have a comprehensive policy as outlined by the CDC's *Guidelines*.

The Association Between Tobacco Policies and Student Tobacco Use

Research on 100% TFS policies has also examined the relationship between policy comprehensiveness and student tobacco use. A few non-experimental studies demonstrate the success of school tobacco bans in reducing youth smoking. Penz et al. conducted a cross-sectional study of nearly 5,000 seventh graders in 23 California middle schools, all of which included smoking bans on school grounds and in buildings. The purpose of the study was to examine the effects of smoking policy on adolescent smoking behavior. Amounts and prevalence rates of adolescent smoking were identified using a self-report survey and a biochemical measure, where students provided an expired air sample for carbon monoxide analysis to determine if they smoked. The science and health education teachers and the principal of each school independently completed a 96item questionnaire about staff and student smoking policies. Staff awareness, perceived effectiveness of policy, and observations of staff and student smoking were also assessed. Comprehensive school tobacco policies were defined as those policies with all of the following four components: (a) student smoking is not permitted on school grounds; (b) student smoking is restricted near school grounds; (c) students are not permitted to leave school during the day; and (d) the school has developed a smoking prevention education plan. Authors found that policies reduced overall tobacco consumption but not prevalence of smoking among seventh grade students. The research indicated that more comprehensive school-based smoking policies were associated with lower amounts of smoking in the past week and the past 24 hours than less stringent policies ¹⁵.

Other research has found similar evidence of a relationship between policy comprehensiveness and youth tobacco use. A national study in Wales that examined the association between school smoking policies and smoking prevalence among students ages 15-16 years showed that more comprehensive tobacco policies are significantly related to less self-reported daily smoking among students, even after accounting for individual risks such as parent and peer tobacco use. This multilevel analysis used cross-sectional data from surveys of 55 secondary schools and 1,375

students. The survey used a two-stage cluster sampling procedure to recruit participants for this classroom-based survey. Surveys of head teachers or other senior-level school administrators on the content and enforcement of the policy were also conducted. The prevalence of daily smoking in schools with a strict policy that banned all smoking, everywhere on campus, by everyone was 9.5%. In schools with an intermediate policy, or no policy on student or staff tobacco use, the prevalence of daily smoking in schools was 21% and 30.1%, respectively. Furthermore, smoking prevalence was lower in schools where students' smoking restrictions were always enforced. However, enforcement of teacher smoking restrictions was not significantly associated with student smoking ¹⁴. In another cross-sectional study, researchers conducted a survey of 16 to 19 year old students in secondary schools and colleges in England and Wales. They found a similar negative association between policy comprehensiveness and the prevalence of current smoking among students in colleges (but not among students in secondary schools)¹³³.

A more recent study conducted by the NC TPCB examined the relationship between student tobacco use rates, the presence of a 100% TFS policy and the length of time the policy had been in place. Using data from the 2005 NC YTS, researchers found that high schools which have had a 100% TFS policy in place for at least three years had the lowest student prevalence rates for both current smoking (13.3%) and any tobacco use (21.1%) as compared to schools that did not have a 100% TFS policy in place. At schools without a 100% TFS policy, current student smoking and rates for any tobacco use by students were 22% and 31.2%, respectively. Researchers concluded that students attending school in districts that had had a 100% TFS policy in place for at least three years were 40% less likely to be current cigarette smokers and 32% less likely to use any form of tobacco in comparison to students in school districts without a 100% TFS policy in place. Schools districts that had a 100% TFS policy in place. Schools districts that had a 100% TFS policy in place. Schools districts that had a 100% TFS policy in place is used to be "heading in the right direction" according to the researchers, although the differences were not statistically significant ¹⁰.

Despite this promising research, evidence on the link between comprehensive 100% TFS policies and reduced student tobacco use or perceptions of decreased use, has been described as "mixed"¹⁴ and "suggestive but still equivocal"¹¹⁵. In a cross-sectional study designed to assess the relationship between school structural and smoking policy variables, Clarke et al. surveyed 26,429 Australian students at 347 schools, as well as school administrators. They found that the prevalence of student smoking was unrelated to the status of student, staff or school visitor smoking policies ¹⁷. In a second study, Canadian researchers in Ontario found that a year after implementing a statewide ban on smoking on school property, 16% of high school administrators reported a decrease (and 7% observed an increase) in student smoking during the school day. However, after the law was implemented, administrators witnessed student smoking more visibly off school property, such as sidewalks, malls, and public parks. The majority of administrators perceived that the ban had little effect on smoking behavior or attitudes towards smoking among students ^{134, 135}. In a third study, a representative national study of 15-year-old students in Scottish schools, Griesbach et al. evaluated the relative impact of tobacco policy status on student perceptions of both student and teacher compliance with the policy. They found no association between the status of the policy and students' perceptions of smoking in school bathrooms²⁰. A fourth study by Darling et al. in New Zealand schools found that having a school tobacco policy was unrelated to the prevalence of tobacco use among students, tobacco purchasing behavior, and knowledge of the negative health effects of tobacco¹⁸. Finally, Rosendahl et al. conducted a representative regional follow-up study of fifthgrade students in Swedish schools. They demonstrated that school adoption of a formal anti-smoking policy was unrelated to smoking in sixth grade among those students who had not smoked in fifth grade ¹⁹. These research studies are summarized in Table 1.

Study Reference	Design	Number of	Smoking	Policy	Findings (significance)			
	(Sample)	schools	measure	variable				
(students) measured Possible relationship between policy and student tobacco use								
Moore et al	Cross	55	Student self-	Enforcement	School smoking			
2001	sectional (Random)	(1375)	report	of existing policy	policy is associated with school-level variation in daily smoking ($P = .002$). The prevalence of daily smoking is lower in schools with a strict			
					policy. Low enforcement of student smoking policy is associated with an increased risk of being a weekly smoker.			
Charlton and While, 1994	Cross- sectional (Non- Random)	74 (2254)	Student self- report	Policy comprehensi veness	Highest prevalence of smoking among students occurred in schools or colleges where smoking is allowed for students or staff. Lowest prevalence occurred where smoking not allowed.			
Wakefield et al., 2000	Cross- sectional (Random)	202 (17,287)	Student self- report	Policy comprehensi veness Student perception of compliance with the policy.	School smoking policies are related to a greater likelihood of being in an earlier stage of smoking uptake (P<.05) and lower prevalence (P = .001) – but only when students perceive most or all of students obeyed the policy.			
Proeschebell, 2006)	Cross- sectional (Random)	177 (6,000)	Student self- report	Presence of a 100% TFS school policy Length of time policy in place	High schools without a 100% TFS policy have the highest prevalence rates for cigarette smoking. High schools with a 100% TFS policy in place for at least 4 years have the lowest			

 Table 1. The literature on the association between policy and student tobacco use

					prevalence rates for			
					cigarette smoking.			
Kumar et al., 2005	Cross- sectional	(35,746)	Student self- report	Compliance monitoring Sanctions Policy comprehen- siveness	Cigarette smoking. Monitoring student behavior is a negative predictor of any cigarette use in the past 30 days among middle school students (P < .058) Schools with more severe sanctions for policy violations do not have lower cigarette use. School policies that permit staff smoking have a higher daily smoking rate among			
					high school students.			
Penz et al., 1989	Cross- sectional (Unclear)	23 (4807)	Student self- report and biochemical measure	Effect of components tobacco policies Impact of punitive sanctions on student smoking	Schools with policies that are more comprehensive and that have an emphasis on prevention, have lower amounts of smoking in the past week and in the last 24 hours. Punitive measures are ineffective, whereas policies that focus on prevention through education and cessation support are associated with lower levels of smoking.			
Pinilla et al., 20002)	Cross- sectional (Stratified)	30 (1877)	Student self- report School director report	Compliance with a 100% TFS policy	School-level compliance with no- smoking rules is strongly associated with decreased probability of smoking.			
No relationship or 'mixed' relationship between policy and student smoking								
Clarke et al. 1994	Cross- sectional (Random)	347 (26,429)	Student self- report	Presence of a policy Policy	Staff smoking policies, visitor smoking policies, and the presence or			
				communicati	absence of "No			

				on (signs)	Smoking" signs is unrelated to reported student smoking.
Darling et al, 2006	Cross- sectional (Non- random)	63 (2658)	Student self- report	Policy orientation	Policy type is unrelated to the prevalence of tobacco use among students.
Rosendahl et al., 2002	Observationa l (Random)	91 (2883)	Student self- report	Presence of a formally established anti-tobacco policy.	School policy is unrelated to preadolescents' smoking.
Griesbach et al., 2002	Cross- sectional Random	77 (1644)	Students' perceptions of other students smoking behavior	Policy comprehensi veness Staff report of policy enforcement	No association between policy status and students' perceptions of other students smoking in the bathrooms. Students are less likely to be aware of other students smoking outdoors and teachers smoking in staff rooms at schools where a policy is in place (P<.001) . Highly significant association between enforcement of smoking restrictions in the bathrooms and perceptions of student smoking, with less smoking perceived in schools where bans 'always' enforced. Bans on teachers smoking in staff rooms associated with higher perceptions of teachers smoking outdoors on school premises (P < .001)

These findings must be evaluated in the context of their research design limitations. With the exception of Rosendahl et al., these studies of policy impact used only cross-sectional data to investigate the main effects of one or two policy components on youth tobacco use. They also assumed a longitudinal relationship between policy and youth smoking. However, the relationship between the policy and student smoking behavior is unclear. For example, schools with a policy in place may have already had low smoking rates, which facilitated policy adoption. A second design limitation is related to assessment. The results were based on an analysis of self-report data, rather than observation. Thus, social desirability and recall biases affect the validity of the findings. Additionally, with the exception of Moore et al., the researchers did not consider elements of policy implementation and the impact that these may have on the smoking rates. Using administrator and student perceptions of smoking (as did Northrup et al. and Griesbach et al.) rather than actual observations or student or staff self-reported data, was another limitation of these studies. Finally, the impact of secular events and the overall decline in youth tobacco use were not considered. Thus, while not clear, there is some evidence that a relationship exists between 100% TFS policies and student tobacco use. Much can be learned about which factors make these policies effective. Studies that consider factors in addition to policy status, such policy implementation, may help determine features that distinguish effective and ineffective policy, as well as what these policies can and cannot do.

Tobacco-Free School Policy Implementation

As suggested above, the uncertainty over the association between 100% TFS policy comprehensiveness and student tobacco use may, in part, reflect variations in the extent to which these policies have been implemented ^{7, 11, 15, 18, 20, 39, 99, 106, 108, 116, 124, 132}. According to Bowen, an important condition under which a policy may be successful in changing behavior is that it must be implemented completely so that all members of the target group are reached in a consistent fashion with all components ¹³⁶. The CDC's *Guidelines*, which were designed to help schools and local

communities formulate successful tobacco prevention programs, recommend explicitly that antitobacco policies address implementation issues, including policy communication, compliance monitoring, provision of cessation resources and policy enforcement. The *Guidelines* suggest that if strategies to implement the policy are lacking, there will be little incentive for compliance. In addition, if systems are not in place to monitor the policy, it will be difficult to establish how the policy is being enforced and the corrective actions to take should problems arise or if implementation diverges from policy language. Four interrelated aspects of 100% TFS policy implementation – policy communication, compliance monitoring, enforcement and the provision of cessation resources – have been the focus of a number of 100% TFS policy studies over the past decade and are critical to understanding implementation success. Following is an overview of each issue along with related research.

Policy Communication.

Students, school staff and school visitors cannot be expected to comply with a policy that they do not know about or do not fully understand. Therefore, communication is crucial to compliance with the 100% TFS policy because, through increasing awareness and rule clarification, the risk of inadvertent noncompliance is reduced. Effective 100% TFS policy communication starts with adoption of a policy that includes guidelines for specifically communicating the content of the policy to students, school staff and visitors ^{1, 73, 137}. The importance of policy communication, as well as its link to compliance, is illustrated by the research of Maes and Lievens. These researchers conducted a multi-level analysis of cross-sectional data from students and school staff in Belgian schools to assess the relationship between the structural and health policy variables of the school and the characteristics of the individual, and the effect that relationship has on risk and health behavior of adolescents. They surveyed 3,225 students, 29 school administrators and 1,132 teachers. Although a wide range of school structural and policy variables were taken into account, only one was linked

with regular smoking. They found that in schools where anti-tobacco rules were clearly written and communicated, less regular smoking among students was evident ¹³⁸.

Yet, research shows that schools do not always have clearly written and effectively communicated tobacco policies. Tubman and Vento surveyed 383 middle and high school principals in a study of the implementation of 100% TFS policies in Florida middle and high schools. They found that many schools' anti-tobacco policies did not provide clear guidance as to how the policy was to be communicated or implemented. They suggested that features of implementation, such as lack of communication, influenced the extent to which program staff were willing to request compliance with articulated standards and to tolerate deviance from the policy ¹¹⁶. Tompkins et al., in a review of 100% TFS policies in West Virginia schools, found that only 54% of the 421 schools surveyed had provisions for communication included in the policy. Of these policies, 26% were deemed incomplete because their communication procedures were not specifically outlined for all audiences in the policy ¹³¹.

Tobacco use policies can be made explicit in a number of ways, including signage, announcements, and promotional activities. Clarke et al. recommended that school smoking policies be communicated by signs around the school, in school communications, and reinforced in curriculum areas ¹⁷. However, researchers have pointed out that these environmental cues are not consistently available. In a survey of school informants at 239 Canadian schools with existing school tobacco policies, only half had signage promoting the policy that was visible to students and staff ¹³⁶. Without clear communication of the 100% TFS policy, compliance may be suboptimal. The reverse is also true – compliance may be enhanced when the policy is effectively communicated. Pevzner and Ribisl found that schools with a clearly communicated 100% TFS policy in place – defined as having signage and public announcements about the policy – had fewer instances of smoking at football games than schools where the policy was not clearly communicated ¹³⁹.

Policy Compliance and Compliance Monitoring.

Although virtually all schools across NC and the US have some form of tobacco restrictions in place, research shows that schools vary in the degree to which they monitor individuals' actions and behaviors regarding the policy ^{11,72}. According to Coombs, policy compliance is the adherence to the stated policy. If one focuses on the rules embedded in the policy, it is possible to gauge the success of implementation by assessing the degree of compliance with these rules ¹⁴⁰. There are several reasons why compliance with 100% TFS policies may not occur. As noted above, failure to comply may be due to lack of communication. Little chance of changing the behavior of any target individual exists if the person does not know the policy exists, or if the policy message or directive is ambiguous ^{140, 141}. School visitors are unlikely to comply with a policy if it is not brought to their attention and clarified through signs, announcements or other forms of communication.

As well as the communication concern inherent in the compliance and monitoring of the policy, effective implementation also requires specific resources, such as time, staff or funds. Without these resources, the probability of compliance may be low ¹⁴⁰. For example, in some school districts, the 100% TFS policy was implemented immediately upon its adoption by the BOE – with no time for implementation planning, development of communication strategies, placing of signage, or establishment of programs and services to help staff who are tobacco users to reduce their tobacco use or to quit. Anecdotal accounts from staff in these school districts suggest that complying with the policy was difficult initially.

Third, noncompliance may result from individuals' perceptions of the policy and actions that may be taken by school officials when the policy is violated ¹⁴⁰. For example, school visitors who observe that the 100% TFS policy is inconsistently enforced may not comply because they do not think action will be taken if the policy is violated. Some people may believe that the policy violates their individual right to use tobacco. Because rules derive their power, in part, from legitimacy, which, according to Stone is "the quality of being perceived as good and right by those whose behavior they
are meant to control" (p. 285), these people may choose to ignore the policy ⁶. Finally,

noncompliance may occur because, given the demands that the policy makes on the individual or the organization, the consequences of noncompliance are preferred to the burden of compliance ¹⁴⁰. For example, changing tobacco use habits may be especially difficult given the addictive nature of tobacco and, therefore, resistance among tobacco users to making this change may be expected. New policies also create new demands on organizations – demands that may be resisted simply because they require adaptation. In some cases, noncompliance may be a calculated strategy for saving time, energy and money in an organization ¹⁴⁰.

Ensuring compliance with the policy is complicated and may require a number of steps. Compliance expectations must be communicated to policy implementers and policy targets in a way that is understandable in order to prevent inadvertent violations. Compliance must also be strictly monitored and violators identified and addressed. The support of staff charged with implementing the policy must be gained, and staff must be monitored to confirm that they are fulfilling their responsibilities for policy monitoring and enforcement. Support from the policy targets must also be gained whereby people opposed to the policy are encouraged to become supporters, and those who refuse to support the policy are prevented from subverting others. Obstacles – such as addiction to tobacco – that stand in the way of a person making a commitment to comply with a policy also need to be addressed, for example, through the establishment of smoking cessation classes, before policy compliance can be high ^{140, 141}.

Understanding school tobacco policy compliance, and the factors that affect it, is crucial, because research shows that these policies are frequently violated. This is illustrated by several studies. First, the CDC's SHPPS found that during the 1998-1999 academic year, of schools that kept a record of tobacco policy violations, the mean number of reported school violations for middle and high schools was 19.6. The overall numbers ranged from 0 to 300 violations, suggesting that policy violations occur routinely in schools and more frequently in some schools than others ⁷². Second, in a longitudinal study of 679 Massachusetts 7th grade students that examined the onset of symptoms of

nicotine dependence, 10.3% of the students who smoked reported smoking at school in violation of the school's tobacco policy ³⁷. Third, the 2003 YRBS found that nationwide, 8% of students had smoked cigarettes on school property at least one day in the thirty days preceding the survey. Overall, the prevalence of having smoked on school property ranged from 2.7% to 14% across state surveys. In NC, 8.9% of high school students and 2.1% of middle school students reported smoking on school property in the month prior to the survey ¹⁴². Finally, Pevzner and Ribisl found more than 50 instances of smoking at 12.2% of the football games at schools with a 100% TFS policy in place. Compliance was highest at those schools that clearly communicated the policy at football games through signs and announcements. Schools achieved perfect compliance, defined as no observed instances of smoking at only 6 of the 90 football games. These results support the importance of the role of communication in policy compliance and suggest that many schools need to do a better job of communicating their 100% TFS policy ¹³⁹.

In addition to policy communication, the role of monitoring is also important to policy compliance. For instance, compliance may be low because compliance monitoring at the school is suboptimal. In a study examining the association between compliance monitoring and youth tobacco use, Kumar et al. surveyed school administrators at 342 middle and high schools to assess their level of policy compliance monitoring. Compliance monitoring results were compared to tobacco use rates of nearly 36,000 8th, 10th and 12th grade students at those schools. These researchers found that middle schools that rigorously monitored students to assure that they were complying with the school's tobacco policy had significantly lower smoking prevalence rates. As many students start smoking during the middle school years, closely monitoring these instances of student smoking may decrease the prevalence rate of cigarette use not only among these students, but eventually among high school students and beyond ¹¹.

Researchers have found that the *perception* of whether people are complying with a tobacco policy or not is also important. This is illustrated in a study conducted by Wakefield et al. that sought to determine the relationship between the extent of restrictions on smoking at school, home and in

public places, and the stage of smoking that an adolescent was in. Respondents were classified into one of five stages on the basis of specific responses on a questionnaire related to their smoking history and future smoking intentions. For instance, students who had never smoked a cigarette, and had a strong intention not to do so in the future, were considered "non-susceptible nonsmokers", while students who had smoked more than 100 cigarettes in their lifetime were considered "established smokers." Researchers found that school smoking bans were associated with higher proportions of students in the earlier stages of smoking uptake, but only when students perceived that compliance with the smoking ban was strong ^{99, 143} In another study, Trinidad et al. examined factors associated with compliance and support for 100% TFS policies among students in California schools. Following the modification to existing school tobacco policies that had previously banned only student smoking on school property to one that banned smoking by everyone, students' perceptions that most or all students complied with the policy increased from 43.7% in 1993 to 71.5% in 2002. Further, support for the policy increased among student smokers from 55.8% in 1996 to 69.1% in 2002. These students were more likely to support school smoking bans. However, students who witnessed teachers smoking at the school in violation of the policy were less likely to favor school smoking bans. The increases in perceived compliance and support for smoke-free school policies were associated with declines in youth smoking over the same time period. This suggested that perceptions of compliance support a normative environment that reinforced the edict that tobacco is not tolerated on campus, leading to less student tobacco use, while perceptions of faculty noncompliance undermined student smokers' support of this policy ¹⁴⁴.

Finally, personal beliefs and attitudes about the policy, and the impact these may have on youth are also important to understanding compliance. Galaif et al. found a relationship between school staff smokers' attitudes about modeling smoking behavior and their receptivity to a 100% TFS policy. Staff who did not believe that their smoking had an impact on students were less likely to comply with the policy. This finding suggests that the stronger the belief that staff can influence student smoking behavior, the greater the likelihood that staff will comply with the policy, thus

illustrating the importance of gaining support of policy targets when implementing a policy ¹⁴⁵. This finding is supported by a qualitative study conducted by Gordon and Turner of factors that influence school staff enforcement of student smoking in violation of a school's tobacco policy. Researchers interviewed 27 school staff members at two Scottish schools. They found that decisions to intervene when smoking was witnessed indoors, in violation of the policy, were largely motivated by personal or professional values. These included perceptions and concerns about staff-pupil relationships, attention to the students' wider welfare, and perceptions of policy effectiveness ¹⁰⁸. Thus, the likelihood of policy compliance is increased when those charged with this task find the policy to be effective and coherent with their personal and professional beliefs.

Policy Enforcement and Sanctions.

Although 100% TFS school policies are widespread, how best to deal with policy infractions remains uncertain. Studies that investigated associations between 100% TFS policy enforcement and student tobacco use suggested that enforcement plays a meaningful role in policy effectiveness. Policy enforcement, in this context, refers to the application of sanctions – or negative inducements – as a result of noncompliance. The idea behind sanctions is that knowledge of a threatened penalty motivates people to act differently than they might otherwise choose to act ⁶. However, according to Stone, sanctions will only be effective if several conditions are met. First, the person who is the target of the sanctions must be willing and able to alter his or her course of action when confronted with a possible penalty. The nature of tobacco addiction may render sanctions meaningless for some people, as they may be unable to modify their behavior on their own. In such cases, the availability of cessation classes, counseling or nicotine replacement therapy may be necessary in order for the tobacco user to avoid policy violations.

Second, the sanctions must be consistently enforced. Stone points out that the deterrent effect of sanctions is lost if policy targets find out that some policy violations will be tolerated, and others will not 6 . Several studies on school tobacco bans illustrate the importance of consistency when applying

sanctions. In a cross-sectional survey by Wakefield et al., researchers reported an 11% reduction in smoking intake (the progression from experimentation to regular smoking) when high school students perceived that school policies are strongly enforced ¹⁴³. In another study, using cross-sectional data drawn from 80 secondary schools in Wales, Moore et al. demonstrated an association between the strength of the enforced policy and smoking prevalence, with lower prevalence of daily smoking found among students attending schools with an enforced policy and school-wide smoking bans ¹⁴. Griesbach et al., in a national study of 15-year-olds in Scottish schools, showed that, compared with restrictions on pupil smoking that were not always enforced, restrictions that were always enforced predicted more student perceptions of students *never* smoking in restrooms and outside areas, and fewer perceptions of students smoking in these areas about every day ²⁰. Researchers examining the link between school tobacco policy and smoking onset in Ontario elementary and secondary schools also found that student perceptions that school smoking bans are consistently enforced are indicative of decreased smoking in secondary school students. A multi-level logistic regression analysis was used to examine correlates of a student "ever smoking" in a sample of more than 4,200 students in grades six and seven from 57 schools. Researchers found that strong enforcement of school smoking restrictions was related to lower levels of student smoking ^{146, 147}. Finally, Pinilla et al., in a crosssectional study of 1,877 students from 30 Spanish secondary schools, found most school differences in pupil smoking rates could be accounted for by the extent to which a tobacco ban was being consistently enforced at the school 109 . Smoking prevalence was higher (9.52%) in schools with weak enforcement of smoking rules than in schools with medium to strong rule enforcement (5.45%). These researchers suggested that when punishment systems are viewed as selectively applied to some students, and/or "tolerance zones" are allowed to exist where students can use tobacco without fear of reprisal, students interpret mixed messages regarding the policy. Thus, for tobacco policy compliance to be high, people must be convinced that there is a strong likelihood that they will be sanctioned if they violate the policy.

Stone's third condition for effective sanctions is that they must fit the behavior and be consistent with "social customs, peer norms, moral beliefs, and existing practices" ⁶. The designers of sanctions sometimes make them so drastic that the sanction givers hesitate to impose them because they both violate personal beliefs and because they are designed in such a way that imposing a penalty may harm the very person that one is trying to protect. Penz et al. illustrate this point when they suggested that school staff may choose not to enforce tobacco bans where severe punitive sanctions, such as suspension, are in effect because young people excluded from school are more likely to suffer negative consequences such as dropping out or involvement in other drug use behaviors, as a result of the suspension ⁷. Instead of punitive sanctions, some researchers have recommended "behavior change" types of sanctions based on sound theoretical underpinnings and that involve educational or rehabilitation hours rather than suspension ¹⁴⁸.

In general, US schools are more likely to use punitive sanctions in response to school tobacco policy violations rather than sanctions that offer remediation through education, counseling or cessation support. Evans-Whipp et al., in a review of the literature on school alcohol, tobacco and other drug policies in Western Australia and the state of Washington in the US, found that for first-time tobacco policy violations, the most common consequences among US schools were notification of school administrators and notification of the student's parents or guardian. In 18.2% of the schools, students were also required to participate in assistance programs. This differs from violations that involve alcohol and other drugs, where 39.5% and 44.8% of the schools, respectively, required students to participate in assistance programs ^{72, 106, 149}. The researchers point out that compared to alcohol and other drug use in schools, tobacco use appeared to be considered a less severe violation and less warranting of remediation. In another study, Martin, Levin and Saunders found that a high percentage of South Carolina schools resorted to punitive measures for students who violate the school's tobacco policy. Thirty-four percent of those schools mandated enforced suspension for the first violation and 68% mandated enforced suspension for the second violation.

severe sanctions than those with students with higher SES¹⁵⁰. Gingiss et al., in a study of schools in Texas, found that similar, severe actions that emphasize punishment rather than remediation were *always* or *almost always* taken when a student was caught using tobacco. For example, while 82% of the policy violators received in-school suspension and 49% were referred to legal authorities, only 12% were encouraged to participate in a tobacco education or assistance program¹⁵¹. Finally, Tompkins et al. also found that official strategies to enforce school tobacco policies in schools in West Virginia were primarily punitive in nature rather than oriented towards education, remediation or the treatment of tobacco addiction¹³¹.

