SOCIAL FACTORS OF CIGARETTE SMOKING INITIATION AMONG UNDERGRADUATE COLLEGE STUDENTS

By

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In Dedication to

Jill Margaret Fameree

and

JoAnn McFarlin

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My first name, Jane, means "God is gracious." During my entire life, but particularly during these past four years, I have been graced with the love and support of so many outstanding people.

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This study examined whether three social factors affected cigarette smoking initiation during the freshman and sophomore years of college: (1) perceived prevalence of peers' smoking behavior, (2) smoking-related behavior of friends and roommates, and (3) sociability. Moreover, this study determined the percentage of students who initiated smoking during college, identified at-risk populations, and pinpointed when college students are most vulnerable to begin smoking. A total of 1,772 undergraduate students in intact classrooms from five universities completed a researcher-constructed self-report survey. Questionnaires from 1,250 full-time, traditional-aged freshmen, sophomores, and juniors were analyzed. A total of 26.8% of the sample had smoked cigarettes during the 30 days before the survey, and 9.3% of the sample had smoked for the first time on two or more days during any one month during college. Nearly 57% of these "smoking initiators" had started smoking during their first six months of college; 70.7%, by the end

of their freshman year; and, 90%, by the end of their sophomore year. Moreover, one out of four participants who reported smoking at least one cigarette during the 30 days before the study had started smoking in college.

Results of multiple logistic regression analyses showed that the smoking-related behavior of friends and roommates was the only statistically significant explanatory variable ($p = .003$). This relationship remained after controlling for the effects of perceived prevalence of peers' smoking behavior, sociability, susceptibility to smoke during freshman year, and alcohol consumption during freshman year. The coefficient (b) for friends' and roommates' smoking-related behavior was 0.842. This value suggests that the odds of initiating smoking during freshman or sophomore year of college increases by $e^{0.842} = 2.321$—or more than doubles—for each unit increase in the composite score of the smoking-related behavior of friends and roommates.

Findings will assist college health professionals (1) to identify students at risk to begin smoking, (2) to develop and tailor anti-smoking initiatives, (3) to implement interventions at the most strategic times during the academic year, and, (4) to help at-risk students remain smoke-free during their college years.

CHAPTER 1
INTRODUCTION

Cigarette smoking has many negative consequences. Between 1995 and 1999, smoking caused over 440,000 adult and over 1,000 infant deaths annually (Centers for Disease Control and Prevention [CDC], 2002). Currently, smoking causes one out of every five deaths, making it the leading preventable cause of death in the United States (CDC, 1999). Furthermore, annual economic losses total over $157 billion—the equivalent of $3,400 for every smoker in the United States (CDC, 2002). "If current smoking patterns continue, an estimated 25 million people alive today will die of smoking-related illnesses" (CDC, 1999, p. 41).

The Surgeon General first warned Americans about the health hazards of cigarette smoking in 1964. At that time, one out of every two adults smoked. Since then, over 10 million people have died from smoking-related illnesses (CDC, 1997), and 56.3 million Americans continue to jeopardize their health despite repeated warnings (Substance Abuse and Mental Health Services Administration [SAMHSA], 2002).

Persons of all ages choose to ignore public health warnings related to smoking, but adolescents and young adults have the highest smoking rates. Approximately 11% of middle school students (CDC, 2001), and 34% of students in grades 9-12 have smoked at least one cigarette in the past 30 days (United States Department of Health and Human Services [USDHHS], 2000). Moreover, in 2001, approximately 33% of full-time, traditional-aged college students have smoked in the past 30 days (SAMHSA, 2002).

Smoking rates among college students are comparable with those of high school students, and therefore, pubic health efforts for smoking prevention and cessation are warranted.

Research Problem

This study determined the percentage of college students who began smoking in college and examined the influence of three social factors on cigarette smoking initiation during the freshman and sophomore years of college. These factors included (1) perceived prevalence of peer smoking behavior, (2) smoking-related behavior of friends and roommates, and (3) sociability.

Purpose of the Study

This study was conducted to accomplish three purposes. (1) This study determined the percentage of college students who began smoking in college, identified at-risk populations, and pinpointed when college students are most vulnerable to begin smoking. This information is useful for targeting at-risk populations and for implementing these anti-smoking initiatives at the most appropriate times. (2) The study examined the effect of three social factors and smoking initiation during freshman and sophomore years of college. Findings will help college health professionals develop tailored interventions to help vulnerable students remain smoke-free during college. (3) The study helped to fill a void in the professional literature regarding smoking initiation among college students. Currently, a voluminous amount of research on smoking initiation has been conducted on middle school and high school students, whereas only a limited amount of research exists on smoking initiation among college students.

Rationale for the Study

Research on cigarette smoking initiation among college students is important for four reasons: (1) Smoking negatively contributes to serious health consequences, and a

significant number of college students currently smoke, (2) reducing cigarette smoking is both a national and a college health priority, (3) nicotine is a highly addictive substance, and subsequently, smoking cessation is extremely difficult, and (4) research on smoking initiation among college students is limited.

The Negative Health Consequences of Smoking

A significant number of college students are putting themselves and others at risk for serious health consequences because of smoking, and the magnitude of these consequences is enormous. Smoking is the number one preventable illness behavior in the nation, resulting in more deaths each year than AIDS, alcohol, cocaine, heroine, homicide, suicide, motor vehicle crashes and fires combined (USDHHS, 2000). Smoking has been conclusively linked to lung, kidney, bladder, laryngeal, oral, esophageal, and pancreatic cancer, cardiovascular disease, chronic obstructive pulmonary disease, and stroke in both males and females (Samet, 2001). Moreover, female smokers have an increased risk for infertility, delayed conception, ectopic pregnancy, and spontaneous abortion when compared with nonsmokers (USDHHS, 2001a).

Smoking not only negatively affects the health of smokers, but also harms nonsmokers. Each year, 35,000 nonsmoking adults die of heart disease, and another 3,000 die of lung cancer, from passive smoke (CDC, n.d.) Furthermore, environmental tobacco smoke has been linked to the exacerbation of asthma, reduced lung functioning, and respiratory symptoms (Samet, 2001). Due to the enormous health hazards to smokers and nonsmokers alike, helping nonsmoking college students refrain smoke-free, and assisting those who currently smoke with cessation efforts, is critical.

Smoking Reduction as a Current Health Priority

Because smoking is the number one preventable cause of disease, health professionals want to reduce adult smoking in the United States from 22% to 16% by the year 2010 (USDHHS, 2000). Although the prevalence rate for smoking among college students (26-33%) exceeds the national rate (22%), campus health professionals have set the same goal as those who set the national agenda—a reduction of smoking to 12% or less among college students by the year 2010 (Task Force on National Health Objectives in Higher Education, 2002). To accomplish this ambitious goal, national and college public health efforts must prevent the initial onset and progression of smoking as well as encourage and help smokers to quit.

Smoking Cessation as a Difficult Goal

Reducing smoking to 12% among college students by the year 2010 can be achieved in two ways—either nonsmoking college students must remain smoke-free, or those who currently smoked must quit. Quitting smoking, however, proves to be very difficult and is typically characterized by frequent relapses (CDC, 1998). For instance, seven out of ten current smokers in the United States want to quit smoking, but because of the highly addictive nature of nicotine, most smokers who try to quit repeatedly fail (USDHHS, 2000). Annually, 45% of smokers who try to quit smoking succeed for at least 24 hours every year, but fewer than 3% quit permanently (USDHHS, 2000).

A large percentage of college smokers also want to quit smoking. Nearly two-thirds have ever tried to quit smoking (CDC, 1997), and 50% to 80% have tried to quit smoking during the year prior to being surveyed (Debernardo et al., 1999; Everett et al., 1999). One study reported that one in five college students tries to quit five or more times annually (Wechsler, Rigotti, Gledhill-Hoyt, & Lee, 1998). Although the majority

of college smokers want to quit, only one in four succeed (Everett et al., 1999). Because the success rate of smoking cessation is so bleak, the "optimal public health strategy is to prevent cigarette smoking completely" (CDC, 1998, p. 387).

Limited Research on College Students

To make progress toward the Healthy Campus 2010 goal of reducing smoking on college campuses, the American College Health Association (ACHA) has recommended that prevention and education initiatives address the risks of tobacco use and support non-use (ACHA, 2000). Since the 1998 multi-billion dollar Master Tobacco Settlement Agreement, funding for tobacco prevention and cessation programs has increased on college campuses nationwide. To develop effective anti-smoking initiatives, however, more than money is required. College health practitioners also must have relevant information and tools. Currently, research on smoking initiation among college students is limited and cannot adequately inform college health practitioners.

This study will help college health professionals move toward their 2010 goal of reducing smoking among college students by providing useful information. Findings will assist college health professionals in four ways: (1) to identify students at risk to begin smoking, (2) to develop or refine tailored anti-smoking initiatives, (3) to implement interventions at the most appropriate times during the academic year, and ultimately, (4) to help at-risk students remain smoke-free during their college years. Furthermore, college health practitioners can use the *College Student Smoking Survey* to determine the nature and scope of cigarette smoking on their particular campus.

Smoking Initiation Among College Students

Primary prevention involves "actions and interventions designed to identify risks and reduce susceptibility or exposure to health threats prior to disease onset" (American

Association for Health Education [AAHE], 2001, p. 101). In the case of smoking initiation among college students, the goal is to identify nonsmoking students who are at risk of becoming smokers in college, and then to create and deliver tailored interventions to help them remain smoke-free. Although prevention of smoking among college students is warranted, the preponderance of primary prevention research and interventions have focused on middle and high school populations because four out of five smokers begin to smoke before the age of 18 (USDHHS, 2000). Approximately 20% of smokers begin smoking in their young adult years, representing around 11 million individuals who can be categorized as "late-onset" smokers. Rates of smoking initiation among college students cannot be determined from existing data.

Smoking initiation among college students is not well studied. Furthermore, all national data collected from college students about smoking initiation have been collected by age rather than by educational setting. Results from the 1995 National College Health Risk Behavior Survey (NCHRBS) indicated that 22.6% of college students who had ever smoked began smoking when they were either 17 or 18 years old. A total of 11% began when they were age 19 years old or older (Everett et al.,1999; Wechsler et al.,1998). Results from a statewide survey administered in California showed that among students who had ever smoked, 14.3% smoked a whole cigarette for the first time at the age of 19 or older (Patrick, Covin, Fulop, Calfas, & Lovato, 1997). From these two studies, we can presume that at least 11% to 14.3% of college students who had ever smoked began the behavior during college. To accurately assess how many college students start smoking during college, however, data must be collected and analyzed by educational setting rather than by age.

Only one study of college students has assessed smoking initiation by educational setting. Researchers at Yale University determined whether college smokers began smoking prior to or during college (Debernardo et al., 1999). They also assessed how many nonsmoking students were at risk to become smokers in the future. Researchers found that 5.7% of the participants began to smoke cigarettes in college. Among the 11.3% of the sample who considered themselves current smokers, half indicated that they started smoking in college. Furthermore, 80% of participants who began smoking in college started this behavior during their freshman or sophomore year. The researchers also found that 19.4% of nonsmoking college students lacked a firm commitment to refrain from smoking in the upcoming year. This finding was similar to national findings from a high school sample—22.5% of students who had never smoked were considered susceptible to trying cigarettes in the upcoming year (CDC, 2000).

The collective results from the study of Yale University students suggested that a significant number are vulnerable to initiate smoking, particularly during their freshman or sophomore year of college. Although intriguing, these findings need validation for several reasons. First, college students from only one university participated in the study. Second, only 13% of the sample smoked, which was significantly lower than the corresponding national rate of 29% (CDC, 1997). Third, the definition for smoking was not explicit. Participants were asked, "Do you smoke cigarettes now?" Current smoking is typically measured using a specific time frame, usually the 30 days prior to the survey. For example, many national surveys use the following question to measure current smoking: "In the past 30 days, have you smoked cigarettes?" The inconsistency between how these two ways measured smoking prevalence may explain the relatively low

prevalence rate in the Yale study. Fourth, and finally, the small sample size of college smokers limits the conclusions of this study. Only 58 college smokers—and only 29 smoking initiators—participated in this study. Because of these limitations, findings from this study are inconclusive and offer limited direction to health educators for designing smoking prevention programs.

As mentioned previously, most individuals who smoke begin smoking during adolescence (USDHHS, 2000; Everett et al., 1999). Subsequently, the preponderance of research on cigarette smoking initiation investigates middle and high school populations. However, this voluminous body of literature may shed light on why college students begin to smoke. Rigorous studies of middle and high school students unequivocally show that a variety of social factors increase the risk of starting to smoke. These social risk factors include having friends, parents or older siblings who smoke; receiving offers and encouragement to smoke; being socially competent; and having an inflated perception of the norm for smoking (Carvajal, Wiatrek, Evans, Knee, & Nash, 2000; Conrad, Flay, & Hill, 1992; Flay, Hu, & Richardson, 1998; USDHHS, 1994; West & Michell, 1999; West, Sweeting, & Ecob, 1999).

Research Questions

The following questions were investigated in this study.

1. Does the perceived prevalence of peers' smoking behavior during freshman year of college increase the risk of smoking initiation during the first two years of college?
2. Does the smoking-related behavior of friends and roommates during freshman year of college increase the risk of smoking initiation during the first two years of college?
3. Does sociability during freshman year of college increase the risk of smoking initiation during the first two years of college?

Delimitations

The following delimitations were noted in this study.

1. Participants were selected from undergraduate students at one of five universities: (1) Ball State University, (2) Texas A & M University, (3) University of Alabama, (4) University of Florida, or (5) University of Georgia.
2. Participants were traditional undergraduate students.
3. Participants reported beginning college within 36 months of the survey.
4. Participants reported having full-time status during their first year of college and at the time of the survey.

Limitations

The following limitations were identified for this study.

1. Participants selected from the five universities may not represent a nationwide undergraduate student population.
2. Participation in the study was voluntary.
3. The diversity of the sample was limited to students who chose to participate in the study.
4. The generalizability of the results was limited to the sample of participants in this study.

Assumptions

The following assumptions were made for this study.

1. The five selected universities were representative of other universities in the United States.
2. Individuals who voluntarily agreed to participate were representative of all undergraduate students enrolled at their university.
3. The data collection instrument developed for this study was adequate for the purpose of this study.
4. Participants were able to accurately recall their perceptions and behaviors during their freshman year of college.

Definition of Terms

The following is a list of relevant terms for this study.

Extroversion. A preference for attending to the outer world of events by seeking active stimulation and involvement in the environment (Morris, 1979).

First year of college. The first 12 months of attendance at a two- or four-year college or university, after graduating from high school. Synonymous to "freshman year of college."

Freshman year of college. The first 12 months that a student attends a two- or four-year college or university, after graduating from high school.

Health promotion. Any planned combination of educational, political, environmental, regulatory, or organizational mechanisms that support actions and conditions of living conducive to the health of individuals, groups, and communities (AAHE, 2001).

Perceived prevalence of peers' smoking behavior. An estimate of the percentage of the participant's peers who engaged in a variety of smoking-related behaviors during their freshman year of college.

Primary prevention. Actions or interventions designed to identify risk and reduce susceptibility or exposure to health threats prior to disease onset (AAHE, 2001).

Second year of college. The second 12 months of attendance at a four-year college or university, after graduating from high school. Synonymous to "sophomore year of college."

Smoking. Actively inhaling smoke from regular or clove cigarettes.

Smoking initiation. The first time that a participant smoked on two or more days during any one month.

Smoking-related behavior of friends. Smoking cigarettes, offering cigarettes to others, or encouraging others to smoke.

Sociability. The tendency to prefer the presence of others to being alone and seeking and being especially gratified by the presence, attention, sharing of activities, and stimulation of others (Buss & Plomin, 1986).

Sophomore year of college. The second 12 months in attendance at a four-year college or university, after graduating from high school. Same as "Second Year of College."

Susceptibility. The lack of a firm commitment not to smoke in the future among nonsmokers (Pierce, Choi, Gilpin, Farkas, & Merritt, 1996).

Traditional, undergraduate student. A student who began college between the ages of 17 and 19 years old, and who were 18 to 22 years old at the time of the survey.

Summary

Each year, cigarette smoking costs thousands of premature deaths and millions of dollars in lost productivity and health care costs in the United States. Consequently, national and college health goals include reducing smoking prevalence rates to 12% or less by the year 2010. To achieve this goal, aggressive efforts to prevent individuals from starting to smoke, and to help smokers stop smoking, must occur nationwide including on college campuses. Because most cigarette smoking begins during adolescence, research has overwhelmingly focused on middle and high school students rather than on college students. Nonetheless, over 46 million people in the United States currently smoke, and one-fifth—or 9 million— began smoking as young adults. Recent data suggest that a substantial number of young adults will begin to smoke during college, particularly during their freshman or sophomore year (DeBernardo et al., 1999;

Everett et al., 1999; Wechsler et al., 1998). Therefore, research that examines potential risk factors of smoking initiation among this population is important.

