

EFFECTIVENESS OF NICOTEEN PROGRAM[®] TO INFLUENCE ADOLESCENT
CIGARETTE SMOKING BEHAVIORS

By

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ABSTRACT

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The focus of this study was to determine the effectiveness of the NICoteen Program developed by Baby Think It Over Educational Products, Inc. The purpose of the program is to “explore the physical, mental and financial consequences of smoking” for adolescents. The researcher surveyed 278 students, grades six through nine, at two middle schools in Eau Claire, Wisconsin. Differences between experimental and control groups on the post-program survey were analyzed using an Independent Samples T-test. The same test was also used to analyze the difference between pre-and post-program surveys for both groups.

Crosstabulations and Independent samples T-tests were used to examine the relationships between demographics, behaviors, and attitudes for all students. No statistically significant differences were found between experimental and control groups participating in the study. Likewise, no statistically significant difference in attitude or behavior was found between participants pre- to post-program. Results of this study point to the role family patterns may play in determining smoking behavior and attitudes.

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CHAPTER 1

Introduction

Smoking is the most preventable cause of death in our society. Nearly one in five deaths in the United States each year is tobacco-related (American Cancer Society, 2000). Cigarettes kill more than 400,000 Americans every year. This figure represents more deaths than from AIDS, alcohol, car accidents, murders, suicides, drugs and fires combined (Lynch & Bonnie, 1994).

It is estimated that the tobacco industry made \$190 million in profit from the illegal sale of cigarettes to minors in 1999 (American Cancer Society, 2000). Recent legal actions taken against the tobacco industry have influenced legislators to take a more proactive stance on tobacco through anti-tobacco advertising and enforcement. Today, there are more anti-smoking campaigns aimed at influencing children's perceptions about tobacco than at any other time in history. The basis for many of these programs is to provide children with the knowledge to make informed decisions. Through these programs children learn about the health problems caused by tobacco use. In theory, this should be the basis of any successful anti-smoking program targeting children. In reality, adolescents and pre-teens have continued to smoke at rather steady rates since the mid-1990's (CDC, 1999). The question to be answered by new anti-smoking campaigns is "why"?

Baby Think It Over Educational Products, Inc. believes that the focus of new adolescent anti-smoking campaigns need to focus on the attitudinal and psychosocial factors present in a youth's environment. By focusing on the social environment present in teens' lives, it may be possible to influence behavior. This social argument was first

hypothesized by Leventhal and Cleary (1980), who believed that adolescents go through stages of smoking behaviors before they become dependent on tobacco products. Each stage is built on the social influences present in the teenager's life.

Baby Think It Over Educational Products, Inc. has developed a program that they believe combats the social pressures in adolescent life that influence smoking. The NICoteen Program was developed in 1999 and uses innovations in voice-recognition technology coupled with classroom instruction, to influence teen's tobacco perceptions. The basis of the program is the NICoteen Pack, which simulates for the adolescent the power an addiction can take over an individual's life.

The Nicoteen Program has recently been released after two years of research and development. The primary focus of the research has been the effects of computer simulation on learning.

Students remember only 10 percent of what they read;
20 percent of what they hear; 30 percent, if they see
visuals related to what they are hearing; 50 percent, if
they watch someone do something while explaining
it; but almost 90 percent, if they do the job themselves
even if only as a simulation (Gokhale, 1993).

The schools and students who participated in this study were part of the original test-marketing sample developed by Baby Think It Over Educational Products, Inc. The program follows a set pattern of classroom lectures paired with student simulator interaction. A teen is assigned to carry the NICoteen Pack smoking simulator for up to ten days at a time. At random, unpredictable times the smoking simulator requests

student attention, simulating a smoker's need for nicotine. "The act of smoking a cigarette is simulated by repeating a verbal anti-smoking message in place of each puff. Throughout each smoking session, the smoking simulator tells the student various smoking related facts and asks thought provoking questions" (NICoteen Program Manual, 2000). This interaction is also accompanied with classroom exercises that focus on cigarette cost, health risks of tobacco use, tobacco advertising, and cigarette ingredients.

Baby Think It Over Education Products, Inc. believes that the NICoteen Program simulations offer the structure of a safe environment in which participants can actively learn. It provides teens with the opportunity to experience the consequences of a behavior in order to evaluate the real-life effects (Nicoteen Program Theory Synopsis, 2000). The NICoteen Program also helps students convert raw experiences into learning by "establishing remembered learning experiences for future reference, providing a safe context to experience and learn consequences, and increase self-awareness of learned patterns that control thinking" (NICoteen Program Theory Synopsis, 2000).

Statement of the Problem

The purpose of this study was to determine the effectiveness of the NICoteen Program developed by Baby Think It Over Educational Products, Inc. This was accomplished by: (1) comparing the differences between experimental and control group participants on the post-program instrument, (2) by measuring changes from pre-to post-program for experimental group participants, and (3) by examining the relationships between demographics, behaviors and attitudes for all students.

CHAPTER 2

Review of Literature

Smoking is the most preventable cause of death in our society. Nearly one in five deaths in the United States each year is tobacco-related (ACS, 2000). Cigarettes kill more than 400,000 Americans every year. This figure represents more deaths than from AIDS, alcohol, car accidents, murders, suicides, drugs and fires combined (Lynch & Bonnie, 1994). “Lung cancer mortality rates are about 23 times higher for current male smokers and 13 times higher for current female smokers compared to lifelong never-smokers. In addition to being responsible for 87% of lung cancers, smoking is also associated with cancers of the mouth, pharynx, larynx, esophagus, pancreas, uterine cervix, kidney, and bladder. Smoking accounts for at least 30% of all cancer deaths, is a major cause of heart disease, and is associated with conditions ranging from colds and gastric ulcers to chronic bronchitis, emphysema, and cerebrovascular disease” (ACS, 2000).

For adolescents the risks of smoking cigarettes are just as great. More than a third of all kids who ever try smoking a cigarette become regular, daily smokers before leaving high school (CDC, 1998). It is estimated that 337,138 adolescents will become regular smokers in 2001 (Campaign for Tobacco-free Kids, 2001). In fact, the addiction rate for nicotine is higher than the addiction rates for marijuana, alcohol, or cocaine (CDC, 1995). Surprisingly, a September 2000 study found that symptoms of addiction, such as having strong urges to smoke, feeling anxious, or having unsuccessfully tried to stop smoking, can appear in young kids within weeks or only days after occasional smoking first begins, and well before daily smoking has ever

started (DiFranza et al, 2000). This study outlines the inherent risk for children experimenting with tobacco. They are more susceptible to addiction because of their slight size and their body's unfamiliarity with chemicals processed in cigarettes. Roughly a third of all kids who become regular smokers before adulthood will eventually die from smoking (CDC, 1998). If current trends continue over five million of the youths under age 18 who are alive today will die from tobacco-related causes (CDC, 1996).