Despite the wide use of punitive enforcement, scholars have not found a correlation between severe sanctions and reduced student tobacco use. Kumar et al. noted that schools with severe and harsh sanctions for violating school tobacco policies have neither lower cigarette use among students nor greater disapproval of tobacco use, and questioned the usefulness of punitive measures as a means to decrease the prevalence of tobacco use ¹¹. In a study of the association between the orientation of policy enforcement and student tobacco use, Penz et al. noted that smoking policies that emphasized prevention and had an educational or treatment focus were independently associated with less smoking among California seventh graders, while those policies that stressed punishment for students who violated the ban (such as out-of-school suspension or parent notification) were not ¹⁵. In summary, enforcement is a crucial, yet uniquely challenging aspect of 100% TFS policy implementation, and one that is influenced by a number of factors.

Support for Tobacco Cessation.

With 22% of high school students reporting tobacco use within the previous 30 days, and many students experiencing nicotine dependency and failed cessation attempts, access to cessation services for adolescents play an important role in the implementation of 100% TFS policies ⁵⁷. It seems appropriate that school officials are aware of student tobacco users' interest in quitting, and that students found to be using tobacco at school are offered access to treatment for nicotine addiction in

addition to any disciplinary action that may be warranted. Providing school-based cessation can support implementation of 100% TFS policies in several ways. If students who use tobacco are able to quit or cut down, the pool of users on campus will be reduced and schools may experience better policy compliance. Offering tobacco cessation opportunities to students who violate the policy may also appeal to school staff, making them more likely to consistently monitor and enforce the policy. Cessation programs also contribute to the creation of a normative school environment that is disapproving of tobacco use and supportive of healthy behaviors, which can lead to less tobacco use and more support for the policy. Despite these benefits, not all schools offer programs or services to assist students in quitting or reducing their tobacco use. The reasons vary. School principals may not believe a need for tobacco cessation resources exists at their school. If a clear need is evident, they may not believe that it is the role of the school to provide these services. Also, resources, such as funding or trained staff, may not be available to implement such programs. Because BOEs or central office administrators may not direct schools to provide cessation services via the policy or policy guidance that is developed, principals may not consider cessation services to be a priority. In summary, while cessation support can play an important role in the implementation of a 100% TFS policy, barriers exist to it widespread use.

Part II: Policy Implementation

A Review of the Literature on Policy Implementation

Concern about the inability to put well-founded plans into action has encouraged many scholars to seek insight into what Dyer and others call the "black box" of implementation ^{2, 152}. A perusal of the literature reveals a number of models that relate to the implementation of public policy, and even more reviews that point to the important contributions and shortcomings of this implementation research. Schoefield, in a review of the literature on the implementation of public policies, points out that the literature has concentrated on several, often overlapping, themes ¹⁵³. The first of these

themes concerns the attempts of scholars to develop analytic models, variously called first-, secondand third-generation models, to explain the implementation process. The second theme relates to the different approaches to studying implementation. The third theme concentrates on trying to understand the influence of different variables on implementation. Following is an overview of the primary literature addressing each of these themes, along with details of their relationship to the study of 100% TFS policy implementation.

Defining the Implementation Process

In 1986, Goggin et al. coined the term *third-generation* implementation research – which led to a conceptualization of *first-* and *second-* generation research and their associated models. First-generation studies emerged from a positivistic perspective that viewed the administrative phase of the policy process as one of routine, technical administrative practice, in which the administrator is expected to implement the statute precisely as adopted by the legislative body. These researchers sought to identify factors to describe the implementation process. Their research was characterized by pioneering, but largely atheoretical, single-site case studies that saw implementation as either a success or a failure. Rather than production of predictive models, they concentrated on the reasons for success or failure of the policy goals and developed a typology of approaches to make implementation more effective within the bureaucratic *goal displacement* resulting from imperfect primary legislation and a failure of bureaucratic compliance ¹⁵³⁻¹⁵⁵. These scholars also attempted to establish causal relationships between policies and their outcomes. In doing so, the researchers conceptualized implementation as a rational, linear process distinct and separate from policy formulation.

The work of Sabatier and Mazmanian helped to illustrate this way of thinking. These researchers identified conditions that a policy decision must have in place in order to be effectively implemented. First, the program must be based on sound theory, relating changes in the target group behavior to the

achievement of the desired end state. Second, the statute or policy decision must contain unambiguous policy directives, and the implementation process must be structured so that the target group is likely to perform the desired behavior. Third, the leaders of the implementing agencies must possess substantial managerial skills and must be committed to the statutory goals. Fourth, the program must be actively supported by constituency groups and legislators throughout the implementation process. Finally, the relative priority of the policy could not be undermined over time by the emergence of conflicting policies or changes in relevant socioeconomic conditions that changed the technical theory behind the policy, or the political support for the policy. The conceptual framework underlying this set of conditions was based on a theory of public agencies as bureaucracies with multiple goals that were in constant interaction with interest groups, other agencies, and legislators in their policy subsystem ¹⁵⁶.

Van Meter and Van Horn, also considered scholars of first-generation implementation research, outlined similar conditions for implementation effectiveness. They believed that six independent variables mediated the link between policy and successful practices. The first variable was the identification of performance indicators which assessed the extent to which policy standards and objectives are realized. Van Meter and Van Horn pointed out that, in some cases, the policy's goals and objectives were not explicit and must be deduced, or they were ambiguous and contradictory. The second variable was the availability of resources, such as funds or other incentives, to facilitate effective policy implementation. Because effective policy communication helps to guide implementation and minimize policy deviation, a third variable was the effectiveness of inter-organizational communication to assure that program standards and objectives, and procedures for achieving them, were understood by the individuals responsible for their achievement. Included in this category were sanctions and incentives to prevent or address violations, and technical assistance to assure consistency in implementation. A fourth variable in Van Meter and Van Horn's model were the characteristics of the implementing agencies that can help support the capacity to implement the policy. These characteristics were both the formal structural features of organizations and the

informal attributes of their personnel. Included in this category were the competence and size of the agency's staff and the internal communication networks that are in place. A fifth variable was the impact of economic, social and political conditions, and the effect these factors have on performance. A final variable for Van Meter and Van Horn was the "disposition of the implementers" ³. They contended that each of the previous five variables must be filtered through the perceptions of the person(s) specifically charged with implementing the policy. Their comprehension or understanding of the policy, the direction of their response to it (acceptance, rejection or neutrality), and the intensity of that response mediated their actions and, thus, affected the performance of the policy. While these first-generation models offered a blueprint for the description and analysis of the policy implementation process, and alerted policymakers to variables that can be manipulated to improve delivery of services overall, these first-generation researchers were criticized for being overly pessimistic about the ability of governments to effectively implement their programs, for placing too great an emphasis on policy failure, and for failing to produce real models to help predict policy outcomes ^{153, 155, 157-159}.

So-called second-generation researchers, including Barrett, Fudge, Mazmanian and Sabatier, were more analytical and comparative in perspective than first-generation researchers. They were best known for the observation that implementation was overwhelmingly complex, and as such, required different conceptual frameworks that considered the many factors that could influence the process ^{160, 161}. Barrett and Fudge's work was radical, and relevant to this dissertation, because it emphasized the development of procedural explanations for implementation within organizations rather than concentrating on the success or failure of policies *per se*, as first-generation researchers did ¹⁵⁴. One of the main contributions of Barrett and Fudge's work lies in the conceptualization of implementation as a policy-action continuum. Such a concept meant that the researcher, by necessity, must be interested not only in the nature of the policy, but also in those upon whom the action depends ¹⁶². Other contributions to the body of knowledge revolved around researchers' attempts to identify broad categories of variables that impacted either positively or negatively on

implementation, and their attempts to establish causal relationships between policies and their outcomes. While second-generation implementation research added much to the knowledge of the implementation process, and to the reasons behind variations in implementation, it has also been criticized. The main criticism of the second-generation model was based on the approach that emphasizes case studies at the expense of validation and replication. Critics say that second-generation researchers have failed to develop testable theory and have not provided a comprehensive or unified approach to implementation analysis ^{153, 155}.

Third-generation implementation researchers were characterized by their focus on developing testable theory. They placed a greater emphasis on research methodology and on the dynamism of the implementation process through studies that used a wide range of approaches, including network analysis, content analysis, and multiple locations and observations^{153, 155}. Notable were the theoretical advances made by Goggin et al. which were based on their Communication Model of Intergovernmental Policy Implementation¹⁵⁴. The key components of this model were designed around the legislative and organizational bodies of state, federal and local implementation agencies and how they made decisions and took actions. This model introduced an element of dynamism, not seen in first- and second-generation models, by incorporating interaction. Built in is the opportunity for feedback and policy redesign based on the interests, inducements, constraints and motivations of actors at the different legislative levels ^{154, 155}. In addition to interaction, this model took into consideration *capacity* or the capability to act in order to convert the policy into action. Furthermore, Goggin et al. distinguished between state, organizational and ecological capacity, and additionally considered resources such as personnel, finances and time, as critical to the implementation process. Finally, in emphasizing communication between federal, state and local levels, this model addressed communication from a macro perspective and, in addition as considered micro communication processes. In doing so, the model demonstrated how issues such as distortions, misunderstandings and interpretations can impact policy implementation^{154, 155}.

Top-Down and Bottom-Up Approaches to Policy Implementation

A second theme that runs throughout the implementation literature is concerned with how the process is conceptualized. Earlier researchers viewed implementation from a top-down, hierarchal perspective. The top-down approach rested on the theory that policymakers designed specific policies and programs that implementers then carry out. This approach viewed implementation as a rational-technical process that started at the top with a clear statement of the policymaker's intent, and proceeded through a linear sequence of increasingly distinct phases to define the implementer's expectations at each level, and to state an outcome against which success or failure can be measured in terms of the original statement of intent ^{152, 158, 160}. Thus, implementation was a process of downward logistics – and it was both possible and desirable to regulate the process from above by making procedures routine specifically to curtail the implementer's influence over policy decisions², ^{160, 163-165}. As such, the best way to reconstruct and explain implementation was to follow these stages from policy inception to termination. This process was started by an examination of the initial definition of the problem, the decision-making process that ensued, and the resulting decisions. The next step was to examine the process of transforming the policy decision into practice. Finally, an examination of events that occurred during implementation takes place. By that time, the focus has descended to the bottom layers of bureaucracy and society.

Proponents of this rational-technical, bureaucratic approach viewed implementation as the "transmission of a blueprint to the operating units" and as a "straightforward activity because the structure, constraints, (and) priorities have already been delineated" ^{3, 166}. Implementation failures – which were considered to be gaps between the policymaker's decisions and the implementer's actions – could be explained by events and decisions encountered at the previous stages. A common analysis of implementation failure holds that policy ambiguity is at fault in that goals or intentions were not made explicit, clear or unambiguous. Other reasons for failure included technical difficulties in moving from political goals to program objectives, lack of resources, bureaucratic obstacles such as

lack of interagency coordination, implementation managers who chart their own particular courses regardless of the official policy, and the influence of stakeholders. These problems, according to supporters of the top-down approach, could be addressed with more explicit policy directives, greater attention to administrative responsibilities, better marshalling of resources, clearer statements of intended outcomes, improved regulatory structures and hierarchical control, sanctions or incentives, information systems, performance measures, and the creation of better links among the organizational entities responsible for implementation ^{2, 152, 156, 158, 165-167}.

In the 1970s and 1980s, researchers suggested that the top-down approach, with its implicit assumption that policymakers control the organizational, political and technological processes that affect implementation, was a claim that was unsupported by research evidence. The top-down approach was even considered a "myth" by Elmore who said that most of the implementation process "cannot be explained by the intentions and directions of policymakers" ^{158, 160}. These theorists believed that administrative rules and modern management techniques were incorrectly presumed to produce routine, rather than variable, implementation of social policies and further noted that topdown models did not deal very well with the "messiness...behavioral complexity, goal ambiguity and contradictions" inherent in policymaking ¹⁵⁴. They also believed the process itself was flawed from the start because statutes were inherently ambiguous. They could not be made precise because – even in the absence of any political reason for ambiguity – language itself could not be made precise. Instead, language was open to interpretation by legislators, implementers, or policy targets, concerned members of the public, and stakeholders. Thus, the policy must be interpreted in order to decide whether and how to ignore, adapt or adopt policymakers' recommendations. Here, implementation failure or implementation success referred to a rhetorical and political process of interpreting and evaluating events and their effects ^{153, 168}.

The idea of interpretation, compromise and modification led to another established criticism of the top-down approach, namely, its failure to take into account the role of the *street-level bureaucrat* ¹⁶⁹. The street-level bureaucrat was considered the ultimate implementation agent – the person

responsible for putting the policy into practice. Proponents of the top-down approach suggested that street-level bureaucrats divert the true policy and, thus, act as deviants within the system. In doing so, critics said that top-down theorists failed to see the importance of the role the street level bureaucrats play in interpreting the central policy. To clarify, from an *interpretivist* point of view, policy events only assume significance when people both perceive and attribute meaning to them. Whenever individuals engage in these perceptions and attributions, they do so by taking into account a variety of cues from their social environment, including shared norms, values and symbols, as well as their personal experiences. This interpretive process can be intensely political because the course and outcomes of this process at the level of the organization and the community may have important consequences for the actors – including implementers, policy targets and stakeholders – involved in the policy action.

Responding to these criticisms of the top-down approach, researchers began to develop analytical models that sought to understand implementation from the point of view of the actors, and to incorporate street-level discretion into the processes. These frameworks were the opposite of the top down approach. This *bottom-up* approach began not at the top of the implementation process, but at the last possible stage, "the point at which administrative actions intersect private choices" ¹⁵⁸. These researchers focused on the actions of local implementers as opposed to those of the central government. They also gave more attention to the nature of the problem which the policy was designed to address, rather than the goals of the policy. Finally, they made an important methodological contribution to implementation analysis. Rather than focus on a linear causation for implementation failure, proponents of the bottom-up approach sought to describe networks of implementation and the impact the motives and actions of the actors had on the implementation process.

Elmore's *backward mapping* approach to analyzing implementation is a classic example of this bottom-up approach. Consider, for example, a case in which a policy has failed. In understanding the reasons for the failure, the backwards mapping approach would start with the actors, decisions

and actions most *proximal* to the failure, rather than at the top where the policy decision was made. Thus, having established a relatively precise target at the lowest level, the analysts would then work their way backward to the levels of management and politics where the strategic choices shaping the controversial actions in question were made. At each stage, the ability of the organization to affect the behavior that is the target of the policy is examined. This sort of methodology allowed for the analyst to define the problem in terms of a mismatch between the policymaker and the implementer; that is, those at the top are insufficiently aware of the realities of day-to-day service delivery and, therefore, make uninformed and often mutually contradictory decisions that cannot be effectively implemented and lay the groundwork for failure ^{152, 160}. This approach does not rely on compliance with the policymaker's intent as the standard of success or failure. It offers, instead, a standard of success that is conditional – that is, one's definition of success to influence the behavior of the actors at one level of the implementation process to influence the behavior of the actors at the other levels.

The differences between and implications of these two methods of reconstruction were clear. The top-down approach assumed that organizational units in the implementation process were linked in hierarchal relationships. The closer one was to the source of the policy, the greater was one's authority and influence. The ability of an organization to respond to problems depended on the establishment of clear lines of authority and control. A bottom-up, or interpretive, approach assumed essentially the opposite – the closer one was to the source of the problem, the greater was one's ability to influence it. Here, the problem-solving ability of organizations depended not on hierarchal control but on maximizing discretion at the point where the problem was most immediate. Another difference was seen when considering implementation failures. In the top-down approach, often a single chain of decisions and actions led to a policy failure. In the bottom-up approach, it was more likely that many separate chains, which involved different sets of actors and different components of the problem, led to the policy failure. Furthermore, in most cases, these various chains of decisions and actions come together and interact in intricate and unexpected ways ¹⁵².

For some theorists, an alternative to these either-or choices was to synthesize the two in the creation of a new model. One example is Sabatier's Advocacy Coalition Framework (ACF)¹⁶⁰. According to Sabatier, an advocacy coalition consists of actors from many public and private organizations at all levels of government who share a basic set of core beliefs about the policy goals. With regard to the 100% TFS policy issue, competing coalitions may include policy advocates who seek strong enforcement of the policy to protect students from secondhand smoke, school staff who belief they have a right to use tobacco on campus, and community members who oppose the policy. These coalition members may seek to manipulate the rules in order to achieve their specific goals, which are consistent with their core beliefs. For Sabatier, implementation was a function of several factors. The first factor that shaped implementation was the interaction of competing advocacy coalitions within a policy subsystem or community. Next were factors external to the policy subsystem. These external factors might relate to socioeconomic conditions, political issues or cultural beliefs. Implementation was also a function of factors internal to the policy subsystem. These included rules, organizational structures or resource constraints. Finally, Sabatier suggested that belief systems, which relate to sets of values, priorities and causal assumptions, shaped the perceptions and motivations of the implementation agents as well as other actors in the coalitions. In short, the ACF combined the bottom-up unit of analysis of a variety of actors involved in a policy problem with the top-down concerns with the manner in which socio-economic conditions and legal instruments restrain and encourage behavior¹⁶⁰.

Factors that Influence Implementation

A final theme of the implementation literature concerns factors that influence implementation outcomes. Scholars have identified more than three hundred variables that have been shown to affect policy implementation, and they are far from reaching a consensus on those that serve as predictors of implementation success ¹⁷⁰. According to researchers, these factors interact in complex ways. For example, Domitrovich and Greenberg noted that a combination of variables interact to influence the

outcomes that a policy produces, as well as its future viability. These factors included the content and structure of the policy, the manner in which it was implemented, relationships between policy implementers and policy targets, and a variety of system-level variables. Thus, to adequately assess and support implementation, information was needed about the various policy components, their delivery system, and the characteristics of the context in which the program was conducted ⁸. Chen also provided a conceptual model of factors that influenced implementation. He argued that although an intervention, such as a new policy, is the major change agent in a program, the "implementation system" is likely to make an important contribution to program outcomes. The implementation system provided a means and a context for the intervention and is affected by a number of factors. According to Chen, the first of these factors were the characteristics of the implementation system, such as the processes and structures in place to communicate the policy, train staff and provide resources to support implementation. Next were the characteristics of the implementers, including their knowledge, beliefs and experiences with this policy and similar ones and third were characteristics of the setting in which the program or policy was implemented; these might include the school climate, staff support, and school district support for the policy. Chen contended that these factors were likely to influence both the implementation itself and the outcomes of the policy ¹⁷¹. Sabatier and Mazmanian identified a set of five conditions or factors by which a policy decision could achieve its objectives. Similarly, these conditions included a sound causal theory, an unambiguous and clear statute, skilled implementers, the support of constituency groups and the maintenance of the priority of the policy ¹⁵⁶.

While all these factors are important, for the purposes of this research, two deserve special consideration – the role of the implementation agent and the role of the institution. Research on educational policy implementation has shown that the interests of school officials, administrators and teachers can mediate school reform, thus shaping its final level of compliance ¹⁷²⁻¹⁷⁷. Research on 100% TFS policy implementation has also demonstrated the importance of focusing on the individuals who put the policy into practice, recognizing that their attitudes, beliefs and practices can

influence implementation ^{108, 145}. Theorists have noted that policy implementers must make daily decisions related to the policy, and implementation success is substantially dependent on these implementers having the "will and the skill" necessary to transform the broad policy into concrete and effective actions ¹⁶¹. Implicit is the interpretive process through which policies are adapted and redesigned by implementation agents to fit personal beliefs, knowledge and experiences, as well as local agendas and situations.

Consider, for example, the ways in which the implementers' perceptions about the effectiveness of a policy can influence its implementation. Perceived effectiveness refers to a belief on the part of involved actors that the policy can achieve its set goals ¹⁷⁸. This observation is important because people are likely to cooperate when they believe that policies are effective at solving problems. For example, Pickett et al. found that school principals in Ontario who did not view a school-wide ban on smoking as potentially effective in deterring student tobacco use were more likely to have major policy implementation problems than those principals who believed the ban to be effective ¹⁷⁹. Furthermore, others have noted that policies viewed as effective attract political support and administrative resources, while policies viewed as ineffective are ignored, challenged or dismantled ^{178, 180}.

Another individual factor which can affect policy implementation is the implementer's perception of support for the policy. Perceptions of policy support can operate in an indirect way, particularly if those responsible for implementing a policy are required to be responsive to local citizens and to staff who may be affected. For example, Pickett et al. suggested that principals who believed that community members and school staff supported the school's 100% TFS policy were more likely to support its implementation. Conversely, principals who believed community members and school faculty were opposed to the policy were more likely to demonstrate lack of support by asking that the policy be modified or repealed ¹⁷⁹.

A second factor that deserves special consideration is the role of the institution. Institutional factors refer to the constraints imposed on implementation that result from the characteristics of the

implementing organization. With regard to 100% TFS policies, one institutional constraint can be the size of the school district. Researchers have argued that larger public schools and school systems tended to have larger bureaucracies. These bureaucracies hindered the individual autonomy of school principals and staff, promoted rigidity, and made them less likely to comply with reforms, resulting in less effective implementation ^{104, 172, 176}. Another institutional factor is related to the location of the organization. For example, studies have shown that schools and school districts in urban areas may be subject to more visibility from the media and community groups, which may, in turn, result in extra pressure to implement new policies effectively ^{172, 174}. A third organizational variable that has been shown to affect policy implementation is related to funding. Hahn et al., in a study of school policies in a tobacco-growing state, found that schools that received funding from tobacco companies, or grew tobacco, were nearly three times more likely to provide cessation services to students than schools without such an affiliation ¹³².

Conclusion

This literature review addresses two primary content areas important to this dissertation. The first part focuses on the general topic of tobacco use in schools and includes a summary of the impact of tobacco bans, the role of 100% TFS policies in preventing youth tobacco use, and an overview of the theoretical basis for 100% TFS policies. This is followed by a review of the literature addressing the implementation of 100% TFS policies. Specifically, the literature related to policy communication, compliance monitoring, enforcement and policy support are considered.

The second part of this literature review examines the topic of policy implementation. The review concentrates on several, often overlapping, themes. The first theme concerns the attempts of scholars to develop analytic models to explain the implementation process. The second theme relates to the different approaches in studying implementation. The third theme concentrates on trying to understand the influence of different variables on implementation. Various implementation research

approaches are considered, providing a foundation for the development of the 100% TFS Policy Implementation Project.

Chapter 5: The Policy Implementation Project

Overview of the Project

This research has three objectives. First, a number of researchers have proposed a link between 100% TFS policies and student tobacco use. However, this link is considered equivocal. One suggestion for this observation is that suboptimal implementation of the policy may have diminished the potential for policy impact. No single study has examined the policy implementation process to determine if successful or effective implementation is associated with reductions in student tobacco use. Thus, the primary question of this dissertation is: Are optimally implemented 100% TFS policies associated with reduced student tobacco use? To answer this question, a generalized model of 100% TFS policy implementation that is appropriate for use within NC middle and high schools has been designed. Based on this model of implementation, a rating system has been devised for measuring the extent of policy implementation at each of the study schools. This rating system is applied to a subset of schools that participated in the 2005 NC YTS and have the 100% TFS policy in place. Individual school implementation ratings (IRs) are then compared with current student smoking rates at each school to identify any relation between policy implementation and policy impact. As such, this research provides a snapshot of policy implementation across NC middle and high schools, thus leading to the secondary research question of this dissertation: Are 100% TFS policies being fully implemented at North Carolina middle and high schools in school districts that *have adopted the policy?* Finally, using survey data and information from key informant interviews, factors that facilitate or hinder policy implementation are examined, thus leading to the third research question: What factors facilitate or hinder the implementation of 100% TFS policies?

Conceptual Framework for 100% Tobacco-Free School Implementation Project

As seen in the literature review, researchers have employed a number of conceptual models to examine policy processes and to understand implementation. These frameworks organize inquiry and provide a structure to the research process by identifying important constructs to be included in the study and suggesting relationships among these constructs. The conceptual framework for the 100% TFS Policy Implementation Project, as shown in Figure 3, considers three classic theories or models of implementation that are frequently cited in the literature on policy implementation and discussed in the literature review in the previous chapter. These theories are: (1) Van Meter and Van Horn's conceptual model of policy implementation; (2) Lipsky's theories related to the influence of street-level bureaucrats on policy implementation; and (3) Sabatier's Advocacy Coalition Framework (ACF).

The theories of Van Meter and Van Horn, Lipsky, and Sabatier have been selected as an organizing framework for this study for several reasons. First, as suggested by the work of Van Meter and Van Horn and Sabatier, this framework offers a process-oriented and longitudinal view of implementation that demonstrates how action is achieved by various dynamic effects, such as policy communication, interpretation, and decision-making. It also includes the concept of a continuum of action linking the policy to its specific effects ^{168, 169}. Second, this conceptual framework includes a learning element that is the hallmark of Sabatier's Advocacy Coalition Framework. Here, in order for learning to occur, policy implementers must interpret results and alter behavioral intentions. Thus, this conceptual model presents the idea of the policy loop, where policy implementation can be informed by policy experience. Third, this model highlights the role of the school principal, who is the primary implementer of the policy, and may exercise discretion in performing his or her job. Central to the thinking of Van Meter and Van Horn, is the finding that "lower participants" in organizations involved in implementing policy may not comply faithfully with policy decisions, and that the degree of compliance is affected by various factors including the amount of support for the

policy decision and the level of change the new policy entails ³. At the same time, Lipsky's work is firmly rooted in the ideal of the "street level" bureaucrat and emphasizes the potential dilemmas for professionals directed to implement a policy that may be controversial, contrary to community, professional or personal codes of behavior, or lacking in resources ¹⁶⁹. Finally, as emphasized by Sabatier and Van Meter and Van Horn, this model considers the entire policy subsystem as important to the implementation process. It allows the integration of factors beyond the individual – including organizational structure and practices, the role of competing advocacy coalitions, and the influence of political, economic and social conditions – that can affect 100% TFS policy implementation ^{3, 169}.

In summary, this framework is a synthesis of the top-down and bottom-up approaches in that it considers the role of the implementer, the influences of the policy community, the leadership and support that the oversight organization provides to principals to guide implementation, the opportunity for policy learning, and the context in which the policy is implemented. Figure 3 offers a schematic of the 100% TFS policy implementation process that is used as a framework for this research. This figure relates to Figure 2, which is a generalized view of the 100% TFS policy-making process, in that it expands specifically upon Phase Two, the policy implementation phase. The following is an explanation of the model and how it relates to the theoretical framework.

Policy adoption. The model's starting point is the adoption of the policy by the local BOE. Van Meter and Van Horn note that policy implementation begins with "those actions … that are directed at the achievement of objectives set forth in prior policy decisions" ³.

Guidance and technical assistance. Guidance and technical assistance is provided to support policy implementation from several sources. The NC TPCB provides policy implementation guidance and technical assistance to school districts, and, specifically, to principals through various educational forums. School district administrators (such as superintendents and SDFSC) provide guidance and technical assistance on implementation to school principals. Finally, assistance is provided by school principals to their staff who are responsible for implementing the policy on a dayto-day basis. Sabatier and Mazmanian point out that it is critical that the guidance and technical

assistance provided by the implementing agency be supportive of the statutory objectives. This means that the policy objectives must be unambiguous, implementing officials must be supportive, and there exist adequate incentives for policy compliance ¹⁵⁶. According to Van Meter and Van Horn, implementation support and assistance are important influences on the actions of the implementers, which in this study, are the school principals ³.