This chapter provided an overview of the study and included the research problem, purpose, rationale, as well as a brief overview of smoking initiation among college students. Additionally, research questions, delimitations, limitations, assumptions, and definitions of key terms for the study were presented. Chapter 2 provides background and context of cigarette smoking among college students, conceptual frameworks for the study's variables, and a review of relevant literature on smoking initiation among college students.

CHAPTER 2
REVIEW OF THE LITERATURE

This study determined the percentage of college students who began smoking in college, identified at-risk populations, and pinpointed when college students are most vulnerable to begin smoking. The effects between three social factors and smoking initiation during freshman and sophomore years of college were also examined. The first section of this chapter provides an overview of smoking and college students, including prevalence rates and trends, smoking initiation among college students, and reasons why college students smoke. The second section provides a conceptual framework for smoking initiation. The third section provides a conceptual framework to explain the relationship between the three explanatory variables and smoking initiation. The fourth section reviews the empirical support between each of the three explanatory variables and smoking initiation.

Cigarette Smoking Among College Students

The purpose of this section is to provide a background and context of cigarette smoking among college students. First, prevalence rates and trends will be described, and then, smoking initiation among college students will follow. This section will conclude with reasons why college students smoke.

Smoking Prevalence Rates Among College Students

National surveys administered between 1993 and 2001 indicate 30-day smoking prevalence rates for college students ranging from 22.3%-32.9%. (ACHA, 2002; CDC,

1997; Johnston, O'Malley, & Bachman, 2001; SAMHSA, 2002; Wechsler et al., 1998). Table 2-1 shows various prevalence rates by year and source.

Table 2-1. Cigarette Smoking Prevalence Rates by Year and Source

Year of Survey	30-Day Prevalence	Annual Prevalence	Life-time EVER Prevalence	Source
1993	22.3%	31.6%		Wechsler et al., 1998
1995	29.0%		74.8%	CDC, 1997
1997	28.5%	39.5%		Wechsler et al., 1998
1999	40.4%	48.5%	69.0%	SAMSHA, 2000
2000	28.2%	41.3		Johnston et al., 2001
	32.0%			ACHA, 2002
2001	25.0%			ACHA, 2002
	32.9%		69%	SAMSHA, 2002
2002	26.5%			ACHA, 2002

Frequency and Quantity Smoked

The 30-day prevalence rates reported above include any amount of cigarette use during the month prior to the survey. Prevalence rates are also calculated based on how frequently students smoke, and how many days they smoke per month. For example, in 1995, 16.5% students smoked on 20 or more days during the month prior to being surveyed (CDC, 1997). In the fall of 2000 and the spring of 2002, these rates decreased from 15% to 11.9% (ACHA, 2002). In 2000, daily smoking rates among college students ranged between 10.6% and 18% (ACHA, 2002; Johnston et al., 2001). In the spring of 2002, 8.0% of college students smoked daily (ACHA, 2002).

In addition to tracking the number of days per month smoked, Wechsler and colleagues (1998) assessed the number of cigarettes that college students smoked on the days that they smoked. Among the 28.5% of participants who smoked during the month prior to the survey, 43.6% smoked fewer than one cigarette on the days that they smoked. Moreover, 24.2% smoked between one and nine cigarettes; 20.4% smoked 10-19

cigarettes; and 11.8% smoked 20 or more cigarettes, on average, on the days that they smoked.

Smoking Rates by Gender

Findings from five national studies between 1993 and 2002 show similar smoking rates for male and female college students (ACHA, 2002; CDC, 1997; Emmons, Wechsler, Dowdall, & Abraham, 1998; Johnston et al., 2001; Wechsler et al., 1998). Thirty-day prevalence rates measuring any amount of cigarette use, 30-day daily prevalence rates, and annual prevalence rates were similar between males and females (ACHA, 2002; Johnston et al., 2001). For example, National College Health Assessment data collected in the spring of 2002 show that 27.6% of males and 25.8% of females reported smoking at least once in the 30 days prior to the survey (ACHA, 2002). A total of 12.1% of males, and 11.7% of females smoked on 20 or more days, and 8.5% of males and 7.7% of females smoked on all 30 days prior to the survey.

Smoking Rates by Race

Although rates of smoking do not significantly differ by gender, they do significantly differ by race. According to the 1995 National College Health Risk Behavior Survey, (CDC, 1997) white students were significantly more likely than black students or Hispanic students to report smoking: (1) any time in their lifetime, (2) any time during the month prior to the survey, (3) on 11 or more days during the month prior to the survey, (4) on 20 or more days during the month prior to the survey, and (5) 30 days during any month during their lifetime. Additionally, Hispanic students were significantly more likely to report lifetime cigarette use and current use as were black students. Rates for other racial groups were not available from this study.

Although more white students smoke than do blacks or Hispanics, researchers at Harvard University found significant increases in smoking among all racial groups during between 1993 and 1997 (Wechsler et al., 1998). Table 2-2 shows these data. Although black students had the lowest 30-day prevalence rate (13.7%), they had the highest increase in smoking between 1993 and 1997 (47%). The rates for Hispanic students also increased (12.0%), but this group had the lowest rate of increase compared to other racial groups.

Table 2-2. Cigarette Smoking Prevalence Rates by Race

Race	30-day prevalence in 1993	30-day prevalence in 1997	% Increase
African American	9.6	13.7	42.7
Asian/Pacific Islander	18.3	22.4	22.5
Hispanic	22.7	28.8	12.0
White	23.2	30.4	31.2

Smoking Trends Among College Students

During the 1990s, overall smoking rates among college students steadily increased. Wechsler and his colleagues (1998) used data from the Harvard School of Public Health Alcohol Study to compare smoking rates between 1993 and 1997. In 1993, 22.3% of students smoked during the month prior to the survey; however, 28.5% smoked in 1997. This represented a 27.8% increase in smoking over this 4-year time period. During that time, rates also significantly increased for all student subgroups including gender, race/ethnicity, and year in school, as well as among students attending both private and public universities.

Findings from the Monitoring the Future Study verified the Harvard researchers' results (Johnston et al., 2001). Thirty-day prevalence rates in 1991 and 1999 were 23% and 31%, respectively, representing a 30% increase. Most recent data from this on-going

study, however, suggest that this upward trend may be changing. Findings from the year 2000 indicate that the 30-day smoking prevalence rate among college students slightly decreased for the first time since 1991. This 2.4% decline (from 31% to 28.2%) was not a statistically significant change. Results from the 2001 National Household Survey on Drug Abuse, however, show a higher 30-day smoking prevalence rate than that found in the 2000 Monitoring the Future Study (SAMHSA, 2002). Nearly 33% of full-time college students, and 44.6% of part-time students, aged 18-22 years had smoked some time during the month prior to the survey.

Data from the Monitoring the Future Study and from the National College Health Assessment suggest that *daily* smoking may be leveling off after a steady increase throughout the 1990s (ACHA, 2002; Johnston et al., 2000). Findings from the former study show that the number of college students who smoked daily increased between 1991 and 1999 by 40%—from 14% to 19%, respectively. Between 1999 and 2000, however, the rate dropped from 19% to 17.8%. Similarly, results from three annual administrations of the National College Health Assessment also showed a downward trend in daily smoking among college students. These data indicated that 10.6%, 8.6%, and 8.0% of college students smoked daily in the 2000, 2001, and 2002, respectively (ACHA, 2002).

Smoking Initiation Among College Students

Research has been conducted that consistently assesses how many college students currently smoke, how much, and how often, however, research is lacking that assesses how many college students begin to smoke during college. Only two national studies have collected smoking initiation data, but unfortunately, these data were collected by age rather than educational setting. Nonetheless, these age-specific data can shed some

light on smoking initiation behavior among college students. For example, results from the 1995 National College Health Risk Behavior Survey indicate that among students who had ever smoked, nearly nine out of ten smoked a whole cigarette for the first time at the age of 18 or younger (Everett et al., 1999). More specifically, 18.5% smoked a whole cigarette for the first time when they were 12 years old or younger; 24.5% when they were 13 or 14 years old; 23.7% at the age of 15 or 16 years, and; 22.6% when they were either 17 or 18 years old. Approximately 11% smoked their first cigarette at age 19 years or older. Furthermore, a national study conducted in 1997 found that 11% of student smokers smoked their first whole cigarette at the age of 19 or older (Wechsler et al., 1998). From these findings, we can assume that at least 11% of college smokers may begin smoking during college. However, to precisely assess smoking initiation during college, students must be asked whether they began smoking before or during college.

A random study conducted among Yale University students assessed how many current smokers began smoking in college (Debernardo et al., 1999). Although current smokers comprised only 13.0% of the sample, half of them indicated that they started smoking in college. Furthermore, 80% of these smokers who began smoking in college started smoking during their freshman or sophomore year. These results suggest that a significant number of college students are vulnerable to start smoking in college, particularly during their freshman or sophomore year.

Reasons Why College Students Smoke

Two studies of college students have investigated reasons why college students smoke. One national study used multivariate logistic regression to assess predictors of smoking among current college smokers (Emmons et al., 1998). Their sample included students from 140 randomly selected 4-year colleges in the United States. The found that

seven variables increased the likelihood of being a smoker in college: binge drinking prior to college; binge drinking during college; using marijuana during college; having multiple sex partners in college; participation in leisure activities during college; dissatisfaction with college education; and choosing not to participate in athletics during college. Moreover, females who engaged in three high-risk behaviors—binge drinking, using marijuana, and having multiple sex partners during college—were more likely to smoke than their male counterparts. However, researchers of this study did not assess how many smokers in their sample began to smoke in college, nor did they investigate whether these seven variables predicted smoking initiation during college. Nevertheless, their findings provide insight into possible correlates of smoking behavior among college students.

The second study took place at Yale University. This small-scale study examined reasons why college students smoked and also why those who were contemplating smoking would begin to smoke (Debernardo et al., 1999). Descriptive results are shown in Table 2-3. According to these findings, large differences exist between smokers and

Table 2-3. College Students' Motivations for Smoking

Motivation	Smokers (%)	Nonsmokers (%)
Stress	49.3	6.5
Image smokers project	39.1	2.5
Expression of independence	36.2	1.8
Friends smoke	11.6	11.1
Depression	31.9	2.7

nonsmokers' motivations for smoking. For example, nearly one out of two smokers reported that stress motivated them to smoke. Conversely, less than one in ten susceptible nonsmokers thought that stress would motivate them to begin to smoke. A similar percentage of smokers and nonsmokers reported friends' smoking behavior as

motivator for smoking. Approximately 11.6% of the smokers claimed that friends who smoked influenced their current smoking behavior. Similarly, 11.1% of the non-smokers implicated friends who smoke as potentially influencing their future smoking behavior.

A Conceptual Framework for Smoking Initiation

Cigarette smoking has been conceptualized as a gradual progression through a series of stages. In general, researchers have divided the process into four to six stages beginning with not smoking and ending with established smoking and addiction (Flay, 1993, Mayhew, Flay, & Mott, 2000; Pallonen, Prochaska, Velicer, Prokhorov, & Smith, 1998; Stern, Prochaska, Velicer, & Elder, 1987). Two similar, yet distinct, types of these stage models have emerged (See Table 2-4). The first type, based on the Transtheoretical Model of smoking cessation, classifies smoking into four or five stages: precontemplation, contemplation, decision-making (or preparation), action, and maintenance (Stern et al., 1987; Pallonen et al., 1998). The second type of stage model also divides the process of smoking into five stages, but uses different labels for each stage: preparatory, trial, experimentation, regular use, and nicotine dependence/addiction (Flay, 1993) [See Table 2-4].

Recently, scholars have merged these two types of stage models into yet another five-stage framework ranging from non-smoking to established/daily use (Mayhew et al., 2000). Their conceptualization is depicted in Table 2-5. The researchers collapsed the precontemplation, contemplation, and preparation stages of the Transtheoretical Model into one, non-smoking stage with two sub-stages based on smoking intention. The four stages that follow the two nonsmoking stages use Flay's (1993) labels and descriptions: tried, experimentation, regular use, and established/daily use.

Incorporating Susceptibility into the Stages

The concept of susceptibility is a recent addition to the stages of smoking acquisition (Prokhorov et al., 2002). Susceptibility as a measure for smoking initiation was first introduced in 1993 in a report of tobacco use in California. Since then, it has been found to be a strong predictor of smoking initiation among children and adolescents (Choi, Pierce, Gilpin, Farkas, & Berry, 1997; Distefan, Gilpin, Choi, & Pierce, 1998; Jackson, 1998; Pierce et al., 1996; Pierce et al., 1993; Unger, Johnson, Stoddard, Nezami, & Chou, 1997). Consequently, susceptibility has been incorporated into the Youth Tobacco Survey (USDHHS, 2001).

Pierce and colleagues (1993) define susceptibility as the "absence of a determined decision not to smoke in the future" (p. 43), and measure this construct with three questions: (1) Do you think you will smoke a cigarette soon? (2) Do you think you will smoke a cigarette in the next year? and (3) Do you think you would smoke if your closest friend offered you a cigarette? Those who respond "definitely not" to *all* of three items are classified as nonsusceptible, whereas, all others are considered susceptible to future smoking behavior (Pierce et al., 1996).

Prokhorov and colleagues (2002) have recently suggested that integrating susceptibility into the Transtheoretical Stage Model would improve its validity. More specifically, they hypothesized that an adolescent's response to the question about a closest friend's offer to smoke would further determine who was susceptible among those who also had no intention of smoking in the future. Their integrated model proved to have better predictive and concurrent validity than did either of the two individual

Table 2-4. Stage Models of Smoking Acquisition, 1987-1998

Source	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
Stern et al., 1987	*Precontemplation* Has not yet considered smoking and reports no desire to do so in the future. Perceives few positive consequences of smoking.	*Contemplation* Thinking about starting to smoke. Perceives relatively more positive consequences than in Stage 1.	*Decision-Making* Pros and cons of smoking are closely balanced.	*Action* Experiments with cigarettes, but not totally committed to smoking in the future. Receives minimal pleasure from smoking.	*Maintenance* Smokes on a regular basis. Committed to smoking now and in the future. Has no desire to stop. Receives pleasure from smoking.
Pallonen et al., 1998	*Precontemplation* Has not tried smoking and has no intentions of smoking in the next 6 months.	*Contemplation* Never smokers who are thinking about trying to smoke in the next 6 months.	*Preparation* Never smokers who are thinking about trying to smoke in the next 30 days.	*Recent Action* Smoked cigarettes regularly, but for less than 6 months.	
Flay, 1993	*Preparatory* Involves the formation of knowledge, beliefs and expectations about smoking and the functions that it can serve.	*Trying* The first two or three times a person smokes. Peers are usually involved.	*Experimentation* Repeated, but irregular smoking; often situation specific (like at a party).	*Regular Use* Weekly smoking across situations and personal interactions.	*Nicotine Dependence and Addiction.* Physiological need for nicotine. Established tolerance and withdrawal symptoms with quit attempts.

Table 2-5. Stage Models of Smoking Acquisition, 2000-2002

Source	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6
Mayhew et al., 2000	*Non-smoking – Preparation* Does not intend to smoke.	*Non-smoking– Contemplation* Intends to smoke. Belief and attitude formation; susceptible to peer pressure.	*Tried* Has smoked, but no more than one or two cigarettes. Has not smoked in the past year.	*Experimentation* Smokes occasionally on an experimental basis. Does not intend to become a permanent smoker.	*Regular Use* Smokes at least monthly, but not as frequently as daily.	*Established/ Daily Use* Smokes daily or almost daily. May smoke heavily on occasion. Nicotine dependence.
Prokhorov, et al., 2002	*Precontemplation– Nonsusceptible* Never smokers who have no intention of smoking in the next 6 months and state that they would "definitely not" smoke if a friend offered them a cigarette.	*Precontemplation– Susceptible* Never smokers who have no intention of smoking in the next 6 months, but fail to state that they would "definitely not" smoke if a friend offered them a cigarette.	*Contemplation* Never smokers who are thinking about trying to smoke in the next 6 months.	*Preparation* Never smokers who are thinking about smoking in the next 30 days.		

models. Furthermore, their integrated model predicted susceptibility among adolescents who reported no intentions to smoke in the future. Based on these findings, they divided the precontemplation stage of smoking acquisition into two sub-stages based on their definition of susceptibility. They categorized individuals with strong convictions to refuse a friend's offer to smoke as Nonsusceptible, and those with weak convictions as susceptible (See Table 2-5).

Since the introduction of susceptibility as a relevant construct in smoking behavior, researchers have validated ways to measure it among adolescents (Pierce et al., 1996; Unger et al., 1997). Furthermore, the relationship between susceptibility and smoking acquisition has been examined primarily among adolescent populations (Choi et al., 1997, Jackson, 1997, 1998; Pierce et al., 1996; Prokhorov et al., 2002; Unger et al., 1997; Unger, Rohrbach, Howard-Pitney, Ritt-Olsen, & Mouttapa, 2001). Little investigation of this construct, however, has occurred among college populations.