The Journal of the American Medical Association, recently reported that,

Teenagers who smoke a pack of cigarettes or more a day are at markedly increased risk for three different kinds of anxiety disorders: panic disorder, agoraphobia and generalized anxiety disorder during early adulthood. Our findings indicate very clearly that adolescents who smoke a pack of cigarettes a day or more were 12 times more likely than others to have panic attacks, five times as likely to have agoraphobia and five times as likely to have generalized anxiety disorder during early adulthood.

(ACS, 2001)

Given all these dangers, why are children continuing to experiment with tobacco products? Programs such as D.A.R.E., which encourage children to stay away from cigarettes, drugs, and alcohol, are teaching students at younger ages. The answer may be in the social environment in which tobacco experimentation typically begins.

Through children know the inherent dangers of smoking, their social environment (parents and peers) may drive them toward experimentation.

According to Leventhal and Cleary (1980), young people appear to progress through a set of stages that takes them from mild exposure to dependence. Though not all young people who experiment with tobacco become daily users, the majority of those who do, pass through similar stages to addiction. The five stages to addiction include: the preparatory stage, the trying stage, the experimental stage, regular use, and finally dependence. The preparatory stage revolves around psychosocial risk factors, including advertising and role models, which help adolescents and pre-teens form their attitudes and beliefs about smoking. Though no smoking has taken place, the adolescent may begin to see smoking as a coping mechanism or a way to display independence. During the trying stage the adolescent smokes his or her first few cigarettes. The psychosocial risk factors associated with this stage are peers, the perception that smoking is accepted, and the availability of cigarettes. This is the stage where many adolescents stop smoking. Whether an adolescent has a positive or negative experience within the trying stage will determine if he or she continues on into experimentation. The experimentation stage is characterized by irregular but repeated smoking resulting from situational circumstances, such as a party or friends who smoke. Regular use soon follows the experimentation phase. Regular use is defined as weekly tobacco use across a variety of social situations. Soon to follow is dependence, which is characterized by the physiological need for nicotine.

The transition years from elementary school to secondary school, grades 7 through 9, seem to be the peak time for initial adolescent tobacco use (Alexander et al,

1983). During this stage of development youths are struggling to find an identity separate from that of their parents. They are striving to distance themselves from their parent's influence. Many adolescents choose to set their own value system and experiment with what their parents may deem as risky behaviors, such as smoking (Konopka, 1991). "Cigarette smoking is a risky behavior portrayed by advertising and role models as a way to be attractive to one's peers, and smoking appears to contribute to a positive social image in some settings" (Sussman et al, 1987). The functions of smoking established by advertising, independence, masculinity or femininity, and risk taking, are precisely what make adolescents vulnerable to experimentation.

Accordingly, any efforts to decrease future smoking levels among high school students, college-aged youths, or adults need to include a focus on reducing experimentation and regular smoking among teens and even pre-teens, as well. Delaying the age when smoking can also reduce the risk that they become regular or daily smokers and increase their chances of successfully quitting if they do begin regular smoking. (Campaign for Tobacco-free Kids, 2001)

Adolescent Cigarette Use

In order to accurately assess the influence of teen smoking cessation programs, it's necessary to understand the national, state, and regional patterns of tobacco use by adolescents. These patterns can be used to identify target populations, adolescent

tobacco attitudes, and assess the effects of existing smoking cessation programs. With this data a more effective and efficient program can be designed.

The national patterns in adolescent tobacco use and health behaviors have been tracked by three cross-sectional surveillance systems: the National Household Survey on Drug Abuse, the Monitoring the Future Project, and the Youth Risk Behavior Survey. These three surveillance systems have been funded by national health agencies and university social research projects. They help provide historical adolescent tobacco use data, determine at-risk behaviors, and contribute to predictions for future tobacco-related diseases.

The National Household Survey on Drug Abuse (NHSDA) was conducted nine times from 1971 through 1991 by the National Institute on Drug Abuse. The survey continued from 1991 to the present sponsored by the Substance Abuse and Mental Health Services Administration (SAMHSA). The National Household Surveys on Drug Abuse has been the primary source of illicit drug, alcohol, and tobacco use information on the U.S. population age 12 years and older, since 1971.

The 1999 survey was redesigned from a paper and pencil questionnaire to an interactive, bilingual, computer-based questionnaire. This allowed the sample size to increase roughly fourfold from previous years and provide information from 70,000 participants. Findings from the 1999 National Household Survey on Drug Abuse conclude that “Current cigarette smoking rates increase steadily by year of age, from 2.2 percent at age 12 to 43.5 percent at age 20. Overall, 14.9 percent of youths age 12 to 17 years in 1999 smoked cigarettes currently” (SAMHSA, 2000). The rate of cigarette smoking for children ages 12 to 14 years has steadily fallen from a high of 3.9 in 1991.

It was also reported by the 1999 National Household Survey on Drug Abuse that youths age 12 to 17 who currently smoke cigarettes are seven times more likely to start using illicit drugs than their peers who are non-smokers.

The Monitoring the Future Project (MTFP) surveys have been collected since 1976 by the University of Michigan's Institute for Social Research. This surveillance system uses a cross-sectional and longitudinal design. The surveys are distributed annually with a follow-up five to six years later. The sample used for the Monitoring the Future Project is U.S. students in grades 8, 10, and 12.

“After reporting a nearly 50 percent increase in the rate of smoking among younger teens (eighth and tenth graders), between 1991 and 1996, the study has been showing a fairly steady reduction in smoking since then” (MTFP, 2000). In the 1996 Monitoring the Future Project survey, the number of students in the eighth grade who reported smoking a cigarette in the last 30 days was 21 percent. This percentage has dropped steadily since then, with 14.6 percent of eighth grade participants involved in the 2000 survey indicating cigarette use in the last 30 days. The percentages of eighth-graders reporting daily cigarette use have also dropped from a high of 10.4 percent in 1996, to a decade low of 7.4 percent in 2000.