Factors affecting school-level implementation. The next box in Figure 3 represents the various factors that affect school-level implementation of the 100% TFS policy. As noted in the literature review, over 300 factors have been identified as potentially affecting policy implementation, making these factors important explanatory variables when considering policy implementation ¹⁷⁰. Factors thought to be most relevant to the implementation of 100% TFS policies include: policy-related factors such as the length of time the policy has been in place and the length of time from policy adoption to implementation; school contextual factors, such as the school type, school size, availability of resources and the current student smoking rate; attitudes and beliefs about the policy held by the principal; and community-related factors such as the level of tobacco-production in the surrounding area and the level of community support for the policy. These factors are similar to the independent variables posited by Van Meter and Van Horn that they believe mediate the link between policy and practice: policy content, resources, characteristics of the implementing agencies, economic, social and political conditions, and the disposition of the implementers ³.

Principal interpretation. Implicit in this model of implementation is the notion that those responsible for implementation must both attend to and make sense of the policy stimulus. From this cognitive perspective, the ideas about the policy that school principals construct from the policy directive are important in understanding their actions – or lack thereof – related to implementation. Here, policies do not present problems and solutions as givens. Rather, the implementer must discern from the policy, and other sources, the changes in practice that are necessary to address the problem ³, ¹⁸¹. The implementer's comprehension or understanding of the policy, the direction of his or her

response to it (acceptance, rejection or neutrality), and the intensity of that response will mediate the action to implement the policy and, thus, affect the performance of the policy. For example, if the principal believes the policy to be an effective one to address youth tobacco use, perceives that strong community and school support for the policy exists, and has the resources necessary to implement the policy effectively, he or she may be more likely to develop effective implementation mechanisms. On the other hand, if the principal does not perceive support for the policy to exist, does not believe the policy will have an impact, and does not have the resources to implement the policy effectively, he or she may be less likely to develop effective implementation strategies. Thus, as noted by both Van Meter & Van Horne and Lipsky, implementation of the policy may differ substantially from the intention of the policy-makers because of decisions made by the implementers ^{3, 169}.

Actions, strategies and operations. The actual implementation actions, strategies and operations that are undertaken to move the policy from words on paper to action include: the development of communication mechanisms to inform students, school staff and the community of the policy; the development of mechanisms for compliance monitoring; the development of enforcement actions in the event of non-compliance; and the establishment of programs and services such as cessation or alternatives to suspension programs, that support policy implementation. Van Meter and Van Horn believe that effective communication and policy enforcement activities are critical to minimize policy deviation ³. These theorists, as well as Lipsky, noted that there can be broad discretion among lower-level employees in public bureaucracies, such as school districts, to implement policies. Rather than being rule-bound implementers, principals have the flexibility to choose a policy implementation level that maximizes their preferences and considers the constraints and capacities of the school district, as well as the preferences of the policy targets ^{3, 169}.

Intervening factors affecting outcomes. The next box in Figure 3 represents factors that may influence the results of the policy. These intervening factors can be wide-ranging and may be internal or external to the policy subsystem. One intervening factor may be changes to institutional arrangements that enhance or inhibit implementation operations. For example, a new superintendent

who is strongly committed to the policy may demand more accountability from principals. Another factor may be the availability (or lack of availability) of key resources necessary for effective implementation. For example, if adequate signage promoting the policy is not available to principals, policy communication may not be as effective. The support or opposition of policy coalitions may also influence outcomes. Policy coalitions may lend support to schools in monitoring the policy at athletic events, or may strongly advocate for more stringent implementation to the school board. Finally, external events – such as a statewide media campaign in support of 100% TFS policies –may lead to increased attention on policy implementation, thus influencing results.

Results of policy implementation. Implementation results include policy outputs and policy outcomes. Policy outputs are the immediate results of the policy operations. These outputs might include the number of students, staff or visitors found to be violating the policy or the number of students who attend cessation classes or alternative-to-suspension (ATS) classes. Policy outcomes, which are longer-term, may include decreases in youth and staff tobacco use.

Policy learning and modification. Based on the principal's interpretation of policy results, modifications may be made to the policy implementation process, and/or policy learning may take place that supports further implementation activities. As proposed by Sabatier, policy learning occurs by a gradual diffusion and dissemination of the policy and its ongoing reinterpretation and adaptation ¹⁸². Thus, this feedback loop may result in changes to the operations as implementation is modified, expanded or enhanced.



Figure 3. Flow chart of 100% tobacco free school policy implementation

Measuring Implementation Effectiveness

The foundation of this research study is the development of IRs for each of the schools in the sample. To do this, a definition of *100% TFS policy implementation* must be devised. Durlak (1995) suggests that a starting point for measuring implementation effectiveness is to specify the dimensions or "active ingredients" of the implementation process. Once these dimensions are established, an objective assessment system can be developed to monitor the quality or effectiveness of the implementation process ¹⁸³. The challenge for this research project is to set appropriate priorities for closer examination among these dimensions.

A review of the literature on 100% TFS policy implementation suggests that four components of the implementation process may be directly related to the policy outcome of reduced youth tobacco use. These are: (1) policy communication; (2) compliance monitoring; (3) policy enforcement; and (4) educational programs to support cessation ^{1, 5, 11, 20, 99, 116, 135, 139, 144, 184, 185}. These dimensions are supported by the CDC's *Guidelines*, which recommended that to achieve maximum effectiveness, schools should develop a clearly articulated 100% TFS policy that includes: "procedures for communicating the policy to students, all school staff, parents or families, visitors and the community;" provisions for "fairly and consistently" enforcing the policy; and "provisions for all school staff and students to have access to programs to help them quit using tobacco" rather than having purely punitive measures in place for addressing policy violators ¹.

In addition to the CDC's definition of policy implementation, the NC TPCB's *100% TFS Model Policy* suggested dimensions of implementation that can be used to develop an effective definition ¹³⁷. This model policy was developed in collaboration with the NC Department of Public Instruction (DPI) and was based, in part, on the CDC's policy recommendations. The policy identified specific procedures for communicating, monitoring compliance, enforcing and supporting the policy. For example, it stated that "signs will be posted in a manner and location that adequately notify students, staff and visitors about the 100% TFS policy" and that school district administrators "will develop a

plan for communicating the policy that may include information in student and employee handbooks, announcements at school-sponsored events and appropriate signage in buildings and around campus" ¹³⁷. The policy also encouraged the development of a protocol for compliance monitoring and enforcement and suggested that school administrators work together with the local health department "to provide students and employees with information and access to support systems, programs and services to encourage them to abstain from the use of tobacco products" ¹³⁷.

Using these resources, this study defines effective and successful 100% TFS policy implementation as the following: *To achieve maximum effectiveness, schools implementing a 100% TFS policy must ensure that policies are effectively communicated to all policy targets, regularly monitored for compliance, and consistently enforced using sanctions that emphasize tobacco education and remediation.* This definition suggests the various dimensions that are measured: communication, compliance monitoring, and enforcement. Initially, cessation support was considered as a dimension of the model for implementation. However, through discussions with school administrators, many factors were uncovered that determined whether or not cessation services would be provided at the school. They included: low rates of student tobacco use, lack of resources (funding, student transportation, trained staff), and lack of a clear directive by central administration to provide these services or resources. As such, this dimension was eliminated from consideration in the development of the schools' IR.

Having identified the primary dimensions of effective and successful 100% TFS policy implementation, objectives for each of these dimensions were created. According to Durlak, objectives are the "implementation outcomes" or measurable indicators of the policy implementation process. They outline the degree to which proposed services are actually delivered during implementation. Four criteria were established for the development of the objectives. First, they must be conditionally independent of each other. Second, objectives should reflect general actions that the majority of NC's middle and high school principals would be likely to take in implementing a 100% TFS policy. Third, the information to assess achievement of these objectives must be easily

accessible to school principals completing the survey. Finally, as in the development of the dimensions, the objectives must be based on collective theoretical and practical expertise. Using these criteria, a set of five objectives – one objective addressing policy communication, one objective addressing compliance monitoring, and three objectives addressing policy enforcement – were created. Figure 4 is a flowchart demonstrating the development of the rating scale from the concept, to implementation dimensions, and finally to objectives. The objectives served as operational definitions for 100% TFS policy implementation and were considered an *ideal* or *target* to achieve. The objectives are summarized below:

- Objective 1: Ongoing strategies are used to communicate information about the policy to students, school staff and visitors.
- Objective 2: Compliance monitoring takes place consistently at key locations on campus, after regular school hours, and during athletic and social events attended by the public.
- Objective 3: Official sanctions are established that provide a standard way to address tobacco policy violations so that the same sanctions are applied, regardless of the particular person or situation.
- Objective 4: No circumstances exist where any tobacco use by the policy targets is tolerated or permitted on campus or at school-related events.
- Objective 5: Sanctions for students who violate the 100% TFS policy include opportunities for tobacco education or remediation, rather than only punitive sanctions.



Figure 4. Implementation process concepts, dimensions, and objectives

Calculating the Implementation Rating

The IR is based on a rating system which provides scores for responses to a series of questions addressing each of the objectives. While no such system exists for rating 100% TFS policy implementation, rating systems such as this have been used by others to quantify implementation of laws and policies related to tobacco in other settings. Joossens and Raw developed a Tobacco Control Scale to quantify the implementation of tobacco control policies at the country level. They sent a questionnaire, developed with the help of a panel of international tobacco control experts, to correspondents in 30 European countries. Out of a possible 100 points, only four countries scored above 70 points, and 13 countries scored above 50 points ¹⁸⁶. Levy, Chaloupka and Gitchell described the effects of tobacco control policies on smoking rates and developed a tobacco control outcomes based on cigarette prices and workplace and home smoking bans. They found significant and fairly strong correlations between the tobacco control index and adult smoking prevalence and per capita cigarette consumption ¹⁸⁸. Alciati et al. developed a rating system to evaluate the extensiveness and comprehensiveness of state laws restricting youth access to tobacco in the US.

They addressed six items specific to tobacco-control provision and three items related to enforcement provisions ⁹⁷. Chriqui et al. applied a similar rating system to state indoor air laws in the US. They rated nine items to produce a summary score for each state. The American Lung Association also measured tobacco control activities at state level based on spending, smoke-free air laws, cigarette excise taxes and youth access laws ¹⁸⁹.

The IR for this project is based on the schools' proximity to achievement of the five objectives, and this is determined from the responses of the principals to each of the questions on the survey that are linked to that specific objective. Responses to each question are rated on a scale of zero to three. Criteria are established for assigning each rating. An example of the decision criteria can be seen in Appendix A. The highest rating, three, is given when the criterion for that question are met or exceeded. Lower scores of two, one or zero are given when the criterion are partially met or not met at all.

The scores on the survey questions are averaged to create the score for the particular objective to which they are linked. In the case of the *communication* and *compliance monitoring* dimensions, each of which has only one objective, the score for the objective becomes the actual dimension rating. For the *enforcement* dimension, which has three objectives, scores for the objectives are averaged to create the score for the dimension. All dimensions are weighted equally. Lastly, the dimension scores are added together to create the IR. For example, if a school receives a score of three on the communication dimension, a score of two on the compliance monitoring dimension and 2.33 on the enforcement dimension, the overall IR will be 7.33 out of a possible nine. IRs are interpreted as follows:

- 9.0 = Excellent (meets 100% of target)
- 6.75 8.99 = Good (meets 75% 99% of target)
- 4.5 6.74 = Fair: (meets 50% 74% of target)
- <4.5 = Poor: (meets less than 50% of target)

Methods

Study Design

This study employed a cross-sectional study to answer the three research questions. It was conducted in three phases. First, a generalized model of 100% TFS policy implementation that is appropriate for NC middle and high schools was developed. Next, based on the model of implementation, a rating system was created to measure the extent of implementation in NC schools, and a survey of school administrators at middle and high schools in school districts was conducted. The IR, which was derived from the principal survey, was then compared to the current youth smoking rate for each school and used to assess the level of policy implementation among study schools. Finally, key informant interviews were conducted with principals at eight schools to identify factors that facilitate or hinder policy implementation.

Subjects and Setting

Middle and high school principals from NC school districts that had a 100% TFS policy in place during the fall of 2005 and that participated in the 2005 NC YTS were enrolled in this study. The NC YTS was administered to students in 177 middle and high schools from 79 school districts in the fall of 2005. Ninety-nine middle and high school principals representing thirty-nine school districts met the inclusion criteria for participation. Middle schools in this study typically serve grades six through eight, and high schools typically serve grades nine through twelve. *Combined* schools, which have grade levels that span school categories, such as schools that offer kindergarten through sixth grades, or sixth through twelve grades, were included in the subset as long as the school has a sixth grade. Elementary schools and charter schools were excluded. Surveys were sent to all ninety-nine principals at their schools; sixty-five completed and returned the surveys, resulting in a 66% response rate. Recruitment of school principals for this study consisted of five carefully timed contacts. This method is based on one suggested by Dillman as part of the *tailored design* method developed to parallel the ways in which successful face-to-face interviewers persuade prospective respondents to be interviewed. The first contact was a pre-survey letter that provided information on the nature and purpose of the study and informed principals that a questionnaire would arrive the following week. Contact number two was a mailing that included the questionnaire, a fact sheet on the research project, and a cover letter. A stamped and addressed envelope was included for return of the completed questionnaire. Additionally, a check for five dollars, made out to the school's PTA, was included as an incentive to participate. If surveys were not returned within a week, a personal e-mail (contact number three) was sent to principals, along with a second copy of the survey, to encourage participation. The fourth contact was a replacement survey and a letter mailed to principals who had not responded two weeks after the initial mailing. Finally, contact number five, a follow-up telephone call, was made a week or so after the second survey was mailed. Thus, a total of five attempts were addressed to each potential study participant during the recruitment phase.

A convenience sample was used to identify principals to participate in the key informant interviews with principals. The survey asked whether the principal was willing to be contacted for an interview. Of the 65 respondents, 48 principals (74%) agreed to be contacted. Principals at schools with the top ten IRs and the bottom ten IRs were contacted via email and invited to participate in the interviews. IRs from the top ten schools ranged from 8.4 to 9.0, placing them at the upper level of the *good* to the *excellent* categories. IRs from the bottom ten schools ranged from 4.8 to 5.7, placing them at the lower end of the *fair* category. Eight principals agreed to participate in the interviews – five from schools with an optimal IR, and three from schools with a suboptimal IR. The selection of principals was designed to provide diversity in terms of type of school (middle or high), length of time that the policy had been in place, school size, and geographic location. Figure 5 provides an explanation of the recruitment process.

Data Collection

Using various methods, several different types of data were collected for this study. The primary data collection method was the survey of middle and high school principals. Using the survey, an IR was computed for each school that was based on the scores that each principal received on the three policy subscales - communication, compliance monitoring, and enforcement. Details of the instrument are provided in the next section, and a copy of the survey is included in Appendix B. The survey was also used to gather information on several of the independent variables for this study in order to identify factors that may be associated with optimal or suboptimal policy implementation. These independent variables included: the principal's perceptions of policy support, principal's perceptions of policy effectiveness, the number of policy violations by students, school staff and visitors during the 2005-2006 school year, and the provision of cessation services for students who use tobacco and want to quit. In addition to the survey, key informant interviews were conducted in order to identify factors that hindered or facilitated policy implementation. The interview guide for the key informant interviews is included in Appendix C. A review of each school district's 100% TFS policy was also conducted to determine the length of time the policy had been in place, and a review of each school's website was conducted to identify the number of students at the school and the county where the school is located. Information on current student smoking rates was obtained from the 2005 NC YTS.


Figure 5. Flow chart of sampling and data collection

The Instrument

The questionnaire was developed in March – April of 2006. To establish content validity, six public health, survey research, and education specialists were asked to review and comment on an initial draft of the survey. Based on their comments, the survey was revised and then pilot-tested on a group of five middle and high school principals in NC schools that had a 100% TFS policy in place, but were not part of the study sample. This process resulted in additional changes, a further round of

pretesting, and more modifications to create the final instrument. The questionnaire can be found in Appendix B.

Questions were developed to assess the five objectives identified in the model of 100% TFS policy implementation and the school's IR was computed based on the responses to these questions. The first objective related to the *communication dimension*. Three questions on the survey assessed achievement of this objective. The first question was designed to identify the strategies used by principals to communicate information about the policy to the three policy targets - students, school staff and school visitors. Six common strategies were presented and a dichotomous (yes or no) response scale was used to indicate if the particular strategy was used. Researchers have noted the importance of signage in communicating the policy ^{17, 136, 139}; therefore, a second question related to the placement of signs on campus was included on the survey. Five key locations were listed (such as campus entrances and around playing fields), and a dichotomous (yes or no) response scale was used. School athletic events are commonly attended by members of the public who may not have knowledge of the policy. For this reason, researchers have noted the importance of making announcements at athletic and other school events attended by the public as a reminder not to use tobacco¹³⁹. Thus, the third communication question was related to the frequency in which announcements regarding the policy were made at these events. This item was answered on a fivepoint scale ranging from one which signifies *always*, to five which indicates *never*. A numeric value ranging from zero to three corresponds to the numbers on the five-point scale, with a score of zero assigned to the number five on the scale (which indicates announcements are never made), and a score of three assigned to numbers one and two on the scale, indicating that policy announcements are made relatively frequently, or *always*. The score for the communication subscale was the mean of these three questions.

The second dimension, *compliance monitoring*, had one objective: that consistent monitoring of policy compliance at key times and locations on campus and at school-related events will take place. For the purposes of this survey, *policy monitoring* was defined as visual surveillance by school staff

or volunteers to ensure that students, school staff and visitors do not use tobacco on campus or at school-related events held off campus. Research has shown that 100% TFS policies are often violated, that policy compliance monitoring is not always taking place, and that the strictness of monitoring - whether actual or perceived - is associated with daily cigarette use by students ^{11, 57, 72,} ^{139, 190}. The survey included one question related to compliance monitoring. School principals were asked to indicate how strictly compliance with their respective school's 100% TFS policy was monitored at five school-related locations and events: inside school buildings (including restrooms); in parking lots, playing fields and other school grounds; at school-sponsored sporting and social events on school grounds; at school-sponsored sporting and social events off school grounds; and on campus after regular school hours. The scale measuring the principal's report on monitoring compliance with the schools 100% TFS policy was adapted from one developed by Kumar et al. All items are answered on a five-point scale ranging from five which signifies not strictly at all, to one which signifies *very strictly*. A numeric value ranging from zero to three corresponds to each of the numbers on the scale, with a score of zero assigned to the number one on the scale, which indicated monitoring was *not strict at all*, and a score of three assigned to the numbers four and five on the scale, which indicated that the policy was relatively, or very strictly monitored. The compliance monitoring subscale score was the mean of these five items.

The policy *enforcement dimension* had three objectives. The first addressed whether or not official sanctions established at the school provided a standard way to address tobacco policy violations so that the same sanctions were applied to all members of a particular policy group, regardless of the person or situation. Survey respondents were asked to select one of two answers that best describes how policy violations by each of the three target groups are handled at their school – either *through the application of a standard set of sanctions that treat all violators the same regardless of the situation* or *on a case-by-case basis, depending on the person or situation*. The literature has suggested that consistent policy enforcement is related to lower school tobacco use rates and that the deterrent effect of sanctions is lost when they are not consistently applied ^{6, 14, 108, 109}. A

school that has standard sanctions in place to address violations by students and at least one other group received a score of three. Having standard sanctions in place for fewer groups, or for groups other than students, resulted in a score of two or one.

A second question was developed to address the next enforcement objective – whether circumstances exist where tobacco use was permitted or tolerated among students, school staff or school visitors on campus or at school-related events. A dichotomous (*yes* or *no*) response was sought. Studies show that the effects of anti-tobacco messages are likely to be undermined when students and others perceive that the policy is not enforced ^{11, 111}. Schools that have the policy in place, yet permit *tolerance zones* to exist where individuals can use tobacco without sanction, were considered to have ineffective policy enforcement in this model of implementation. Schools that do not tolerate or permit tobacco use on campus received a score of three, while schools that permitted or tolerated any tobacco use on campus received a score of zero.

To address the third enforcement objective, whether sanctions for students who violate the policy have an educational or punitive focus, principals were asked to indicate how often students who were caught violating the school's 100% TFS policy were given the opportunity to participate in some form of tobacco education or remediation as part of their sanctions. Such an opportunity might include: participation in tobacco education class as an alternative to out-of-school suspension, participation in a tobacco education class in addition to suspension, or one-on-one counseling with, for example, the school nurse or guidance counselor. An option to fill in another response was provided. A five-point response scale (*always* to *never*) was used to indicate how often students have access to these remedial or educational sanctions when they violate the 100% TFS policy. A numeric value ranging from zero to three corresponds to each of the numbers on the scale, with a score of zero assigned to the number five on the scale, which indicates that students *never* have access to educational or remedial sanctions, and a score of three assigned to the numbers one and two on the scale, which indicates that student *always*, or nearly always have access to educational or

remedial sanctions when caught violating the policy. The overall policy enforcement subscale score is the mean of these three questions.

In addition to questions related to the IR, the survey also included two sets of questions related to principals' perceptions about the policy. First, the survey assessed principals' perceptions about the *effectiveness* of the policy. Research has suggested that for a policy to achieve its intended impact, the implementation agent (in this case the school principal), must believe that the policy is based on sound theory and was appropriate for the target group ^{6, 178}. Two statements were included on the survey related to principals' perceptions of policy effectiveness. The first statement, "*A 100% TFS policy is an effective strategy to prevent, reduce or maintain already low levels of tobacco use among students,*" addressed their overall perceptions of policy effectiveness. A second statement, "*Without a 100% TFS policy in place, it is likely that more students at this school will try or use tobacco products,*" was designed to determine the principal's perceptions of policy appropriateness for his or her school. Principals were asked to rate the extent to which they agreed or disagreed with the statements using a 4-point response scale that ranged from *strongly agree* to *strongly disagree*. A numeric value was assigned to each response, which was then used to develop the rating.

The literature on policy implementation has also suggested that implementation would be more likely to be successful if the person responsible for implementation perceived that those affected by the policy will be supportive. For this reason, the survey also assessed principals' perceptions of policy support for the 100% TFS policy by two key groups: school staff, and parents and other community members. Each of these groups is believed to play an important role in how the policy is implemented at the school. Two questions were included on the survey related to principals' perceptions of policy support. The first asked about the extent to which school staff support or oppose the policy. Principals were asked to rate these two questions related to policy support using a 4-point response scale that ranged from *strongly support* to *strongly oppose*.

The survey also collected data related to the number of policy compliance violations during the 2005-2006 academic year for students, school staff, and school visitors. A final question on the survey addressed whether or not schools offered tobacco cessation programs for students. While this was not included in the development of the IR, the information can be used for planning services and developing cessation resources for students. Principals were asked to indicate by answering *yes* or *no* if their school offered tobacco cessation programs – such as the Not on Tobacco (NOT) smoking cessation program – at any time during the 2005-2006 school year for students at their school who use tobacco and want to quit. A distinction was made between the provision of regular classroom instruction on tobacco prevention, and any educational sanctions that may be offered to students who violate the policy (such as attending a tobacco education class instead of in-school suspension). If no cessation services were offered, principals were asked to indicate the primary reason why this did not occur by checking one of several responses.

While the scientific literature broadly identifies communication, compliance monitoring and enforcement measures that are effective and ineffective, the decision as to how much weight should be given to each measure on the scale is not an easy one to make. Little research has been conducted on the implementation of 100% TFS policies and the research that does exist is not precise enough to discern the relative importance of the three implementation dimensions to the overall IR. Therefore, in order to score the surveys and develop ratings for each school, equal weight was given to each question and to each dimension.

The reliability of different aspects of the survey instrument was tested. Cronbach's alpha coefficient was used to measure the reliability of the Likert-type scales, and the Kuder-Richardson (KR-20) coefficient was used when items were dichotomous. There is no consensus on measures across sources as to what is adequate reliability. For example, according to Gliem and Gliem, Cronbach's alpha coefficient values and KR-20 values that are more than .9 are considered excellent; values that are between .8 and .9 are considered good; values that are between .7 and .8 are considered questionable; values that are between .6 and .7 are considered poor; and values less than

.6 are unacceptable ¹⁹¹. Another source suggests that the Cronbach's alpha and KR-20 coefficient values should be above .7 however, in some cases, a value of .60 is considered acceptable ¹⁹². There is a similar lack of consensus with regard to the optimal range for the inter-item correlation value of the reliability analysis. Gliem and Gliem recommend a minimal value of at least .40 ¹⁹¹. Briggs and Cheek recommend an optimal range for the inter-item correlation of .2 to .4 ¹⁹².

The first two questions, related to principals' perceptions of policy effectiveness, and which are answered on a 4-item scale, have a Cronbach's alpha coefficient of .45. The second two questions, which are related to perceptions of policy support and are answered using a 4-item scale, have a Cronbach's Alpha coefficient of .61. Overall, the reliability of these questions is relatively low. However, researchers note that Cronbach's alpha values are quite sensitive to the number of items in a scale, and that it is common to find quite low Cronbach's alpha values with short scales (e.g., scales with fewer than 10 items). The scales for these questions are composed of only four items. In these instances, researchers recommend reporting the mean inter-item correlation, which provides information about the correlation of each item with the sum of the remaining items. The mean inter-item correlation is .33 for questions related to policy effectiveness and .45 for questions related to perceptions of policy support. According to Briggs and Cheek, these values fall within the optimal range for inter-item correlation ¹⁹²

Reliability analysis was also conducted on a set of questions related to the use of signage to communicate information about the policy in various locations on campus, and at school-related events both on and off campus. Five sub-questions, all answered on a dichotomous scale, were included in this question. The KR-20 coefficient was .61 and the inter-item correlation was .24. While the KR-20 coefficient was relatively low, the inter-item correlation was within optimal levels.

Finally, reliability analysis was conducted on the compliance monitoring subscale. The scale measuring the principal's report on monitoring compliance with the schools 100% TFS policy was adapted from one developed by Kumar et al ¹¹. All items were answered on a five-point scale. According to these researchers, the compliance monitoring subscale had good internal consistency

with a Cronbach's alpha coefficient reported at .84¹¹. In the current study, the Cronbach's alpha coefficient was .821. Clearly, as the scale used in this research had a level of reliability similar to that of the original scale, the adaptation did not reduce the reliability of the scale.