Only one study has examined how many nonsmoking college students may be susceptible to begin smoking. DeBernardo and colleagues (1999) measured susceptibility by asking students whether they "would try cigarette smoking in the next 12 months" (p. 63). They found that nearly one out of five nonsmoking participants were susceptible to start smoking in the upcoming year. More specifically, their findings indicated that 11.5% of non-smokers were considering smoking, and an additional 7.9% were unsure whether they would continue to abstain from smoking, during the next year. This study, however, did not examine the relationship between susceptibility and smoking initiation among college students.

Risk Factors of Smoking by Stage

In addition to susceptibility to smoke in the future, a variety of other psychosocial risk factors have emerged for smoking initiation and progression through the stages of smoking. Conrad, Flay, and Hill (1992) reviewed 27 prospective studies on smoking initiation published since 1980 and identified risk factors for each stage of smoking. Their findings indicated that some type of social influence—like parent, adult, sibling, and/or peer's smoking behavior and attitudes—plays a role at every stage of smoking acquisition. Their findings are summarized in Figure 2-1.

Summary

This section provided a conceptual framework for smoking initiation and progression to addiction. The process of becoming a cigarette smoker was depicted on a continuum represented by four to six stages beginning with receptivity to smoking and ending with nicotine dependence and addiction. Within the last 10 years, the concept of susceptibility has been incorporated into two stage models of smoking acquisition. Prospective studies of smoking initiation among adolescents have identified a variety of psychosocial risk factors for each stage of the smoking process. Now that a conceptual framework for the outcome variable of the study has been described, a conceptual framework for the three explanatory variables, and the five covariates, will be provided.

1. PREPARATORY STAGE

Psychosocial risk factors include advertising, adult/sibling role models who smoke cigarettes, and susceptibility to smoke.

Adolescent forms attitudes and beliefs about smoking

Never smokes

2. TRYING STAGE

Risk factors include peer influences to smoke--friends' smoking, approval, and offers to smoke, the perception that smoking is normative, the availability of cigarettes, alcohol use, and marijuana use.

Adolescent smokes first few cigarettes.

No longer smokes

3.EXPERIMENTAL STAGE

Risk factors include social situations and peers that support smoking, parental smoking, self-efficacy in ability to refuse offers to smoke, and the availability of cigarettes.

Adolescent smokes repeatedly, but irregularly.

No longer smokes

4. REGULAR USE

Risk factors include peers who smoke, the perception that smoking has personal utility, and few restrictions on smoking in school, home, and community settings

Adolescent smokes at least weekly across a variety of situations and personal

Quits smoking

5. ADDICTION/DEPENDENT SMOKER

Adolescent has developed the physiological need for nicotine.

Figure 2-1. Psychosocial risk factors of cigarette smoking.

Adapted from Flay (1993), Flay et al. (1998), Prokhorov et al. (2002), USDHHS (1991), and USDHHS (1994, p. 92),

Social Cognitive Theory

Psychosocial risk factors have been implicated at every stage of the smoking acquisition process, and therefore, a psychosocial theory is necessary to help explain the progression of smoking from cognitive susceptibility to nicotine dependence. One of the most promising models applied to smoking initiation is social cognitive theory (Wang, Fitzhugh, Eddy, Fu, & Turner, 1997). Social cognitive theory explains behavior as a process involving the dynamic interactions between personal, behavioral, and environmental factors (Bandura, 2002). This on-going process is known as reciprocal determinism. Figure 2-2 diagrams the study's three explanatory variables and five covariates as a schematic showing reciprocal determinism between each pair of the three types of determinants in the model. Each of these three determinants as well as two concepts that are relevant to smoking initiation, observational learning and reinforcement, are depicted and will be briefly described.

Personal Determinants

Personal determinants within social cognitive theory include thoughts, perceptions, and emotions, as well as biological factors and genetic predisposition. More specific examples of personal determinants include beliefs, expectations, self-perceptions, gender, ethnicity, and temperament. In this study, two explanatory variables, sociability and perceptions of peers' smoking behaviors fit within this category. Furthermore, two of the five covariates in the study, susceptibility to smoke and grade point average, can be considered personal determinants of smoking initiation.

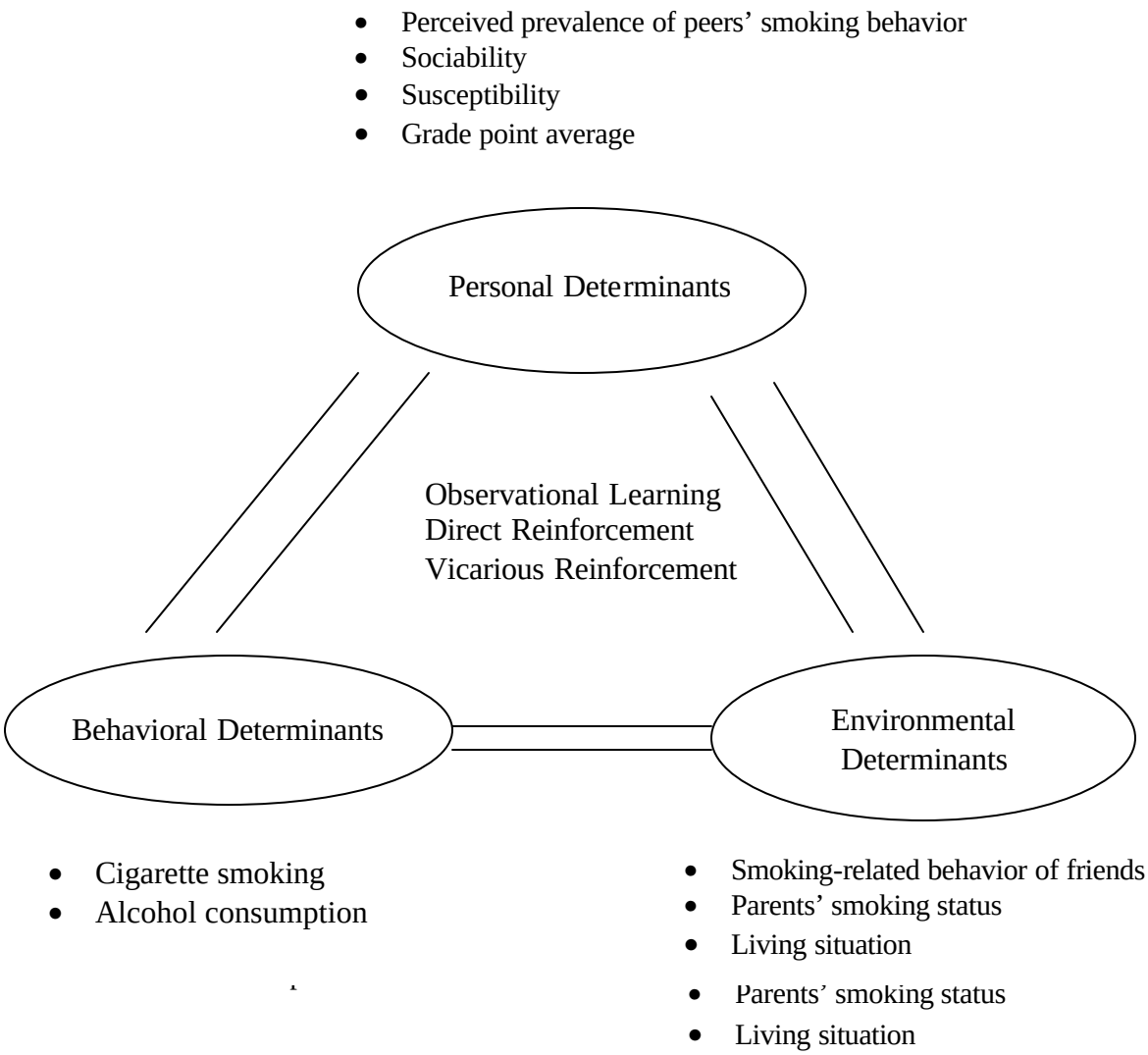

Figure 2-2. A schematic of the explanatory variables and covariates within a Social Cognitive Theory framework.

Adapted from: Bandura (2002)

Environmental Determinants

In contrast to personal determinants that are internal to an individual, environmental determinants are external factors that influence an individual's thoughts and behavior. With few exceptions, smoking initiation occurs within social environments. According to Bandura (2002), "self-development, adaptation, and change

are embedded in social systems" (p. 121). Traditional-aged college students exist in a very dynamic and diverse social environment. Undergraduate students typically interact with roommates, housemates, dorm-mates, classmates, co-workers, instructors, friends, and/or romantic partners on a regular basis. Moreover, college students also tend to have many group affiliations, like being members of academic clubs, intramural sports teams, sororities or fraternities, or community groups.

Because of the dynamic and diverse nature of relationships within college students' lives, the social environment plays a crucial role in this study. In particular, the relationship of smoking-related behavior and interactions between friends, roommates, romantic partners, and sorority sisters and fraternity brothers (if applicable) and smoking initiation was examined. In addition, parents' smoking status and whether participants lived alone or with other students was assessed.

Behavioral Determinants

Behavioral determinants interact with both personal and environmental determinants. Social cognitive theory posits that a reciprocal relationship exists between a person's actions and his or her environment. In the case of cigarette smoking, for example, individuals who smoke may choose friends or roommates who also smoke. Conversely, friends or roommates who smoke may influence a nonsmoker to start smoking.

Another behavioral determinant that is relevant to smoking behavior is alcohol consumption. As mentioned earlier in this chapter, binge drinking both before high school and during college was predictive of smoking behavior in college. Therefore, this study measured alcohol consumption during freshman year among its participants.

Observational Learning

Two other constructs within social cognitive theory are also very relevant social influences of smoking initiation behavior. The first, observational learning, is defined as "behavioral acquisition that occurs by watching the actions and outcomes of others' behavior" (Baranowski, Perry, & Parcel, 1997, p. 157). A key tenant of social cognitive theory is that human beings learn not only by direct experiences, but also vicariously through observing others (Bandura, 2002). Moreover, vicarious learning can occur both inside and outside of one's immediate environment. An example of vicarious learning within one's environment would be observing a group of college students smoking outside one's residence hall or sorority house, and creating interpretations about that situation. An example of observational learning occurring outside one's environment would be seeing an anti-smoking commercial on TV or seeing a character in a movie smoking a cigarette, and subsequently forming thoughts, feelings, and interpretations about what was seen.

Reinforcement

In addition to observational learning, social cognitive theory suggests that two types of reinforcement influence thoughts and behavior. The first, known as vicarious reinforcement, is related to observational learning. In the previous example of the group of students smoking outside of a residence hall, vicarious reinforcement could occur if the observer admired, liked, or was attracted to one or more of the individuals who were smoking. In this instance, smoking may be positively reinforced in the observer. The second type of reinforcement—direct reinforcement—is inherent in the explanatory variable "Smoking-Related Behavior of Friends" as measured in this study. Respondents indicated how many of their friends, roommates, romantic partners, and sorority sisters or

fraternity brothers smoked, offered them cigarettes, or encouraged them to smoke during their freshman year of college. The composite score of these three behaviors for these four types of relationships provided a measure of the level of positive reinforcement received for initiating smoking.

Summary

This section provided a conceptual framework for the study's three explanatory variables and for five suspected covariates. Social cognitive theory posits that substance use is learned through observation and experiences within the social environment. Moreover, behavioral, personal, and environmental determinants interact collectively and dynamically to influence an individual's thoughts and actions. Observational learning, vicarious reinforcement, and direct reinforcement were also described as they relate to the study's variables. A diagram was created to integrate within a social cognitive theory framework all three of the explanatory variables, all five of the covariates, and pertinent concepts for this study. The next, and final section of this chapter, will review evidence of the relationship between each of the three explanatory variables and cigarette smoking initiation.

The Relationship between the Three Explanatory Variables and Smoking Initiation

Perceived Prevalence of Peers' Smoking Behavior

Social cognitive theory suggests that personal perceptions, whether real or imagined, influence behavior. Considerable evidence indicates that perceived prevalence of peers' smoking behavior influences the perceiver's smoking behavior. In particular, children and adolescents are at an increased risk of becoming smokers if they overestimate the number of their peers who smoke (Bauman, Botvin, Botvin, & Baker,

1992; Carvajal et al., 2000; Flay et al., 1998; Jackson, 1997; Unger & Rohrbach, 2002; USDHHS, 1994).

Flay and his associates (1998), for example, conducted a longitudinal study of the psychosocial predictors of the different stages of smoking among high school students. Perceived smoking behavior of peers and adults was among one of the many variables they measured among 7th graders. Cigarette smoking stages were assessed 6 years later, when participants were in the 12th grade. Students who never smoked, not even a puff or two, were classified as "never smokers." Those who had smoked only one whole cigarette or less in their entire life were labeled *triers*. Those who had smoked more than one whole cigarette in their lifetime, but had not smoked in the week preceding the assessment, were classified as *experimenters*. Finally, students who smoked during the week before they had completed the survey were categorized as *regular smokers*.

The relationship between perceptions of smoking and all three active smoking stages, as well as, transitions between trying and experimentation, and experimentation and regular use were assessed. The composite score of a 3-item scale served as the measure for perceived prevalence of smoking. Two items assessed perceived prevalence of peers' smoking behavior, and one measured perceived prevalence of adult smoking behavior. The scale's internal consistency was .71 as measured by Cronbach's reliability coefficient.

Results indicated that perceived prevalence of peers' smoking significantly predicted experimentation and regular use. Prevalence estimates also predicted one of the two transitions measured between smoking stages. The transition between trying cigarettes to experimental use was significantly predicted by the participants' perceptions

of prevalence, however, this relationship was not found for the transition between experimental smoking and regular use.

The study just described served as an example of the quality of many other longitudinal studies of perceived prevalence and smoking among children and adolescents (Bauman et al., 1992; Carvajal et al., 2000; Flay et al., 1998; Jackson, 1997; Unger & Rohrbach, 2002). Collectively, findings provide strong evidence that perceived prevalence of peers' smoking behavior influences smoking behavior. However, no published study currently exists that has examined the relationship between perceived peers' smoking prevalence and smoking initiation among college students. Only descriptive data are available on prevalence estimates of peer smoking among college students.

Descriptive data show that college students greatly overestimate the number of peers' who have never smoked, as well as those who currently smoke (as measured as any cigarette use during the 30 days before data collection). Furthermore, the magnitude of these misperceptions has been fairly consistent over the past three years (see Table 2-6).

Table 2-6. Actual Prevalence and Perceived Prevalence of Smoking Among College Students

	Spring 2000		Spring 2001		Spring 2002	
	Actual	Perceived	Actual	Perceived	Actual	Perceived
Never smoked	70.0%	9.0%	71.0%	8.0%	68.2%	6.1%
Smoked one or more days in past month	30.0%	91.0%	25.0%	93.0%	26.6%	93.9%

Source: American College Health Association, 2002.

Evidence also suggests that college students overestimate daily smoking behavior among their peers (Page, 1998). In a study of 775 college students from one university,

female students, on average, estimated that 42.3% of male, and 42.2% of female peers, smoked daily. Men also overestimated these daily prevalence rates but by a smaller margin. They perceived that 36.9% of men, and 33.9% of women on their campus smoked daily. Actual rates of daily smoking proved to be much lower—13.4% for men and 17.8% for women.

Smoking-Related Behavior of Friends

Evidence from studies of elementary school students (Jackson, 1997), middle school students (Carvajal et al., 2000; Conrad et al., 1992), and high school students (Duncan, Tildesley, Duncan, & Hops, 1995; Flay et al., 1998; Killen et al., 1997; Wang et al., 1997) clearly indicate that friends play a major role in smoking initiation and escalation of use. For example, the first time an individual smokes most commonly occurs with a friend who already smokes, and reinforcement from friends has been implicated in further experimentation and progression of smoking (USDHHS, 1994). Furthermore, over 90% of high school students who smoke report that one or more of their closest friends smoke, compared to 33% of nonsmokers reporting having one or more close friends who smoke (CDC, 2001).

Prospective studies of high school students provide strong evidence that friends' smoking status and reinforcement are more significant than many other psychosocial risk factors for smoking initiation and progression (Duncan et al., 1995; Flay et al., 1998; Killen et al., 1997; Wang et al., 1997). For example, in a longitudinal study described above (Flay et al., 1998), friends' smoking behavior significantly predicted trying, experimenting, and regular smoking. Moreover, this relationship became stronger as the stage of smoking progressed and as the number of friends who smoked increased. Friend's smoking behavior also predicted movement from trying cigarettes to

experimentation for both genders, but not progression from experimentation to regular use.

Killen and associates (1997) also examined the relationship between friends' smoking behavior and smoking initiation among high school students. For several years, they annually assessed these behaviors among participants in 2 consecutive cohorts of 9th graders. Among girls and boys with no history of smoking at baseline, those with friends' who smoked at baseline were significantly more likely to try smoking over the study's duration. The researchers concluded that friends' smoking "was the most important predictor of smoking" (p. 1013) for both genders when compared to other factors including temperament, depression, and drive for thinness.