The Youth Behavior Risk Survey (YRBS) has been distributed since 1991 by the Centers for Disease Control. This survey monitors six categories of priority health-risk behaviors among youths in grades nine through twelve. The six categories include: behaviors that contribute to unintentional and intentional injuries, tobacco use, alcohol and other drug use, sexual behaviors, unhealthy dietary behaviors, and physical

inactivity. The survey provides national and state information on the six categories mentioned previously for U.S. high school students.

The 1999 Youth Risk Behavior Survey concluded that over one third (34.8%) of high school students nationwide had smoked cigarettes on one or more of the last thirty days. Roughly 38 percent (38.1%) of Wisconsin's high school population reported smoking on one or more of the last thirty days. The 1999 survey also reported that 16.8% of students nationwide had smoked on twenty or more of the 30 days preceding the survey. Wisconsin's high school population reported a slightly higher rate of 21.7 percent. Interestingly, all three national surveys reported that adolescents in the North Central region of the U.S., which Wisconsin is a part of, had a higher rate of teen smoking than any other region of the country. The Monitoring the Future Project also reported higher rates of smoking for teens who were white and lived in rural areas.

Along with the Youth Risk Behavior Survey, sponsored by the Centers for Disease Control, Wisconsin adolescent tobacco use is being tracked using the Wisconsin Youth Tobacco Survey, developed by the Department of Health and Family Services. "The Wisconsin Youth Tobacco Survey tracks tobacco use, attitudes, and related behaviors among public school students enrolled in middle and high school (grades 6-12)" (DHFS, 2000). The sample size for the 2000 Wisconsin Youth Tobacco Survey was 1,440 middle-school students and 1,307 high-school students.

The 2000 Wisconsin Youth Tobacco Survey concluded that roughly 46 percent of Wisconsin's middle school students have tried some sort of tobacco product. Twelve percent of Wisconsin's middle school students report smoking on one or more of the previous thirty days (defined as current smoking). As students age this rate tends to

increase. The current rate for smoking on one or more of the previous thirty days for twelfth grade students is 39 percent.

The rate of current smoking increases more rapidly among middle school students than among high school students. Currently, 3 percent of students in grade 6 report smoking cigarettes on at least one of the past 30 days, compared to 20 percent of students in grade eight. Current smoking by high school students in grade 9 is 26 percent, which rises to 39 percent by grade twelve. That's a 17 percent increase in current student smoking between the grades 6 to 8, and only a 13 percent increase from grades 9 to 12.

The NICoteen Program

Baby Think It Over Educational Products, Inc., believes that the solution to the teen smoking problem is not to focus on the health consequences, but on the toll an addiction takes on an adolescent's life. By focusing on the addiction, the NICoteen Program combats the psychosocial issues involved in the process. The program shows adolescents that they are **Not In Control** of their lives if they choose to smoke cigarettes (NICoteen Program Manual, 2000). "The NICoteen Pack makes the student respond to its smoking requests. If the student ignores the simulator, it becomes more persistent and irritating, simulating the addictive nature of nicotine" (NICoteen Program Manual, 2000).

The NICoteen Pack is a first of its kind interactive smoking simulator. The product uses voice recognition technology to simulate the addictive affects of nicotine. A teen is assigned to carry the simulator for up to ten days at a time. At random, unpredictable times the smoking simulator requests student attention, simulating a

smokers need for nicotine. “The act of smoking a cigarette is simulated by repeating a verbal anti-smoking message in place of each puff. Throughout each smoking session, the smoking simulator tells the student various smoking related facts and asks thought provoking questions” (NICoteen Program Manual, 2000).

Development of the NICoteen Program and Pack began in the winter of 1999. The study begun by researchers at the University of Wisconsin-Eau Claire, and concluded by the researcher from the University of Wisconsin-Stout, is the first formal evaluation conducted on the NICoteen Program. The original program manual has been changed in part because of informal evaluations provided by instructors involved in the original study. Specifically, instructors swayed Baby Think It Over Educational Products, Inc. to add themes to the daily instruction provided by the program manual. Each day of the program focuses on a specific theme, such as addiction or health consequences of cigarette use. This has helped instructors focus not only on the daily activities of the program, but also on themes of the program. The product was officially released on January 12, 2001.

The NICoteen Program Manual states that the purpose of the program is to “explore the physical, mental, and financial consequences of smoking.” The program is based on five key concepts that are communicated to teens through instruction. The five concepts are: (1) A smoking addiction is demanding, (2) Smoking consumes a great deal of time, (3) Smoking drastically affects one’s health, (4) Smoking is expensive, and (5) Smoking takes away independence. In order to accurately evaluate the success of the NICoteen Program it is necessary to judge it in relation to these five key concepts. The

objective of this paper is to determine the effectiveness of the NICoteen Program towards that end.

CHAPTER 3

Methodology

Participants

Schools in the Eau Claire area were contacted by Baby Think It Over Educational Products, Inc. in the winter of 1999 and asked to participate as a test-marketing population for the NICoteen Program. Schools wishing to participate were given NICoteen Program materials and NICoteen Packs free of charge. The participants used in the research study were students from South middle school and Cornell middle school, both located in Eau Claire, Wisconsin. A total of 229 seventh-grade students participated from South middle-school and 49 ninth-grade students participated from Cornell middle-school. The total sample used for the study was 278 students.

The students were further divided into experimental and control groups. Those students who had participated in the study started by researchers from UW-Eau Claire acted as the experimental group, and students who completed the post-program survey without participating in the previous research acted as the control group. The experimental group received a pre-program survey (designed by researchers from UW-Eau Claire) in March of 2000, participated in the NICoteen Program in April 2000, and were given a post-program survey (designed by a researcher from UW-Stout) in February of 2001. Those students in the control group were only given a post-program survey (designed by a researcher from UW-Stout) in February 2001, without receiving any instruction or exposure to the NICoteen Program. A total of 56 students (35 students from South, 21 students from Cornell) participated in the research study as an

experimental group. A total of 222 students (194 students from South, 28 students from Cornell) participated in the research study as a control group.

It is important to note that students from South middle school were in the sixth grade while completing the pre-program survey (March 2000) and in the seventh grade while completing the post-program survey (February 2001). Students from Cornell were in the eighth grade while completing the pre-program survey (March 2000) and in the ninth grade while completing the post-program survey (February 2001).