Statistical Analysis

The data were analyzed in several stages using the two main sources of empirical evidence, the survey and the key informant interviews. SPSS 14.0 was used for all quantitative analyses, and Atlas.ti coding and indexing software was used for all qualitative data analyses. Stage one involved an examination of the descriptive statistics of the variables in the survey. Minimum and maximum scores, means and standard deviations (when appropriate) were reported for the following variables: school type, number of students, length of time the policy had been in place, county tobacco production, school tobacco policy violations, principals' opinions about policy effectiveness and policy support, overall IR and scores for the various dimensions of implementation (communication, monitoring, and enforcement), and current student smoking rates for each school. Pearson's product moment correlation coefficient, analysis of variance, and independent-samples t-tests were employed to explore relationships and compare differences among groups with regard to these variables of interest. A regression analysis was conducted to estimate the odds ratios for each independent variable of interest while adjusting for the other independent variables. Correlations were computed to identify the relationship between the implementation rating and the current student smoking rate. A reliability analysis was conducted on the survey data. Stage two of the data analysis focused on a textual analysis of the key informant interviews.

Conclusion

The first research question of this dissertation is: "*Are optimally implemented 100% TFS policies associated with reduced student tobacco use*? To answer this question, a generalized model of 100% TFS policy implementation that is appropriate for use within NC middle and high schools was

designed. Based on the model of implementation, a rating system for measuring the extent of policy implementation at each of the study schools was devised that was based on three dimensions of implementation – policy communication, compliance monitoring, and policy enforcement. This system resulted in each study school receiving an IR that identified a level of implementation effectiveness. Finally, current student smoking rates were determined for each school using data from the 2005 NC YTS. These rates were compared with the schools' IR to identify any relationship between policy implementation and youth smoking behavior. The second research question of this dissertation is: *"Are 100% TFS policies being fully implemented at NC middle and high schools that have adopted this policy?"* To answer this question, school IRs were reviewed and classified as being ideal, good, fair or poor. Finally, key informant interviews were conducted with principals at eight schools to answer the third research question: *What factors facilitate or hinder 100% TFS policy implementation*?

Chapter 6: Results

The findings from the 100% TFS Policy Implementation Project are based on the three research questions of this study. A comparison of study respondents and non-respondents is first presented, followed by a descriptive analysis of findings and data related to the research questions. As a first step, respondents (N = 65) and non-respondents (N = 34) are compared to determine if differences between these two groups exist. Findings are summarized in Table 2. Although some differences are evident – overall, these groups did not differ in ways that appeared to be relevant to the research.

Status		Var	iable			
	School Type					
		Middle	High			
Respondent		52%	48%			
Non-respondent		49%	51%			
		Number of Stu	dents at Sch	ool		
	0-500	501-1000	1001-1500	1501+		
Respondent	17%	42%	27%	14%		
Non-respondent	9%	37%	37%	17%		
		County Tobac	co Producti	on		
	15,000/	15,000-	1,000,000-	4,000,000		
	Undisclosed	999,999	3,999,999	or more		
Respondent	20%	17%	31%	32%		
Non-respondent	20%	20%	23%	37%		
	Time Policy in Place					
	12 months or less	13-36 mon	ths	37 months or more		
Respondents	19%	55%		28%		
Non-respondents	6%	60%		34%		

Table 2. Comparison of study respondents and non-respondents

Descriptive Analysis

Sixty-five middle and high school principals, out of a possible ninety-nine, were enrolled in the study and completed the questionnaire for a total response rate of 66%. Principals completing the questionnaire represented thirty-two school districts. Eight principals, from seven school districts, participated in the key informant interviews. Thirty-three middle schools (50.8%), representing 23,876 students, and thirty-two high schools (49.2%), representing 37,880 students, constituted the sample. Current student smoking rates for middle and high schools participating in the study, as determined by an analysis of the 2005 NC YTS data, were 6.78% and 22.98%, respectively. This was comparable to the statewide 2005 NC YTS current smoking rates for middle and high school students, which were 5.8% and 20.3%, respectively. Current smoking rates for study schools ranged from 0% - 25% for middle schools and 5.56% – 66.7% for high schools.

Predictable differences were found between middle and high schools with regard to the number of students at the school and current student smoking rates. High schools tend to be larger, have more students who currently smoke, and have more tobacco policy violations than middle schools. No differences were found between middle and high schools for the length of time the policy has been in place or in the amount of tobacco produced in the county where schools were located. This information is detailed in Table 3. Of the schools in the study sample, 20% have had the policy in place for 12 months or less, 50.8% have had the policy in place for 13-36 months, and 29.2% have had the policy in place for 37 months or more.

Principals' perceptions about the effectiveness of the 100% TFS policy and their perceptions of policy support are reported in Table 4. Overall, the majority (96.9%) of middle and high school principals reported that they *strongly agree* or *agree* that the 100% TFS policy is an effective measure to reduce, prevent, or maintain already low rates of youth tobacco use. Fewer principals (79.9%) reported that they *strongly agree* or *agree* that without the policy in place, more students

Variable	Min.	Max.	Overall 65 Schools 61,756 Students M and SD		Middle School 33 Schools 23,876 Students M and SD		High School 32 Schools 37,880 Students M and SD	
Number of students at school	58.0	2576.0	950.0	527.0	723.5	299.8	1183.7	608
Months since policy adoption	9.0	179	49.1	41.0	48.7	44.4	49.5	37.8
Current youth smoking rate	0	66.7	14.6	12.7	6.8	6.1	22.6	12.7
Tobacco prod. (acres per county, 2005)	0	4100	452.5	8221.5	488.4	923.9	484.1	715.7

Table 3. Descriptive statistics for particip	ating	schools
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at their school would try or use tobacco products. Moreover, all principals believed that school staff *strongly support* or *support* the 100% TFS policy. Slightly fewer (96.9%) believed that parents and community members *strongly support* or *support* the 100% TFS policy. When examined by school type, more middle school principals (100%) than high school principals (93.5%) believed that school staff and the community support the policy.

Research Question One

The first research question, *Is there an association between 100% TFS policy implementation and current student smoking rates?*, was investigated using the Pearson product-moment correlation coefficient. No association was found between the overall IR and the current student smoking rate [r = .061, n = 63, p = .635]. Partial correlation was used to explore the relationship between the IR and the current student smoking rate, while controlling for the length of time the policy has been in place, the type of school, and the size of the school. Still, no association was found between the overall IR and the current student smoking rate.

Table 4.	Principals'	perceptions of	policy effectiveness	and policy support
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Principals' Perceptions of Policy Effectiveness and Policy Support	Overall	Middle School	High School
<i>Strongly agree</i> or <i>agree</i> that a 100% TFS policy is an effective strategy to prevent, reduce or maintain already low levels of tobacco use among students.	96.9%	100%	93.8%
<i>Strongly agree</i> or <i>agree</i> that without a 100% TFS policy, more students at the school would try or use tobacco.	79.9%	84.8%	75%
School staff strongly support or support the 100% TFS policy	100%	100%	100%
Community members <i>strongly support</i> or <i>support</i> the 100% TFS policy	96.9%	100%	93.8%

Multiple regression was used to explore whether the communication, compliance monitoring, and enforcement subscale scores of the IR predicted the current student smoking rate at the school. A statistically significant positive association was found between the communication subscale and the current student smoking rate, but not the compliance monitoring and enforcement subscales. These results are provided in Table 5.

Subscale	(te			
	Beta (Unstandardized)	SE	Beta (Standardized)	t	Sig.
Communication	6.31	2.809	.294	2.24	.028
Compliance Monitoring	208	2.716	010	077	.939
Enforcement	-2.603	2.815	121	925	.594

Table 5. Current student smoking rate regressed on IR subscales.

R squared = .082 (N = 65, P < .05)

Research Question Two

The second research question was: *Are 100% Tobacco-free school policies fully implemented at NC middle and high schools?* Results show that the IR was normally distributed with a minimum score of 4.8 and a maximum score of 9.0. This distribution is shown in Figure 6. The average IR for middle and high schools was 7.05 (SD = 1.0) out of a possible 9.0, with mean middle and high school scores of 6.9 and 7.1, respectively. An independent samples t-test was conducted to compare the IRs based on school type. No significant differences were found between scores for middle schools (M = 33; SD = .18) and high schools [M = 32; SD = .16; t(65) = .57, p = .56].



Figure 6. Distribution of implementation ratings for middle and high schools

Study schools fell into three categories. The first category, the smallest, consisted of two high schools and a middle school (4.47% of the sample) that scored a 9.0 on the implementation rating. These schools were considered to meet or exceed the *ideal* for policy implementation. The next category, the largest, included all schools that received an implementation rating of 6.75 - 8.99, signifying that they achieved 75% to 99% of the ideal. These schools were rated as *good*. Forty schools (61.5% of the sample) were represented in this category. Of these, twenty-three (58%) were high schools and 17 (42%) were middle schools. The ideal and good categories were followed by the *fair* category. This category included all schools that achieved 50% to 74% of the ideal policy implementation. Twenty-two (34.4%) of study schools fell into this category. Of these, eight

(35% of the sample) were high schools and fourteen (65%) were middle schools. No schools received an IR below 4.5. Table 6 provides details on the percentages of middle and high schools in each category. Although there were differences in the proportions of schools that were ranked as ideal, good or fair with regard to their IR, a chi-square analysis showed that these differences were not significant [X^2 (2, N = 65) = 2.85, p = .24].

Rating Criteria	Overall	High Schools	Middle Schools
9.0: Excellent (100% of target)	3 (4.6%)	1 (3.1%)	2 (6.1%)
6.75 – 8.99: Good (75% - 99% of target)	40 (61.5%)	23 (71.9%)	17 (51.5%)
4.5 – 6.74: Fair (50% - 74% of target)	22 (33.8%)	8 (25.0%)	14 (42.4%)
<4.5: Poor (less than 50% of target)	0	0	0

Table 6. Middle and high school implementation ratings by rating category

Implementation ratings were then broken down into the composite subscales that make up the IR (communication, compliance monitoring and enforcement) and middle and high school results compared. These findings are presented in Table 7. The overall score for the *communication subscale* was 2.4 out of a possible score of 3. The mean score for high schools and middle schools was 2.6 and 2.3, respectively. An independent samples t-test was conducted and a significant difference found between scores for high schools (M = 2.6; SD = .38) and middle schools (M = 2.3; SD = .71), which translates to t (65) = 2.68, p = .028 on the communication subscale. The magnitude of the differences in the means is moderate (eta squared = .08).

Variable	Min	Max	Overa	all		Mid	dle Sch	ool	High	School	
			Μ	SD	CI	Μ	SD	CI	Μ	SD	CI
IR	4.8	9.0	7.0	1.0	6.8- 7.3	6.9	1.1	6.6- 7.4	7.1	0.9	6.8- 7.5
Commun. Subscale	1.3	3.0	2.4	0.6	2.3- 2.6	2.3	0.7	2.0- 2.5	2.6	0.4	2.5- 2.8
Comp. Mon. Subscale	0.8	3.0	2.3	0.6	2.1- 2.4	2.3	0.7	2.0- 2.5	2.32	0.5	2.1- 2.5
Enforcement Subscale	1.0	3.0	2.3	0.6	2.1- 2.4	2.3	0.6	2.1- 2.5	2.31	0.6	2.1- 2.5

 Table 7. Implementation rates and subscales for middle and high schools

Overall, 76.6% of the principals reported using five to six (of a possible six) strategies during the 2005-2006 school year to communicate information about the policy to students, school staff and visitors. More high school principals (87%) than middle school principals (67%) were included in this category. Signage was used at nearly all (98.4%) of the schools, with about half of the principals posting policy-related signs in at least four of five key locations on campus. Overall, 89.2% of the principals reported using announcements during the 2005-2006 school year to communicate information about the policy to policy targets, with more high school principals (93.8%) than middle school principals (84.8%) reporting that they used this strategy. High school principals used announcements twice as often as middle school principals. Table 8 summarizes these data.

Communication Variables	Overall N = 65	High Schools	Middle Schools
Five or six (out of a possible six) strategies used to communicate policy	76.6%	87.1%	66.7%
Signage to communicate policy placed around campus	95.0%	100%	90.0%
Signs posted in four or five (out of a possible five) key areas on campus	51.6%	58.1 %	45.5%
Announcements made at social or athletic events attended by public	91.5%	98.0%	85.0%
Policy announcements made <i>all of the time</i> or <i>most of the time</i> at athletic and social events on campus	67.5%	90.0%	45.0%

 Table 8. Variables related to the communication subscale

The overall compliance monitoring subscale score was 2.3 out of a possible 3 (SD = .59), with middle schools scoring 2.3 (SD = .68) and high schools scoring 2.3 (SD = .49). An independent samples t-test was conducted to compare the compliance monitoring subscale scores for middle and high schools. No significant difference was found between scores for high schools (M = 2.32; SD = .49) and middle schools (M = 2.28; SD = .68 where t (63) = .245, p = .80). Table 9 identifies the percentage of principals who indicated that a location or event was monitored *very strictly* or *somewhat strictly*. At both middle and high schools, policy monitoring was strictest inside school buildings (including rest rooms), and least strict at school-sponsored athletic and social events off campus.

Compliance Monitoring Variables Principal reports <i>very strict</i> or <i>somewhat strict</i> monitoring	Overall N = 65	High Schools	Middle Schools
Inside school buildings, including restrooms	95.2%	96.8%	93.8%
At school-sponsored athletic and social events on campus	87.3%	90%	84.8%
Parking lots, playing fields and other school grounds	84.4%	93.5%	75.8%
At school-sponsored athletic and social events off campus	64.2%	64%	64.3%
On campus after regular school hours	83.9%	86.7%	81.3%

Table 9. Variables related to the policy monitoring subscale

The third subscale, policy enforcement, had a mean overall rating of 2.31 (SD = .59) out of a possible 3. Results are summarized in Table 10. An independent samples t-test was conducted to compare the enforcement monitoring subscale scores for middle and high schools. No significant difference was found between scores for high schools (M = 2.3; SD = .58) and middle schools (M = 2.3; SD = .62; where t (63) = -.038, p = .97). Overall, 86.2% of the principals had official sanctions in place that were applied to students when the policy was violated – regardless of the student or situation. Fewer principals had sanctions in place to consistently address school staff (69.2%) and

school visitors (52.3%) who violated the policy. Nearly all principals (99%) reported that tobacco use was not permitted or tolerated on campus or at school-related events. Less than half of all principals (44.6%) reported that remedial or educational sanctions were offered *always* or *almost always*³ to students who violated the policy. Middle schools are more likely than high schools to offer educational or remedial sanctions to policy violators. Furthermore, a chi-square test found that schools that address policy violations using *official sanctions* – versus handling violations on a *caseby-case basis* – were more likely to offer students educational or remedial sanctions *always* or *almost always* [N = 64; p = .041].

While information on the availability of tobacco cessation programs was not included as part of the IR, results showed that overall 53.8% of schools – 62.5% of high schools and 45.5% of middle schools, respectively – offered tobacco cessation services to students during the school year. When cessation services for students were not offered, the reasons most often provided included: *there is no demand for this service* (40%); *not directed by district administration* (13.8%), *lack of funding* (10.8%) and *not the responsibility of the school* (6.2%).

Enforcement Variables	Overall N = 35	High Schools	Middle Schools
Standard sanctions in place for students	86.2%	91%	84%
Standard sanctions for school staff	69.2%	78%	61%
Standard sanctions for visitors	52.3%	63%	42%
Tobacco use permitted or tolerated on campus	99.45%	98.9%	100%
Remedial/educational sanctions provided always or most of the time to students policy violators	44.6%	41%	59%

Table 10. Variables related to the policy enforcement subscale

Finally, the role of school tobacco policy violations was considered in terms of how the number of violations related to the IR. Three variables associated with policy violations were considered: (a) the total number of policy violations by students, school staff and visitors, as reported by the

³ Indicated by circling a 1 or 2 on a scale of 1 to 5, with 1 meaning *always* and 5 meaning *never*

principal; (b) the percentage of students who reported smoking at least one cigarette on campus or at school-related events in the 30 days prior to taking the 2005 YTS survey; and (c) percentage of students who reported seeing a teacher or anyone else who works or volunteers at the school use any tobacco product at any time during thirty days prior to taking the 2005 YTS survey.

First, the total number of policy violations by students, school staff and visitors at the school during the school year, as reported by the principal, were considered. Overall, the mean number of violations was 15.7 (SD 24.4) with high school principals reporting 27.3 (SD 28.9) violations and middle school principals reporting 4.5 (SD 5.4) violations during the 2005-2006 school years. Descriptive analysis showed that schools with a high IR, characterized as having an IR of 6.75 or more (placing them in the good or ideal categories) had a lower mean number of policy violations than schools with a *low* IR, characterized as having an IR of under 6.75 (placing them in the fair or poor categories). Specifically, high schools and middle schools with high IRs had an average of 21.8 and 3.4 policy violations, respectively, during the 2005-2006 school year. This was compared to high schools and middle schools with low IRs, which had an average of 34.4 and 6.5 policy violations, respectively, during that same time period. These results, which are included in Table 11, were not statistically significant. This variable was investigated further using the Pearson product-moment correlation coefficient. A small negative correlation was found between the IR and the total number of policy violations at both high schools (r = -.189; n = 32) and middle schools (r = -.234; n = 33), suggesting that schools with higher IRs have fewer policy violations. However, these values were not statistically significant. The relationship between the total number of policy violations and the various subscales of the IR was also investigated, again using the Pearson product-moment correlation coefficient. A statistically significant, negative correlation of moderate strength was found between the enforcement subscale of the IR and the number of policy violations in middle schools [r = -.37, n = 32, p < .033], with a higher enforcement rating associated with lower numbers of policy violations.

A second variable related to policy violations is the percentage of students who reported smoking on school property at least one day during the 30 days prior to taking the 2005 YTS survey. Overall, 5.3% of students reported smoking on school property during this time period. Of these, 8.07% (SD 7.65) were high school students and 2.54% (SD 4.76) were middle school students. Descriptive analysis showed that high schools with a *high* IR, characterized as having an IR of 6.75 or more (placing them in the good or ideal categories) had a lower mean number of students that report smoking at school than schools with a *low* IR, characterized as having an IR of under 6.75 (placing them in the fair or poor categories). Specifically, 7.4% of students at high schools with high IRs reported smoking on campus in the 30 days prior to taking the 2005 YTS as opposed to 9.1% of students at high schools with low IRs. This information is provided in Table 11. This number was not statistically significant. Further analysis looking at the relationship between reported student smoking and the IR shows a moderate negative correlation between this variable and the communication subscale of the IR among both high school students (r = -.315; p = .09) and middle school students (r = -.336; p = .07).

A third variable related to policy violations was the percentage of students who reported seeing a teacher or anyone else who worked or volunteered at the school use any tobacco product at any time during the thirty days prior to taking the 2005 YTS survey. This included during school hours, after-school but while still on campus, while riding a bus, or at an after-school event held on campus, such as an athletic event. Overall, 22.19% (SD = 13.06) of the students taking the 2005 YTS reported seeing a staff member or adult who volunteers or works at the school use tobacco on campus or at a campus-related event during this time frame. This included 30.33% of the high school students (SD = 11.98) and 14.04% of the middle school students (SD = 8.14). Descriptive analysis showed that high schools with a *high* IR, characterized as having an IR of 6.75 or more, have a lower mean number of students who reported seeing school staff or volunteers smoking at school in the thirty days prior to taking the survey than schools with a *low* IR, characterized as having an IR of under 6.75. This information is provided in Table 11. A one-way analysis of variance was conducted to

find out if there was a difference in the percentage of students who saw a teacher or school volunteer smoke at school in the past 30 days at schools with a high vs. low IR. A statistically significant difference at the p <.05 level between the groups characterized as high implementation and low implementation was identified for HS. The strength of association, or effect size, was .17 using eta squared. According to Cohen, eta squared values can range from 0 to 1. An effect size is considered large if this value is .14 or more ¹⁹³.

Further analysis looking at the relationship between the percentage of students who reported seeing school staff or volunteers smoking and the overall IR revealed a moderate negative correlation for high school students (r = -.33; p = .07). When the IR was broken into its various subscales, a moderate negative correlation was seen between the number of high school students who had seen school staff or volunteers smoke on campus and the compliance monitoring subscale (r = -.38; p = .035).

S	chool Type	Principal Report Policy Violations Mean and (SD)	Student Report Smoking on Campus Mean and (SD)	Student Report Staff Smoking on Campus Mean and (SD)
High Sc	hool			
≻ Hi II	R: 6.75 or more	21.8 (17.6)	7.4 (7.6)	20.0 (11.5)
> Lo I	R: Less than 6.75	34.4 (42.2)	9.2 (7.9)	36.7 (10.4)
Middle	School			
≻ Hi II	R: 6.75 or more	3.4 (4.2)	2.9 (5.7)	13.6 (8.4)
> Lo I	R: Less than 6.75	6.5 (6.8)	1.9 (2.5)	14.8 (8.1)

Table 11. Mean policy violations by school type and IR

Finally, the relationship between these three compliance-related variables was examined, as well as the relationship between these variables and the current student smoking rate. For high schools, a strong, positive correlation was found between the percentage of students who reported smoking on campus in the thirty days prior to the survey and the current student smoking rate for the school (r = .495; p = .005). For middle schools, moderate correlations were found between the current smoking

rate and the principals' report of compliance violations (r = .337; p = .059), and between current student smoking rate and the student reports of staff smoking on campus in the thirty days prior to the survey (r = .44; p = .015).

Research Question Three

The third research question was, "What factors facilitate or hinder implementation of 100% TFS school policies at NC middle and high schools?" To further explore relationships among variables, schools were, again, re-classified as having implementation rates that were either high or low. Schools with an IR of 6.75 or more, placing them in the *ideal* or good categories, were considered as having a high IR; and schools with an IR under 6.74, placing them in the *fair* category, were categorized as having a *low* IR. Logistic regression was conducted to determine if factors such as school type, school size, current youth smoking rate, tobacco production per county, principals' perceptions of policy effectiveness, support for the policy and length of time the policy had been in place were significantly associated (p < .05) with schools that were classified as having a *high* or *low* IR. A forced entry method, where all the predictor variables were tested in one block to assess their predictive ability, was used while controlling for the effects of the other predictors in the model. No significant associations between the IR and the various factors were found.

An exploratory analysis of the various factors that may be associated with the overall IR and the subscales was also conducted. First, the impact of time was considered. A one-way between groups analysis of variance was used to learn if there is a relationship between the length of time the policy has been in place at the school and both the overall IR and the three implementation subscales. Schools were divided into three groups according to the amount of time that had elapsed since the policy was adopted (Group 1: 12 months or less; Group 2: 13 - 36 months; and Group 3: 37 months or more). A statistically significant difference was found at the p < .05 level in the compliance monitoring subscale rating for the three groups [F (2, 62) = 3.78, p = .028]. The effect size, calculated using eta squared, was .11. Post hoc comparisons using the Tukey HSD test indicated that

the mean score for Group 1 (M = 1.91, SD = .7) was statistically different from the mean score for Group 3 (M = 2.49, SD = .42). Group 2 (M = 2.34, SD = .58) did not differ significantly from either Group 1 or 3. Additionally, a difference approaching statistical significance was found in the enforcement subscale rating for the three groups [F (2, 62) = 2.42, p = .096]. Comparisons among the three groups indicated that Group 2 (M = 2.6; SD = .48) was different from Group 3 (M = 2.1; SD = .65). These results are provided in Table 12.

	Variable	df	SS	MS	F	Sig.
Imple	mentation rating					
>	Between groups	2	1.09	.548	.526	.593
>	Within groups	62	64.57	1.04		
Comn	unication subscale					
>	Between groups	2	.816	.40	1.14	.324
>	Within groups	62	22.01	.355		
Comp	liance monitoring subscale					
>	Between groups	2	2.46	1.23	3.78	.028*
>	Within groups	62	20.14	.325		
Enfor	cement subscale					
>	Between groups	2	1.65	.82	2.42	.096
>	Within groups	62	21.12	.34		

Table 12 One-way analysis of variance for effects of time on IR and IR subscales

Significant at .05 level

Second, principals' perceptions of policy support and policy effectiveness were considered to determine if these attitudes may have influenced the overall IR or the various subscales. Independent samples t-tests were conducted to compare the IR, the communication subscale, the compliance monitoring subscale, and the enforcement subscale scores at schools where the principal perceived that there was high versus low support for the policy, and high versus low perceptions of policy effectiveness. No statistically significant differences were found.

Finally, the relationship between the communication, compliance monitoring and enforcement subscales of the IR was investigated using Pearson product-moment correlation coefficient. A small, positive correlation was found between the communication subscale and the enforcement subscale [r = .27, n = 65, p = .026] with a high communication subscale score associated with a high enforcement subscale score. Significant associations were not found among the other subscales.

To further identify and explore factors that facilitate or hinder 100% TFS policy implementation, key informant interviews were conducted with eight principals, five at schools that had the highest IR, and three at schools with the lowest IR. The sample was made up of five high schools and three middle schools. Six of the eight schools had implemented the policy for three years or less. Schools were located in regions across the state, in both rural and urban areas, and in areas that grow varying amounts of tobacco. Through the interviews, three themes emerged to suggest the various factors that affected implementation of the 100% TFS policy: (1) the attitudes of school principals; (2) leadership and support for implementation; and (3) resource availability or constraints. Following is an overview of the themes along with illustrative comments by the school principals.

Attitudes of School Principals

Principals' perceptions about the need to address the problem of youth tobacco use emerged as an important factor both supporting and hindering implementation. Principals at schools with high IRs believed that despite recent overall decreases in youth tobacco use, or low levels of tobacco use among their students, tobacco prevention through education and policy changes continued to be an important issue and one that they had a responsibility to address. One high school principal noted, "I think we have an obligation to keep educating kids about tobacco...." Another principal stated "It is our responsibility to try to head off a lot of the problems that freshman may face – like tobacco use and alcohol use." Still another said, "I don't just want the kids to not use tobacco at school – I want them to quit using tobacco." These principals had tobacco education and remediation programs at

their schools for youth who violated the policy and cessation programs for students who used tobacco and wanted to quit. Moreover, these principals believed that a 100% TFS policy had, in fact, contributed to a reduction in youth tobacco use at their school. This belief supported their continued implementation efforts.

In contrast, principals of schools with low IRs perceived the problem of youth tobacco use as negligible at their schools, or less important than other health issues, such as obesity, that students faced. One middle school principal noted, "We only have 2-3 [tobacco] violations during the whole school year, so it [youth tobacco use] is not a real problem at our school." Discussing the importance of the 100% TFS policy, she went on to say, "it [the policy] has been implemented and we have moved on. We are up to the next issue now – getting physical activity into the schools." Another principal at a middle school noted "not that it [youth tobacco use] isn't important now, but...we are spending more time with children who are overweight because that is the area that we are really concerned about...." Commenting on the importance of the 100% TFS policy at his school, a high school principal said "Our health focus tends to swing around....It [the 100% TFS policy] is important, but if I can rank it one way or another, I would say that its importance has dropped."

One way to understand how principals' attitudes about the policy influence their implementation efforts was by observing the various operations and process that they have put into place for implementing the policy. For example, a principal at a school with a high IR explained how he developed a seven-member policy "cabinet" that specifically focused on implementation of the 100% TFS policy:

We have an assistant principal who deals strictly with discipline, a lead teacher who deals strictly with assuring that tobacco education is incorporated into the curriculum, and a 'freshman academy' director who deals only with freshman academy⁴. Our student assistance director and three guidance counselors also participate. We have weekly cabinet meetings where we sit down and everyone checks in with where we are.