In another study of secondary school students, smoking initiation and progression were assessed over a 3-year time span (Wang et al., 1997). The relationship between parents', siblings' and best friends' smoking status and smoking initiation and progression was examined. Best friends' smoking status proved to be the only consistent and significant predictor of smoking initiation and progression for males and females.

A 4-year prospective study of five age cohorts who began the study between the ages of 11 and 15 years olds also found evidence that peer reinforcement was predictive of cigarette use. Results indicated that encouragement to smoke by a best friend and lack of family cohesion predicted initial cigarette use. Encouragement—but not family cohesion—also predicted progression to more advanced stages of smoking (Duncan et al., 1995).

In contrast to the numerous prospective studies that examine friends' smoking behavior and smoking initiation among high school students, only a limited amount of

cross-sectional data link friends' smoking behavior to smoking initiation during college. In a study of African-American students, current residence, parents and friends who smoked during the participant's childhood, and current friends who smoked were significantly correlated with smoking at least one cigarette but less than one hundred total in one's lifetime (Hestick, Perrino, Rhodes, & Sydnor, 2001). When these variables were subsequently entered into a prediction model, however, only parents and friends who smoked during the participant's childhood proved to be statistically significant in predicting trial smoking behavior in college. Current friends' smoking status was not a significant predictor of trial smoking in this study, however, it did predict lifetime smoking behavior—defined as smoking 100 or more cigarettes in one's lifetime. Furthermore, the risk of lifetime smoking was reduced when neither friends nor parents smoked and the student viewed spirituality as important.

An email assessment of undergraduate students at Yale University also provided a limited amount of cross-sectional data on friends' behavior and smoking status (Debernardo et al., 1999). Nonsmoking students who were susceptible to start smoking within a year after the survey were asked about motivations for smoking. Approximately 11% indicated that they would be motivated to begin smoking because of friends who smoked. The most frequently selected motivator for future smoking initiation behavior was friends' behavior (11%), followed by stress (6.5%), depression (2.7%), image that smokers project (2.5%), and expression of independence (1.8%). Obviously, these descriptive data cannot assess whether having friends' who smoke actually increased the risk of smoking among their susceptible friends.

Sociability

Sociability is defined as the tendency to prefer the presence of others to being alone and seeking and being especially gratified by the presence, attention, and sharing of activities (Buss & Plomin, 1986). Psychologists generally agree that sociability is one component of extroversion (Morris, 1979; Sipps & Alexander, 1987). Extroversion is defined as the preference for attending to the outer world of events by seeking active stimulation and involvement in the environment (Morris, 1979). Extroverts inherently "value, enjoy, and engage in a wide range of social and affiliative activities and [are] socially confident" (Morris, 1979, p. 89). Not surprisingly, similar items that measure both constructs are included in the International Personality Item Pool (2001).

Compared to the amount of research on the relationship between friends' behavior and smoking initiation, extroversion—and its related construct of sociability—has been studied less extensively. Yet overall, a limited number of longitudinal and cross-sectional studies have found an association between sociability (or extroversion) and smoking initiation for both adolescents and college students. As early as the 1970s, for example, researchers of a large, longitudinal study found extroversion to be positively associated with smoking initiation for both sexes (Cherry & Kiernan, 1976). In a cross-sectional study of undergraduate students conducted in the 1980s, findings were similar—smokers were significantly more likely than nonsmokers to be extroverts (Spielberger & Jacobs, 1982).

More recently, sociability was examined as one of a variety of potential predictors of smoking initiation among high school students (Killen et al., 1997). In a 4-year prospective study, researchers collected data from two consecutive cohorts of 9th graders

to determine whether sociability influenced smoking initiation. They found that sociability predicted smoking initiation among the girls only in both cohorts.

A longitudinal study of Australian adolescent twins examined the relationship of extroversion and other personality factors and smoking initiation among 1,400 twins who were 11 to 18 years old at baseline (White, Hill, & Hopper, 1996). Three years after the baseline assessment, the researchers categorized each participant as a nonsmoker, an experimental smoker, or a recent smoker. A nonsmoker had never smoked a whole cigarette. An experimental smoker had not smoked in the month preceding the survey, but had smoked at least 10 cigarettes in his or her lifetime. A recent smoker had smoked during the month preceding the survey and had smoked at least 10 cigarettes in his or her lifetime. Results indicated that extroversion, but not self-esteem, psychoticism, or neuroticism, consistently distinguished nonsmokers who remained smoke-free from nonsmokers who started smoking. Furthermore, researchers found a positive relationship at the end of the three-year study between extroversion and smoking both among the experimental smokers and the recent smokers.

Conclusion

All three social variables in this study have been linked to smoking initiation among adolescents. Of these three explanatory variables, friend's smoking-related behavior has the strongest empirical support, followed by perceived prevalence of peers' smoking behavior, and then sociability. These conclusions are based overwhelmingly on research on adolescent populations because rigorous research on the social risk factors of smoking initiation among college students is lacking.

Summary

Chapter 2 began by providing a context of cigarette smoking among college students. Smoking prevalence rates, trends, characteristics of college student smokers, reasons for smoking, and smoking initiation rates were provided. Following this overview, two conceptual frameworks were described—one for the outcome variable and one for all other variables in the study. First, stage models of cigarette smoking were described. Then, social cognitive theory was presented to explain the relationship between the study's explanatory variables and smoking initiation. Finally, evidence to support each of the three explanatory variables was provided. A comprehensive literature review confirmed that a considerable amount of empirical support exists between each of these three variables and smoking initiation among high school populations. Conversely, little is known about these variables and smoking initiation among college students. Therefore, the field of college health will benefit from research that examines the influence of each of these social factors on smoking initiation.

CHAPTER 3
METHODS

This study determined smoking the percentage of college students who began smoking in college, identified at-risk populations, and pinpointed when college students are most vulnerable to begin smoking. The effects between three social factors and smoking initiation during freshman and sophomore years of college were also examined This chapter describes the methodology used in the study and is organized into five sections: (1) research design, (2) research variables, (3) instrument development, (4) pilot administration, and (5) final administration.

Research Design

This study used a cross-sectional survey design. Participants in intact classes at five universities completed a survey on social factors influencing smoking initiation. The selected classes were comprised of primarily first- and second-year undergraduate students representing a variety of academic majors. Participants were traditional-age college students. They began college by the age of 19 years and were between the ages of 18 and 22 years old at the time of the survey.

Research Variables

This study examined the relationship between three explanatory variables and one outcome variable. The three explanatory variables included: (1) perceived prevalence of peers' smoking behavior, (2) smoking-related behavior of friends and roommates, and (3) sociability. Smoking initiation during college served as the outcome variable. Smoking

initiation was defined as the first time that a participant smoked a whole cigarette on two or more days during a month.

Instrument Development

A 77-item *College Student Smoking Survey* was developed specifically for this study. The survey was designed to assess the relationship between the three explanatory variables and smoking initiation and to provide descriptive data that could inform decision-making and program development on college campuses. Procedures outlined by Alreck and Settle (1995) were followed to develop and select items and to conduct an expert review as well as student review. These three steps of the development process are described in the following subsections.

Item Selection and Development

First, a comprehensive review of current surveys on tobacco use among adolescents and college students was conducted. Items measuring demographics, frequency and quantity smoked, alcohol consumption, and susceptibility were selected or adapted from a variety of sources (ACHA, 2002; CDC, 1997; Johnston et al., 2001; Pierce et al., 1996; SAMSHA, 2002). Next, possible items for the sociability scale were located and selected from the International Personality Item Pool (2001). Finally, the principal researcher created additional items to measure the outcome variable as well as the three explanatory variables. Potential items were categorized into nine sections: (1) Cigarette Smoking Initiation, (2) Susceptibility, (3) Social Context of First Ever Cigarette, (4) Social Norms, (5) Sociability, (6) Frequency of Going Out, (7) Smoking-Related Behavior of Friends and Roommates During Freshman Year, (8) Control Variables, and (9) Freshman Year and Current Smoking Behavior.

Expert Review

Six experts in cigarette smoking, health education, and college health reviewed potential items. They were instructed to rate the relevance of each item, select the best items within each section, recommend additional items, and make suggestions. Based on the expert review data, two versions of a pilot survey were developed and reviewed by nine undergraduate students. Appendix A contains the names of the six reviewers.

Student Evaluation

Students at the University of Florida helped in the preliminary stages of survey development in two ways—they provided qualitative definitions of various levels of intoxication, and they reviewed two similar versions of the pilot survey. Seventy-six male and female students from two sections of a Personal and Family Health class were asked to "define *moderately intoxicated* and *extremely intoxicated* in their own words." Their responses were tallied and definitions were created based on their feedback. Furthermore, nine students reviewed two similar versions of the pilot instrument. To keep the survey to a length that could be completed in less than 15 minutes, two versions were necessary. Both versions contained many identical items including those that measured demographics, smoking behavior, grade point average, living situation, and parents' smoking status. However, items on each of the following four scales differed by version: sociability, perceptions of peers' smoking behavior, friends and roommates' behavior, and susceptibility to smoke.

Freshman and sophomore reviewers were recruited from a fall 2002 Personal and Family Health class at the University of Florida, and ultimately, nine females reviewed the surveys. Five students reviewed version one of the instrument; and four students reviewed version two. The researcher instructed participants to record how long it took

them to complete the survey, to identify problems and suggest solutions, and to offer general comments on how to improve the survey. Based on these results, a final version of the survey was created and then pilot-tested on undergraduate students.

Pilot Study

Setting

The pilot study was conducted using 20 intact classes at the University of Florida in fall 2002. Participants were enrolled in five sections of Personal and Family Health, one section of Human Physiology, or 14 lab sections of Human Anatomy. Classes were comprised of male and female students from a variety of academic majors.

Participants

Females comprised 77.9% of the pilot sample. On average, participants were 17.9 years old when they began their freshman year of college, and 19.3 years old at the time of the survey. Nearly 90% lived with other individuals—besides their parents—during the majority of their freshman year. Only 5.2% lived alone during that time. The percentages of Asian, Black, Hispanic, and White participants were 9.3%, 11.3%, 9.6%, and 67.3%, respectively. Approximately 2% of the participants indicated that they were American Indian, Alaskan Native, or Biracial.

Data Collection Procedures

The University of Florida's Institutional Review Board approved the data collection procedures for the pilot study (see Appendix B). The principal researcher collected data in each of the 20 classes. Participants received an informed consent letter, a survey booklet, a scantron form, and a pencil. The researcher read a script explaining the study to the students and their rights as a potential research participant. Participation was voluntary and anonymous. To ensure anonymity, signed consent forms were

collected separately from survey responses (see Appendix C). Participants recorded their responses on a scantron form, and most completed the survey in 10 to 15 minutes.

Data Analysis

Data from the pilot study were scanned and electronically transmitted onto a computer disk at the University of Florida's Office of Academic Technology. Raw data from 733 participants were loaded into SPSS v. 10.0. A total of 688 participants met the following inclusion criteria for the pilot study: (1) they began college at the age of 17, 18 or 19 years, and (2) they were between the ages of 18 and 22 years old at the time of the survey, and (3) they were enrolled full-time during their freshman year and at the time of the pilot study.

Instrument Reliability

Item and scale analyses were conducted to assess the survey's four major scales. All items on the Perceptions of Peers' Smoking Behavior, the Smoking-Related Behavior of Friends and Roommates, and the Susceptibility scales had acceptable item discriminations. In contrast, nine of the 13 items on the Sociability scale had acceptable item discriminations, and therefore, four weaker items were subsequently removed from this scale.

The reliability of each scale was then calculated using Cronbach's measure of internal consistency. All scales measuring the three explanatory variables (Perceived Prevalence of Peers' Smoking Behavior, Smoking-Related Behavior of Friends and Roommates, and Sociability) had similar reliability coefficients of .84, .84, and .87, respectively. Furthermore, the Susceptibility scale had a high reliability coefficient of .90.

Final Survey Administration

Final Survey Format

The final survey was developed using Remark OMR version 5.5 software developed by Principia Products. The final survey's format was changed after the pilot study for four reasons. First, the Remark OMR software became available to the researcher after the pilot study. Second, the software stored all scanned surveys as an electronic image. Third, participants recorded their responses directly on the survey and could use ink rather than only pencil. Consequently, scantron forms and pencils did not need to be distributed for the final study. This shortened the survey administration time by five minutes when compared to the pilot survey. Fourth, participant error was reduced because responses were recorded directly on the survey as opposed to on a scantron form.

Final Survey Description

The *College Student Smoking Survey* is a 77-item survey that was typically completed in 10 minutes or less (See Appendix D). Forty-three of the items comprised one of the survey's five scales. Table 3-1 lists the type of variable measured, the number of items, the number of response choices, and the reliability coefficient for each scale. More detailed results of the item and scale analyses are located in Appendix E.

Table 3-1. Instrument Specification Table

Scale Variable	Type of Variable	Item Number	Response Number	Reliability Coefficient
Perceived prevalence of peers' smoking behavior	Explanatory	9	5	.880
Smoking-related behavior of friends and roommates	Explanatory	12	4	.916
Sociability	Explanatory	9	4	.836
Susceptibility to smoking	Covariate	10	4	.953
Alcohol consumption	Covariate	4	6	.947

The remaining 35 items measured demographics, control variables, other potential covariates (besides susceptibility and alcohol consumption), smoking initiation behaviors, and 30-day prevalence of smoking. The final item on the survey solicited qualitative comments from the participants.

Setting

Undergraduate students from Ball State University, Texas A & M University, the University of Alabama, the University of Florida, and the University of Georgia participated in the final study. These five universities were selected for several reasons: (1) each had at least 15,000 undergraduate students enrolled during the 2002-2003 academic year, (2) each was able to provide a faculty liaison to coordinate data collection, and (3) each is located in a state that does not rely on tobacco revenue for its economic stability.

Participants

Male and female undergraduate students in intact classes participated in the final study. Classes were chosen based on two criteria: (1) they contained primarily first- and second-year undergraduate students, (2) they were comprised of students from a variety of academic majors. An elective introductory health class was chosen at four out of the five universities. A political science class, required of all undergraduate students, was selected at Texas A & M University.

Between 200 and 600 students at each university completed a survey for an initial sample size of 1,775. Five inclusion criteria were applied to the initial data set: (1) participants started college when they were 17, 18 or 19 years old, (2) participants were 18 to 22 years old at the time of the survey, (3) participants began college within 36 months of the survey, (4) participants were enrolled full-time during their freshman year

of college and at the time of the survey, and (5) participants provided sufficient data to determine their smoking initiation status. A total of 525 surveys failed to meet all five inclusion criteria yielding a final sample size of 1,250. The amount of excluded surveys was not surprising because data was collected in intact classes that obviously contained students who were over 22 years old at the time of the study.

Protection of Confidentiality

Each of the five university's Institutional Review Board approved the final study. All participants received a description of the study and information about their rights as participants. Participation was voluntary and anonymous. Written consent was obtained from participants at Ball State University, the University of Alabama, the University of Florida, and the University of Georgia. Participants at Texas A & M University were not required to provide a written consent form.

Data Collection Procedures

Data were collected in selected classes at five universities between January 6 and February 6, 2003. The researcher collected data at the University of Florida. She recruited a faculty advisor at each of the other four sites (see Appendix F) and sent them the survey materials in early January. The same data collection protocol was followed at all five sites (see Appendix G). The faculty advisors returned the completed surveys to the researcher by February 20, 2003.

Data Analysis

Surveys were scanned using Remark OMR version 5.5 software. Data were then loaded into SPSS version 10.0 for analysis. To verify data entry accuracy, 75 surveys were randomly selected and the original responses were compared to the scanned responses. The original responses on all 75 surveys matched their scanned counterparts.

Three types of data analyses were conducted on the final data set to establish a profile for the sample and to test the research hypotheses. First, descriptive statistics were calculated to determine the baseline smoking initiation rates as well as the 30-day prevalence rates of current smoking among students. They were also calculated to obtain a general demographic profile of the sample and a specific profile of college student smokers. Second, correlations were calculated between each of the five covariates (susceptibility to smoke cigarettes during the upcoming year, grade point average, living situation, alcohol consumption, and parents' smoking status) and smoking initiation to determine which of these five to include in the final regression analysis. According to Cohen (1977), correlations of .10 or greater represent at least moderate associations, and therefore, this criterion was used to determine inclusion of the five covariates. Third, multiple logistic regression was used to examine the relationship between each of the three explanatory variables and smoking initiation. Analyses for all three research questions were tested at a .05 significance level.

Controlling for Bias

Potential bias was controlled in three ways. First, the same data collection protocol was followed at all five sites. Second, individual differences were controlled. More specifically, data analyses were limited to responses from participants who (1) began college when they were 17, 18 or 19 years old, (2) were 18-22 years of age at the time of the survey, (3) began college within 36 months of completing the survey, and (4) were enrolled full-time during their first year of college at the time of survey. Third, data was collected to measure five potential covariates. Those with a .10 or greater association with the outcome variable were included as covariates in the multiple logistic regression analyses.