Instruments

Administration and design of the pre-program survey was conducted by researchers at the University of Wisconsin-Eau Claire in the spring of 2000 (see Figure 1). Prior to student participation in the NICoteen Program, a parent information sheet and consent form was distributed to protect student participants (see Figure 2 & 3). Researchers at the University of Wisconsin-Eau Claire failed to complete the study and a researcher from the University of Wisconsin-Stout was contacted to complete the project in December, 2000. The pre-program survey was insufficient for the purposes of completing the study. As a result a new survey was developed based on the pre-program survey and the needs of Baby Think It Over Educational Products, Inc (see Figure 4).

The NICoteen Program is based on five important facts: (1) A smoking addiction is demanding, (2) Smoking consumes a great deal of time, (3) Smoking drastically affects one's health, (4) Smoking is expensive, and (5) Smoking takes away independence. The pre-program survey developed by researchers from UW-Eau Claire failed to address these five key concepts. Based on literature provided by Baby Think It Over Educational Products, Inc. and the NICoteen Program's five key concepts, the

researcher from UW-Stout and a representative from Baby Think It Over Educational Products, Inc. provided the basis for content validity of the post-program survey. The instructions provided on the top of the post-program survey outline the voluntary nature of the research and the rights to confidentiality each student had. The instructions were deemed sufficient to ensure confidentiality by UW-Stout's Institutional Review Board prior to distribution of the post-program survey.

Procedures

The pre-program survey, designed by researchers from the University of Wisconsin-Eau Claire, was distributed to all students participating in the NICoteen study at South and Cornell middle schools on March 27, 2000. Students in the sixth grade at South middle school began the NICoteen Program and received NICoteen Packs April 4, 2000. Students in the eighth grade at Cornell middle school began the NICoteen Program and received NICoteen Packs April 10, 2000. All data was collected by researchers at the University of Wisconsin-Eau Claire.

Students who participated in the NICoteen Program and received a NICoteen Pack were required to adhere to the following curriculum. The NICoteen Program consists of a NICoteen Pack smoking simulator and anti-smoking lesson plans. Students are required to take a NICoteen Pack home with them for up to ten days. During that period the simulator will beep signaling the need for attention from the student. "The act of smoking a cigarette is simulated by repeating a verbal anti-smoking message in place of each puff. Throughout each smoking session, the smoking simulator tells the student various smoking related facts and asks thought provoking questions" (NICoteen Program Manual, 2000). Upon completion of the simulation portion of the program,

students return the Packs to their instructors and discuss how their perceptions of smoking have changed.

Researchers at the University of Wisconsin-Eau Claire failed to complete the study and a researcher from the University of Wisconsin-Stout was contacted to complete the project in December, 2000. The pre-program survey was insufficient for the purposes of completing the study. As a result a new survey was developed based on the pre-program survey and the needs of Baby Think It Over Educational Products, Inc.

The post-program survey, designed by the researcher from the University of Wisconsin-Stout, was distributed to students who completed the NICoteen Program (experimental group) in February 2001, as well as students who were in the same grades who did not have exposure to the NICoteen Program (control group). It is important to note that students from South middle school were in the sixth grade while completing the pre-program survey (March 2000) and in the seventh grade while completing the post-program survey (February 2001). Students from Cornell were in the eighth grade while completing the pre-program survey (March 2000) and in the ninth grade while completing the post-program survey (February 2001).

All post-program surveys were distributed February 23, 2001. All survey data, pre-program and post-program, was analyzed by the researcher from the University of Wisconsin-Stout using the Statistical Package for the Social Sciences (SPSS) software-version 10. An executive summary of the research was presented to Heidi Solheim, a Marketing Analyst for Baby Think It Over Educational Products, Inc, on March 2, 2001.

CHAPTER 4

Results

Race

Students who participated in the study were primarily Caucasian (80.9%), followed by Asian (4.7%), Hispanic (1.1%), African-American (.7%), and Other (2.9%). The other 9.7% of students failed to distinguish their race. No statistically significant relationship was found between race and any other variable.

Use

There were 25 students who took part in the study that reported cigarette use in the past 30 days, 13 (5%) from South middle school and 12 (26.5%) from Cornell middle school. The average age for smoking a whole cigarette for the first time was 10.32 years.

Parents

Of the 276 participants in the study, 28% (77 students) reported that one or more of their parents smoke cigarettes on a regular basis. A statistically significant relationship (Chi-square=25.41, d.f.=1, $p<.000$) was found between students whose parents smoked and whether the students had siblings who smoked (see Table 1). Those students whose parents smoked had a higher percentage of siblings who smoked as well. A statistically significant relationship (Chi-square=17.18, d.f.=1, $p<.000$) was also found between students whose parents smoked and whether the students had ever tried smoking themselves (see Table 2). Those students whose parents smoked had a higher incidence of trying smoking than their counterparts whose parents do not smoke. A statistically significant relationship (Chi-square=12.10, d.f.=1, $p<.001$) also existed

between parents who smoke and the rates of their children who have smoked a whole cigarette themselves (see Table 3). Students whose parents smoke were more likely to have smoked a whole cigarette than their counterparts whose parents do not smoke cigarettes.

Students whose parents smoke were compared against students whose parents do not smoke on four behavior and perception based questions. The four questions are as follows: “How old were you when you smoked a whole cigarette for the first time?” “During the last 30 days, including today, how many days have you smoked at least one cigarette?” “On the days you have smoked in the last 30 days, how many cigarettes did you smoke per day?” “What percent of people your age in your school smoke?” The only question that achieved statistical significance was, “What percent of people your age in your school smoke?” ($t=2.61$, $d.f.=246$, $p<.010$). Those students whose parents smoke regularly believe that more of their peers smoke (see Table 4). Table 5, located in the appendix, is provided to illustrate the difference between students whose parents smoke and those students whose parents do not on eleven opinion based statements regarding smoking. The only statistical differences between the groups on the eleven opinion based statements were whether negative consequences of smoking become larger over time ($t=-2.41$, $d.f.=275$, $p<.017$) and that smoking is a time consuming habit ($t=-2.008$, $d.f.=267$, $p<.046$). Students of smoking parents do not believe that smoking consequences increase over time as much as students of non-smoking parents do. Students of smoking parents also believe that smoking is a much less time consuming behavior than students of non-smoking parents.