⁴ The Freshman Academy is a course that provides high school freshman with the tools to deal with challenges they may face in the upper grades, such as pressure to use tobacco or alcohol.

According to this same principal, this attention to the various implementation operations, and team approach translated into better policy outcomes: "We are able to identify students who smoke and provide them with assistance before they are caught. This, of course, is better for the student, but also for the staff as fewer students have to be handled administratively." Another principal, again from a school with a high IR, explained how the previous system of monitoring student behavior was modified when the 100% TFS policy took effect:

The supervisory structure at this school has a principal, three assistant principals, a uniformed police officer and two security guards on staff every day....Our primary responsibly is supervising the kids when they are not in class – before school, during lunch, during class changes, and after school....With this policy, we realized that we had to start monitoring potentially dead areas where students, staff or visitors may try to smoke, and monitor kids who we know have tobacco issues, so that we can help them before they get into trouble. Now, that level of oversight is part of our day-to-day routine, and we interact and talk about things we have seen or about things that may become an issue.

Unlike principals at schools with a high IR where processes and strategies were created or revised to accommodate the policy, principals at schools with low IRs did not recall any specific innovations to their organizational structure or operations designed to facilitate implementation when the 100% TFS policy was adopted. On the contrary, rather than design procedures to assure effective implementation, a principal from a school with a low IR related how, in response to unhappy fans, concessions were made to the policy, permitting some tobacco use on campus, as long as it was out of view of students. This principal stated "We have quite a few fans who walk away from everyone else to smoke...my response varies. Quite honestly, I am not going to make a huge issue out of it...at least they are out of the way." Similarly, rather than establish procedures to assure that workers do not use tobacco. He noted "…some of these subcontractors are doing you a favor, so you don't want to tell them not to smoke". Because these workers were often on campus after school or during the summer months when most students are not on campus, this principal concluded that their tobacco use "is not an issue."

At the same time, even principals from schools with a high IR had areas of discretion where tobacco use was tolerated on campus. One high school principal tolerated tobacco use by students, staff and visitors who were driving on and off campus, as monitoring and enforcing the policy under these circumstances "...is not reasonable for his staff."

Leadership and Support

Key informant interviews showed that the leadership and support of the school district superintendent was important to the implementation of the 100% TFS policy at the school level. Principals reported that administrative leadership was demonstrated when the superintendent spoke favorably about the policy at school and community meetings, thus serving as a policy advocate and demonstrating that district administrators believed the policy to be an important and effective measure. Leadership was also demonstrated when the superintendent reiterated the expectation that the policy would be enforced at the school level and held principals accountable for how the policy was implemented at their school. A high school principal at a school with a high IR reported, "Our superintendent ... has told us 'these are the rules, it's your school, [and] it's your job to enforce the rules at your school." Another principal, again from a school with a high IR noted, "We know without a shadow of a doubt that we have to enforce this [policy]." Principals at two other schools said they were required to provide reports on policy compliance and discuss their implementation experiences at regularly scheduled principal meetings. One of these principals said, "Our superintendent is always asking us questions about how it [the 100% TFS policy] is going. He wants to hear from people in the trenches, to get feedback so they can make sure things go smoothly." Thus, the superintendents' interest in the policy communicated to principals that the policy was an important measure, as well as one that school staff were expected to support.

In contrast, principals at two schools with low IRs reported that the policy was not discussed at district meetings, or in any communications from the superintendent. As one principal reported: "We never discuss it...we are just told to do it." In these schools, superintendent support for the policy, or

expectations that the staff will enforce it, was not always clear. For example, when asked to describe the support provided by school administrators in implementing the 100% TFS policy, one principal responded, "None. They basically don't provide support." Another principal noted that it is not clear if the policy is monitored by central office administrators: "I turn in my statistics. I don't know if they pay attention to them. I never hear anything back."

In addition to the importance of policy leadership to the local implementation process, principals also related the importance of administrative support to their efforts. In several school districts, the superintendent had designated other central office administrators, such as the SDFSC or the Director of Student Services, to support school-level implementation of the policy. These staff members played an important role in policy implementation at several schools. One principal stated, "Even now, after having the policy in place for three years, I'll call [the SDFSC] if I want to find out about programs for staff or students who use tobacco and want to quit." Another principal explained the supportive role of the school districts' school health advisory committee (SHAC): "They helped inform the surrounding community about the policy, educated staff, arranged for us to get signs, and held cessation programs for staff who had tobacco problems."

Not only was the support of school district administrators important, principals also highlighted the role that *students* at their school played in the implementation of the 100% TFS policy. Student-led, adult-supported organizations, such as peer-education programs, anti-tobacco advocacy groups, and student assistance programs were involved in multiple ways at schools with a high IR. One high school principal described the involvement of the school's student assistance program. "....they [the students] are the 'eyes and ears' at our school....if they see someone smoking in the bathroom, then they are trained on how to get them to put the cigarette out." A principal at another school discussed how their student assistance program worked together with school administrators to monitor the policy and encourage student cessation:

We have students who are part of the student assistance program out there helping other students quit. They are trained to talk with them about resources that are available. They meet weekly with the coordinator to discuss what has gone on....They will let us know

which students were smoking in the bathrooms, or outside. This way, we are able to identify a student who has a tobacco problem and get help for them before they are caught smoking on campus.

Still another principal discussed how students in their schools' peer education program distributed packets of information on tobacco cessation, along with the telephone number for a state-sponsored telephone "quitline", to other students who used tobacco and wanted to quit. This student involvement supported policy implementation by allowing remedial and educational approaches to be tried, possibly averting the need for punitive sanctions when a student was found to be violating the policy. One principal elaborated on this aspect of student involvement:

What's great is that the administration doesn't have to get involved, because if we get involved – for example, if we catch one of these kids smoking – then it becomes another ball game....we have to handle it administratively...we have to suspend them. But, if it goes through the student assistance program, then we can take a proactive approach and get them some type of aid before it comes to that, which is more in line with our goals.

Other activities in which students were involved included handing out information about the policy at athletic events, holding "tailgate parties" prior to athletic events to raise awareness, and making announcements about the policy at these events. Thus, student involvement supported 100% TFS policy implementation by communicating and reinforcing the policy, by monitoring and encouraging compliance, and by supporting cessation.

Resource Availability or Constraints

A third factor cited by principals as facilitating or hindering implementation of the 100% TFS policy was the availability of *resources*. These resources included signage, funding for tobacco education and cessation programs, training programs for principals, and time to plan for implementation. All principals participating in the interviews discussed the benefits of receiving free, high quality signs about the policy that were available through the state-sponsored *Tobacco-Free Schools Signs Project*. Through this program, NC school districts that adopted a 100% TFS policy received metal signs, banners, floor stands, and other items for distribution to all schools in the

district. The *Tobacco-Free Schools Signs Project* facilitated policy implementation by helping to communicate information about the policy, and supporting a normative environment that was disapproving of tobacco use on campus and at other school-related events.

Principals of schools with high IRs also discussed the benefits of having funding available to conduct alternative to suspension (ATS) and teen tobacco cessation programs, such as the Not on Tobacco (NOT) program. Funds were used to pay for school staff to be trained to implement these programs, or to hire outside facilitators to conduct these programs at their school. According to principals, the ability to offer these programs and services facilitated implementation of the 100% TFS policy in several ways. First, they decreased the number of students who used tobacco at their schools by offering an avenue for cessation. They also reinforced the policy and helped to create an anti-tobacco normative environment. Finally, these programs and services were an incentive for school staff to rigorously monitor compliance, as "catching" non-compliant students provided a way for students to gain help for their tobacco addiction. In addition to holding tobacco remediation and cessation classes, funding was used to support student anti-tobacco groups, allowing them to hold events and activities to raise awareness of the policy. Schools with low IRs did not offer tobacco education or remediation programs, and did not have student advocacy groups on campus.

In addition to resources such as signs and tobacco cessation and remediation programs, schools benefited by having access to training and education related to 100% TFS policy implementation. Several principals noted that the chance to attend a state-sponsored *100% Tobacco-Free Schools Leadership Forum* or *100% Tobacco-Free School Compliance Workshop* was instrumental in learning strategies used by their peers to implement the policy at their school.

Finally, *time* was a resource that both facilitated and hindered policy implementation. Specifically, having adequate time from when the policy was adopted by the BOE, to when it was implemented at the school, affected implementation of the policy. Principals in several districts with high IRs noted that an adequate amount of time was available from when the BOE adopted the policy until the policy took effect. This resulted in smoother implementation. Sufficient time permitted school staff to be trained in policy implementation techniques, signs to be placed around campus, and cessation classes for students and staff who used tobacco to be conducted. It also gave employees who used tobacco an opportunity to cut down or quit in order to make it through the school day without using tobacco on campus. Finally, adequate lead time allowed the school to effectively communicate information about the policy to the public. One middle school principal from a school with a high IR discussed the school districts' strategy of allowing nine months from the time that the policy was adopted in March, until it was implemented at the end of December of that same year. The extended lead time gave the school district time to educate the public, especially those who attend football games, about the policy. The following quote by the principal illustrates the importance of adequate lead time to implementation:

We anticipated that Friday night football games would be our biggest challenge....So we tried to get the word out to the community. We held several pre-game 'tailgate' parties, placed signs about the policy around campus, asked for voluntary compliance from fans at games, worked with the local media, ran cessation classes for students and staff, and sent information home to parents. When the policy was finally implemented [nine months] after it was adopted, everyone knew about it...no one even blinked.

Another principal discussed how having five months from the time of adoption to

implementation allowed him to work with school staff who use tobacco to help them quit or cut back:

We had some long-term staff members – all great teachers – who were concerned about how they would get through the school day without smoking. They were used to taking their smoke breaks. Having five months [from time of adoption to implementation] allowed these staff members to work towards cutting back or quitting.... When they came back in the fall, they were ready and able to comply.

Still another principal reported, "This wasn't a policy that could be adopted in one month and implemented in the next. We had a semester to get ready. That was definitely a good thing. This gave us [school principals in the district] a chance to go through an educational program, and then to go back to our schools and get our staff trained."

In contrast, a principal at a school with a low IR school talked about the lack of lead time from adoption to implementation and the impact this had. "The policy was adopted one month and

implemented the next. We barely had time to get the signs up and let people know...." This lack of time resulted in short-term solutions that often were not ideal. The high school principal noted,

It was the worst for our teachers who smoked – they were used to taking a couple of smoking breaks during the day, and now they were not able to. I agreed that they could leave campus during their planning time to smoke, but that was not a great solution, either. I remember one time when I was looking for one of the teachers, but found out that she was off campus on her smoking break.

Conclusion

Schools that participated in the study had an average IR of 7.05 out of a possible 9.0. According to the scale devised for this study, these ratings demonstrated *good* overall policy implementation. Using multiple regression analysis, a statistically significant positive association was found between the current youth smoking rate and the communication subscale of the IR. Significant differences in the communication scores were found for high schools and middle schools. A one-way analysis of variance found a positive relationship between the amount of time the policy had been in place and the compliance monitoring subscale score, with a longer amount of time resulting in a higher subscale rating. Less than half of the schools offered education or remediation for students who were caught violating the school's tobacco policy.

Interesting findings related to three categories of policy violations were identified. These categories are: policy violations reported by the principal, student reports of smoking on campus or at campus events, and student reports of school staff smoking on campus or at school events. First, a small negative correlation was found between the IR and the total number of policy violations for the academic year (as reported by principals) at both high schools and middle schools. A moderate, negative correlation was also found between the enforcement subscale and the number of policy violations at middle schools. Second, a moderate negative correlation was found between the moderate negative correlation was found between the correlation was found b

exists between the percentage of high school students who report seeing school staff smoke on campus or at campus related events and the overall IR and the compliance monitoring subscale.

Qualitative analysis of key informant interviews provided additional insight into factors that may have facilitated or hindered policy implementation. Three factors were identified. First were the attitudes of school principals. These included their perceptions about the problem of youth tobacco use among their students and their perceptions about the importance of youth tobacco prevention *vis a vis* other health issues of concern to youth (such as obesity). The second factor was the leadership and support provided by both school administrators and student anti-tobacco groups at the school. The third factor was the availability of resource – such as funding, training and time – to support implementation of the 100% TFS policy.

Chapter 7: Discussion

RQ1: Policy Implementation and Current Youth Smoking Rates

In this study, the association between the implementation of 100% TFS school policies and current student smoking rates is investigated; no significant association is found. It is not clear why there is not an association between the IR and current student smoking rates. One explanation may be time. Three-quarters of the sample (70.8%) have had the policy in place for three years or less. It may be that the influences of strict compliance monitoring, consistent enforcement and strong communication take longer to demonstrate a significant impact on current student smoking rates. Another explanation may be that there are other, more important components of policy implementation that are not captured in the scale. These might include: the availability of cessation or ATS classes, the tobacco prevention education curriculum used by the school (as well as how these are implemented), or whether or not there are coalitions or youth advocates working together with the school to implement the policy. Looking at intermediate school-level changes, such as the number of policy compliance violations on campus, rather than long-term changes, such as reductions in the current student smoking rate, may be more illuminating. Other intermediate variables that may shed light on the impact of the policy with regard to student smoking behavior include: student reports of smoking on campus, student reports of staff smoking on campus, the number of students making quit attempts, the number of students at earlier stages of smoking uptake, or the number of students participating in a cessation classes.

The use of 2005 NC YTS data to determine current student smoking rates may also play a role in the failure to find a correlation between the overall IR and current student smoking rates. This data set is not specifically designed to measure current student smoking by school or by policy status, but rather to generate statewide and regional tobacco prevalence estimates for youth. As such, bias may exist in the types and locations of the schools and classes selected to participate in this study. Furthermore, the study sample is not random and the composition of students in the study may have influenced findings. For example, because smoking rates increase with grade level, if the study sample had a high concentration of 11th or 12th grade classes, the current smoking rates for schools would have been greater than if a random sample of students had been selected. Finally, current smoking rates at these schools prior to the adoption of the policy are not available. Therefore, even if an association had been identified, its interpretive value would have been limited.

The relationship between the IR subscales and the current smoking rates are also examined. Interestingly, there is evidence of a positive association between the overall current student smoking rate and the communication subscale of the IR (p = .02), suggesting that schools that more rigorously communicate the policy have *higher* rates of current student smoking. One explanation may be that principals at schools with higher rates of current student smoking take more measures to communicate information about the policy in order to gain compliance, leading to higher communication subscale ratings. As such, current student smoking rates at the school may influence policy implementation.

To the researcher's knowledge, only one other study has considered 100% TFS policy communication and its impact. Pevzner and Ribisl found that schools with a clearly communicated 100% policy in place – defined as having signage and public announcements about the policy – had fewer instances of smoking at football games than schools where the policy was not clearly communicated ¹³⁹. Though this does not suggest that current student smoking rates are lower at these schools, it does demonstrate that policy communication may lead to improved policy compliance.

Other research has acknowledged the importance of policy communication to policy enforcement and compliance ^{15, 179}, and made the connection between perceived compliance with a 100% TFS policy and reduced youth tobacco use ⁹⁹, leading to the supposition that effective policy communication can lead to greater policy compliance which, in turn, can lead to reduced youth tobacco use. Taken together, these results and other research suggest a dynamic and interactive relationship between policy implementation and student smoking behavior. Here, student smoking rates may influence policy implementation, just as policy implementation may influence student smoking rates.

It is unclear why a positive relationship was found between current student smoking and the communication subscale and not the compliance monitoring and enforcement subscales, as well. Perhaps factors used to define compliance monitoring and policy enforcement in this study did not include key components that, had they been identified, could have also demonstrated a similar association. The use of 2005 NC YTS data to determine current student smoking rates may have also played a role. Nevertheless, this finding merits further research that includes additional investigation into the validity of the IR subscales, use of a random sample, and an experimental design.

RQ 2: Overall Implementation of the Policy

Six years after the 100% TFS policy initiative was launched, the majority of schools in the study are effectively implementing the policy. Three schools (4.6%) have achieved *ideal* implementation, defined as fully achieving the model of implementation on which this scale is based, and forty (61.5%) of the schools in the study are rated as having *good* implementation, defined as 75% – 99% of the model or ideal implementation. The remainder of the schools have *fair* implementation. According to this IR scale, no schools are considered *poor*. These findings are important as they point out that, for the most part, school principals and their staff are effectively implementing the policy. This suggests that efforts to support implementation by various state agencies and local
stakeholders is working, making it more likely that the policy will have its intended effect of reducing youth tobacco use and reducing exposure to secondhand smoke.

Encouragingly, all principals who participated in the study took some measures to communicate, monitor compliance and enforce the policy. This suggests that, despite differences in the school size, length of time the policy has been in place, or amount of tobacco grown in the county, all principals are actively implementing the 100% TFS policy. Also encouraging is that the majority of principals perceive the policy to be effective in reducing or maintaining already low rates of student tobacco use at their schools and consider the policy effective in preventing student tobacco use. According to Lubell, people are more likely to cooperate with a policy when they believe that it is effective at solving problems. Also, policies viewed as effective attract political support and administrative resources, while policies viewed as ineffective tend to be ignored, challenged or dismantled ^{178, 180}. Furthermore, most principals report strong community and school staff support for the policy. This is an important development because, as Pickett et al. notes, principals who believe that community members or school staff support the 100% TFS policy are more likely to support its implementation. Conversely, principals who believe community members and school faculty are opposed to a policy are more likely to ask that the policy be repealed, are less likely to mount consistent and comprehensive efforts to successfully implement the policy, and may be unwilling to demand full compliance, as it could lead to discord among staff or within the community ^{20, 178-180}. Thus, these high levels of perceived policy effectiveness and perceived policy support may contribute to the overall favorable IRs.

While overall implementation of the 100% TFS policy is going well, it is occurring unevenly, with some schools finding small but significant areas of discretion where school principals curtail policy requirements or shape the policy to match their preferences. These variations do not appear to be due to differences in school type, size, tobacco production in the state, or prevalence of current student tobacco use at the school. That policy implementation is occurring in a less systematic way than was anticipated seems to be more dependent on local circumstances and attitudes, rather than

school characteristics (such as size, location, etc.). School principals have varying attitudes related to the policy, different access to resources to support implementation, different degrees of administrative leadership and support, and varying approaches to implementation. On the one hand, this suggests the need for continued education, technical assistance, and services to support uniform implementation. On the other hand, it can be argued that variations in implementation are not surprising, and this may, in fact, demonstrate that schools are merely producing outputs that are closely responsive to the needs of the students, staff and visitors. Just as Lipsky and Sabatier found, when implementation of an initiative is placed in the hands of local officials operating in different political and social environments, uniformity in implementation may be difficult to achieve ^{156, 169}.

Policy Communication

Of the three dimensions of implementation examined in this study, the communication subscale received the highest overall rating (2.4). Three-quarters of school principals report using a minimum of five strategies to communicate information about the policy to students, school staff and visitors. Nearly all post signs about the policy on campus and make announcements at athletic and social events attended by the public at least some of the time. Clarke et al. and others recommend that school smoking policies be communicated by signs, in school communications, and at outdoor athletic events attended by the public ^{15, 17, 139}. These results indicate that school principals are taking steps to communicate information about the policy, using a variety of channels to reach various policy targets. Principals participating in key informant interviews note that the free signage provided by the state-sponsored *Tobacco-Free Schools Signage Project* is an important resource that supports policy implementation at their schools.

At the same time, there is room for improvement. While nearly all the schools use some signs on campus to communicate the policy, only about half (51.5%) post the signs in four or five, (out of a possible five) key locations such as campus entrances, building entrances, playing fields and stands, parking lots and other school grounds, and administrative buildings not used by students. Signs

increase awareness and improve understanding about the policy, thus reducing the number of inadvertent policy violations. Signs also help to create a normative environment that supports the anti-tobacco policy, and they facilitate compliance monitoring. For example, adequate signage means that when a school staff member asks a school visitor to stop using tobacco on campus, his or her request will be visually reinforced by signage on campus that communicates the official school policy. Lack of signage in key areas on campus may undermine policy implementation efforts. It is not clear if school principals in the study are making choices on sign placement based on their perceptions of need, the quantity of signs that are available to their schools, or both. A review of the signage needs of principals may indicate a gap. Advising school principals on sign placement and making larger quantities of signage available, as needed, may improve coverage, thus leading to better policy communication.

There is also evidence that high schools and middle schools differ in their ratings on the policy communication subscale, with middle schools scoring lower than high schools on all of the communication measures. One explanation is that several of the survey questions relating to the communication subscale make the assumption that the school has outdoor athletic and social events attended by the public. However, some middle schools may not hold these types of events on a regular basis, they may not have playing fields on school grounds and, thus, hold athletic events on public playing fields off campus, or they may hold events that are primarily attended by students and school staff, rather than visitors. For example, some middle schools hold football games on Thursday afternoons. If these are only attended by staff and other students from the school, the principal may not believe that announcements about the 100% TFS policy are necessary. Thus, a negative answer on the survey could lead to a slightly lower communication subscale rating. An adjustment on the survey should be made so that schools where announcements are not made at athletic events for reasons such as these do not receive a lower communication score.

A second explanation for middle schools' scoring lower than high schools on the communication subscale of the IR is that low rates of current student smoking and low rates of policy compliance

violations at schools may lead principals to assume that the problem of youth tobacco use is minor and that multiple communication measures are not warranted. However, studies show that most youth tobacco use begins during the middle school years ¹⁹⁴. This means that communication about the policy during events likely to be attended by students is particularly important during the middle school years as it can decrease the likelihood of youth trying and becoming addicted to nicotine, decrease access to tobacco products, prevent peers and adults from modeling tobacco use, and help to establish a normative environment that socially sanctions tobacco use and reinforces healthy behaviors ^{39, 110}. As such, it may be particularly important to encourage middle school principals to make an extra effort to communicate information about the policy.

Compliance Monitoring

The mean scores for monitoring compliance with the 100% TFS policy are fairly high (2.3 out of a possible 3.0 for both middle and high schools). The majority of school principals (95.2%) monitor the policy inside school buildings *strictly* or *very strictly*. School sponsored athletic and social events held on campus are also monitored *strictly* or *very strictly* by the majority of principals (87.3%). This percentage continues to steadily decrease when various other locations and events are considered. The settings or events where policy compliance is least likely to be *strictly* or *very strictly* monitored are school-sponsored athletic and social events that are held off campus. These include football games or soccer games held at other schools or at community sites, or social events such as a prom or school dance, that may be held at a local hotel. At these events, only 64% of principals report strict or very strict policy monitoring. Monitoring policy compliance is particularly important because, as noted earlier, most students start using tobacco during the middle school years, and close monitoring in school and school-related events most likely assures that they have fewer opportunities to do so by eliminating peer and adult role models for tobacco use, decreasing access to tobacco products, and supporting a normative environment that disapproves of tobacco use. Additionally, for schools that offer educational or remedial sanctions for tobacco use, close policy monitoring offers a mechanism

whereby students who violate the policy are identified and can gain access to services and resources to help them quit.

Unlike research by Kumar et al. which shows that for middle school students (but not high school students) monitoring student behavior is a significant negative predictor of daily cigarette use ¹¹, this study found no correlation. There may be several reasons for this lack of finding. As mentioned earlier, 2005 NC YTS data may not be the most appropriate data to use for this study. Furthermore, school monitoring typically involves having a number of school staff members or volunteers surveying school buildings, grounds and events over a wide range of times. Yet, information on compliance monitoring for this study is obtained from only one respondent within each school – the school principal. Though the assumption is made that principals are knowledgeable about how the policy is implemented in their schools, this may not always be the case. It is plausible that the principal is not fully aware of how strictly these locations and events are actually monitored. Therefore, compliance monitoring in some instances may be more or less strict than reported by the school principal, leading to no apparent correlation.

Assuring that the 100% TFS policy is strictly monitored requires a number of steps. The expectation that the policy will be monitored for compliance must be communicated effectively to all those involved, and the support of those charged with monitoring the policy must be gained. Training, for example, on how to address violations when they are noted, must occur. Monitoring procedures that assure coverage of key areas on campus and at school events both on and off campus must be created. Those responsible for monitoring must also be monitored themselves to confirm that they are fulfilling their responsibilities. Support from the policy targets must also be gained so that the authority of those monitoring the policy is recognized and accepted. Obstacles that stand in the way of a person making a commitment to strictly monitor the policy need to be addressed. For example, one obstacle may be a concern by school staff that tobacco use is legal for adults and that they cannot, therefore, prevent adults from smoking at an outdoor athletic event. Another obstacle may be concerns of school staff that sanctions for student policy violators are too harsh and, thus,

identifying students who are noncompliance will result in punishment that will harm, rather than benefit the student.

Interestingly, analysis of variance reveals a significant positive association (p = .028) between the length of time that a policy has been implemented and the compliance monitoring subscale of the IR, with a *higher* compliance subscale score related to those schools that have had the policy in place for a *longer* period of time. This finding suggests that staff at these schools monitor campus buildings and grounds, as well as school-related events both on and off campus more strictly than those schools that have been implementing the policy for less time. One reason for this finding may be that, over time, school staff develop better policy monitoring processes and operations. Thus, policy learning, for example through discussions with peers in other schools about effective monitoring techniques or participation in the state-sponsored *Compliance Workshops*, may play a role. As time goes on, and perhaps with some trial and error, school staff acquire the knowledge and skills to better monitor the policy. This supports the conceptual framework of the project, which is based on the ideas of Sabatier, that the policy implementation process involves a feedback loop whereby interpretation of implementation results form the basis for modifications to the process in order to better achieve policy goals ¹⁵⁶.

On the other hand, it may be that schools that have had the policy in place for a longer period of time are different in some way from schools that have had the policy in place for a shorter length of time. For example, schools that have had the policy in place for over three years can be considered *early adopters* of the policy, and as such, may have superintendents or BOEs who are more committed to the policy and have higher expectations that the policy will be closely monitored. Through their leadership, school principals may be encouraged or directed to take measures to assure that compliance monitoring takes place. Because they are among the initial school districts in the state to adopt the policy, these schools may also be located in communities that are more supportive of the policy. Thus, there may be a higher expectation among community members that the policy is strictly monitored. Schools that are *late adopters* – for example, they have had the policy in place

for less than a year – may not have strong school district or community support for the policy, or this support has not had an opportunity to develop. As such, school staff may not monitor the policy as strictly, and community members may not expect rigorous monitoring. While these various explanations are intriguing, it is not possible to draw any conclusions using the present survey and key informant interviews.