Summary

This chapter described the research design, research variables, instrument development, and pilot and final studies' methodologies. A cross-sectional survey design was used for this study. The *College Student Smoking Survey* was developed and pilot tested according to recommended theory and practice (Alreck & Settle, 1995). Findings indicated that the survey was reliable.

Data were collected in intact classes during January and February of 2003. A total of 1,775 students from five universities participated in the final study, however, after five inclusion criteria were applied, 1,250 participants remained. The majority of participants who were excluded from the study did not meet the criterion of being a traditional undergraduate student or were over the age of 22 years.

Descriptive statistics were calculated to identify sample demographics and characteristics of college smoking behavior, including the percentage of participants who started smoking during college. Furthermore, smoking prevalence rates were calculated. Covariates with moderate associations to smoking initiation were identified for inclusion in the multiple logistic regression analyses to test the three research hypotheses. The results of the final study are reported in Chapter 4.

CHAPTER 4
RESULTS

This study determined the percentage of college students who began smoking cigarettes in college, identified at-risk populations, and pinpointed when college students are most vulnerable to begin smoking. The effects between three social factors and smoking initiation during freshman and sophomore years were also examined. This chapter presents the results of the study and is organized into five major sections. The first three sections provide descriptive analyses of the sample, current smoking behavior, and smoking initiation behavior. The fourth section describes the associations between the suspected covariates and smoking initiation, and the fifth section presents the results for the three research questions.

Sample Demographics and Characteristics

This section describes demographics and characteristics of the sample. A total of 1,772 male and female undergraduate students from five universities participated in the study. Five criteria were selected to ensure that participation was limited to only full-time, traditional-aged freshman, sophomore, and junior students. Seniors were excluded because of the concern for the accuracy of recalling information from their freshman year of college. After applying the inclusion criteria to the data set, 1,250 surveys remained, yielding a 70% inclusion rate. Approximately 60% of those excluded were seniors, and another 10% had failed to indicate how many months they had been in college. The remaining 30% of those who were excluded were either not traditional-aged students or failed to provide sufficient data to determine their smoking initiation status.

Participation by University, Gender, and Race

Table 4-1 provides a summary of participants by university, gender, and race. Of the 1,250 participants, one out of three attended the University of Florida (37.5%). Nearly 21% were enrolled at Ball State University, followed by 15.8% from Texas A & M University, 14.1% from the University of Georgia, and 11.6% from the University of Alabama. Two out of three participants were female (68%), and nearly 8 out of 10 were White (78.7%).

Table 4-1. Distribution of Participants by University, Gender, and Race

	f	%
University		
Ball State University	261	20.9
University of Alabama	145	11.6
University of Florida	467	37.5
University of Georgia	175	14.1
Texas A & M University	197	15.8
Total	1,245	
Gender		
Male	398	32.0
Female	845	68.0
Total	1,243	
Race		
African American	117	9.4
American Native	1	0.1
Asian	45	3.6
Latino	67	5.4
Pacific Islander	3	.2
White	978	78.7
Multi-racial	32	2.6
Total	1,243	

Note. University affiliation was missing for 5 participants. Gender and race were missing for 7 participants.

Participation by Age and Months in College

Table 4-2 shows the age of the participants at the time of the study and also the number of months since they began their freshman year. Approximately 37% of the

participants were 19 years old. The mean age of the sample was 19.25 years. One out of four were 18 years old, and another 25% were 20 years old. Only 10% of participants were 21 or 22 years old at the time of the study. Freshmen comprised the largest percentage of the sample (46.2%), followed by sophomores (32.5%), and then juniors (21.4%).

Table 4-2. Distribution of Participants by Age and Months in College

	f	%	Cum %
Age			
18	319	25.5	25.5
19	464	37.1	62.6
20	324	25.9	88.6
21	123	9.8	98.4
22	20	1.6	100.0
Total	1,250	100.0	
Months since beginning college			
≤ 6	447	35.8	35.8
7 - 12	130	10.4	46.2
13 - 18	261	20.9	67.0
19 - 24	145	11.6	78.6
25 - 30	160	12.8	91.4
31 - 36	107	8.6	100.0
Total	1,250	100.0	

Current Smoking Behavior

This section describes how many participants smoked, how much, and how often during the 30 days preceding the study. National surveys typically use a dichotomous question to measure current smoking behavior: "Have you used (or smoked) cigarettes in the past 30 days?" In this study, participants were given four response choices to describe their smoking behavior during the 30 days preceding the survey: (1) never smoked, not even a puff or two, (2) tried a cigarette, but only a puff or two, (3) took puffs from cigarettes on occasion, but didn't smoke a whole cigarette at one sitting, or (4)

smoked one or more whole cigarettes. Table 4-3 presents these results and distinguishes between three groups of participants: never users, "puffers," and those who smoked at least one or more whole cigarettes during the 30 days before the survey.

Table 4-3. Past 30-Day Smoking Prevalence Rates

	f	%
Never smoked, not even a puff or two	916	73.5
Smoked, but only took puffs	75	6.3
Smoked one or more whole cigarettes	255	20.5
Total	1,246	

Note. 30-day smoking behavior was missing for 4 participants.

Nearly three out of four participants (73.5%) did not smoke in the 30-days before the survey. In contrast, a total of 26.8% reported some cigarette use during that time period. Among these cigarette users, 6.3% had only puffed on one or more cigarettes during that time, whereas, 20.5% had smoked one or more whole cigarettes.

Smoking Behavior by Gender and Race

Table 4-4 shows 30-day smoking prevalence rates by gender and race. Nearly 28% of the males and approximately 25.% of the females had smoked in the 30 days before the survey. The same percentage of males (20.1%) as females (20.2%) smoked one or more whole cigarettes, however, slightly more males (7.8%) than females (5.1%) only puffed during that time. Pacific Islanders had the highest prevalence rate among the different racial groups (66.7%), however, these results must be interpreted with caution because only three Pacific Islanders participated in the study. Approximately one of out four White participants (28.7%), and a similar number of multiracial participants (28.1%), had smoked during the month before the survey. The prevalence rate for Latinos was 22.4%, for Asians, 19.9%, and for African Americans, 12%.

Smoking rates for participants who only puffed on cigarettes during the 30 days before the study also differed among the various racial groups. For example, Latino participants had the highest rate of puffing on cigarettes during the 30 days before the study (12.0%), followed by White (6.0%), African American (6.0%), and Asian participants (2.2%). No Pacific Islander or multi-racial participant reported puffing on cigarettes during the month before the study.

Table 4-4. Past 30-Day Smoking Prevalence Rates by Gender and Race

	Smoked < 1 cigarette		Smoked ≥ 1 cigarettes		Any cigarette use	
	f	%	*f*	%	*f*	%
Gender						
Male	31	7.8	80	20.1	111	27.9
Female	43	5.1	171	20.2	214	25.3
Missing	1		4			
Total	75		255			
Race						
African American	7	6.0	7	6.0	14	12.0
American Native	0	0.0	0	0	0	0
Asian	1	2.2	8	17.7	9	19.9
Latino	8	12.0	7	10.4	15	22.4
Pacific Islander	0	0.0	2	66.7	2	66.7
White	59	6.0	222	22.7	281	28.7
Multi-racial	0	0.0	9	28.1	9	28.1
Total	75		255			

Frequency and Quantity Smoked

This section describes the behavior of the participants who smoked one or more whole cigarettes during the 30 days before the study. This group is referred to as "current smokers." Table 4-5 shows how often and how much the current smokers smoked during the month before the study. The majority of current smokers reported smoking on 20 or fewer days (64%), and 33.6% smoked on five or fewer days during the month prior to the survey. Only 20.2% had smoked on all 30 days prior to the survey.

Current smokers were also asked how many cigarettes, on average, they smoked on the days when they smoked. Three out of four reported smoking five or fewer cigarettes on the days that they smoked—22.4% had smoked one cigarette, and 51.6% had smoked two to five cigarettes, on the days that they smoked. Only 10% reported smoking between 11 and 20 cigarettes, and only one out of the 255 current smokers in the sample reported smoking more than a pack a day when he or she smoked.

Table 4-5. Number of Days and Quantity Smoked

	f	%	Cum %
# of days			
1	19	7.5	7.5
2	29	11.5	19.0
3-5	37	14.6	33.6
6-10	34	13.0	46.6
11-20	44	17.4	64.0
21-29	40	15.8	79.8
All 30	51	20.2	100.0
Total	253		
# of cigarettes			
1	56	22.4	22.4
2-5	129	51.6	74.0
6-10	40	16.0	90.0
11-20	24	9.6	99.6
21 or more	1	0.40	100.0
Total	250		

Note. Results are reported for participants who smoked one or more whole cigarettes during the 30 days prior to the survey and represent their smoking behavior during that month. The number of days was missing from 2 participants, and the number of cigarettes smoked was missing from 5 participants.

Smoking Initiation Behavior

This section describes smoking initiation behavior among all participants as well as subpopulations within the sample. Findings showing the age of when participants first smoked a whole cigarette are presented first. Then, the results of four types of smoking initiation behavior are presented including the first time that participants had (1) smoked whole cigarette, (2) smoked on 2 days during any one month, (3) smoked on 20 days in

any one month, and (4) smoked on 30 consecutive days. These results are presented by time in school as well as year in school.

First Ever Smoking Behavior by Age

Table 4-6 shows how old participants were when they first smoked a whole cigarette. Of the 1,250 participants, 32.7% had smoked their first whole cigarette by the time they were 17 years old, and another 7.8% had smoked their first whole cigarette when they were 18 years old. Collectively, only 3.5% of the participants had smoked their first whole cigarette after the age of 18 years.

Table 4-6. First Ever Smoking Behavior by Age for Sample and Current Smokers

	Sample			Current Smokers		
Smoked first whole cigarette	*f*	%	Cum %	*f*	%	Cum %
17 or younger	408	32.7	32.7	185	72.8	72.8
18	98	7.8	40.5	44	17.3	90.1
19	30	2.4	42.9	17	6.7	96.8
20	12	1.0	43.9	7	2.8	99.6
21	1	.1	44.0	1	0.4	100.0
Never	700	56.0	100.0	—	—	
Total	1,249	100.0		254	100.0	

Note. Data was missing for 1 participant and 1 current smoker. Current smokers are participants who smoked one or more whole cigarettes during the 30 days before the survey (n = 255).

Table 4-6 also shows how old current smokers were when they first smoked a whole cigarette. Current smokers were defined as participants who had smoked one or more whole cigarettes during the 30 days before the survey. Among this group of 255 participants, 72.8% had first smoked a whole cigarette by the time they were 17 years old. A total of 17.3% had smoked their first whole cigarette at the age of 18 years, and 6.7% had first smoked a whole cigarette when they were 19 years old. Collectively, only 3.2% of these current smokers had first smoked a whole cigarette when they were 20 or

21 years old. Moreover, no current smoker reported first smoking a whole cigarette after the age of 21 years.

First Ever Smoking Behavior by Time in College

One purpose of this study was to pinpoint when smoking initiation occurred during college. Table 4-7 shows these results for the sample, current smokers, and "ever" smokers. Ever smokers were defined as participants who had ever engaged in each of the four smoking initiation behaviors listed in the table. Among the sample, 43.8% had ever smoked a whole cigarette in their lifetime and 36.5% had done this prior to college. Only 7.3% had first smoked a whole cigarette during college. A total of 27% of the sample had first smoked on two or more days in any one month before they came to college, whereas, only 9.3% had engaged in this behavior after they came to college.

Results are also presented for more frequent smoking. A total of 16.4% of the participants had ever smoked on 20 days in any one month with 11.2% first smoking this frequently prior to college, and 5.2% starting some time during college. Finally, 13.5% of the sample reported ever smoking on 30 consecutive days. Just over 9% had first smoked this frequently prior to college, whereas, 4.3% had first smoked on 30 consecutive days during college.

In addition to showing first ever smoking behavior for all participants in the sample, Table 4-7 also presents this information for current smokers. Over 84% of current smokers had first smoked a whole cigarette prior to college. Approximately 70% had first smoked on two days in any month; 42.5% had first smoked on 20 days during any one month; and 36.1% had first smoked on 30 consecutive days prior to college. Results also show that 3.5% of current smokers had never smoked on 2 days in one

Table 4-7. First Ever Smoking Behavior by Time in College for Sample, Current Smokers, and Ever Smokers

	Whole cigarette			2 days/month			20 days/month			30 consecutive days		
	f	%	Cum %	*f*	%	Cum %	*f*	%	Cum %	*f*	%	Cum %
Sample												
First 6 months	55	4.4	4.4	66	5.3	5.3	39	3.1	3.1	27	2.2	2.2
Second 6 months	10	0.8	5.2	16	1.3	6.6	7	0.6	3.7	8	0.6	2.8
Second year	24	1.9	7.1	22	1.8	8.4	15	1.2	4.9	16	1.3	4.1
After 2nd year	2	0.2	7.3	12	0.9	9.3	4	0.3	5.2	3	0.2	4.3
Prior to college	456	36.5	43.8	337	27.0	36.3	140	11.2	16.4	114	9.2	13.5
Never	702	56.2	100.0	797	63.7	100.0	1044	83.6	100.0	1079	86.5	100.0
Total	1249	100.0		1250	100.0		1249	100.0		1247	100.0	
Current Smokers												
First 6 months	21	8.3	8.3	35	13.8	13.8	32	12.6	12.6	23	9.1	9.1
Second 6 months	4	1.6	9.9	10	3.9	17.7	5	2.0	14.6	7	2.8	11.9
Second year	14	5.5	15.4	14	5.5	23.2	13	5.1	19.7	13	5.2	17.1
After 2nd year	1	0.4	15.8	7	2.8	26.0	2	0.8	20.5	2	0.8	17.9
Prior to college	214	84.2	100.0	179	70.5	96.5	108	42.5	63.0	91	36.1	54.0
Never	—	—		9	3.5	100.0	94	37.0	100.0	116	46.0	100.0
Total	254	100.0		254	100.0		254	100.0		254	100.0	
Ever Smokers												
First 6 months	55	10.0	10.0	66	14.6	14.6	39	19.1	19.1	27	16.1	16.1
Second 6 months	10	1.8	11.8	16	3.5	18.1	7	3.4	22.5	8	4.7	20.8
Second year	24	4.4	16.2	22	4.9	23.0	15	7.4	29.9	16	9.5	30.3
After 2nd year	2	0.4	16.6	12	2.6	25.6	4	2.0	31.9	3	1.8	32.1
Prior to college	456	83.4	100.0	337	74.4	100.0	160	68.1	100.0	114	67.9	100.0
Total	547			453			235			168		

Note. Current smokers smoked one or more cigarettes during the 30 days preceding the survey. Ever smokers excluded participants who reported "never" within each category of smoking behavior.

month; 37.0% had never smoked on 20 out of 30 days; and 46% had never smoked on 30 consecutive days.

Finally, Table 4-7 presents first ever smoking behavior results for “ever” smokers. These results include only those participants who had ever engaged in that specific smoking behavior. For example, the percentages for ever smokers under the “whole cigarette” category were calculated from the 43.8% of the sample who indicated that they had smoked a whole cigarette. The 56.2% of the sample who reported never smoking a whole cigarette were excluded from these results. These descriptive results answer the question, “Among participants who had *ever smoked* at the various smoking level, how many engaged in that particular behavior prior to college, and how many engaged in that behavior during college?”

Results show that as smoking behavior progresses, the percentage of students who initiate that particular behavior during college increases. For example, 16.6% of participants who had ever smoked a whole cigarette had first smoked it during college. This percentage increases to 25.6% for those who had ever smoked on 2 days in any one month, and to 32.1% for participants who had ever smoked on 30 consecutive days.

Another interesting way to present these smoking behavior data are by year in school. Table 4-8 presents first ever smoking behavior by year in school for all participants. Freshmen were defined participants who had been in college for one to 12 months. Sophomores had been enrolled for 13-24 months, and juniors had been in college for 25-36 months. For reasons mentioned at the beginning of this chapter, seniors were excluded from this study.