Siblings

Of the 276 participants in the study, 17% (46 students) stated that they had one or more siblings who smoked cigarettes regularly. A statistically significant relationship (Chi-square=41.53, d.f.=1, $p<.000$) existed between students whose siblings smoke and if they have ever tried smoking (see Table 6). Those students whose siblings smoke regularly were more likely to have tried smoking themselves. A statistically significant relationship (Chi-square=39.96, d.f.=1, $p<.000$) also was found between students whose siblings smoke and whether those students have smoked a whole cigarette themselves (see Table 7).

Table 8, located in the appendix, is provided to illustrate the differences between students whose siblings smoke and those students whose siblings do not on eleven opinion based statements regarding smoking. A statistical difference was found between groups on three of the eleven opinion based statements. Statistical significance was reached for the statements: “Smoking is exciting” ($t=2.67$, d.f.=275, $p<.008$), “Smoking is enjoyable” ($t=3.78$, d.f.=274, $p<.000$), and “People who smoke are popular” ($t=3.27$, d.f.=274, $p<.001$). Students whose siblings do not smoke believe smoking is less safe than students with smoking siblings. Students whose siblings smoke believe smoking is more “enjoyable” and people who smoke are more “popular” than their counterparts whose siblings do not smoke.

Have You Ever Tried Smoking

Table 9, located in the appendix, is provided to illustrate the differences between students who have tried smoking and those students who have not tried smoking on eleven opinion based statements regarding smoking. A statistical difference was found

on six of the eleven opinion based statements. The statements for which a statistical difference was found are: “Smoking cigarettes is usually safe” ($t=3.72$, $d.f.=275$, $p<.000$), “Smoking is exciting” ($t=5.69$, $d.f.=275$, $p<.000$), “Smoking is enjoyable” ($t=5.35$, $d.f.=274$, $p<.000$), “Cigarettes that have low tar are safer than regular cigarettes” ($t=2.29$, $d.f.=271$, $p<.023$), “A smoking addiction takes away your independence” ($t=-2.14$, $d.f.=274$, $p<.033$), and “People who smoke are popular” ($t=4.08$, $d.f.=274$, $p<.000$).

Students who have tried smoking believe that smoking cigarettes is safer, more exciting, and more enjoyable than those students who have never tried smoking. Students who have tried smoking also believe that low tar cigarettes are safer, that an addiction does not take away as much of your independence, and that people who smoke are more popular than those students who have never tried smoking.

Have You Ever Smoked A Whole Cigarette Yourself

Table 10, located in the appendix, is provided to illustrate the differences between students who have smoked a whole cigarette themselves and those students who have not on eleven opinion based statements regarding smoking. A statistical difference was found between groups on nine of the eleven opinion based statements. The statements that reached statistical significance are: “Smoking cigarettes is usually safe” ($t=2.39$, $d.f.=274$, $p<.017$), “Smoking cigarettes is exciting” ($t=4.62$, $d.f.=274$, $p<.000$), “Smoking is enjoyable” ($t=6.21$, $d.f.=273$, $p<.000$), “Over time the negative consequences involved in cigarette smoking become larger and larger” ($t=-2.25$, $d.f.=275$, $p<.008$), “Smoking is expensive” ($t=-2.25$, $d.f.=272$, $p<.025$), “Smoking is a time consuming habit” ($t=-2.81$, $d.f.=267$, $p<.005$), “Cigarettes that have low tar are

safer than regular cigarettes” ($t=2.9$, $d.f.=270$, $p<.004$), “A smoking addiction takes away your independence” ($t=-3.41$, $d.f.=273$, $p<.001$), and “People who smoke are popular” ($t=4.08$, $d.f.=273$, $p<.000$).

Students who have smoked a whole cigarette believe that smoking cigarettes is safer, more exciting, and more enjoyable than those students who have never smoked a whole cigarette themselves. Students who have smoked a whole cigarette also believe that there are less negative consequences from smoking over time, cigarettes are less expensive, and smoking is less time consuming than the students who never smoked a whole cigarette. Students experienced with smoking rate cigarettes with low tar safer, rate smoking as less of an addiction, and see smokers as more popular than their counterparts in the non-smoking group do.

Experimental Group vs. Control Group

One of the main objectives of the research was to examine differences in behavior and attitudes for students who participated in the NICoteen Program (experimental group) and those who did not (control group). Due to the nature of the pretest, the study was only able to compare data on the following opinion based statements: “Smoking cigarettes is usually safe”, “Smoking is exciting”, “Smoking is enjoyable”, and “Smoking is addictive, which makes trying to quit almost impossible”. Among these statements, only one proved statistically significant, “Smoking is exciting” ($t=2.49$, $d.f.=275$, $p<.013$). Surprisingly, students in the experimental group (those who participated in the NICoteen Program) rated smoking as more exciting than students from the control group. This may be attributed to the novelty of the NICoteen Pack, which each student was required to carry. No statistically significant differences were

found between experimental and control groups on the eleven opinion based statements. Student's responses to the question, 'what health problems can smoking cause?' are provided in Tables 11 through 14.

Pre- vs. Post Program Data

The experimental group contributed both pre- and post-program data to determine the effectiveness of the NICoteen Program. Students' pre- and post-program surveys were compared against each other to determine if a statistically significant change in attitude occurred between trials. Unfortunately, the limited scope of the pre-program survey hampered the area the post-program survey could cover. Only four opinion based statements could be compared: "Smoking cigarettes is usually safe", "Smoking is exciting", "Smoking is enjoyable", and "Smoking is addictive, which makes trying to quit almost impossible". No opinion based statements reached statistical significance from pre- to post-program.

CHAPTER 5

Conclusions

Of the 276 students who participated in the study, 11% stated that they have smoked a whole cigarette at least once. Of these 11%, the average age for smoking a whole cigarette was 10.32 years old. These same students smoked on average 1.7 cigarettes during three of the last thirty days. All students who participated in the study were asked what percentage of people their age smoke. Students believed that 27.89% of their peers smoke. This is more than double the actual amount in their schools.

Those students whose parents smoked had a higher percentage of siblings who smoked, had a higher incidence of trying smoking, and were more likely to have smoked a whole cigarette than their counterparts whose parents do not smoke cigarettes. Students of smoking parents also do not believe that smoking consequences increase over time or that smoking is as much a time consuming behavior as compared to students of non-smoking parents. Those students whose parents smoke regularly were also more apt to rate the incidence of smoking for their peers as higher than that of children of non-smoking parents.