In addition to examining compliance monitoring at the schools, this study also considers three measures of policy compliance: (a) the number of student violations reported by the principal for the 2005 - 2006 academic year; (b) the percentage of students at each school who report seeing a school staff member or school volunteer smoke on campus or at a school-related event in the thirty days prior to the 2005 YTS survey; and (c) the percentage of students at each school who report having smoked at least one cigarette on campus in the thirty days prior to the 2005 YTS survey. The study shows a moderate, positive correlation between the high school principals' reports of student policy violations and the current student smoking rates at their respective schools, suggesting that schools which have more students who smoke also tend to have more students caught violating the policy. There can be several explanations for this association. It may be that having more students on campus who smoke simply increases the chance that they will be caught. Or, schools with a higher number of students who smoke may take extra measures to identify policy violators, resulting in more students being caught. These schools may be different in other ways. For example, they may offer educational or remedial sanctions for students caught smoking on campus, leading to more school staff "catching" students who are smoking as this leads to the students' receiving assistance for their tobacco use. Further analysis of this result may help identify the nature of this association.

The second compliance-related variable examined in this study is the percentage of students who reported seeing school staff or volunteers smoking on campus in the thirty days prior to their school's participation in the 2005 YTS survey. Study results show that 14.0% of middle and 30.3% of high school students reported seeing school staff or volunteers smoke on campus during this time. This variable is related to several others, providing insight into the role of school staff in influencing youth

tobacco use. First, there is a significant (p < .05) difference between high schools that have a *high* IR vs. a *low* IR and the number of students who reported seeing school staff or volunteers smoke on campus or school-related events in the thirty days prior to taking the survey. Students at schools with a high IR were less likely to have reported seeing school staff or volunteers smoke than students at schools with a low IR. Second, a moderate negative correlation was found between the percentage of high school students who reported seeing school staff or volunteers smoke on campus during this time frame, and both the overall IR *and* the compliance monitoring subscale. This suggests that schools where students are more likely to see staff or volunteers smoking are less likely to have effectively implemented policies and, specifically, are less likely to have policies with a stronger compliance monitoring component. Third, among middle school students, a moderate positive correlation was found between students who report seeing school staff smoke and the current student smoking rate, suggesting that schools where more students report seeing school staff smoke have higher current student smoking rates.

Taken together, these three findings offer insight into the influence of school staff on the implementation of 100% TFS policies and student smoking. Research suggests that students' exposure to teachers smoking on school premises is significantly associated with smoking behavior ¹². Studies also show that teachers can influence students' perceptions of tobacco, and their actions regarding tobacco use, by serving as role models for healthy or unhealthy behaviors ^{102, 115}. Findings from this study support the idea that exposure to smoking by teachers can influence adolescent smoking because teachers who smoke in front of students at school function as role models. An underlying assumption of the social cognitive learning theory is that adolescents acquire favorable attitudes towards substance use from friends, parents, or other influential people who either use these substances or express favorable statements and attitudes towards their use ¹²⁶. This theory suggests that approval of smoking by friends, parents or other key people (such as school staff) is likely to increase the probability that a youth will begin smoking, through the imitation of powerful role

models. The theory of reasoned action posits that an attitude is more likely to be expressed behaviorally when it is supported by a favorable environment ¹²⁵.

Furthermore, the association between student reports of staff smoking and both the low IR and low compliance monitoring subscale scores suggests that a normative environment of tolerance for smoking exists in many of the schools in this sample, and that this may be influencing student smoking rates. Kumar et al. demonstrate that a normative climate towards substance abuse in schools makes a difference in the probability of substance use by students. This is true across 8th, 10th and 12th grades for daily cigarette use, heavy drinking and marijuana use ¹⁰². Other research shows that school smoking bans are associated with delays in smoking uptake only when students perceive that compliance with the ban is strong⁹⁹. It may be that when policy compliance is weak, these delays are not present, or if present, to a lesser effect. When schools effectively implement the policy, a normative environment of disapproval of tobacco use is established and students are less likely to see school staff and volunteers smoke on campus in violation of the policy. This, in turn, can inhibit the smoking behavior of individual students at the school.

A third compliance-related variable examined in this study is the percentage of students who report having smoked on school property in the thirty days prior to the survey. Overall, 5.3% of students reported this behavior. Of these, 8.07% are high school students and 2.5% are middle school students. This is comparable to findings from the statewide 2005 YTS, which show that 8.9% of high school students and 2.1% of middle school students reported smoking on school property in the thirty days prior to taking the survey. Interestingly, this variable shows a moderate negative correlation with the communication subscale of the IR, with higher communication subscale scores associated with lower numbers of students who report smoking on school property. One explanation may be that more effective policy communication helps to establish a normative environment that disapproves of smoking. Thus, students who choose to violate the policy must go against the school norm. Policy communication can also inhibit students from smoking on campus by helping to clarify rules and remind students of consequences. The survey did not assess the relative importance of the

various communication-related actions undertaken by the principals at the schools. Therefore, some of these may be more important than others in preventing students from smoking on campus. For example, having student-led activities on campus (such as tailgate parties or pep rallies) that uses peers to reinforce the 100% TFS policy and help to establish a tobacco-free school norm may be more important than including a copy of the policy in the student handbook. More research on this subscale, the relative importance of these various communication-related activities, and how they relate to student compliance with the policy is needed.

Policy Enforcement

Like those of the compliance monitoring subscale, the policy enforcement subscale scores are fairly high – 2.28 for middle schools and 2.31 for high schools. This study shows that the majority (86.2%) of school principals have official sanctions in place at their schools that are applied consistently when students violate the policy, irrespective of the student or the particular situation in which the policy violation occurred. This percentage drops when school staff (69.2%) and school visitors (52.3%) violate the policy. In these cases, principals are more likely to apply sanctions that are dependent upon the individual and the situation. Thus, one person may be sanctioned for a tobacco policy violation, while another person who commits the same violation may not be sanctioned, or may receive a different sanction.

Research on the emergence of an anti-tobacco norm suggests that when sanctions for tobacco policy violations are applied in certain situations frequently and consistently, and the costs of being sanctioned are relatively high, "discriminatory learning" takes place and the person develops cognitive expectations that these sanctions will occur in similar situations. Then, when they enter a situation where a type of behavior, such as smoking, has been punished in the past, they are less likely to engage in that particular behavior ¹⁹⁵. Therefore, for school tobacco policy compliance to be high, people must be convinced there is a strong likelihood that they will be sanctioned if they violate the policy, and they must perceive the sanction to be unpleasant enough to want to avoid.

However, if sanctions are inconsistently applied, or if they are so mild as not to lead to avoidance, discriminate learning does not take place. Instead, the sanctioning process engenders a *conditional norm*: one where smoking is tolerated in certain settings and not in others. In this situation, the person is more likely to demonstrate noncompliance by repeating the behavior in the setting where they perceive their smoking behavior to be acceptable ¹⁹⁶.

Applied to the school setting, students, staff and visitors must be convinced there is a strong likelihood that they will be sanctioned if they violate the 100% TFS policy, and that the sanction will be strong. When punishment does not occur, the deterrent effect of the sanctions is lost. Thus, inconsistent enforcement facilitates the use of tobacco among youth by permitting settings where tobacco products are accessible and tobacco use is implicitly or explicitly encouraged. Poor enforcement also makes it easier for students to see potential role models, such as teachers and other adults, using tobacco, which can encourage its use ^{48, 109}. These findings are supported by research which shows that consistent 100% TFS policy enforcement, as well as the *perception* among students that the policy is consistently enforced, is linked to lower rates of smoking among students ^{14, 20, 109, 143, 146}. In summary, strong sanctions and clear and consistent enforcement parameters are important as they help to shape behavior, decrease access to tobacco products, and establish a tobacco-free school norm as a standard of behavior for adults and youth leading to fewer policy violations ³⁹.

To better understand this concept, the overall number of policy violations at the schools participating in this study was compared to the enforcement subscale to determine whether there is a relationship between policy enforcement and policy violations. A statistically significant, negative correlation of moderate strength was identified between the enforcement subscale and the number of policy violations in middle schools, with a higher enforcement rating associated with lower numbers of policy violations. Other results from this study also demonstrate that both middle and high schools with higher overall IRs have lower mean number of policy violations. This suggests that uneven enforcement, and uneven policy implementation, reduce the deterrent effect of the sanctions, resulting in no change, or minimal change in target behavior and more policy violations.

It is not clear why staff at some schools consistently enforce the 100% TFS policy while others do not. However, it is reasonable to assume that a variety of factors influence these decisions. These may include the personal attitudes about the impact of the punishment, the severity of the violation, characteristics of the policy violator, the repeat offender status, grade level of the student, and overall behavior of the person violating the policy. For example, in a study by Small et al., researchers found that the percentage of time that sanctions were *always* or *almost always* applied to student policy violators depended on the type of sanction. When the sanction was to encourage students to participate in a tobacco education program, it was applied *always* or *almost always* 32.8% of the time. When the sanction was to place a student in detention, it was applied *always* or *almost always* 26.3% of the time ⁷². Understanding reasons why principals apply sanctions – or don't apply sanctions – to tobacco policy violators is an interesting and practical area for further research and may provide opportunities to work with school and community leaders to create more consistently enforced 100% TFS policies that serve as a deterrence to youth tobacco use.

Further analysis of the enforcement subscale reveals other areas where implementation of the 100% TFS policy can be improved. One circumstance that needs strengthening is the use of nonpunitive, remedial sanctions for students caught violating the policy for the first time. Only about half of the principals in this study – 59% and 44.6% of middle and high school principals respectively – reported applying remedial or educational sanctions, such as tobacco prevention education programs or counseling, *always* or nearly always⁵ when students at their particular schools violated the policy for the first time. For the rest of the schools, punitive sanctions, such as in-school suspension or out-of-school suspension were used exclusively. This is consistent with other research which shows that, in general, US schools are more likely to use punitive sanctions in response to school tobacco policy violations, rather than sanctions that offer remediation through education, counseling or cessation support ^{131, 148, 150, 151}. Despite their wide use, scholars have not found a

⁵ As indicated by selecting 1 or 2 on a scale of 1-5, where 1 signifies *always*, and 5 signifies *never*.

correlation between severe sanctions and reduced student tobacco use, and have found a correlation between sanctions with an education or treatment focus and less tobacco use ^{11, 15, 148}.

Beyond the potential effect on reducing student tobacco use, the orientation of sanctions can influence those who are expected to monitor the policy and bring violators to the attention of school administrators. Research shows that harsh or severe sanctions may be perceived, by those responsible for enforcing the policy or by community members, as violating professional, personal or community norms¹²². For example, some school staff may believe that suspending students for violating the 100% TFS policy will lead to at-risk students missing a greater proportion of school, becoming disconnected from the positive influences of the school environment, or potentially dropping out of school altogether ¹⁴⁸. As a result, when student policy violations are observed, those responsible for compliance monitoring may choose *not* to bring these students to the attention of school administrators for sanctioning. On the other hand, when sanctions are more in line with professional, personal and community norms – for example, assistance is offered to students to stop using tobacco – those responsible for policy monitoring may be more inclined to bring students who violate the policy to the attention of school administrators. Thus, punitive sanctions may hinder policy enforcement, while educational or remedial sanctions may support enforcement. These findings suggest that it may be advantageous for school and public health leaders to work together with school principals on developing sanctions that both support policy enforcement and help students who use tobacco to quit.

Linked to the need for educational and remedial sanctions for students violating the schools' tobacco policy is the need to increase the number of schools that offer smoking cessation programs to all students who use tobacco and want to quit. According to the 2005 NC YTS, 46.8% of high school student and 56.9% of middle school students who currently smoke want to quit and even more – 55.5% of high school students and 69.5% of middle school students – have already experienced unsuccessful attempts at smoking cessation ⁵⁷. School-based tobacco cessation programs can support implementation of 100% TFS policies in several ways. If students who use tobacco are able to quit

or cut down, the pool of users on campus will be reduced and schools may experience better policy compliance. As mentioned, offering tobacco cessation opportunities to students who violate the policy may also appeal to school staff more than punitive sanctions. This means staff will be more likely to consistently monitor and enforce the policy. Cessation programs also contribute to the creation of a normative school environment that is disapproving of tobacco use and supportive of healthy behaviors, which can lead to less tobacco use and more support for the policy.

Despite these benefits, only about half of the schools in this study (53.8%) offered access to a tobacco cessation program for students during the 2005-2006 school year, with more high schools (62.5%), than middle schools (45.5%) providing this resource. The most frequently cited reason for not offering student cessation programming was a lack of demand for this service. Twice as many middle school principals as high school principals cited lack of demand as the primary reason for not providing cessation services to students. It is not surprising that middle school principals would perceive a lack of demand for student cessation programs, as a relatively low number of middle school students represented by this research currently smoke (6.78%) and few middle school students - on average 2.5 - have been caught using tobacco in violation of the school's policy. High school students, on the other hand, have higher rates of current student smoking (22%) and a higher mean number of policy violations (22) over the 2005 – 2006 school year. This suggests that there is a need for such programs that may not be addressed at the school level. At the same time, research shows that even when these programs are available, adolescents' low awareness, familiarity, and recognition of the value of cessation programs discourages many of them from participating ⁴⁸. Thus, while survey results point to a need to support student cessation, school principals suggest that there may not be a demand. Furthermore, it is unlikely that principals will initiate or continue a program that is not utilized. Nevertheless, research shows that youth begin using tobacco during middle school and those youth who begin smoking at earlier ages tend to use larger amounts of tobacco, over longer periods of time, and have more difficulty quitting than youth who begin smoking later in life ³⁵. Thus, it is important that middle and high school principals perceive the need for student cessation,

understand the benefits that cessation may offer for students, and regularly provide these programs to all students who want to quit. While no evidence suggests that forcing adolescents to attend a group cessation programs is a useful policy, it seems reasonable that schools would offer access to treatment for tobacco addiction, in addition to disciplinary action that may be warranted, and both encourage and facilitate student participation. Opportunities seem substantial for students, parents, advocates and public health leaders to work together to develop convincing arguments for school district administrators about the need for student cessation programs, and for students about the benefits of entering a cessation program. This could result in more smoking cessation programs' becoming available at the middle and high school levels, and more adolescents becoming aware of their availability and benefits.

RQ3: Factors that Influence Implementation

The intent of this research question is to identify factors that hinder or facilitate implementation of the 100% TFS policy. Researchers such as Sabatier and Mazmanian, Pressman, and Wildavsky have proposed that characteristics of the implementers, features of the local site context and the specific implementation processes largely determine the eventual outcomes of policy decisions ^{159,} ^{160, 176}. With this idea in mind, both quantitative and qualitative techniques are used to identify factors that may influence the implementation of the policy. Logistic regression is conducted to determine if any factors are significantly associated (P < .05) with schools that are classified as having a *high* or *low* IR. School type, school size, current youth smoking rate, tobacco production per county, principals' perceptions of policy effectiveness, support for the policy and length of time the policy has been in place are considered in the regression model. No significant associations between the IR and the various factors are found. Key informant interviews are also conducted to further explore factors that may affect a schools' implementation of the policy. Three themes are identified. These are: (a) the attitudes of the school principals; (b) policy leadership and support; and (c) resource availability or constraints.

Attitudes of school principals

One objective of the key informant interview is to identify characteristics of school administrators that are common in schools with optimal or suboptimal implementation. The policy and education implementation literatures suggest that the interests of school officials mediate any reform, shaping its final level of implementation ^{155, 164, 172, 174}. Though the survey did not demonstrate an association between principals' perceptions of policy effectiveness or policy support and the IR rating for the school, key informant interviews with principals offer richer and more detailed information on how their attitudes and perceptions play a role in the implementation of this policy. One issue addressed in the interviews is their beliefs about the prevalence of youth tobacco use at their particular schools. Principals at schools with optimal implementation consider the issue of youth tobacco use to be highly salient and believe that preventing tobacco use remains an important issue -one that the school has a responsibility to address by providing a tobacco-free environment, remedial education for students who violate the policy, and cessation resources. Overall, they consider tobacco use to be low but credit the policy as a factor in achieving this goal. On the other hand, principals at schools with lower IRs perceive the problem of youth tobacco use to be of diminishing or relatively minor importance, with few students using tobacco. Moreover, when compared to other issues they are required to address through school policies or programs, such as student obesity, the 100% TFS policy is of lower priority.

The qualitative analysis suggests that the IR is reflective of a principal's general ideological disposition about the policy. According to Sabatier et al. any new policy requires having implementing officials who are sufficiently committed to and persistent in the development of operating procedures, and in their enforcement, in the face of resistance from target groups ^{156, 160}. For this condition to be met, the policy must be congruent with an individual's personal beliefs. As seen in this study, principals who believe in the salience of the policy construct various organizational supports to enhance implementation and to address barriers so that implementation

goes smoothly and the policy's original intent remains unchanged. On the other hand, principals who do not view youth tobacco use as an issue of high priority at their school make few accommodations for the policy. Instead, they fit implementation into the existing organizational structure at the school with few modifications. In one instance where barriers are encountered, the policy rather than the process is subject to modification. To illustrate, complaints from fans regarding the use of tobacco at football games led the principal at one high school to renegotiate the policy, allowing tobacco use among fans at the stadium as long they remain out of view of others. Interestingly, the renegotiated policy represents a shift from a policy of *zero tolerance* of tobacco use on campus, to one that focuses on *harm reduction*. Penz et al. noted that a harm reduction strategy can be a byproduct of lack of enforcement. This strategy tends to result from pragmatic difficulties which no-use policies fail to address. Though such a strategy represents a way to minimize disruptions and complaints, these researchers pointed out that the need for any strategy at all may mean policy goals are not being achieved⁷. This supports the theories of Van Meter and Van Horn, and Lipsky, in that as policy permeates to "street-level" practitioners, over time divergence from the initial policy maker's intentions becomes apparent. Furthermore, as these "street-level bureaucrats" have a degree of autonomy within an organization to renegotiate policies, modifications should be expected as part of the policymaking process ^{3, 169}. The example noted above illustrates the need for a policy to be congruent with the implementer's personal and professional values in order for it to be implemented faithfully. In summary, the interface between policy and practice can be characterized by ambiguity of intent and unpredictability of response, making it both complex and problematic

This scenario of policy renegotiation also illustrates the iterative process that underlies the complex association of social norms and policies, and the need to assure consistency between the two concepts. For example, policies that may be contrary to social norms of behavior, such as those banning tobacco use at school athletic events open to the public, may be nullified due to the discretion allowed by implementing agents when making decisions about policy compliance and enforcement. In this context, the public takes its cues from the behavior of the system. In turn, the

system is comprised of individuals who are affected by underlying social norms and also control how policies are executed, thus continuing the cycle. To insure effective implementation of policies and to avoid unnecessary enforcement procedures, wide-spread communication efforts directed at the community should be conducted to align the community norms with the views of the school system regarding the 100% TFS policy. To further assure consistency between norms and policy, educational efforts should target not only the community, but also school system personnel. If these norms lag behind policy, than the school may not have the full support of either the community or the school staff¹⁹⁷.

Leadership and support

A second theme that emerges from the interviews is the importance of having individuals and groups that provide policy leadership and support for implementation. Interviewees focus their remarks on two groups. The first are the central office administrators – specifically, the superintendent and the SDFSC. School studies have demonstrated that central office administrators are very consequential to policy implementation ¹⁶⁴. The superintendent and the SDFSC have a complex direct and indirect effect on the implementation of the policy at each site. In some settings they facilitate implementation by ensuring that school staff are trained to effectively implement the policy. These administrators also anticipate and minimize barriers and challenges to the policy and establish forums where principals can discuss problems and share strategies that work with their peers. Both the superintendent and SDFSC have extensive ties to community agencies such as the health department, and they use these ties to gain resources in support of policy implementation. They also serve as strong advocates – both within the school district and the community, thus helping to increase awareness of the policy and acceptance of the change. Superintendents further support implementation by communicating expectations that the policy will be effectively implemented at the schools, and holding principals accountable by requiring reports or updates on progress at principal meetings. Schools with suboptimal implementation note that there appeared to be little interest

among central office administrators in the policy. It is not discussed or tracked, and there is a sense that the policy is not important to senior level administrators in the district.

Policy theorists provide some insight into the role of leadership and support in the 100% TFS policy implementation process. They suggest that the decisions at any given institutional level affect the rules of the next lower level. Thus, the BOE will set the basic institutional rules for the central office administrators of the school district (such as the superintendent), and these administrators will set the basic rules for the implementing agency (the school). If central office administrators do not clearly establish rules for implementation, then school principals will be challenged to establish operating procedures to set the policy into motion ¹⁶⁸.

In addition to central office administrators, a second group, *youth*, play a key role in policy implementation. Youth play a prominent role in advocating for 100% TFS policies⁸⁴, and in some of the schools with a high IR, these students go on to assist with policy implementation. In this study, youth are primarily involved with supporting adult-led efforts to communicate and monitor the policy. Research on the role of youth in policy advocacy suggests that youth experience greater success with these advocacy efforts if the project they are working on focuses on changing environments, fosters ownership of the project, includes appropriate training, offers adequate resources, and builds strong relationships between youth and adults. Furthermore, it is essential for youth to believe that the policy for which they are advocating is an effective strategy and that their actions will be instrumental in creating change^{84, 198}. While research has been conducted on the role of youth in the passage of 100% TFS policies ¹⁹⁸, no research has been specifically conducted on the role of youth in the *implementation* of these policies. However, it is likely that a similar set of requirements exists; meaning that youth working in this arena may be most successful when they can focus on changing environments, when they perceive ownership of the project, receive training & resources necessary to support school-level implementation, and are able to build strong relationships with adults also working towards implementation success.

Community coalitions often played an important role in the policy adoption process, but, unless coalition members are also school employees and implementation is part of their job responsibility, their activities tend to diminish during the policy implementation phase. Several principals note that local adult-led coalitions were initially involved with the districts' policy adoption process, but afterwards, the level of coalition interest waned. This is not surprising. Sabatier and Mazmanian noted that there is a general tendency for organized constituency support to decline over time following the adoption of a policy ¹⁵⁶. Jacobson and Wasserman pointed out that keeping members of community groups or coalitions interested in the often mundane and tedious details of policy implementation is not easy. The policy adoption process has a shorter time frame and a tangible outcome, while the policy implementation process requires a very focused and sustained effort. Without strong direction, it can be difficult to identify a place and purpose for community groups in the implementation process ¹⁸⁰. School and public health leaders working towards the adoption and implementation of the policy should craft a role for coalitions that will carry them beyond the adoption process. The product of this research, Guidelines and Practical Strategies for Implementing a 100% Tobacco-Free School Policy, which is included as Appendix D, offers a number of strategies for engaging local coalitions in the policy implementation process.

Resource availability or constraints

A third factor cited by respondents addresses the availability of resources to support policy implementation. Mazmanian and Sabatier pointed out that there are often insufficient resources, such as funds, staff or incentives, to ensure effective implementation of programs and policies ¹⁵⁶. In this study, schools with optimal implementation appear to have better access to resources and services that support implementation as compared to schools with suboptimal implementation. For example, one high school has a state-funded staff member located at the school whose singular focus is to prevent and reduce youth tobacco use across the school district. This staff member is trained in the implementation of 100% TFS policies, and as such, is able to undertake many of the implementation

tasks that would normally be the responsibility of school staff. Additionally, this person heads up a youth organization that is also working on student tobacco prevention and 100% TFS policy implementation issues. Another school principal reports that their school district has access to funding through a county tax on alcohol. These funds have been designated for tobacco prevention activities, and to conduct ATS and cessation programs. When funding or resources are not available, implementation efforts can be hampered. A principal from a high school with suboptimal implementation notes that funding is not available to offer students ATS or cessation classes. One resource that is accessible to all schools are signs promoting the policy provided through the state-funded *Tobacco-Free Schools Signs Project*. All principals note the benefits of having free, high quality signs available for placement around campus.

Some principals lack knowledge of resources that are available to support policy implementation. For example, most of the principals are not aware of free workshops offered by the NC TPCB designed to support principals implementing the policy. Also, when questioned about their knowledge of two state-funded websites related to 100% TFS policy implementation, none of the principals report familiarity or use of the information. Principals also did not know about the statewide program whereby they can purchase additional signs about the policy for their campus at a low cost. Most are also unfamiliar with the opportunity to send school staff, such as the nurse or guidance counselor, to be trained as an ATS program or NOT program facilitator. Having a trained facilitator on staff would mean that educational or remedial sanctions can be offered to students who violate the 100% TFS policy, or cessation programs could be offered to those students who use tobacco and want to quit. Finally, where local adult or youth tobacco coalitions were present in the county, in only one instance was the principal familiar with the local coalition and how they could work together on implementation of the policy. This indicates that, while good resources are available to support implementation, knowledge of these resources is not making its way to those responsible for the day-to-day implementation of the policy. Yet, even when principals are familiar with some of these resources, lack of funding can make their acquisition prohibitive. For example,

two principals note that sending a staff member to a training course (such as an ATS facilitator training or the NOT facilitator training) may incur costs related to hiring a substitute teacher for the day, paying program registration and reimbursing transportation costs for the staff member. Thus, staff participation in these programs becomes prohibitive. Having funds for school staff to participate in these types of training programs that support implementation may eliminate this barrier. In summary, if schools cannot assemble sufficient financial, organizational or human resources, sustaining the direction and momentum of the policy will be complicated. The knowledge and support of district administrators is key to principals' engaging these resources.

Finally, interviews demonstrate that *time* is also a key resource, and the amount of time schools have from policy adoption to implementation can affect implementation. At one high school, the time frame from policy adoption to implementation was short, creating barriers to successful implementation. The principal notes that there was not enough time to educate the public about the policy, support school staff cessation, or develop organizational processes to facilitate implementation. On the other hand, schools where the principal reports that adequate lead time was available were able to conduct these tasks, leading to a smoother implementation of the policy. While principals can provide input to school administrators as to an appropriate timeline for implementation, the decision ultimately rests with the BOE. This suggests that school and public health leaders might work together beneficially with BOEs on the development of an appropriate timeline for policy implementation, taking into consideration the changes that need to be made in the school district in order to implement the policy effectively.

Conclusion

Overall implementation of 100% TFS policies in NC is going well, as demonstrated by the statewide implementation rating of 7.05 out of a possible score of 9.0. In general, middle and high school principals are familiar with the policy and are taking measures to assure that it is communicated to students, school staff and visitors, consistently monitored for compliance and

enforced. The majority also believe that the policy is an effective measure by which to reduce or maintain already low levels of tobacco use among students. There are, however, areas for improvement in policy implementation. Improving policy communication among middle schools is important. Increasing policy compliance so that there are fewer violations is also key. More consistently enforcing the policy, and increasing the number of school principals who offer educational or remedial sanctions rather than only punitive sanctions to students who violate the policy, is also important to strengthening the deterrent effect of the policy. Finally, encouraging principals to offer cessation support to students can lead to less student tobacco use and greater policy compliance. Several factors appear to facilitate optimal implementation of 100% TFS policies. These include: attitudes and abilities of school principals, availability of policy support, and resource constraints or availability.