Table 4-8. First Ever Smoking Behavior by Year in School for all Participants

	Whole cigarette			2 days/month			20 days/month			30 consecutive days		
	f	%	Cum %	*f*	%	Cum %	*f*	%	Cum %	*f*	%	Cum %
Freshmen												
First 6 months	22	3.8	3.8	28	4.9	4.9	18	3.1	3.1	10	1.8	1.8
Second 6 months	1	0.2	4.0	1	0.2	5.1	0	0.0	3.1	0	0.0	1.8
Prior to college	209	36.2	40.2	162	28.1	33.2	71	12.3	15.1	59	10.2	12.0
Never	344	59.8	100.0	385	66.8	100.0	487	84.6	100.0	506	88.0	100.0
Total	577	100.0		576	100.0		576	100.0		575	100.0	
Sophomores												
First 6 months	21	5.2	5.2	22	5.4	5.4	11	2.7	2.1	9	2.2	2.2
Second 6 months	7	1.7	6.9	10	2.5	7.9	4	1.0	3.7	5	1.2	3.4
Second year	11	2.7	9.6	15	3.7	11.6	11	2.7	6.4	9	2.2	5.6
Prior to college	142	35.0	44.6	104	25.6	37.2	36	8.9	15.3	29	7.2	12.8
Never	225	55.4	100.0	255	62.8	100.0	343	84.7	100.0	353	87.2	100.0
Total	406	100.0		406	100.0		405	100.0		405	100.0	
Juniors												
First 6 months	12	4.5	4.5	16	5.9	5.9	10	3.8	3.8	8	3.0	3.0
Second 6 months	2	0.7	5.2	5	1.9	7.8	3	1.1	4.9	3	1.1	4.1
Second year	13	4.8	10.0	7	2.7	10.5	4	1.5	6.4	7	2.6	6.7
After 2nd year	2	0.7	10.7	11	4.1	14.6	3	1.1	7.5	2	0.8	7.5
Prior to college	105	39.3	50.0	71	26.6	41.2	32	12.0	19.5	26	9.7	17.2
Never	133	50.0	100.0	157	58.8	100.0	214	80.5	100.0	220	82.8	100.0
Total	267	100.0		267	100.0		266	100.0		266	100.0	

Note. Freshmen = 1-12 months in college. Sophomores = 13-24 months. Juniors = 25-36 months. Seniors were not part of the study.

Noteworthy of these data by year in school are the percentages of students who had never smoked at the four various levels shown in Table 4-8. The largest percentage of participants who had never smoked within each category of smoking initiation consistently is freshmen, followed by sophomores, and then juniors. For example, 66.8% of freshmen had never smoked on two or more days in any month, however, this percentage for sophomores was 62.8%, and for juniors, 58.8%.

The last two tables in this section on smoking initiation behavior focus specifically on college-initiated smoking behavior. In other words, the results listed in Tables 4-9 and 4-10 represent only those participants who reported beginning to smoke during college. Two groups are shown in Table 4-9 each of the four types of smoking initiation behavior: (1) participants who had ever initiated the behavior during college, and (2) current smokers. Table 4-10 summarizes the four types of smoking initiation behavior by year in school.

Results in Table 4-9 indicate that the majority of college-initiated smoking behavior among the entire sample, and among current smokers, occurred during the first six months of college. For example, among those who had ever first smoked on 20 days during any one month in college, 60% did so during their first six months of college. Among current smokers, 61.5% smoked on 20 days in any one month for the first time during their first six months of college. Furthermore, relatively little smoking initiation behavior occurred after the sophomore year (3.9%).

Table 4-9. College-Initiated Smoking Behavior by Time in College

	Whole Cigarette			2 Days/Month			20 Days/Month			30 Consecutive Days		
	f	%	Cum %	*f*	%	Cum %	*f*	%	Cum %	*f*	%	Cum %
Ever Initiators												
First 6 mos.	55	60.4	60.4	66	56.9	56.9	39	60.0	60.0	27	50.0	50.0
Second 6 mos.	10	11.0	71.4	16	13.8	70.7	7	10.8	70.8	8	14.8	64.8
Second year	24	26.4	97.8	22	19.0	89.7	15	23.1	93.9	16	29.6	94.4
After 2nd year	2	2.2	100.0	12	10.3	100.0	4	6.1	100.0	3	5.6	100.0
Total	91			116			65			54		
Current Smokers												
First 6 mos.	21	52.5	52.5	35	53.0	53.0	32	61.5	61.5	23	51.1	51.1
Second 6 mos.	4	10.0	62.5	10	15.2	68.2	5	9.6	71.1	7	15.6	66.7
Second year	14	35.0	97.5	14	21.2	89.4	13	25.0	96.1	13	28.9	95.6
After 2nd year	1	2.5	100.0	7	10.6	100.0	2	3.9	100.0	2	4.4	100.0
Total	40			66			52			45		

Another way to present these college-initiated data is by year in school. These data help to pinpoint when the majority of students in each class initiated each type of smoking behavior. Table 4-10 shows that over 95% of the freshmen who had ever initiated these four smoking behaviors in college had engaged in these behaviors for the first time during their first six months of college. Similarly, the largest percentage of college-initiated smoking behavior among sophomores and juniors also occurred during the first six months of college. Moreover, the data representing the juniors shows that the majority of college smoking initiation among this group had occurred during their first two years of college. For example, 85% of the juniors who first smoked on 20 days during any one month, and 90% of the juniors who had ever smoked on 30 consecutive days, engaged in these behaviors by the end of their sophomore year in college.

Correlations Between the Covariates and Smoking Initiation

This section will describe the relationship between five covariates and the dependent variable. To briefly review, the behavior of interest for the study was not the first time that participants tried a cigarette, or even when they first smoked a whole cigarette; rather, the behavior of interest was when participants began to smoke repeatedly. Therefore, the dependent variable of the study—smoking initiation—was defined as the first time a participant smoked on 2 or more days in any one month during their freshman or sophomore year of college. A total of 104 students, or 8.3% of the sample, met this definition of smoking initiation. Data from this subpopulation of students was used to assess the association between five suspected covariates (susceptibility to smoke, grade point average, living situation, alcohol consumption, and parents' smoking status) and smoking initiation. Data from this group was also used to analyze each of the three research questions.

Table 4-10. College-Initiated Smoking Behavior by Year in School

	Whole cigarette			2 days/month			20 days/month			30 consecutive days		
	f	%	Cum %	*f*	%	Cum %	*f*	%	Cum %	*f*	%	Cum %
Freshmen												
First 6 months	22	95.7	95.7	28	96.6	96.6	18	100.0	100.0	10	100.0	100.0
Second 6 months	1	4.3	100.0	1	3.4	100.0	0	0.0	100.0	0	0.0	100.0
Total	23	100.0		29			18	100.0		10	100.0	
Sophomores												
First 6 months	21	53.8	53.8	22	46.8	46.8	11	42.3	42.3	9	39.1	39.1
Second 6 months	7	18.0	71.8	10	21.3	68.1	4	15.4	57.7	5	21.8	60.9
Second year	11	28.2	100.0	15	31.9	100.0	11	42.3	100.0	9	39.1	100.0
Total	39	100.0		47	100.0		26	100.0		23	100.0	
Juniors												
First 6 months	12	41.4	41.4	16	41.0	41.0	10	50.0	50.0	8	40.0	40.0
Second 6 months	2	6.9	48.3	5	12.8	53.8	3	15.0	65.0	3	15.0	55.0
Second year	13	44.8	93.1	7	18.0	71.8	4	20.0	85.0	7	35.0	90.0
After 2nd year	2	6.9	100.0	11	28.2	100.0	3	15.0	100.0	2	10.0	100.0
Total	29	100.0		39						20		

Note. Freshmen = 1-12 months in college. Sophomores = 13-24 months. Juniors = 25-36 months. Seniors were not part of the study. College initiators are participants who reported engaging in smoking initiation behavior during college.

Table 4-11 shows the correlations between each of five suspected covariates and smoking initiation. Only two covariates were moderately associated with smoking initiation as defined by a predetermined inclusion criterion of 0.10. Susceptibility to smoke during freshman year of college (r =.40), and alcohol consumption (r =.20) each showed a moderate association to smoking initiation, and subsequently, both were included in the multiple logistic regression analyses used to answer the study's three research questions. In contrast to these two variables, the other three variables (grade point average freshman year, living with others during freshman year, and parents smoking status) failed to meet the inclusion criterion of 0.10. Consequently, they were excluded from further analyses.

Table 4-11. Correlations between Five Suspected Covariates and Smoking Initiation

Variable	*r*
Susceptibility to smoke freshman year	.40
Alcohol consumption freshman year	.20
Grade point average freshman year	-.08
Living with others (besides parents) freshman year	.04
Parents' smoking status	-.02

Research Question Results

This section describes the results of the multiple logistic regression analyses conducted to answer each of three research questions.

Research Question One

Does perceived prevalence of peers' smoking behavior during freshman year of college increase the risk of smoking initiation during freshman or sophomore year of college?

A multiple logistic regression analysis was conducted to examine the relationship between perceived prevalence of peers' smoking behavior and smoking initiation during

freshman or sophomore year of college. The approximate chi-square statistic was used to assess model fit. A *p*-value of greater than 0.05 indicates an adequate model fit (Hosmer & Lemeshow, 1980). Results of the chi-square analysis confirmed an adequate fit ($?^2$ = 15.145, *p* = .056). Table 4-12 shows the results of the regression analysis. After controlling for the effects of two covariates (susceptibility to smoke during freshman year and alcohol consumption during freshman year), perceived prevalence of peers' smoking behavior was not significantly related to smoking initiation during freshman or sophomore year of college (*p* = .587).

Table 4-12. Multiple Logistic Regression Analysis of Perceived Peer Smoking Behavior and Smoking Initiation

Variable	*b*	*SE*	*Wald*	*p*-value
Perceived Peer Smoking	.095	.176	.295	.587
Susceptibility	1.576	.204	59.735	< .001*
Alcohol Consumption	.507	.105	23.192	< .001*

* = Significant at the .05 level

Research Question Two

Does the smoking-related behavior of friends and roommates during freshman year of college increase the risk of smoking initiation during freshman or sophomore year of college?

A multiple logistic regression analysis was conducted to test for the significance of smoking-related behavior of friends and roommates and smoking initiation during freshman or sophomore year of college. Smoking-related behavior of friends and roommates, susceptibility to smoke during freshman year, and alcohol consumption during freshman year were included in the regression model. A chi-square analysis confirmed an adequate model fit ($?^2$ = 14.031, *p* = .051). Results indicated that the

smoking-related behavior of friends and roommates was a statistically significant factor of smoking initiation during freshman and sophomore years of college (p = .003).

A logistic regression coefficient can be interpreted as the increase in the odds for each unit increase in the explanatory variable. For example, the coefficient (b) for friends' and roommates' smoking-related behavior was 0.832. This value suggests that the odds of initiating smoking during freshman or sophomore year of college increases by $e^{0.832}$ = 2.298, or more than doubles, for each unit increase in the composite score of smoking-related behavior of friends and roommates. Table 4-13 summarizes the results of this regression analysis.

Table 4-13. Multiple Logistic Regression Analysis of Friends' and Roommates' Smoking-Related Behavior and Smoking Initiation

Variable	*b*	*SE*	*Wald*	*p*-value
Friends' and Roommate's Behavior	.832	.281	8.740	.003*
Susceptibility	1.380	.214	41.565	< .001*
Alcohol Consumption	.421	.110	14.600	< .001*

* = Significant at the .05 level

Research Question Three

Does sociability during freshman year of college increase the risk of smoking initiation during freshman or sophomore year of college?

A multiple logistic regression analysis was conducted to examine the relationship between the sociability and smoking initiation during freshman or sophomore year of college. The approximate chi-square statistic was used to assess the fit of the model. Results indicated an adequate model fit (.05 ($?^2$ = 11.928, p = .154). In addition to sociability, susceptibility and alcohol consumption were also included in the model as covariates. Table 4-14 shows that sociability failed to be a statistically significant factor of smoking initiation (p = .411).

Table 4-14. Multiple Logistic Regression Analysis of Sociability and Smoking Initiation

Variable	*b*	*SE*	*Wald*	*p*-value
Sociability	.801	.975	.675	.411
Susceptibility	1.613	.202	63.666	< .001*
Alcohol Consumption	.449	.131	11.764	.001*

* = Significant at the .05 level

Regression Analysis of All Three Explanatory Variables

Finally, a multiple logistic regression analysis was conducted to determine the relationship between all three explanatory variables and smoking initiation. To assess the fit of the model, the approximate chi-square statistic was used. The model fit the data as indicated by a *p*-value of greater than .05 ($?^2$ = 10.671, *p* = .221). Susceptibility and alcohol consumption during freshman year were included as covariates in the model.

The smoking behavior of friends and roommates proved to be the only statistically significant explanatory variable (*p* = .003). A logistic regression coefficient can be interpreted as the increase in the odds for each unit increase in the explanatory variable. The coefficient (*b*) for friends' and roommates' smoking-related behavior in this model was 0.842. This value suggests that the odds of initiating smoking during freshman or sophomore year of college increases by $e^{0.842}$= 2.321, or more than doubles, for each unit increase in the composite score of smoking-related behavior of friends and roommates. Table 4-15 summarizes the results of this regression analysis.

Table 4-15. Multiple Logistic Regression Analysis of Three Explanatory Variables of Smoking Initiation

Variable	*b*	*SE*	*Wald*	*p*-value
Perceived Prevalence of Peer Smoking	.100	.177	.320	.572
Friends' and Roommates' Behavior	.842	.283	8.855	.003*
Sociability	.808	.981	.678	.410
Susceptibility	1.363	.216	39.780	< .001*
Alcohol Consumption	.350	.135	6.659	< .001*

* = Significant at the .05 level

Summary

This chapter provided relevant descriptive results as well as findings for each of the three research questions. A profile of the sample and description of smoking behavior was presented, including 30-day smoking prevalence and the percentage of college students who began smoking in college. Correlations between each of five suspected covariates and smoking initiation were calculated using a predetermined inclusion criterion of 0.10. Only two of these five variables—susceptibility to smoke during freshman year and alcohol consumption during freshman year—met this inclusion criterion. Consequently, these variables were included as covariates in all regression analyses. A separate regression analysis was conducted to answer each of the three research questions. A final regression analysis was conducted that included all three explanatory variables and the two covariates. A discussion of the results will be provided in Chapter 5.

CHAPTER 5
DISCUSSION

This chapter has four purposes: (1) to discuss the study's results including current smoking behavior, smoking initiation behavior, and findings of the research questions, (2) to describe the study's strengths and weaknesses, (3) to present conclusions, and, (4) to offer recommendations for future research and practice.

Current Smoking Behavior

Consistent with national surveys of college students, current smoking behavior was measured by asking participants whether they had smoked at any time during the 30 days before the survey. The 30-day smoking prevalence rate of 26.8% found in this study was consistent with the rates found in other national surveys (ACHA, 2002, Johnston et al., 2001, SAMHSA, 2002). Also consistent were findings that indicated similar smoking rates for males and females, and higher smoking rates for Whites, as opposed to Latinos or African American students.

Unlike national surveys, however, this study distinguished between the number of participants who just puffed on cigarettes during the 30 days before the study, and those who had smoked at least one whole cigarette during that time. Currently, national prevalence rates include individuals who have only puffed on cigarettes in the past 30 days. These individuals are typically labeled "current smokers." Results from this study indicated that 6.3% of those who smoked on the 30 days before the study were "puffers," whereas, 20.5% had smoked one or more cigarettes in the month prior to the survey.

These data provide a more precise description of 30-day smoking behavior and are useful to practitioners who deliver smoking interventions.

This study also determined the frequency of smoking and the quantity of cigarettes smoked, on average, on the days when smoking occurred. Participants who smoked one or more whole cigarettes during the previous 30 days were included in these analyses. Findings indicated that the majority of smokers smoked on relatively few days, and smoked relatively few cigarettes. For example, one out of five students smoked on one or two days during the month before the study, and close to half had smoked on ten or fewer days. In contrast, only one out of five smokers smoked daily. This daily rate is fairly consistent with recent *Monitoring the Future* reports showing that 19% of college smokers smoked daily in 1999, and 17.8% smoked daily in 2000.

This study also determined the quantity of cigarettes smoked, on average, on the days that participants smoked. One out of four smokers smoked only one cigarette on the days that they smoked, and three out of four smoked five or fewer cigarettes. Moreover, only one out of ten students smoked 11-20 cigarettes, and only one participant out of the 255 smokers in the study reported smoking more than a pack on the days that he or she smoked.

Collectively, the findings on the frequency of smoking and the quantity smoked suggest that many college students smoke moderately and occasionally. Therefore, smoking cessation efforts on college campuses should not only target heavy, frequent smokers, but should also target occasional and moderate smokers. What motivates this latter population to quit may be inherently different from what motivates the more frequent, heavy smokers to quit. For example, using a financial appeal may not be an

effective approach with these moderate smokers, because many may only spend around $10.00 a month on cigarettes. Consequently, college health practitioners should find other, more suitable, ways to appeal to these moderate smokers if they intend to motivate them to quit.

Smoking Initiation Results

Currently, 25-30% of college students in that nation smoke. This is more than twice the *Healthy Campus 2010* goal of 12%. Reducing college smoking rates by the year 2010 can be accomplished in one of two ways: (1) either nonsmoking college students must remain smoke-free, or (2) college students who already smoke must quit. This study focused on helping nonsmokers remain smoke-free by investigating smoking initiation among college students. Prior to this study, data were limited that addressed how many college students start smoking in college, when college students are most vulnerable to start smoking, and why college students start smoking. This information is essential not only for the development of effective smoking prevention programs, but also for the wise allocation of limited health promotion resources.