Those students whose siblings smoke regularly were more likely to have tried smoking themselves, rate smoking as more safe, believe smoking is more “enjoyable” and people who smoke are more “popular”, than their counterparts whose siblings do not smoke.

Students who have tried smoking believe that smoking cigarettes is safer, more exciting, and more enjoyable than those students who have never tried smoking. Students who have tried smoking also believe that low tar cigarettes are safer, that an

addiction does not take away as much of your independence, and that people who smoke are more popular than those students who have never tried smoking.

Students who have smoked a whole cigarette believe that smoking cigarettes is safer, more exciting, and more enjoyable than those students who have never smoked a whole cigarette themselves. Students who have smoked a whole cigarette also believe that there are less negative consequences from smoking over time, cigarettes are less expensive, and smoking is less time consuming than the students who never smoked a whole cigarette. Students experienced with smoking rate cigarettes with low tar safer, rate smoking as less of an addiction, and see smokers as more popular than their counterparts in the non-smoking group do.

No evidence of a change in behaviors or attitudes was found between pre-to post program participants or experimental to control participants. In this research, there was no evidence of the influence of the NICoteen Program on teenagers' attitudes or behaviors toward smoking.

The limited scope of the pre-program survey hindered the results that could be gathered through the post-program survey. As a result, future research studies should focus on a consistent pre- and post-program evaluation to ensure greater data gathering and more analytical possibilities. A second area for future research should focus on getting the input of adolescents that have participated in the NICoteen Program and have used the NICoteen Pack. Focus group sessions with adolescents familiar with the program may be able to provide strengths and weaknesses of the program. This in turn may help the program remain flexible and adaptable to the changing teenager. A final area of interest for the success of the NICoteen Program may be to provide standardized

training for instructors using the program in classroom settings. The instruction may need to go beyond simple written instructional materials to ensure consistency and commitment of instructors to the focus and goals of the NICoteen Program.

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- | | | | | | | | |
|--|---|---|---|---|---|---|---|
| 13. Smoking cigarettes is a choice between immediate pleasure and long term health risk. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 14. Smoking any number of cigarettes is fine. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 15. Smoking cigarettes is enjoyable. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 16. People have no control over the reasons that they smoke cigarettes. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 17. Smoking cigarettes is relaxing. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 18. There are some good things about cigarettes that nonsmokers cannot understand. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 19. Smoking cigarettes is exciting. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 20. Over time the negative consequences involved in smoking cigarettes become larger and larger. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 21. Smoking cigarettes is addictive, which makes trying to stop almost impossible. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 22. People who do not want to stop smoking cigarettes say that quitting is beyond their power. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 23. Most people who smoke a lot cannot quit. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 24. The risks from smoking are not worth the pleasure. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 25. List 4 health problems that are caused by cigarette smoking. | | | | | | | |

26. Every cigarette you smoke takes _____ minutes off your life.

27. List 4 ways cigarette companies advertise:

1. _____
2. _____
3. _____
4. _____

28. How much would it cost to smoke for one week? _____

Answer what you can below. You may leave items blank if you do not remember or did not use the NICoteen Pack.

29. List 3 things you learned from the NICoteen Pack that you did not already know.

1. _____

2. _____

3. _____

30. List two NIClines that you used with your pack.

1. _____

2. _____

31. How much time would/does using the NICoteen Pack take up in one day?

- a) Less than one hour
- b) One to three hours
- c) Four to eight hours
- d) Nine to thirteen hours
- e) Over thirteen hours

32. List 4 facts that you remember from the NICoteen Pack.

1. _____

2. _____

3. _____

4. _____

33. What does NIC stand for? _____

34. What things did the pack do that you remember most?

1. _____

2. _____

3. _____

4. _____

Figure 2.

February 28, 2000

Dear Parents:

Your son or daughter is fortunate to have an opportunity to participate in the evaluation of the NICoteen Program, developed by Baby Think It Over Educational Products, Inc. This product has been created to educate teens about the physical, emotional, financial, and social consequences of tobacco addiction. Initial field trials of the product have shown very promising results.

The NICoteen Program™ is a two-part educational tool. The first component consists of student and instructor materials. The materials are a compilation of worksheets and discussion topics that focus on various aspects of smoking education. The second component is the NICoteen Pack™. The pack is a smoking simulator that demonstrates to students the loss of control over their lives caused by addiction to smoking cigarettes. The pack is designed to discourage smoking by subjecting the student to the smoking regimen that an addicted smoker must follow on a daily basis.

The NICoteen Pack makes demands throughout the day. The student interacts with the pack by using an ID and voice recognition technology. Each participant has a personal ID and a NICline (smoking phrase). The ID insures that the designated student is the only one who can operate the device. Simulated smoking is achieved through periodic repetition of the NICline, normally an anti-smoking message, for the amount of time that it would take to smoke a cigarette. Throughout each smoking session the student will hear various smoking related facts and thought-provoking questions.

The NICoteen Pack records the student's interaction throughout the smoking simulation. When the student returns the pack to the instructor, the instructor hears a report of the student's simulation.

Your son or daughter's participation is required to assist researchers from UW-EC in determining the effectiveness of the Program. Dr. Larry Morse, the Chair of the Department of Psychology at UW-EC will be working with your student's instructor to gather research information. Your son's or daughter's identity and Program grade will be available only to the instructor at the middle school and the researchers.

Please read and sign the attached Parent Consent Form and return it to your son's or daughter's middle school by _____. Thank you for your consideration.

Best Regards,

Heidi Solheim, Marketing Analyst

Figure 3.

Parent Consent Form

As the parent or guardian of a student who is eligible to participate in the NICoteen Program™ and research project with UW-EC, I have read and understand the following:

- The NICoteen Program is a two-part educational tool. The first component consists of student and instructor materials. The second component is the NICoteen™ smoking simulator.
- The NICoteen Program will require my son or daughter to participate in a smoking simulation. The experience is intended to demonstrate to my son or daughter the physical, emotional, financial and social consequences of tobacco addiction
- The pack will require interaction throughout the day. When the pack requests a cigarette, it will be the responsibility of my son or daughter to fulfill the simulator's demand for a cigarette.
- Research information will be gathered by the University of Wisconsin-Eau Claire. My son's or daughter's identity and Program grade will be available only to the instructor at the middle school, and the researchers.

Having read all of the above, I agree to allow _____ to participate in the NICoteen Program and research study.