Chapter 8: Conclusion

This study provides a unique look at the implementation of 100% TFS policies adopted by school districts across the state of NC. It is particularly timely since 100% TFS policies have been established in 78 of 115 NC school districts, and more policy adoptions are planned. This study increases understanding of the implementation of 100% TFS policies in middle and high schools in NC by comparing several key dimensions of implementation and identifying factors that facilitate and hinder implementation. Comparisons across schools suggest that commonalities exist in the communication, compliance monitoring and enforcement of the policies, as well as some interesting differences. Furthermore, effective implementation is linked to policies that are supported by strong leaders who believe in the effectiveness of the policy, understand the importance of addressing the prevention of youth tobacco use, and are supported in their efforts with adequate resources. This examination provides a snapshot of how local school processes and features interact with the policy to influence outcomes, highlights the importance of featuring school principals as a central focus of 100% TFS policy implementation research, and extends the findings of previous studies of factors influencing the successful implementation of 100% TFS policies.

Working together, school and public health leaders in NC have demonstrated overall success in the implementation of 100% TFS policies. The policy is considered to be effective by principals, perceived as widely supported by school staff and community members, and, overall, receives good marks on the dimensions of communication, compliance monitoring and enforcement. These results suggest that current activities to support policy implementation, such as technical assistance and training programs and resources offered by state agencies are effective and should continue.

These results suggest several opportunities to enhance 100% TFS policy implementation. Middle schools must work to better communicate the policy, even in the face of minimal student smoking, as this is a crucial time when youth are considering or experimenting with tobacco use. Schools need to be more consistent in enforcement of 100% TFS policies so that sanctions serve as deterrents to tobacco use on campus. More schools must consider offering remedial and educational sanctions to student policy violators, rather than just punitive sanctions, in order for students to gain opportunities to move towards cessation. Finally, more cessation programs and resources targeting students need to be developed at the school level in order to break the cycle of tobacco addiction. These areas for improvement suggest opportunities for state and local public health and education leaders to work together to develop leadership and resources.

An important outcome of this research is the development of a policy implementation rating system. The rating system used in this research has benefits both for schools, and for organizations tracking or supporting 100% TFS implementation. By constructing an implementation rating index, a maximum value is identified that signifies "ideal" or "model" 100% TFS policy implementation, where all elements (communication, compliance monitoring, and enforcement) are in place and stringently adhered to. In illuminating certain aspects about the implementation of 100% TFS policies across the NC, it offers practical information that can be used to improve implementation, leading to higher scores. This rating system, then, offers a goal to which local school and public health leaders can aspire, and provides evidence as to how close to or how far from schools are to achieving this goal. The rating system also permits tracking of 100% TFS policy implementation over time, providing insight into the changing commitment to the policy of schools, school districts and the public health community and providing information that can be used in expanding or enhancing services in response to identified needs. Beyond assessing implementation of individual schools, the ratings allow comparisons to be made across districts regarding policy implementation success. This can create competition, raising the bar and encouraging school and public health leaders to provide more and better services than they would have otherwise. These ratings can also serve as a catalyst

for community advocacy in areas where the policy is not being effectively implemented. In summary, creating a meaningful and standardized assessment of 100% TFS policy implementation can help school and public health leaders see more clearly how far schools and districts have come, demonstrate what additional assistance is needed, allow leaders to evaluate the impact of what has been done, and furnish data to determine where to go in the future. The benefits notwithstanding, many schools and districts may be wary of disclosing performance information, as the perception of poor performance may lead to concerns about community, government or regulatory action. Thus, public health and education leaders considering using such ratings should be mindful of the need to inform and support policy implementation, rather than penalize poor outcomes.

There are two challenges to the use of this scale. First is the difficulty of objectively measuring implementation of the policy. The three components – communication, compliance monitoring and enforcement – are selected based on their importance to the policy implementation process, their ability to be easily quantified, and the likelihood that they represent common actions in which school principals implementing the policy will engage. Other aspects of implementation are also important, but, because they do not meet these criteria, are not included. One example is media coverage of the issue, which to a large extent reflects the skill and energy of tobacco control advocates and organizations. Another example is the resources that underpin and support the implementation of the 100% TFS policy. These might include the level of spending on programs and services (such as youth and adult cessation) and staff training. Still another factor not considered in the implementation scale is community advocacy, and in particular the impact of other institutions in the community that are adopting tobacco bans. More research on these aspects of implementation, their importance to the policy implementation process, and how they may be measured is needed. A second challenge in developing the rating scale is deciding the point allocation for the various implementation activities. For the purpose of this study, equal weight was given to each of the three subscales, and the questions within the subscales. While there is evidence telling us broadly what implementation strategies may be effective, it is not easy to decide which ones are more important

than others and the existing research is not precise enough to permit easy comparisons. Future studies will want to include methodology which permits these implementation subscales to be weighted – perhaps through a collaborative process involving stakeholders who have insight on policy implementation at both the district and school level.

Products of the Dissertation

There are two products of this dissertation: (a) the research findings and (b) the *Guidelines for 100% Tobacco Free School Policy Implementation*. The research findings provide advocates and leaders with data demonstrating that 100% TFS policies alone may not be sufficient to achieve their goal of reducing youth tobacco use; they must also be effectively implemented. The *Guidelines* are an online resource that identifies critical components of 100% TFS policy implementation and serve as a tool to encourage and support effective implementation measures. The text of the *Guidelines* is included in Appendix D. The document can be accessed at <u>www.tobaccofreeschoolsnc.org.</u>

The goal of the research findings and *Guidelines* is to educate and inform. Therefore, a wide distribution involving two primary strategies is proposed. As a first step, a report titled *From Policy to Practice: Implementation of 100% Tobacco-Free School Policies in North Carolina School Districts*, which summarizes key research findings, will be electronically disseminated statewide in the spring of 2007. Recipients will include superintendents, school board members, SDFSCs, local health directors, and school principals. A letter will be included highlighting that, while some schools have achieved a high level of implementation, overall, there are several areas of improvement necessary before this policy can have a real impact on youth tobacco use in the state. The letter will also include a request that school leaders review their current policy implementation practices to determine if they are being successfully implemented. Recipients will be directed to the electronic version of the *Guidelines*, to help staff review and assess implementation at their school. Providing this information, as well as making a request for action, will result in schools' and districts'

reviewing and, if necessary, making changes to their current implementation so that these policies are more rigorously implemented.

Second, because a statewide network that includes hundreds of public health and education practitioners, anti-tobacco coalitions and advocates is currently working together with local school districts on 100% TFS policy adoption and implementation, it makes sense for research findings and the *Guidelines* to be made available for use in local consultation, training, technical assistance and education programs. To facilitate this, an array of materials, including a PowerPoint presentation, fact sheets, talking points and other items, will be developed that can be used by local public health practitioners. These training materials can be used at several key points. Optimal use may occur during the early policy formulation stage, when the policy is being considered for adoption and school leaders want to predict the likelihood of making the innovation work in their district or specific school setting. This information will help school leaders systematically plan for organizational, school-level and individual changes necessary to assure implementation success. For example, they will help to identify up-front needs for training and technical assistance, identify strengths of and barriers to successful implementation, allocate resources and make modifications to the process to fit specific settings. Materials and information may also be used after initial efforts to implement the policy have been underway to assess and, if necessary, enhance 100% TFS policy implementation. Use at this point allows school administrators to determine implementation success, based on the model of "ideal" policy implementation, and identify areas that require further attention. These resources, and in particular the *Guidelines*, can also be a tool for partners interested in working to improve 100% TFS policy implementation at the local level. School staff, public health employees, or advocates can use these resources to develop new programs and services that meet identified needs. Finally, these materials can be used after the new policy has been in operation for a period of time to identify barriers and strengths that may influence policy institutionalization and sustainability.

Several steps will be taken to optimize distribution of these research findings and the *Guidelines*. First, both the research report and the *Guidelines* will be downloadable online resources included on at least two websites addressing NC's statewide 100% TFS policy initiative. The first website, as noted above, <u>www.tobaccofreeschools.org</u> is sponsored by the NC HWTF. This website targets consumers and provides information on health issues addressed by the HWTF, including 100% TFS schools. The second website, <u>www.nctobaccofreeschools.org</u>, is sponsored by the NC TPCB and provides detailed information on the adoption and implementation of 100% TFS policies. Copies of the report and *Guidelines* will also be distributed at key training events around the state, such as the *Tobacco-Free School Compliance Workshops* and *Tobacco-Free Schools Leadership Forums*. Information on the availability of these resources can be sent to statewide educational organizations, such as the Regional Education Service Alliances (RESA), which consist of superintendents in each region of the state, the NC School Boards Association, the NC Parent Teacher (PTA) Association, and the NC School Administrators Association, that support and influence these school leaders. Dissemination can occur via several electronic mailing lists used by advocates, public health leaders, coalition leaders and others.

Implications for Public Health Practice

This Project emerged from a need to provide data about the statewide implementation of 100% TFS policies. An important purpose of this dissertation is to consider how public health leaders, educational administrators, and advocates can support 100% TFS policy implementation, and best facilitate improvements in the consistency, effectiveness and efficiency with which future policies are implemented. As such, this research has implications for policymakers, public health and education planners and practitioners, school administrators, and community leaders working towards policy adoption and implementation. Lessons learned from this research suggest a balanced, multi-pronged

approach organized into two action areas: (a) state and local policy proposals and (b) proposals for state and local health and educational agencies.

State and local policy proposals

State School Board of Education's Tobacco-Free Schools Standards Policy. Currently school districts are not required to adopt a 100% TFS policy. For those school districts that choose to adopt the policy, clear standards for policy implementation that address strategies for communication, compliance monitoring and enforcement should be adopted. These should include provisions for effectively communicating, strictly monitoring and consistently enforcing the policy as well as assuring that students who violate the policy receive educational sanctions designed to assist them in cessation. Furthermore, the NC Department of Public instruction should establish a system for monitoring 100% TFS policy implementation in districts where the policy is in place in order to determine if standards are being met.

As adoption of the policy is voluntary, incentives for achieving these standards must also be created. Incentives for school districts may include: funding for student and staff cessation; funding for programs such as ATS that offer educational or remedial sanctions; additional signage; or funds for school district staff to be trained to provide cessation services or ATS programs. Having standards in place will "raise the bar" and encourage school districts to take clear and effective measures to implement the policy. Incentives will both support successful implementation and encourage other school districts to adopt the policy.

Revision of the model 100% TFS policy. A model 100% TFS policy exists, and is widely used by school districts across the state. However, this policy does not provide specific guidelines for policy implementation. A revised 100% TFS policy should be designed to achieve standards as described above. Additionally, the model policy would include a strategy to develop an implementation monitoring system with school and district level performance indicators of effective implementation. This will assure that local, district and statewide monitoring can take place. For

school districts that already have the 100% TFS policy in place, a model policy *revision* that can be adopted by a school board, should be developed and promoted to school boards.

Proposals for state and local public health and education leaders

Policy learning. Policy learning is essential to successful implementation, and state public health and education agencies are in an excellent position to support this process. One way this can occur is through the translation and dissemination of existing research on 100% TFS policy implementation. A second way state leaders can facilitate policy learning is through an ongoing evaluation of the statewide effort to adopt and implement these policies. Assessing implementation successes and failures, and disseminating these results can improve the efficiency of current efforts, help to synthesize and expand understanding of the implementation process, and stimulate learning. Finally, lessons learned from the implementation of 100% TFS policies can be used to inform other statewide policy implementation efforts. Identifying opportunities to share these experiences with other public health agencies will stimulate learning across other agencies and issues.

Social marketing to change social norms. Social marketing campaigns can support policy implementation by providing information about the policy, encouraging compliance, and directing people to resources where they can learn how to make changes that support a 100% TFS policy. State and local public health agencies can work together to develop campaign materials that can be used locally or regionally in support of policy implementation efforts.

Create and support partnerships. State public health and education leaders can foster innovative partnerships that focus on various aspects of this issue. For example, working with local universities, *research* partnerships can be developed that design, fund, carry out, replicate and disseminate research on 100% TFS policy implementation. A second example is partnerships that provide *resources and services* to school districts that support implementation. These might include partnerships with advertising agencies and media outlets to support activities designed to communicate information about the policy and partnerships with local health departments, hospital

networks and nonprofit organizations, such as the American Lung Association, to provide cessation support and resources to students and school staff who use tobacco and want to quit.

The complexity and multi-dimensional nature of the issue of effective implementation of 100% TFS policies will require a varying approaches and collaborative efforts across multiple sectors of society. While these suggestions do not represent a "solution", each is a step in the direction towards assuring that schools with a 100% TFS policy in place are effective in their implementation of the policy, improving the likelihood that this policy will achieve its goal of reducing youth tobacco use in NC.

Further Research Opportunities

This study presents several opportunities for further research. Because implementation has been linked to reduced youth tobacco use as well as reduced exposure to secondhand smoke, future research on this initiative should consider the impact of implementation on both of these policy outcomes. Additionally, studying this initiative over a longer period of time, rather than just one academic year, will provide researchers with an opportunity to further analyze its impact on youth tobacco use rates across communities, regions and the state as well as the growth in tobacco education and youth cessation services. Another direction for research is evaluating the relationship between the changing availability of resources for policy implementation, such as funding and training, and school IRs. Finally, because of the lack of data on the research and practice of improving the implementation of 100% TFS policies, further refining the model of implementation presented here offers another opportunity for continued research. As such, particular attention may be devoted to identifying the subjective weight or importance of each implementation dimension; understanding other potential determinants of effective policy implementation, such as personal commitment, the involvement of interest groups, divergent policy obligations, and organizational capacity; and testing the reliability and validity of the model.

Limitations of the Research Study

The data presented here fulfill the purpose of answering the research questions. Yet, the results need to be evaluated in the context of six important limitations. First, as the data are cross-sectional, causal inferences, for example, between policy communication and current student smoking rates, should be made with caution. It could be that schools with higher communication subscales have students who smoke less for other reasons. A more comprehensive, longitudinal analysis that employs an experimental design and that accounts for secular trends and population differences is needed to demonstrate any relationship between policy implementation and current student smoking rates. Ideally, current youth tobacco use rates at each school would be assessed prior to policy adoption, and then at points in time following adoption. This will help to determine if dimensions of implementation play a role in lowering the current student smoking rates at the school, or if these rates were already low.

A second limitation is the use of self-report data. Providing accurate information may present schools in an unfavorable light, leading principals to over-represent successful and effective strategies for policy implementation and minimize those that are less effective. Thus, social desirability bias should be considered. The survey asks principals to consider the entire 2005-2006 school year. Questions asked about past events are vulnerable to recall bias. Therefore, data that rely on people's memories must be regarded with less confidence. To measure actual implementation would require different methodologies and is beyond the scope of this project. Taken together, anything short of direct observation of the policy implementation process has the potential to provide inaccurate information about what actually happened at the school.

Third, information on the implementation of these policies is obtained from only one respondent within each school – the school principal. Though the assumption is made that principals are knowledgeable about how the policy is implemented in their schools, this may not always be the case. The principal may have assigned this task to another staff member, such as the assistant

principal or school resource officer, and may not be aware of all the strategies related to implementation that occur at the school, or the level of action that is taken by some staff. At the same time, the type of information that is collected is such that there should be relatively little error in reporting because of lack of knowledge by the administrator.

Because context is important when considering implementation, a fourth limitation of this research is that it does not include a comprehensive review of the policy environment where each of these policies has been implemented. Characterizing the policy environment requires an evaluation of the mix of local, regional or national government legislation as well as the contributions of public agencies, nonprofits, and private industry involved in the issue. Secular trends that demonstrate decreasing youth tobacco use, as well as recent events such as local hospitals, restaurants, entertainment venues or workplaces going tobacco-free, may influence the implementation of this policy or may influence current student smoking rates. While schools play an important role in the lives of youth, even a comprehensive tobacco prevention program supported by a very well implemented 100% TFS policy may not be able to overcome other factors that influence youth to use tobacco. At the same time, a school may have a poorly implemented policy, but still note a decline in youth tobacco use – due to other reasons. One cannot be sure. A study that examines these other influences would be necessary to firmly link successful policy implementation to reduced youth tobacco use.

A fifth limitation is the use of 2005 NC YTS data to determine current student smoking rates. This data set was not specifically designed to measure tobacco prevalence by school policy status, but rather to generate statewide and regional tobacco prevalence estimates for youth; therefore, limitations related to the use of YTS data may exist. Some bias may exist in the types and locations of the schools selected to participate in the YTS when compared to a research study specifically designed for a study of schools with the policy in place. Furthermore, although an equal number of middle and high schools were included in the study sample, other factors may affect smoking rates calculated at each school. For example, since rates increase by grade, having a disproportionate

number of higher- or lower-grade classes selected to participate in the YTS at each middle or high school may affect current smoking rates. The size or demographic make-up of the class may also affect the rate that is determined. Finally, middle school prevalence rates are so low in the 2005 YTS that differences between schools that optimally and sub-optimally implement the policy may not be clear or reliable.

Finally, sample size will determine the statistical power of a piece of research. With surveys, *statistical power* refers to the capacity of a research design to distinguish between those differences between sub-groups shown for a sample which reflect real differences for the same subgroups in the populations, and those differences between subgroups in the sample which simply result from chance. All other things being equal, a larger sample allows for a more confident detection of smaller differences ¹⁹⁹. The sample of sixty-five participants was drawn from a sampling frame of ninety-nine middle and high school principals from schools that both had a 100% TFS policy in place, and participated in the 2005 YTS. As a result of this small sample size, subgroups that were being compared were often very small, limiting the possibilities for exerting statistical control over the survey results. Thus, it may be that the study lacked sufficient power to identify key associations.

Summary

In summary, this study adds to the existing literature on adolescent tobacco use and 100% TFS policies by examining the effectiveness of their implementation in NC middle and high schools, identifying factors that hinder or facilitate implementation, and exploring the link between policy implementation and current student smoking. It provides a rich data source, not only to evaluate policy implementation and quantify the success of 100% TFS policies in NC, but also to investigate the mediators of implementation. A strength of this study is that it demonstrates significant associations between strong policy enforcement and compliance monitoring and the number of policy violations at a given school.

The approach used for this study is valuable in delivering the information necessary to assess 100% TFS policy implementation. The brief, easy-to-fill-out survey can be used to compare activities in schools across districts of the state. Benchmarking regarding implementation is possible through the rating scale, which delivers clear-cut information in support of policy decision-making. The procedure can also serve as a model of practice for other areas of school policy implementation, for example, policies addressing physical activity or nutrition. Nevertheless, the study design has limitations, and researchers interested in examining this topic further should consider different methodologies whereby distinct conclusions about the link between policy implementation and current student smoking can be determined.

One hundred percent TFS policies can play an important role in addressing the public health problem of tobacco use among young people, but simply having a regulation on the books is not enough. These policies must provide a framework for effective implementation and for the achievement of the policy goal of reducing youth tobacco use. Despite the lack of strong evidence that optimal implementation of 100% TFS policies plays a role in reducing current student smoking, this continues to be an avenue for further research. Changes in the study design may yield more and better information about the impact of effective 100% TFS policy implementation on current student tobacco use. Even without this evidence, it is desirable for the public health and educational sector to continue to adopt and work towards the effective implementation of 100% TFS policies.
Appendix A: Ratings Criteria

Objective & Question	Response Options	Rating Criteria				
Principals Perceptions of the Policy						
Q1. Perception of policy effectiveness	Strongly agree Agree Disagree Strongly disagree	 High Policy Effectiveness: Principal answer is either a 1 or 2 (Strongly agree or Agree) Low Policy Effectiveness: Principal answer is a 3 or 4 (Strongly disagree or Disagree) 				
Q2. Perception of policy impact	Strongly agree Agree Disagree Strongly disagree	 High Policy Impact: Principal answer is either a 1 or 2 (Strongly agree or Agree) Low Policy Impact: Principal answer is a 3 or 4 (Strongly disagree or Disagree) 				
Q3. Perception of staff support for policy	Strongly support Support Oppose Strongly oppose	High Policy Support:Principal answer is either a 1 or 2 (Strongly support or support)Low Policy Support:Principal answer is a 3 or 4 (Strongly oppose or oppose)				
Q4. Perception of community support for policy	Strongly support Support Oppose Strongly oppose	 High Policy Support: Principal answer is either a 1 or 2 (Strongly support or Support) Low Policy Support: Principal answer is a 3 or 4 (Strongly oppose or Oppose) 				
	Policy Commun	ication Dimension				
Objective 1: Ongoing strate including students, school sta	gies will be used to comm aff and visitors	unicate information about the policy to all policy targets,				
Q5. What strategies were used to communicate information about the policy during the school year?	Six strategies are listed For each, select a Yes or No response	 3 = Five or six strategies used 2 = Four strategies used 1 = Three strategies used 0 = Less than three strategies used 				
Q6. How often were announcements about the policy made at athletic or social events held on campus and attended by the public during the school year?	Numeric scale from 1 to 5 where 1 = Always and 5 = Never Select one number	3 = Selected 1 or 2 2 = Selected 3 1 = Selected 4 0 = Selected 5				
Q7. Were signs, banners, stickers, floor stands or other items that communicate the policy placed at the locations and events listed?	Five locations and events are listed For each, chose a Yes or No response	 3 = Signage placed at five of the locations 2 = Signage placed three or four locations 1 = Signs placed at one or two locations or events 0 = Signs not placed on campus or used at events 				
Developing the Communica	ation Subscale Score: A	verage of these three answers.				
Compliance Monitoring Dimension Objective 2: Compliance monitoring will take place consistently at key locations on campus, on campus after regular school hours and during athletic and social events attended by the public.						

Q8. How strictly were the following locations and events monitored for 100% Five locations and events are listed 3 = Selected 1 or 2 TFS policy compliance during the school year? For each choose one of five numbers where 1 = Very Strictly and 5 = Not Strictly at All 0 = Selected 5 Developing the Compliance Monitoring Sub score: Average of the five answers. Enforcement Dimension Objective 3: Official sanctions are in place that provide a standard way to address tobacco policy violations so that the same sanctions are applied regardless of the person or the situation Objective 4: No circumstances exist where tobacco use is permitted or tolerated on campus or at school-related events Objective 5: Sanctions for students who violate the tobacco policy include opportunities for education or						
remediation						
Q 10, 12, 13: What best describes how you would address violations by students, school staff, and visitors? With official, standard sanctions or on a case-by-case basis?	Respondents select either: Official sanctions that provide a standard way to address tobacco policy violations - or - Case-by-case basis	 3 = Official, standard sanctions are in place for all three groups 2 = Standard sanctions are in place for students and one other group 1 = Standard sanctions are in place for staff and/or visitors (but not students) 0 = No standard sanctions are in place for any group 				
Q14: Are there any circumstances when tobacco use of any kind (smoking, spit) is permitted or tolerated on campus or at school-related events off campus? This might include: outdoor athletic events (if out of sight of other people), carpool lines, or at school-related events off campus	Response options are Yes or No If Yes, the respondent is asked to describe the situation where tobacco use is permitted or tolerated	 3 = Tobacco use not tolerated or permitted in any circumstances 0 = Tobacco use is tolerated or permitted in some circumstances 				
Q11. How often are the following remedial or educational sanctions applied if a student violates the policy for the first time?	Four educational or remedial sanctions are listed Respondents choose one of five numbers with 1 = Always and 5 = Never for each of the four possible sanctions	 3 = One is selected for at least one of the four options 2 = Two (as the highest number) is selected for at least one of the options 1 = Three or four (as the highest numbers) are selected for at least one of the options 0 = Educational or remedial sanctions are never provided 				
Developing the Enforcement Subscale Score: Average of the three numbers Developing the Final Implementation Rating (IR): Add the three subscale scores for a final number between						

Develop 0 and 9.

- Interpreting the IR:
 9 = Ideal/Excellent implementation
 6.75 8.99 = Good implementation
 4.5 6.74 = Fair implementation
 < 4.5 = Poor implementation

Appendix B: Questionnaire

From Policy to Practice: 100% Tobacco-Free Schools Policy Implementation in North Carolina Middle and High Schools

A Survey for Middle and High School Principals

I. Opinions about the 100% tobacco-free school (TFS) policy

Mark the appropriate box \boxtimes to provide your opinion on the following.

1. To what extent do you agree or disagree with the following statement? "A 100% tobacco-free school (TFS) policy is an effective strategy to prevent, reduce, or maintain already low levels of tobacco use among students."

Strongly Agree	
Agree	
Disagree	
Strongly Disagree	

2. To what extent do you agree or disagree with the following statement? "Without a 100% TFS school policy in place, more students at this school would try or use tobacco products."

Strongly Agree	
Agree	
Disagree	
Strongly Disagree	

3. To what extent do school staff support or oppose your school's 100% tobacco-free school policy?

Strongly support	
Support	
Oppose	
Strongly oppose	

4. To what extent do parents and community members support or oppose your school's 100% tobaccofree school policy?

Strongly support	
Support	
Oppose	
Strongly oppose	

II. Policy communication

The following questions address how information about the 100% tobacco-free school policy was communicated to students, school staff and visitors <u>during the 2005-2006 school year</u>.

5. During the school year, were the following strategies used to let students, school staff, and visitors to campus know that the 100% tobacco-free school policy was in place? Check "Yes" or "No."

Action Taken to Communicate Policy	Yes	No
A. Policy was included in student handbook, given to students and/or sent home to parents.B. Policy was included in employee handbooks and/ or posted in employee areas.		
C. Activities were held on campus or at school events to raise awareness about policy.		
D. Information about the policy was communicated to the public through newspaper articles, television news, community newsletters, athletic programs, or other media.		
E. Policy announcements were made at athletic and social events attended by the public		
F. Signs about the policy were placed around campus and in buildings to remind students, sta and visitors about the policy.	aff 🗌	

6. <u>How often</u> were announcements about the 100% tobacco-free school policy at athletic and social events held on campus and attended by the public during the 2005-2006 school year? Circle the number.

Always Never 1 2 3 4 5

7. Were <u>signs, banners, etc. placed</u> at the following locations on your campus during the 2005-2006 school year? Check "NA" for "not applicable" only if your school does not have one of these locations.

Location on School Campus	Yes	No	N/A
A. Entrance(s) to campus			
B. Entrances to buildings			
C. Parking lot(s) & other school grounds			
D. Around playing fields and in stands			
E. Administrative buildings not used by students			

III. Monitoring 100% tobacco-free school policy compliance

This question is about how the policy is monitored for compliance. "Monitored" refers to regular visual surveillance by staff or volunteers to assure that others are in compliance with the policy.

8. How strictly were the following locations and events monitored during the 2005-2006 school year for compliance with the tobacco policy? Check "NA" only if your school does not have the location or event.

	Very Strictly 1	2	3	4	Not strictly at all 5
A. Inside school buildings – including restrooms					
B. Parking lot(s), playing fields and other school grounds					
C. At school-sponsored athletic and social events on campus					
D. At school-sponsored athletic and social events off campus					
E. On campus after regular school hours					

IV. Enforcing the 100% tobacco-free school policy

The following questions are about the ways that school staff enforce the 100% tobacco-free school policy.