How Many Students Start Smoking in College?

Findings from this study are consistent with previous studies showing that the majority of smoking initiation among college students occurs by the age of 18 years. Among current smokers in this study, 90.1% had smoked their first whole cigarette when they were 18 years old or younger, and 9.9% had smoked their first cigarette when they were 19 years old or older. Wechsler and colleagues (1998) reported similar rates among the current smokers in their sample. They reported that 89% had smoked a whole cigarette for the first time at the age of 18 or younger, and 11% smoked their first cigarette at the age of 19 years or older.

Collecting data by age, however, fails to address how many college students started smoking in college because many college students begin college when they are 18 years old. Findings from this study indicated that 7.3% of the sample had smoked their first whole cigarette during college. Moreover, 9.3% had first smoked on two or more days in any one month; 5.2% had first smoked on 20 or more days in any one month; and 4.3% had first smoked on 30 consecutive days during college. These data are consistent with a study done at Yale University (Debernardo et al., 1999) showing a 5.3% smoking initiation rate among college students. Collectively, these data clearly indicate that fewer than 10% of college students begin smoking during college.

Does this mean that we should abandon smoking prevention efforts on our college campuses? Not necessarily—to assess this question more fairly, the data must be evaluated in a different light. As a whole, smoking initiation rates ranging from 4.3% to 9.3% appear to appear rather insignificant, but when participants who never smoked are excluded from the analyses the picture changes. For example, 25.6% of students who had ever smoked on two or more days in one month did so for the first time during college. Moreover, one-third of students who had ever smoked 20 days/month, and who had smoked on 30 consecutive days, had engaged in this behavior for the first time while in college.

A similar picture emerges when current smokers, rather than ever smokers, are the population of interest. Although 16% of the current smokers in the sample had first smoked a whole cigarette during college, 26% had first smoked on two days in any month during college. Moreover, one-third of the current smokers who had ever smoked on 20 or more days in any month, and one-third of current smokers who had ever smoked

on 30 consecutive days, first reached these smoking frequencies during college. These findings are consistent with a previous report by Wechsler and colleagues (1999). They found that 28% of current smokers had progressed to regular smoking at the age of 19 or older—most likely when they were in college.

Conversely, these smoking initiation percentages among current smokers are inconsistent with those reported by Debernardo and colleagues (1999). In their study of Yale University students, half of the current smokers reported starting to smoke in college. This discrepancy between current smokers' initiation rates in this study and those of Yale students may be attributable to differences in the studies' methodologies. The survey done at Yale University used an email format, whereas this study surveyed students in intact classrooms at five universities. More smokers who had begun smoking in college may have responded to their survey than smokers who had begun smoking prior to college. Another possibility may be that Yale students may not be representative of students from other campuses, and that they have an unusually high percentage of students who start smoking after coming to college.

When Do Most College Student Begin Smoking?

Although the percentage of current smokers in this study who started smoking in college was inconsistent with the percentage in Debernardo's study, findings from both studies indicated that the majority of smoking initiation occurred during the first two years of college. Approximately 80% of the students at Yale University who reported starting to smoke in college began smoking during their freshman or sophomore year. Results of this study confirmed these findings. For example, 89.4% of the students in this study who reported first smoking two or more cigarettes during college started this behavior during their first two years of college.

Other descriptive results from this study further pinpoint when college student tend to begin smoking. These data clearly indicate that the first six months of college is an especially vulnerable time for potential smokers. Among students who had ever smoked on two or more days in any month during college, 56.9% had started smoking during their first six months. Furthermore, 60% had first smoked on 20 days during any one month, and 50% first smoked 30 consecutive days during this time.

Result of smoking initiation behavior among freshmen, sophomores, and juniors, corroborate that freshman year of college is a critical time for potential smokers. For example, 41% of juniors who first smoked on two days during any one month during college reached this frequency of smoking during their first six months of college, and 54% had reached this frequency by the end of their first year of college. Moreover, a total of 72% had first started smoking this often by the end of their second year. The implications of these findings by year in school further support a recommendation to first target prevention efforts to freshmen, and then to sophomores.

Although students who begin smoking in college represent approximately 7-10% of all college students, separating smoking initiation behavior by time in college is useful for several reasons. First, these data pinpoint when the majority of smoking initiation and progression occurs. Second, practitioners can use these results to time their prevention efforts and to wisely use limited resources. Third, these data may help practitioners tailor prevention messages to at-risk audiences, primarily freshmen and sophomores.

Correlations Between Covariates and Smoking Initiation

So far, this chapter has addressed current smoking behavior and smoking initiation results. The percentage of college students in the study who currently smoke, how often, and how much were discussed, and implications were described. Smoking initiation

results revealed that a relatively small percentage of college students begin smoking in college, but much of this behavior occurs during the first two years of college. The first six months of college appears to be a particularly vulnerable time for students.

This chapter will now focus on possible reasons why some college students begin to smoke in college. This section will address the results of the associations between five suspected covariates and the outcome variable (grade point average, parents' smoking status, susceptibility to smoke, alcohol consumption, and living situation). These five variables were not of primary interest in the study; rather, they were measured to be used as control variables if necessary.

Four of the five variables had empirical support that linked them to smoking initiation behavior primarily among a high school population. Three of these variables (grade point average, parents' smoking status, and susceptibility to smoke) have been identified as predicators of smoking initiation among adolescents. Binge drinking during college has been associated with college smoking status. The fifth variable, living situation, did not have empirical support for smoking initiation, however, data were collected showing whether a participant lived alone or with others because of the social nature of the three explanatory variables.

Of these five potential covariates, only susceptibility to begin smoking during freshman year (r =0.40), and alcohol consumption during freshman year (r =0.20), were moderately correlated with smoking initiation. The magnitude of the correlations between the other three suspected covariates (parents' smoking status, grade point average, and living situation) and smoking initiation failed to reach the inclusion criterion of .10 or greater. Two explanations may be offered as to why parents' smoking status

was not influential among this sample. First, findings from the adolescent literature indicate that parents' smoking status is more influential in smoking initiation during early adolescence versus late adolescence. Therefore, if parents were to influence college students' smoking initiation behavior, this most likely would have occurred prior to college. Second, over 95% of the participants did not live with their parents during their freshman year of college, and hence, their parents probably had minimal influence over this behavior.

Like with parental influence, grade point average was included as a potential covariate because of evidence showing a strong association among high school student smoking initiation behavior. One possible reason why GPA was not associated with smoking initiation in this study may be due to a lack of variability among college GPAs when compared to high school GPAs. In this study, 87% of participants reported a first semester GPA of 2.5 or higher; and 65% reported a first semester GPA of 3.0 or higher. The lack of spread in the GPA scores among this sample could have undoubtedly affected this result. Likewise, a lack of variability of participants' living situation probably influenced the results of the correlation between this variable and the outcome variable because nine out of ten participants lived with other students during their freshman year of college.

Research Question Results

The three explanatory variables examined in this study were chosen based on social cognitive theory and empirical support showing an association with cigarette smoking initiation among middle and high school populations. Multiple logistic regression analysis was used to answer each of the three research questions. Only one of

the three explanatory variables proved to be significant at a 0.05 level. The results for each question are discussed below.

Research Question One

Does the perceived prevalence of peers' smoking behavior during freshman year of college increase the risk of smoking initiation during the first two years of college?

Perceived prevalence of peers' smoking behavior was categorized as a personal determinant within the social cognitive theory framework. Furthermore, a fair amount of evidence was presented linking this variable to smoking initiation among adolescent populations. Although perceived prevalence of peers' smoking behavior has both theoretical and empirical support, the results from this study showed that it was not a significant factor of smoking initiation among college students.

The empirical support for this variable comes predominantly from children and adolescent populations. No study thus far has linked this variable influences smoking initiation behavior among a college population. Although much evidence exists showing that college students overestimate the percentage of college students who smoke, none has attempted to use inferential statistics to link this misperception with smoking initiation behavior. Thus one plausible explanation for a lack of significance for this variable among a college population is that this finding is valid.

In contrast, another possible explanation may be that this result is not valid because this variable could have been inaccurately measured. Of all items on the 77-item survey, students expressed the most confusion about items measuring perceived prevalence of peers' smoking behavior. Several students' written comments during instrument development expressed difficulty in "guessing" the number of peers' who smoked during freshman year or questioned the accuracy of their estimations. So although the reliability

coefficient of this scale was adequate (0.88), future investigation of how to best measure this variable may be warranted.

Research Question Two

Does the smoking-related behavior of friends and roommates during freshman year of college increase the risk of smoking initiation during the first two years of college?

Findings from a multiple logistic regression analysis indicated that the smoking-related behavior of friends and roommates was a significant factor of smoking initiation during the first two years of college. This relationship remained even when controlling for susceptibility to smoke and for alcohol consumption during freshman year. Due to the strong theoretical and research support for the influence of this variable on smoking initiation among high school students, this finding was not surprising.

Smoking-related behavior of friends and roommates had the strongest theoretical support among the three explanatory variables. It was classified not only as an environmental determinant of smoking initiation within social cognitive theory, but it also incorporated two key concepts within the theory—observational learning and direct reinforcement. Seeing others smoke is a form of observational learning, or modeling, and according to social cognitive theory, increases the likelihood of similar behavior. The smoking status for four types of relationships (friends, roommates, sorority sisters/fraternity brothers, and romantic partners) was part of how this variable was measured, and the score increased as the number of friends who smoked increased.

In addition to observational learning, this variable also incorporated the concept of direct reinforcement by measuring friends' offers and encouragement to begin smoking. Like observational learning, as direct reinforcement increases for a particular behavior, the likelihood of the behavior occurring or continuing also increases. Eight out of the

twelve items on this scale measured either friends' offers to smoke or friends' encouragement to smoke. Hence, a participant who had received many offers and encouragement to smoke would have a higher composite score for this variable than a participant who had received relatively few offers to smoke.

In addition to strong theoretical support, friends' smoking-related behavior had the strongest empirical support among the three explanatory variables. Longitudinal studies of high school students provide strong evidence linking friends' behavior and smoking initiation. Furthermore, in a small, cross-sectional study of college students, participants who were susceptible to smoke in the upcoming year had indicated that friends' smoking behavior might motivate them to start smoking. They selected this as a potential reason to begin smoking more frequently than image, stress level, depression, or expression of independence.

This finding confirms that smoking initiation is, at least in part, an interpersonal phenomenon, and therefore, prevention efforts should address interpersonal communication issues embedded within the behavior. Rather than focusing on the health consequences or dangers or costs of smoking, interventions should concentrate on the development of resistance or refusal skills. Health communication theory and planning models would be especially useful in developing these types of interventions. For example, a mass communication theme like "Don't let your 'friends' get you hooked on cigarettes" could be tested on a college population for appeal and effectiveness.

Research Question Three

Does sociability during freshman year of college increase the risk of smoking initiation during the first two years of college?

A limited number of studies provide evidence that sociability influences smoking initiation among young people. Two longitudinal studies found extroversion to be positively associated with smoking initiation among adolescents of both genders; whereas, another found sociability to be predictive of smoking initiation only among adolescent girls. A study of male and female college students indicated that extroversion was positively associated with smoking initiation.

Although the association between sociability and smoking initiation has modest empirical support among adolescents, the results from this study indicated that it is not a significant factor of smoking initiation among college students. Two explanations may be plausible for this finding. First, the finding may be valid. Of the three explanatory variables in the study, sociability has the weakest amount of evidence linking it to smoking initiation. Furthermore, these findings are mixed about its influence for each gender. One study showed a significant association for both genders, whereas another found such an association only among girls. Second, this finding may be invalid due to a lack of variability of sociability scores for this population. The participants, as a whole, were a fairly social which is not surprising considering the nature of undergraduate student life and culture. Further investigation of this variable among college students is needed to corroborate this particular finding.

Strengths and Weaknesses

The purpose of this study was to investigate cigarette smoking initiation behavior among a college population. Prior to this investigation, data was limited and questions remained about the size of this problem on college campuses. Furthermore, little was known about the reasons why college students might start to smoke during their college years. Like any study, this investigation had both strengths and weaknesses.

One strength of this study was expanding the research knowledge in this area by providing information on how many students start smoking in college and when they are most vulnerable to begin. Data for smoking initiation were collected by age as well as point of time in college. Findings by age were consistent with those found in a large, national study. Results also confirmed a previous report indicating that smoking initiation is most likely to occur during the first two years of college. This study suggests that the first year of college is an especially vulnerable time to start smoking. These results have practical implications for anti-smoking prevention efforts. Health practitioners can apply them to at-risk groups and can strategically time the delivery of anti-smoking interventions. Given that health promotion resources are limited, this information is valuable.

Another contribution of this study was investigating several reasons why college students may begin to smoke. Results suggest that sociability, perceptions of peers' smoking behavior, GPA, living situation, and parents' smoking status are not significant factors in starting to smoke in college. In contrast, friends' behavior, susceptibility to smoke during freshman year, and alcohol consumption during freshman year were significantly associated with starting to smoke during freshman or sophomore year of college. These findings serve as a starting point for more research on this issue and for application to current campus smoking prevention efforts.

Although this study had several strengths, its findings must be interpreted in the context of several limitations. First, the study was based on self-reported data and required participants to recall information from their past. The extent to which recall bias influenced these findings is unknown. Second, the data are cross-sectional, and therefore,

certainty about the direction of causation between the significant explanatory variable and the outcome variable cannot be confirmed. What cannot be determined from these data are whether persons who initiated smoking in college did so because their friends' behavior influenced them, or whether these "smoking initiators" sought friends and roommates who tended to smoke, and subsequently, offered and encouraged them also smoke. Third, the sample was a convenience sample, rather than a random sample. This limits the study's findings to its sample and not a broader college population.

Conclusions

This study examined whether three social factors affected cigarette smoking initiation among college undergraduate students: (1) perceived prevalence of peers' smoking behavior, (2) smoking-related behavior of friends and roommates, and (3) sociability. Moreover, this study determined the percentage of college students who began smoking in college, identified at-risk populations, and pinpointed when college students were most vulnerable to begin smoking. Results from this study indicated that 26.8% of participants smoked during the 30 days preceding the survey. Unfortunately, this falls far short of the *Healthy Campus 2010* goal of 12%, and consequently, confirms the need for anti-smoking efforts on college campuses.

A total of 9.3% of all participants began smoking cigarettes in college, with many starting to smoke, and progressing in frequency, during their first two years of college. These data indicate that the first six months are a particularly vulnerable time for potential smokers. The specificity of these findings can help college health practitioners implement their smoking prevention efforts at the most appropriate time during the academic year.

Only two of the five suspected covariates were moderately correlated with smoking initiation during the first two years of college. These covariates included susceptibility to smoke during freshman year and alcohol consumption during freshman year. In contrast, grade point average during freshman year, parents' smoking status prior to freshman year, and students' living situation during freshman year failed to be moderately correlated with smoking initiation during the first two years of college. Although susceptibility and alcohol consumption were not the variables of interest for this study, their relationship to smoking initiation warrants further research.

Of the three explanatory variables of this study, smoking-related behavior of friends and roommates was the only significant factor of cigarette smoking initiation during college. This relationship remained even after controlling for the other two explanatory variables and the two covariates. In contrast, perceived prevalence of peers' smoking behavior, as well as sociability, were not significantly associated with smoking initiation during the first two years of college.

Recommendations

Although this study had some limitations, its findings can guide future practice and research. The following recommendations are offered to help practitioners implement anti-smoking initiatives for college students and for researchers who are interested in investigating cigarette smoking initiation among a college population.

Recommendations for College Health Practice

Based on this study's findings, the following recommendations are provided for college health practice.

1. Develop anti-smoking interventions specifically (a) tailored to susceptible freshmen, (b) designed to address friends' behaviors and influence on the smoking initiation process, (c) designed to help susceptible freshmen make a firm

commitment not to smoke, and (d) implemented within six months from when the majority of freshmen begin college, typically during fall semester.

2. Address the misconception that once individuals graduate from high school, they are no longer vulnerable to start smoking.

3. Use *The College Student Smoking Survey*, in part or in whole, to identify the number and characteristics of college students who are likely to begin smoking.

4. Apply the findings from this study to inform decisions about the relative importance of this health issue on college campuses and the amount of resources to allocate to smoking prevention.

5. Create health interventions and messages that address the relationship between cigarette smoking initiation and alcohol consumption.

Recommendations for Future Research

In addition to recommendations for college health practices, the following recommendations are provided for research on smoking initiation among undergraduate college students.

1. Replicate this study using a longitudinal research design and a random sample.

2. Conduct both quantitative and qualitative studies about the nature of friends' offers and encouragement to smoke.

3. Conduct research on the effectiveness of an anti-smoking interventions targeted to, and implement for, traditional-aged freshmen during their first six months of college.