Signed _____ Date _____

No, I do not wish _____ to participate in the NICoteen Program's research study. I understand that if I do not allow my son or daughter to participate in this study, he or she will not receive a lower grade because of my refusal. I understand that he or she will still participate in the classroom activities and that an assignment requiring an equal amount of work will be given as a substitute for the completion of the smoking simulation.

Signed _____ Date _____

Figure 4.

Cigarette Smoking Behavior Survey

This survey is a follow-up basic health opinion questionnaire to last year's health education classroom activities, beliefs and various issues related to smoking. We are asking that you create an ID number as the last four digits of your phone number. The ID number will ensure that you remain anonymous to the researcher analyzing the data.

1. ID # _____
 2. Race (circle one): Hispanic Asian Caucasian
African-American Other _____
 3. Do your parents/guardians smoke?
Yes / No
 4. Do you have any brothers or sisters that smoke?
Yes / No
 5. Have you ever tried cigarette smoking, even one or two puffs?
Yes / No
 6. Have you ever smoked a whole cigarette yourself?
Yes / No
- (If your answer to #6 was "No", go to #10)
(If your answer to #6 was "Yes", continue to #7)
7. How old were you when you smoked a whole cigarette for the first time? ____ Years
Old
 8. During the last 30 days, including today, how many days did you smoke at least one cigarette? ____ Days
 9. On the days you have smoked in the last 30 days, how many cigarettes did you smoke per day? ____ Cigarettes per Day
 10. What percent of people your age in your school smoke? ____ Percent
 11. What health problems can cigarette smoking cause?
(List all you can.)

Instructions: Circle a number 1 through 7 to describe your opinion on how true each of the following statements are.

	Not True			Somewhat True			Very True
12. Smoking cigarettes is usually safe.	1	2	3	4	5	6	7
13. Smoking is exciting.	1	2	3	4	5	6	7
14. Smoking cigarettes is enjoyable.	1	2	3	4	5	6	7
15. Smoking cigarettes is addictive, which makes trying to stop almost impossible.	1	2	3	4	5	6	7
16. Over time the negative consequences involved in smoking cigarettes become larger and larger.	1	2	3	4	5	6	7
17. Smoking is expensive.	1	2	3	4	5	6	7
18. Smoking is a time consuming habit.	1	2	3	4	5	6	7
19. Cigarettes that have low tar or nicotine are safer than regular cigarettes.	1	2	3	4	5	6	7
20. The younger you are when you begin smoking, the more likely you are to become addicted.	1	2	3	4	5	6	7
21. A smoking addiction takes away your independence.	1	2	3	4	5	6	7
22. People who smoke are popular.	1	2	3	4	5	6	7

Table 1

**Do Your Parents Smoke * Do Your Siblings Smoke
Crosstabulation**

Count

		Do Your Siblings Smoke		Total
		Yes	No	
Do Your Parents Smoke	Yes	24	53	77
	No	22	178	200
Total		46	231	277

Table 2

**Do Your Parents Smoke * Have you ever tried smoking
Crosstabulation**

Count

		Have you ever tried smoking		Total
		Yes	No	
Do Your Parents Smoke	Yes	27	50	77
	No	22	178	200
Total		49	228	277

Table 3

**Do Your Parents Smoke * Have you ever smoked a whole cigarette yourself
Crosstabulation**

Count

		Have you ever smoked a whole cigarette yourself		Total
		Yes	No	
Do Your Parents Smoke	Yes	14	63	77
	No	10	189	199
Total		24	252	276

Table 4

Do your parents smoke & use statistics.

Do Your Parents Smoke		N	Mean	Std. Deviation
Age when smoked whole cig.first time	Yes	15	10.60	2.29
	No	10	9.90	2.38
How many days have you smoked at least one cig.	Yes	14	2.79	7.99
	No	9	3.56	9.94
Days you have smoked,how many	Yes	14	2.21	4.85
	No	9	.89	2.03
Percent people your age who smoke	Yes	64	34.05	24.86
	No	184	25.63	21.19

Table 5

Do your parents smoke & opinion based questions.

Do Your Parents Smoke		N	Mean	Std. Deviation
Smoking Cigarettes is usually safe	Yes	100	1.33	1.07
	No	232	1.21	.82
Smoking is exciting	Yes	99	1.35	.93
	No	233	1.24	.70
Smoking is enjoyable	Yes	98	2.16	6.56
	No	233	1.34	.99
Smoking is addictive,which makes	Yes	98	5.94	1.73
	No	233	6.58	4.83
Over time the negative consequences involved in	Yes	77	6.05	1.67
	No	200	6.49	1.19
Smoking is expensive	Yes	75	6.23	1.62
	No	199	6.32	1.36
Smoking is a time consumeing habit	Yes	75	5.17	1.99
	No	194	5.64	1.58
Cigarettes that have low tar or nicotine are safer	Yes	76	2.34	1.82
	No	196	2.60	1.80
The younger you are when you begin smoking,	Yes	76	5.36	2.22
	No	200	5.75	1.84
A smoking addiction takes away your	Yes	76	4.66	2.00
	No	199	4.99	2.02
People who smoke are popular	Yes	77	1.81	1.32
	No	198	1.66	1.29

Table 6

**Do Your Siblings Smoke * Have you ever tried smoking
Crosstabulation**

Count

		Have you ever tried smoking		Total
		Yes	No	
Do Your Siblings	Yes	24	22	46
Smoke	No	25	207	232
Total		49	229	278

Table 7

Do your siblings smoke * Have you ever smoked a whole cigarette

Count

PREPOST			Have you ever smoked a whole cigarette yourself		Total
			Yes	No	
posttest	Do Your Siblings	Yes	15	31	46
	Smoke	No	9	222	231
	Total		24	253	277

Table 8

Do your siblings smoke & opinion based questions.

Do Your Siblings Smoke		N	Mean	Std. Deviation
Smoking Cigarettes is usually safe	Yes	57	1.47	1.12
	No	277	1.20	.85
Smoking is exciting	Yes	57	1.46	.87
	No	277	1.24	.75
Smoking is enjoyable	Yes	57	2.98	8.53
	No	276	1.29	.93
Smoking is addictive, which makes	Yes	56	5.77	1.80
	No	277	6.52	4.48
Over time the negative consequences involved in	Yes	46	6.07	1.58
	No	232	6.43	1.30
Smoking is expensive	Yes	46	6.39	1.24
	No	229	6.28	1.47
Smoking is a time consuming habit	Yes	45	5.33	1.73
	No	225	5.55	1.71
Cigarettes that have low tar or nicotine are safer	Yes	45	2.80	1.82
	No	228	2.48	1.80
The younger you are when you begin smoking,	Yes	46	5.91	1.70
	No	231	5.59	2.00
A smoking addiction takes away your	Yes	46	4.52	1.91
	No	230	4.98	2.03
People who smoke are popular	Yes	46	2.26	1.54
	No	230	1.59	1.22

Table 9

Have you ever tried smoking & opinion based questions.