9. How many <u>times</u> were students caught using any kind of tobacco at school or school-related events during the 2005-2006 school year? (Count each <u>incident</u> – even if the same person violated the policy on several occasions). Check the box if no violations occurred for the group.

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10. Which of the following best describes how your school would deal with students who violate the policy? Check the appropriate box:

Official sanctions are in place – either written or unwritten but understood – that provide a <u>standard</u> way to address tobacco policy violations by students. All students are meant to receive the same sanctions, regardless of the situation.	
OR	
Violations are handled on a <u>case-by-case</u> basis. The sanctions a student receives depends on the person and situation	

11. How often would the following actions be taken at your school if a student violated the 100% tobacco-free school policy <u>for the first time</u>?

		Always 1	2	3	4	Never 5
A.	Refer to guidance counselor or nurse for one-on-one counseling about tobacco use or cessation.					
В.	Option to participate in a tobacco education program instead of out-of-school or in-school suspension					
C.	Option to participate in a tobacco education program in addition to out-of-school or in-school suspension					
D.	Other educational or remedial action (list):					

12. Which of the following best describes how you would deal with <u>school staff</u> who violate the tobacco policy? Check the appropriate box:

Official sanctions are in place – either written or unwritten but understood – that provide a <u>standard</u> way to address tobacco policy violations by school staff. All staff members are meant to receive the same sanctions, regardless of the circumstances	
Violations are handled on a <u>case-by-case</u> basis. The sanctions a staff member receives depends on the person and situation	

13. Which of the following best describes how you would deal with <u>parents or visitors to the school</u> who violate the tobacco policy? Check the appropriate box:

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Official sanctions are in place – either written or unwritten but understood – that provide a <u>standard</u> way to address tobacco policy violations by school visitors. All visitors are meant to receive the same sanctions, regardless of the situation	
OR	
Violations are handled on a <u>case-by-case</u> basis. The sanctions a visitor receives depends on the person and situation	

14. Are there ever circumstances when tobacco use of any kind (smoking, spit) is permitted or tolerated on campus or at school-related events? This might include: outdoor athletic events (if out of sight of others), in carpool lines, or at school-related athletic events off campus.

YES.... 🗌 🔿 NO.....

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If Yes, please explain using the back of this page

15. During the 2005-2006 school year, did your school ever offer tobacco cessation classes or programs for any students (not just those who violated the policy) who use tobacco and want to quit? This might include the Not on Tobacco (NOT) teen tobacco cessation program. (Don't include classroom instruction on tobacco prevention or sanctions for tobacco policy violations that offer counseling or tobacco education).

YES	
NO	₽

If No, please answer question 16

16. IF CESSATION SERVICES WERE NOT OFFERED: What is the primary reason that tobacco cessation services were not offered to students at your school during the 2005-2006 school year?

This is not the responsibility of the school	
There is not enough demand for tobacco cessation services for students	
Funding is not available to provide tobacco cessation programs	
Schools are not directed to provide cessation services by the district	
Cessation programs for students are available in the community	
Other: (Please list)	

THE END

Thank you for taking the time to complete this questionnaire. Your assistance is very much appreciated. Please return your questionnaire in the stamped and addressed envelope.

Appendix C: Interview Guide

Introduction

The purpose of the interview is to learn more about how the 100% TFS policy has been implemented at your school, and to identify factors that may have hindered or facilitated implementation. Eight to twelve principals from around the state will participate in the interviews. The interview should take about 30 minutes. Like the survey, the interview will be completely confidential and any information that you provide will be released only as group summaries. Your name will not be connected to your answers in any way. With your permission, I would like to record our interview. Tapes and transcriptions will be destroyed at the end of the research study.

- > Are there any questions that you have about the research study or the interview?
- ➤ May I record the interview?

Overview of the 100% TFS policy

Please provide an overview of your experiences with the 100% TFS policy at your school. Were you principal when the policy was adopted?

Barriers and facilitators

- Were there any specific obstacles or barriers to the implementation of this policy? If, yes, please describe.
- What can be done either by the school district, state level agencies, or local agencies to assure smoother implementation of the policy?
- Were there any costs to the school associated with policy implementation? For example, did you purchase additional signs or pay for staff to be trained in facilitating a youth cessation class?

Decision-making related to policy implementation

- What sort of factors were taken into account in deciding to what extent the policy should be communicated to students, school staff and visitors?
- What sort of factors were taken into account in deciding to what extent the policy should be monitored for compliance?
- What sort of factors were taken into account in deciding what sanctions to apply to students, school staff and visitors who violate the policy?
- What sort of factors were taken into account in deciding to provide (or not provide) cessation services to students and school staff who use tobacco and want to stop?

Organizational factors

- Is there anything that you did at your school to facilitate or make policy implementation easier?
- > To what extent has the school district supported implementation of this policy?
- To what extent has implementation of the policy been audited or monitored by central or district level administration?
- What other resources or support if any would you have liked to have in order make policy implementation easier?

Community factors

- > What was the initial response to the policy from parents and community members?
- To what extent has the community including parents, visitors to athletic events, organizations that use school facilities or others supported this policy?
- Are there any community groups or organizations that have played a role in the implementation of this policy at your school?

In your opinion, have community attitudes about tobacco played a role in how the community has responded to the policy?

School-level factors

- > What was the initial response to the policy from school staff (consider all job categories)?
- > To what extent has school staff supported implementation of this policy?

Individual-level factors

- How would you characterize student tobacco use at your school? Is it high or low? Increasing or decreasing? Is tobacco use more prevalent among some groups of students than others?
- How effective do you believe this policy is in preventing, reducing or maintaining already low rates of student tobacco use?
- In comparison to other health issues faced by students at your school, how much of a problem is tobacco use?

Technical assistance

- What kinds of guidance or training did you receive to implement the 100% TFS policy at your school? For example, was training or direction provided by central administration? Did you attend a state-sponsored TFS Leadership Forum? Did you receive information from the state TFS website (www.nctobaccofreeschools.com)?
- If guidance or technical assistance has been provided: Did you feel that this guidance had any specific strengths? Were there any elements of this assistance with which you were unhappy?

If no guidance or technical assistance has been provided: Did you feel that this would have made implementation easier, or more successful? What kinds of support would have been helpful?

Closing

Are there any additional comments you would like to make about the 100% TFS policy or the way that the policy has been implemented at your school?

Appendix D: Text of Online Policy Implementation Manual

From Policy to Practice: Guidelines and Practical Strategies for Implementing a 100% Tobacco-Free School Policy in Your School District or School

The NC Health and Wellness Trust Fund makes North Carolina stronger, both physically and economically, by funding programs that promote preventive health. Created by the General Assembly in 2000 to allocate a portion of North Carolina's share of the national tobacco settlement, HWTF has invested \$127 million to support preventive health initiatives and \$78 million to fund a prescription drug assistance program.

For more information, please visit <u>www.healthwellnc.org</u>.



Congratulations... your school district has adopted a 100% tobacco-free school policy (TFS). This policy prohibits all tobacco use, everywhere on school campus and at school-related events, at all times. A 100% TFS policy is recommended by the Centers for Disease Control and Prevention (CDC) as part of a comprehensive approach to tobacco prevention and control in schools. Its primary goal is to reduce youth tobacco use. However, there are many other benefits to a 100% TFS school environment, such as healthier employees, decreased access to tobacco products, decreased exposure to secondhand smoke, and cleaner campuses.

Since 2002, when the North Carolina (NC) Health and Wellness Trust Fund (HWTF) began its 100% TFS campaign, 67 of North Carolina's 115 school districts have adopted the policy – bringing the total of NC school districts that are 100% tobacco-free to 78. This means that more than two-thirds of North Carolina's students attend school in an environment safe from secondhand smoke and from images of peers and adult role models using tobacco products.

We are proud of these numbers – but we can't stop here. NC's 100% TFS Policy Initiative is about more than adopting a policy. It's also about putting this policy into place and sticking with it to provide a safer school environment for students and school staff, ultimately leading to fewer kids using tobacco. *From Policy to Practice: Guidelines for Implementing a 100% Tobacco-Free School Policy in your School District* will help you do that. It is a tool for people working to implement their school districts' 100% TFS policy. It grew out of the need for school and public health leaders, policy makers, and advocates to capitalize on their enormous success encouraging school districts across the state to adopt a 100% TFS policy. This booklet is based on the guidelines established by the CDC and includes strategies used by school administrators across the state. It is one of several resources that support NC's 100% tobacco-tree Schools Policy Initiative. We invite you to share this booklet with all school principals, counselors, nurses, coaches, students, community volunteers and others willing to work together to support a 100% TFS policy in your school.

Chapter 1: From Policy to Practice

Why worry about policy implementation?

What does it mean for a 100% TFS policy to be "effectively" implemented? Well, to be most effective, 100% TFS policies must be:

- Successfully communicated throughout the community;
- Regularly monitored for compliance;
- Consistently implemented using sanctions that emphasize tobacco education and remediation; and
- Fully supported with cessation programs and services targeting students and school staff to help them maintain a tobacco-free lifestyle.

There is a strong rationale for focusing on the implementation of 100% TFS policies. First, the benefits of the policy cannot be realized if it is not well-implemented. This will result in students being exposed to secondhand smoke, to role modeling of tobacco use, to greater access to tobacco products on campus, and to a school environment that ignores or supports – rather than prevents – tobacco use. Ultimately, this will mean more students trying and using tobacco and being at risk for lifelong tobacco addiction and its health consequences.

Poor implementation also creates extra work for school staff. When tobacco use is tolerated at athletic events or on campus, other people are left with the perception that compliance is optional, and that school rules are not to be taken seriously. This means even more people will ignore the policy, and school staff will have to work harder to achieve compliance – not only with this policy, but with other school policies as well.

A 100% TFS policy also puts into practice what students are learning about tobacco prevention in the classroom. For education to be effective, the school environment must support what is being taught. This means that a poorly implemented 100% TFS policy will undercut important messages that students learn about the dangers of tobacco use, and will create an inconsistent environment for other health promoting policies and activities.

Finally, there is a compelling ethical reason for focusing on 100% TFS policy implementation. Poorly implemented policies may lead to inconsistent treatment of youth. For example, a high achieving student may be sanctioned for using tobacco on campus, while a low achieving student in danger of school failure may be tolerated for the same offense. Alternatively, a low achieving student may be sanctioned for tobacco use, while the same behavior by a college-bound student or student athlete facing suspension from a game is tolerated. This means that some students will benefit from cessation support and assistance while others will not. Consequently, some students may move on to regular tobacco use, lifelong addiction and the possibility of tobacco-related illness.

How to use this manual

These *Guidelines* are geared towards three groups:

- School or community leaders considering the policy. The *Guidelines* will provide insight into how others have made a 100% TFS policy work in their district, and how challenges and barriers to effective implementation have been overcome. This information will help school superintendents, board members, community advocates and others planning for the policy develop a realistic picture of how it can be implemented.
- School administrators that have recently adopted the policy. Strategies included in this manual will allow administrators to draw on the collective knowledge of other school districts that have this policy in place. Because there is no need to "reinvent the wheel", policy implementation will be easier and more effective.
- School administrators with long-term 100% TFS policies already in place. Administrators in school districts that have had the policy in place for some time may want to review the *Guidelines* for new ideas to communicate, monitor and support the policy, and to address barriers.

Because planning for effective implementation begins <u>before</u> the 100% TFS policy is adopted, these *Guidelines* begin with basic strategies to consider when a school district is in the policy planning phase. Next, four dimensions of implementation – policy communication, compliance, monitoring and cessation support – are addressed. Recent research is summarized at the start of each chapter, followed by specific guidelines for successful implementation. Tools that schools can use to support implementation are included at the end of each chapter.

Chapter 2: Implementation Planning

Planning for implementation begins even <u>before</u> the 100% TFS policy has been adopted. This is the time to consider what to include in the policy document, develop an appropriate timeline for implementation, and identify and address potential barriers or challenges to implementation that staff may encounter.

1. Use the policy as a tool

Perhaps the most important tool your district has for implementing the 100% TFS policy is the policy document itself. It is the "blueprint" for policy implementation. Effective 100% TFS policy implementation starts with adoption of a policy that includes clear guidelines for how it will be communicated, monitored and supported. Providing these details will eliminate any "grey areas", and will allow for easier acceptance of the policy. For more ideas, review the Model 100% TFS Policy.

Some school districts prefer to leave implementation details out of the policy document, allowing principals the flexibility to develop strategies that meet the needs of students, staff and community members at their school. In this case, we suggest that a policy implementation plan be developed that includes clear strategies for how school staff will communicate, implement, monitor and support the policy. For more information, review the Model 100% TFS Policy Implementation Plan.

2. Develop a timeline from adoption to implementation

School districts adopting a 100% TFS policy should consider the implementation timeline – or the time from when the policy is adopted to when it becomes effective. Because policy implementation requires planning, we recommend at least 4-6 months. During that time information about the policy can be widely communicated, sanctions reviewed, staff trained to address policy violators, and cessation programs established.

3. Staff and community attitudes about the policy

In order for school staff to be committed to implementing the 100% TFS policy, they must be convinced that is the "right thing to do." The same goes for community members – people are more likely to comply if they believe the policy is necessary and that it will be an effective measure. We suggest that school leaders talk with principals, guidance counselors, coaches, parents and others to learn their thoughts about the policy. Do they consider tobacco use to be a problem among students at their school? Do they believe it will lead to less youth tobacco use? Do they understand that the policy does not violate the rights of people who use tobacco? These are important beliefs that are necessary for effective implementation. If school personnel or community members are not sure how this policy will benefit students, staff, and the school district, education and outreach strategies can be planned. For more information, see Will A 100% TFS Policy Make a Difference? and Frequently Asked Questions about the 100% TFS Policy documents.

End of Chapter Resources⁶

- Model 100% Tobacco-Free School Policy
- Frequently asked Questions about the 100% TFS Policy
- Sample 100% TFS Implementation Plan
- Will a 100% TFS Policy Make a Difference?

⁶ End of chapter resources are available at www.nctobaccofreeschools.com

Chapter 3: Policy Communication

Effective policy communication is important for several reasons. People are more likely to comply with a 100% TFS policy if they know about it, and understand the rules. Signs and announcements about the policy also help to create a school environment that supports a tobacco-free "norm." Finally, policy communication influences the extent to which school staff are willing to require compliance. For example, staff are more likely to approach a person violating the policy at an athletic event if they can point to a nearby sign that explains the districts' 100% TFS policy.

4. Identify policy targets and ways to reach them

Many school and community groups need to know about the policy including students, school staff (all classifications), parents, contracted workers, school volunteers, organizations that use school facilities, fans – both home and away – that attend sporting events and the general public, to name a few. Each group requires different communication strategies. We recommend that your school use multiple strategies to communicate information about the 100% TFS policy. In a recent survey of principals at middle and high schools with a 100% TFS policy in place, three-quarters (75%) of the principals used at least *five* different strategies to communicate information general the school year. These included signs, announcements at school athletic and social events, local media articles/announcements, student-led events and information in employee and student handbooks.

For a list of ideas on ways to communicate information about the policy, review the 100% TFS Policy Communication Checklist at the end of this chapter. Other end-of-chapter resources include: A brochure about the 100% TFS Signage Project, a program in which school districts with a 100% TFS policy place receive high quality signs, banners and floor stands at no charge from the Health and Wellness Trust Fund, suggested Announcements for Athletic Events, and a Letter to Parents explaining the policy that can be sent home with students.

5. Devise ongoing communication strategies

When your policy is first put into place, you will probably plan a round of activities to inform people about the change. These might include putting up signs, announcements at games, and letters home to parents.

However, that is just the beginning! School leaders with successful compliance understand that high levels of compliance only occur if people are reminded about the policy again *and again*. New students, staff, parents, contract workers and outside groups are constantly coming on campus and need to be informed on an ongoing basis. Come up with simple but effective strategies to continually inform and remind people of the policy.

6. Do more than communicate – educate

People are more likely to follow a rule that they understand, support and believe is effective. Simply telling people that the school has a 100% TFS policy may not be enough to gain compliance. Education is key.

A good place to start educating people about the importance of this policy is with the policy document. It should include a strong rationale for the 100% TFS policy, along with well-stated facts about the role of the school in preventing youth tobacco use. For examples, see the Model 100% TFS Policy in Chapter 2.

Next, take time to help members of the community understand why a 100% TFS policy is such an important measure. Let them know that it is: 1) effective in reducing youth tobacco use; 2) supporting what schools and families teach kids about tobacco; and 3) part of the school districts' emphasis on the overall health and well-being of students. School systems can build understanding and support for the policy through community forums, sharing information at athletic events or health fairs and providing information through local news outlets. Good resource to use to educate people about the policy are Frequently Asked Questions about the 100% TFS Policy and Will a 100% TFS Policy Make a Difference? Both are located at the end of chapter 2.

7. Express support for the policy

When school and community leaders express their support for the policy, it makes a powerful statement – to school staff, students and the public. Schools that are successfully implementing the policy have a superintendent and Board of Education that takes pride in the policy and strongly believes it will benefit students, employees and the community. Ask the superintendent, health director, board chair, hospital director or head of the local medical society to discuss the values and benefits of the policy in meetings, public events and media interviews. To find out what school and public health leaders across the state say about the 100% TFS policy, review

End of Chapter Resources⁷

- 100% TFS Signs Project
- Communication Checklist
- Announcements for Athletic Events
- Letter to Parents About the 100% TFS Policy
- School Leaders Speak Out About the 100% TFS Policy

⁷ End of chapter resources are available at www.nctobaccofreeschools.com

Chapter 4: Monitoring Policy Compliance

Compliance monitoring is about making sure that students, staff and visitors obey the 100% TFS policy. Research shows that strict monitoring of a 100% TFS policy leads to less student tobacco use. Experience shows that most people will comply with the policy. At the same time, administrators should be prepared to address the small number who will not.

What causes poor compliance? One reason is lack of communication. There is little chance people will follow the policy if they don't know it exists or don't understand it. Individual beliefs about the policy are also important. If someone believes the policy violates their right to use tobacco, or that it will not help reduce youth tobacco use, they are more likely to be noncompliant. Tobacco addiction also plays a role. Students and staff may want to comply with the policy, but they are unable to get through the day without using tobacco. Finally, poor monitoring by school staff can lead to low compliance. If people see that nothing will happen when others use tobacco on campus, they will be more likely to use tobacco on campus themselves.

8. Create a system to monitor compliance at the school

The 100% TFS policy should be monitored inside buildings, including restrooms and locker rooms, around school grounds during the school day and after school hours, at all school-related events both on and off campus, in carpool lines and parking lots, and on buses. The policy should also be monitored when outside groups use school facilities and when individuals or groups who may not have learned about the policy (such as construction crews) are on campus.

That's a lot of ground to cover! Although each school may approach compliance monitoring differently, those that are most successful take a team approach, rather than rely on just the principal or assistant principal. The team might include the principal, assistant principal, school resource officer, counselor and student services coordinator. The team coordinates staff monitoring of school grounds and events, anticipates and addresses compliance problems, makes sure all staff understand their monitoring roles and responsibilities, oversees policy communication efforts, and provides feedback to the district on how policy compliance is going.

9. Ask all staff to monitor policy

We recommend that all staff at the school – from the part-time janitorial workers up to the principal - be charged with monitoring policy compliance. In order for this to work, all staff need to understand: 1) that they are expected to help monitor compliance with the policy; 2) the school procedures for when they encounter someone violating the policy; and 3) what happens in the unlikely event they encounter a person who reacts in an angry or unwilling manner to their request that they stop using tobacco on campus.

10. Support school staff as they monitor the policy

Research shows that personal or professional values help to determine how staff will intervene when tobacco use is witnessed at school. Staff are more diligent about monitoring the policy when they view the policy and sanctions for violators as legitimate, coherent with personal and professional beliefs and beneficial to students. For example, school staff may be less likely to "catch" a student violating the policy if they know this will result in a harsh sanction – such as out-of-school suspension – that is unlikely to benefit the student. Review and discuss school sanctions for student policy violations with staff, and make revisions as necessary. Suggested Student Sanctions that emphasize prevention education are included at the end of this chapter. One way to assess staff attitudes about the policy and how it is implemented is with the School Staff Compliance Monitoring Tool. This brief survey looks at the staff's personal beliefs about the policy and their opinions about how the policy is being communicated, monitored and supported.

Staff may also be uncertain what to do when they see a violation, or they may be intimidated by the idea of telling another adult, for example at a football game, to stop using tobacco. To help train school staff on effective compliance monitoring, a compliance workshop can be scheduled at your school or district. This one-hour program will review common compliance challenges and strategies used by other schools to overcome them. A list of Positive Statements About the 100% TFS Policy that can be used when talking with people violating the policy is included at the end of the chapter along with information about the 100% Tobacco Free School Compliance Workshop.

11. Prepare for common compliance challenges

While most people will fully comply with a school TFS policy, there are a small number who may not. They usually fall into one of several categories:

- School employees addicted to tobacco: Used to taking regular breaks to smoke or chew tobacco, they find it hard to get through the day without either leaving campus or violating the policy. Schools can avoid this by providing adequate time (3-6 months) between the policy adoption date and effective date so that these staff can utilize resources to quit or cut back. Educate school employees about the NC Quitline, a HWTF-funded resource for people trying to quit tobacco. NC Quitline Information is included at the end of the chapter. During that time period, offer (or partner with the local health department or hospital to offer) cessation classes and other cessation therapy.
- Groups that use school facilities. Sports leagues, clubs and other groups that
 use school facilities after the regular school day or on weekends may not be aware
 of the policy or realize the policy applies to them. Avoid compliance problems by
 making sure that signage about the policy is visible. Also, make sure all contracts
 include a statement about the school's policy and the organization's responsibility to
 abide by it. If a group uses the facility on a regular basis, it may help to provide a
 letter from the facilities manager letting them know about the policy. Some schools
 include a stipulation in the contract that a cleaning fee will be charged if tobacco is
 used when their organization is using school facilities.
- Workers from outside the school district. Workers from outside the district, such as janitorial services or subcontractors, may not know about the policy. We advise school systems to communicate this information through contractual agreements and letters to school contractors.
- Fans at athletic events. With adequate signage, regular announcements at the game and reminders in program event brochures, policy compliance will likely be very good. For those fans who still use tobacco on school grounds, school systems must have staff that will remind them of the TFS policy in a friendly but firm manner. Simply reminding them of the policy is usually sufficient. See the fact sheet Strategies for Compliance Problem-Solving at the end of the chapter for more ideas. The Tackle Smoking Project is a great program that involves youth groups in monitor compliance at football games and is available at no charge. More info is provided at the end of this chapter.

End of Chapter Resources⁸

Suggested Student Sanctions

⁸ End of chapter resources are available at www.nctobaccofreeschools.com

- Staff Follow-Up Survey
- Strategies for Compliance Problem-Solving
- Positive Statements about the 100% TFS Policy
- 100% Tobacco Free School Compliance Workshop
- The Tackle Smoking Project
- State Resources to Support Compliance with a 100% TFS Policy

Chapter 5: Compliance and Sanctions

No matter how well the 100% TFS policy is communicated, monitored or supported, there are bound to be some policy violations. Therefore, sanctions – or the application of penalties – play a small but key role in policy implementation. Most schools in NC with a 100% TFS policy in place have very few policy violations. When a violation does occur, it is important to provide consistent and fair penalties that encourage people to change their behavior.

12. Understand people's ability to alter their behavior

For sanctions to have a deterrent effect, the person must be willing and able to alter their behavior. For some people who are addicted to tobacco, this may not be possible to do on their own or without help. Consider this when developing sanctions for policy violations – particularly for students and school staff. Encourage cessation and make information about local resources available before the policy is implemented. Information on the NC's Quitline and other Tobacco Cessation Resources are available at the end of Chapter 6.

13. Provide educational or remedial sanctions for students

Research shows that schools in the United States tend to use severe or punitive sanctions in response to student tobacco policy violations, rather than sanctions that offer education, counseling or cessation support. Yet there is no evidence that severe sanctions lead to reduced student tobacco use. On the contrary, school tobacco policies that emphasize prevention and have an educational or treatment focus are associated with less smoking among students. We recommend that schools offer students who violate the policy an alternative to suspension, such as a tobacco education program, for the first two policy violations. More information on Suggested Student Sanctions is available at the end of this chapter.

14. Develop consistently applied, progressive sanctions

The purpose of applying sanctions or penalties when the 100% TFS policy is violated is to deter or prevent that person, and others, from violating the policy in the future. However, when sanctions are viewed by people as being selectively applied, or when "tolerance zones" are allowed to exist on campus where people can use tobacco without consequence, the deterrent effect is lost. For compliance with the 100% TFS policy to be high, people must be convinced there is a strong likelihood of consequences for violating the policy. We recommend that schools have clear sanctions for policy violations that provide progressively more severe penalties for each subsequent violation. These should be applied consistently, without regard for the person or the situation in which the violation occurs.

End of Chapter Resources⁹

Suggested Student Sanctions

⁹ End of chapter resources are available at www.nctobaccofreeschools.com

Chapter 6: Cessation and Education

About half of young people in North Carolina who use tobacco want to quit, and many are trying. In the past year, 55.5% of high school smokers and 69.5% of middle school smokers made at least one serious attempt to quit. Schools that are successfully implementing their 100% TFS policy have programs and services in place to support student and staff cessation efforts.

15. Provide a range of cessation services and resources

Not all schools have enough tobacco users to justify holding a cessation class. Others may not have the funds. Don't let that stop you from making a strong effort to support cessation.

Students and staff who use tobacco may be at different stages of quitting. Some may have just started considering the idea. Having a little more information on how to quit, or the chance to talk with a guidance counselor, may be what they need to actually try quitting. Others may have made the decision to quit and need to know about joining a local cessation classes. Working together with your local health department, hospital, or health organization (such as the local chapter of the American Lung Association), develop and promote a range of cessation resources designed to meet each tobacco user where they are in the cessation process. The Resources on How to Quit at the end of this chapter will provide a good place to start

End of Chapter Resources¹⁰

Resources on How to Quit

¹⁰ End of chapter resources are available at www.nctobaccofreeschools.com

Chapter 7: Ongoing Evaluation and Advocacy

Because each year will bring new students, staff, parents, and others to your school, a well-implemented 100% TFS policy includes provisions for ongoing policy advocacy and evaluation. We encourage school staff to collect information about the positive effects that the 100% TFS policy is having on students and staff. This might include the numbers of people who have quit using tobacco, tried to quit, attended cessation classes or attended alternative to suspension classes. The local health department may work with the school on gathering this information.

Also, collect stories about how the 100% TFS policy has changed lives – such as the teacher who was finally able to quit, or the student with asthma who can now attend football games because they are smoke-free. Talk with parents and community members about how the policy helps to support what they are teaching their children at home about tobacco and health, or how it has encouraged them to quit smoking or chewing tobacco. Publicize these stories in school newsletters or the local paper, and share them with the school board and superintendent. Finally, develop ways to monitor and evaluate the policy so that any implementation problems can be identified early and addressed, and effective strategies can be reinforced and shared among schools.

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