	Have you ever tried smoking	N	Mean	Std. Deviation
Smoking Cigarettes is usually safe	Yes	49	1.67	1.51
	No	284	1.16	.70
Smoking is exciting	Yes	49	1.71	1.15
	No	284	1.20	.66
Smoking is enjoyable	Yes	49	3.24	9.18
	No	283	1.29	.93
Smoking is addictive, which makes	Yes	48	5.46	2.09
	No	284	6.56	4.40
Over time the negative consequences involved in	Yes	49	6.14	1.50
	No	229	6.41	1.32
Smoking is expensive	Yes	49	6.06	1.65
	No	226	6.35	1.38
Smoking is a time consuming habit	Yes	48	5.19	1.91
	No	222	5.59	1.67
Cigarettes that have low tar or nicotine are safer	Yes	49	3.06	1.92
	No	224	2.42	1.76
The younger you are when you begin smoking,	Yes	49	5.73	1.80
	No	228	5.63	1.99
A smoking addiction takes away your	Yes	49	4.35	1.94
	No	227	5.02	2.01
People who smoke are popular	Yes	49	2.37	1.67
	No	227	1.56	1.16

Table 10

Have you ever smoked a whole cigarette & opinion based questions.

	Have you ever smoked a whole cigarette yourself	N	Mean	Std. Deviation
Smoking Cigarettes is usually safe	Yes	24	1.67	1.34
	No	252	1.20	.87
Smoking is exciting	Yes	24	1.83	1.13
	No	252	1.18	.60
Smoking is enjoyable	Yes	24	5.00	12.95
	No	251	1.24	.77
Smoking is addictive, which makes	Yes	23	5.00	2.47
	No	252	6.49	4.68
Over time the negative consequences involved in	Yes	24	5.67	1.95
	No	253	6.43	1.27
Smoking is expensive	Yes	24	5.67	2.08
	No	250	6.35	1.35
Smoking is a time consuming habit	Yes	24	4.58	2.22
	No	245	5.60	1.64
Cigarettes that have low tar or nicotine are safer	Yes	24	3.54	2.08
	No	248	2.44	1.75
The younger you are when you begin smoking,	Yes	24	5.50	2.09
	No	252	5.65	1.94
A smoking addiction takes away your	Yes	24	3.58	2.00
	No	251	5.02	1.97
People who smoke are popular	Yes	24	2.71	1.99
	No	251	1.61	1.18

Table 11

South Middle School Experimental Group Frequencies

<u>Pre-NICoteen Program</u>		<u>Post-NICoteen Program</u>	
Lung Problems/Cancer	32	Lung Problems/Cancer	34
Bad Breath/Yellow Teeth	25	Bad Breath/Yellow Teeth	15
Heart Problems/Heart Attack	17	Heart Problems/Heart Attack	13
Breathing Problems/Cough	9	Breathing Problems/Cough	7
Mouth Cancer/Gum Disease	7	Mouth Cancer/Gum Disease	12
Throat Cancer	5	Throat Cancer	8
Brain Damage	5	Brain Damage	2
Black Lung	3		
Smell Bad	3	Smell Bad	2
Emphysema	3	Emphysema	8
Liver Problems	2		
Shortened Life	2	Shortened Life	3
Yellow Fingernails	2	Yellow Fingernails	3
Wrinkles	1	Wrinkles	4
Stroke	1	Stroke	1
Tongue Cancer	1		
Addiction	1	Addiction	1
Blood Clots	1		
Kidney Failure	1		
		Low Blood Pressure	1

Table 12

South Middle School Control Group Frequencies

Lung Problems/Cancer	186
Bad Breath/Yellow Teeth	74
Mouth Cancer/Gum Disease	50
Heart Disease/Heart Attack	48
Speech/Breathing Problems/Cough	47
Emphysema	33
Shortened Life/Early Death	26
Throat Cancer	15
Yellow Fingers/Fingernails	15
Brain Damage	10
Smell Bad	10
Wrinkles	9
Black Lung	9
Liver Problems	8
Stroke	6
Prone to Illness/Sickness	6
Addiction	4
Tongue/Lip Cancer	4
Stomach Cancer	2
Glaucoma	2
High Blood Pressure	1
Throwing up	1
Tiredness	1
Pregnancy Complications	1
Diabetes	1
Blocked Arteries	1
Dizziness	1

Table 13

Cornell Middle School Experimental Group Frequencies

Pre-NICoteen Program		Post-NICoteen Program	
Lung Problems/Cancer	22	Lung Problems/Cancer	25
Throat Cancer	15	Throat Cancer	7
Bad Breath/Yellow Teeth	10	Bad Breath/Yellow Teeth	9
Heart Problems/Heart Attack	6	Heart Problems/Heart Attack	5
Breathing Problems/Cough	6	Breathing Problems/Cough	2
Emphysema	4	Emphysema	10
Kills Taste Buds	3	Kills Taste Buds	1
High Blood Pressure	2		
Yellow Fingernails	2	Yellow Fingernails	1
Mouth Cancer/Gum Disease	2	Mouth Cancer/Gum Disease	4
Bronchitis	1	Bronchitis	4
Brain Damage	1		
Addiction	1		
Smell Bad	1		
Black Lungs	1		
Stroke	1		
		Blood Clots	1
		Lip Cancer	1
		Wrinkles	1

Table 14

Cornell Middle School Control Group Frequencies

Lung Cancer	24
Emphysema	8
Heart Problems/Heart Attack	6
Bad Breath/Yellow Teeth	6
Throat Cancer	5
Bad Breath/Yellow Teeth	5
Mouth Cancer/Gum Disease	4
Brain Damage	2
Shortened Life	2
Yellow Fingernails	2
Bronchitis	2
Birth Defects	1
Shrinking Blood Vessels	1
Liver Problems	1
Prone to Illness/Sickness	1