4. Investigate the nature of alcohol consumption and smoking initiation during the first semester of college.

5. Conduct quantitative and qualitative research on susceptibility to start smoking during freshman year of college.

This chapter focused on a discussion of a multi-campus study designed to determine how many traditional-aged, undergraduate students start smoking cigarettes in college, when they are most vulnerable to begin, and whether three social factors put them at greater risk to start smoking in college. These findings expand the limited body of literature in the area of smoking initiation among college students and should be

corroborated by future research. In the mean time, however, college health practitioners can use these findings to guide the development and delivery of their smoking prevention efforts. Such efforts could help at-risk students remain smoke-free during their college years, and ultimately, could help to achieve the *Healthy Campus 2010* goal of reducing the percentage of college smokers to 12% or less by the year 2010.

APPENDIX A
LIST OF EXPERT PANEL MEMBERS

1. Dr. Jill Varnes
   Professor, Department of Health Science Education
   University of Florida
   PO Box 118210
   Gainesville, FL 32611-8210

2. Dr. William Chen
   Department Chair, Department of Health Science Education
   University of Florida
   PO Box 118210
   Gainesville, FL 32611-8210

3. Dr. Sadie Sanders
   Visiting Professor, Department of Health Science Education
   University of Florida
   PO Box 118210
   Gainesville, FL 32611-8210

4. Dr. Phillip Barkley
   Director, Student Health Care Center
   University of Florida
   PO Box 117500
   Gainesville, FL 32611-7500

5. Joanne Auth
   Former Coordinator for Education/Training Programs
   Student Health Care Center
   University of Florida
   PO Box 117500
   Gainesville, FL 32611-7500

6. Dr. Jane Jones
   Professor, School of Health Promotion and Human Development
   University of Wisconsin-Stevens Point
   Stevens Point, WI 54481

APPENDIX B
INSTITUTIONAL REVIEW BOARD
APPLICATIONS AND APPROVAL LETTERS

1. **TITLE OF PROTOCOL:**

Social Factors of Cigarette Smoking Initiation among College Undergraduate Students

2. **PRINCIPAL INVESTIGATOR(s):**

Jane Emmerée, M.Ed., CHES, Ph.D. Candidate, Department of Health Science Education, Box 118210, Gainesville, FL 32611-8210, phone: (352) 392-0583, ext. 1409, email: emmeree@ufl.edu, fax: 352-392-1909.

3. SUPERVISOR:

Jill Varnes, Ed.D., C.H.E.S., Professor, Dept. of Health Science Education, Box 118210, Gainesville, FL 32611-8210, phone: (352) 392-0583 x 1309 or 392-2404, email: varnes@aa.ufl.edu, fax: 352-392-1909.

4. DATES OF PROPOSED PROTOCOL:

From September 30, 2002 To September 30, 2003

5. SOURCE OF FUNDING FOR THE PROTOCOL:

Jane Emmerée (researcher). Application for funding will be submitted on October 4, 2002 for the Patrick J. Bird Dissertation Award, College of Health and Human Performance. Award amount: $1,000.

6. SCIENTIFIC PURPOSE OF THE INVESTIGATION:

This study will (1) examine the relationship between social factors and cigarette smoking initiation during college, (2) establish baseline smoking initiation rates for college students, and (3) contribute to the professional literature regarding smoking initiation among undergraduate students.

7. DESCRIBE THE RESEARCH METHODOLOGY IN NON-TECHNICAL LANGUAGE.

Three phases of data collection are proposed for the study: (1) an initial pilot stage, (2) a larger pilot study, and (3) the final administration. The researcher will develop a survey under the direction of Dr. Randall Penfield, Assistant Professor in the Dept. of Educational Psychology, College of Education. Two pilot studies will be conducted to ensure the validity and reliability of the instrument. Ten University of Florida undergraduate students will participate in the initial pilot study. They will receive a cover letter and a copy of the survey. They will provide quantitative and qualitative feedback about survey construction, clarity and wording of items, layout, and length. In addition, 6 content experts in the areas of health education, social psychology, college health, and/or cigarette smoking will provide input during the initial pilot study. Content expert feedback will be submitted anonymously.

The survey will be revised based on the initial pilot study data and will then be administered to approximately 300 University of Florida undergraduate students. The survey administration protocol during this second pilot study will be identical to that of the final survey. All participants will receive a cover letter with a copy of the survey. Item response theory and factor analysis will be used to identify questions with the strongest psychometric properties. These questions will be retained for the final instrument.

Approximately 1,250 undergraduates will participate in the final study. Instructors at five public universities will distribute approximately 250 surveys in classes containing a high proportion of first and second year students. Instructors will receive a cover letter, a protocol for the distribution and collection of survey materials, and the survey materials. Student participants will receive a cover letter, the survey, and a scan tron form. Participants should complete the survey in less than 15 minutes. To ensure anonymity, the participants will be instructed to refrain from putting their name on their answer form. They will complete the survey in class and will return it directly to their instructor. Instructors will mail all surveys to the researcher.

8. POTENTIAL BENEFITS AND ANTICIPATED RISK:

The 10 undergraduate participants in the initial pilot study will receive a long distance phone card, valued at about $2.00. Participants in the second pilot study and the final study will not receive compensation. Participants in all three phases of the study will be offered a copy of the study results upon request. All three phases of this study involve no more than minimal risk. Participation is voluntary and all participants will remain anonymous.

9. DESCRIBE HOW PARTICIPANT(S) WILL BE RECRUITED, THE NUMBER AND AGE OF THE PARTICIPANTS, AND PROPOSED COMPENSATION (if any):

Participants in any phase of this study must be at least 18 years old. Individuals will participate in only one phase of the study

- Initial Pilot Study: Five female and five male sophomore students will be recruited from one section of the Personal and Family Health class at the University of Florida. They will receive a long distance phone card for their participation and will be offered a copy of the study results.
- Larger Pilot Study: Three hundred undergraduate students will be recruited from all sections of the Personal and Family Health course and the Human Physiology course at the University of Florida These participants will not receive compensation, but will be offered a copy of the study results.
- Final Study: Instructors at 5 public universities (University of Florida, University of Georgia, Texas A & M, University of Alabama, and Ball State University) will be recruited to distribute approximately 250 surveys to undergraduate students. Classes will be selected with a high proportion of first and second year students. No compensation will be awarded for participation, however, participants will be offered a copy of the results once the project is completed.

10. DESCRIBE THE INFORMED CONSENT PROCESS. INCLUDE A COPY OF THE INFORMED CONSENT DOCUMENT (if applicable).

Participation will be voluntary. Student participants will receive a cover letter (see attached) explaining the study and requesting their assistance.

_____

Principal Investigator's Signature

_____

Supervisor's Signature

I approve this protocol for submission to the UFIRB:

_____

Dept. Chair/Center Director Date

UNIVERSITY OF FLORIDA

Institutional Review Board

98A Psychology Bldg.
PO Box 112250
Gainesville, FL 32611-2250
Phone: (352) 392-0433
Fax: (352) 392-9234
E-mail: irb2@ufl.edu
http://rgp.ufl.edu/irb/irb02

DATE: 4-Oct-2002

TO: Ms. Jane Emmeree
PO BOX 118210
Campus

FROM: C. Michael Levy, Ph.D, Chair
University of Florida
Institutional Review Board 02

SUBJECT: **Approval of Protocol #2002-U-789**

TITLE: Social Factors of Cigarette Smoking Initiation among College Undergraduate Students

SPONSOR: Patrick J. Bird Dissertation Award

I am pleased to advise you that the University of Florida Institutional Review Board has recommended approval of this protocol. Based on its review, the UFIRB determined that this research presents no more than minimal risk to participants. Given your protocol, it is essential that you obtain signed documentation of informed consent from each participant. Enclosed is the dated, IRB-approved informed consent to be used when recruiting participants for the research.

If you wish to make any changes to this protocol, including the need to increase the number of participants authorized, you must disclose your plans before you implement them so that the Board can assess their impact on your protocol. In addition, you must report to the Board any unexpected complications that affect your participants.

If you have not completed this protocol by 2-Oct-2003, please telephone our office (392-0433), and we will discuss the renewal process with you. It is important that you keep your Department Chair informed about the status of this research protocol.

CML:dl

1. **TITLE OF PROTOCOL: Revisions to Approval Number: #2002-U-789**

Social Factors of Cigarette Smoking Initiation among College Undergraduate Students

2. **PRINCIPAL INVESTIGATOR(s):**

Jane Emmerée, M.Ed., CHES, Ph.D. Candidate, Department of Health Science Education, Box 118210, Gainesville, FL 32611-8210, phone: (352) 392-0583, ext. 1409, email: emmeree@ufl.edu, fax: 352-392-1909.

3. SUPERVISOR:

Jill Varnes, Ed.D., C.H.E.S., Professor, Dept. of Health Science Education, Box 118210, Gainesville, FL 32611-8210, phone: (352) 392-0583 x 1309 or 392-2404, email: varnes@aa.ufl.edu, fax: 352-392-1909.

4. DATES OF PROPOSED PROTOCOL:

From September 30, 2002 To September 30, 2003

5. SOURCE OF FUNDING FOR THE PROTOCOL:

Jane Emmerée (researcher). Application for funding will be submitted on October 4, 2002 for the Patrick J. Bird Dissertation Award, College of Health and Human Performance. Award amount: $1,000.

6. SCIENTIFIC PURPOSE OF THE INVESTIGATION:

This study will (1) examine the relationship between social factors and cigarette smoking initiation during college, (2) establish baseline smoking initiation rates for college students, and (3) contribute to the professional literature regarding smoking initiation among undergraduate students.

7. DESCRIBE THE RESEARCH METHODOLOGY IN NON-TECHNICAL LANGUAGE.

Three phases of data collection are proposed for the study: (1) an initial pilot stage, (2) a larger pilot study, and (3) the final administration. The researcher will develop a survey under the direction of Dr. Randall Penfield, Associate Professor in the Dept. of Educational Psychology, College of Education. Two pilot studies will be conducted to ensure the validity and reliability of the instrument. Ten University of Florida undergraduate students will participate in the initial pilot study. They will receive a cover letter and a copy of **one of two versions of the survey**. They will provide quantitative and qualitative feedback about survey construction, clarity and wording of items, layout, and length. In addition, 6 content experts in the areas of health education, social psychology, college health, and/or cigarette smoking will provide **input on all potential items** during the initial pilot study. Content expert feedback will be submitted anonymously.

Two versions of the survey will be developed based on the initial pilot study data **and each will be administered to approximately 400** University of Florida undergraduate students. The survey administration protocol during this second pilot study will be identical to that of the final survey. All participants will receive a cover letter with a copy **of one of the two versions** of the survey.

Item response theory and factor analysis will be used to identify questions with the strongest psychometric properties. These questions will be retained for the final instrument.

Approximately **1,850 – 2,000** undergraduates will participate in the final study. Instructors at five public universities will distribute **150-600** surveys in classes containing a high proportion of first and second year students. Instructors will receive a cover letter, a protocol for the distribution and collection of survey materials, and the survey materials. Student participants will receive a cover letter, the survey, **a pencil**, and a scan tron form. Participants should complete the survey in less than 15 minutes. To ensure anonymity, the participants will be instructed to refrain from putting their name on their answer form. They will complete the survey in class and will return it directly to their instructor. Instructors will mail all surveys to the researcher.

8. POTENTIAL BENEFITS AND ANTICIPATED RISK:

The 10 undergraduate participants in the initial pilot study will receive a long distance phone card, valued at about $2.00. Participants in the second pilot study and the final study will not receive compensation. Participants in all three phases of the study will be offered a copy of the study results upon request. All three phases of this study involve no more than minimal risk. Participation is voluntary and all participants will remain anonymous.

9. DESCRIBE HOW PARTICIPANT(S) WILL BE RECRUITED, THE NUMBER AND AGE OF THE PARTICIPANTS, AND PROPOSED COMPENSATION (if any):

Participants in any phase of this study must be at least 18 years old. Individuals will participate in only one phase of the study

- Initial Pilot Study: Five female and five male sophomore students will be recruited from one section of the Personal and Family Health class at the University of Florida. They will receive a long distance phone card for their participation and will be offered a copy of the study results.
- Larger Pilot Study: **Eight-**hundred undergraduate students will be recruited from all sections of the Personal and Family Health course and **two** sections of the Human Physiology course at the University of Florida These participants will not receive compensation, but will be offered a copy of the study results.
- Final Study: Instructors at 5 public universities (University of Florida, University of Georgia, Texas A & M, University of Alabama, and Ball State University) will be recruited to distribute **150-600** surveys to undergraduate students. Classes will be selected with a high proportion of first and second year students. No compensation will be awarded for participation, however, participants will be offered a copy of the results once the project is completed.

10. DESCRIBE THE INFORMED CONSENT PROCESS. INCLUDE A COPY OF THE INFORMED CONSENT DOCUMENT (if applicable).

Participation will be voluntary. Student participants will receive a cover letter (see attached) explaining the study and requesting their assistance.

_____

Principal Investigator's Signature

_____

Supervisor's Signature

I approve this protocol for submission to the UFIRB:

_____

Dept. Chair/Center Director Date

UNIVERSITY OF FLORIDA

Institutional Review Board

98A Psychology Bldg.
PO Box 112250
Gainesville, FL 32611-2250
Phone: (352) 392-0433
Fax: (352) 392-2433
Email: **irb2@ufl.edu**
http://rgp.ufl.edu/irb/irb02

October 15, 2002

MEMORANDUM

To: Ms. Jane Emmeree
PO Box 118210
Campus

From: C. Michael Levy, Ph.D., Chair CML/dl
University of Florida Institutional Review Board

Subject: UFIRB Protocol # 2002-U-789
Social Factors of Cigarette Smoking Initiation among College Undergraduate Students

Funding: Patrick J. Bird Dissertation Award

The request, received October 11, 2002 to revise the above referenced protocol has been reviewed and approved. Approval of this protocol runs through October 2, 2003. Any further revisions to this protocol, including the need to increase the number of participants authorized must be reviewed by the Board prior to implementation.

CML:dl

(increase number of participants; created two versions of pilot instrument)

IRB Project # : _____

UNIVERSITY OF ALABAMA
INSTITUTIONAL REVIEW BOARD FOR THE PROTECTION OF HUMAN SUBJECTS

REQUEST FOR APPROVAL OF RESEARCH INVOLVING HUMAN SUBJECTS

I. Identifying information (to be completed by Principal Investigator):

Principal Investigator(s): Jane Emmerée, M.Ed.
If PI is a student, Faculty Advisor: Dr. James Eddy, Dept. of Health Science, Univ. of Alabama
Department/College: University of Florida, Dept. of Health Science Education
Address: PO Box 118210, Gainesville, Florida, 32611-8210
Telephone: 352-392-0583, x. 1409
FAX: 352-392-1909
E-mail: emmeree@ufl.edu
Title of Research Project: Social Factor of Cigarette Smoking Initiation Among College Undergraduate Students

Date Submitted: November 15, 2002
Funding Source: I received a $1,000 award from my college to offset costs for this project.

Type of Proposal: __X__New _____Revision or supplemental material _____Renewal (attach Renewal Application)

II. NOTIFICATION OF IRB ACTION (to be completed by IRB):

Type of Review: _____Full board _____Expedited

IRB Action:

_____Approved—this proposal complies with University and federal regulations for the protection of human subjects.
Approval is effective until the following date: _____

Items approved: _____Research protocol (dated_____)
_____Informed consent (dated_____)
_____Recruitment materials:_____
_____Other:_____

_____Revisions requested—see attached pages for needed revisions.

_____Disapproved—see attached paged for reasons for disapproval.

Approval signature _____ Date _____

Revised 4/15/01

TITLE OF RESEARCH PROJECT

Social Factors of Cigarette Smoking Initiation Among College Undergraduate Students

PROCEDURES

Purpose and Design: This study will (1) examine the relationship between social factors and cigarette smoking initiation during college, (2) establish baseline smoking initiation rates for college students, and (3) contribute to the professional literature regarding smoking initiation among undergraduate students. A survey will be used to collect data.

Location of Research: 5 public universities: University of Florida, University of Georgia, Texas A & M, University of Alabama, and Ball State University. On October 2, 2002, IRB approval was obtained from the University of Florida (see attached letter). An IRB application has been submitted to each of the other four universities.

Recruitment and Selection of Participants:

Undergraduate classes with a large proportion of freshman and sophomore students have been selected (since data indicate that the vast majority of undergraduates who begin to smoke in college, start their freshman or sophomore year). Instructors have given the PI permission to access their classes, pending approval of their IRB.

Selected classes are electives or qualify as general education requirements for undergraduates at each university. These classes also have historically contained males and females, as well as students of various races and academic majors. Between 300-500 students will be surveyed at each university.

Detailed Procedures:

The Principal Investigator will send Dr. Eddy (the UA Faculty Research Advisor) survey materials and a protocol for data collection. He will train 2-3 staff or graduate students to assist with survey administration. No person involved in administering the survey will be an instructor in a class to be surveyed.

Study participants will receive two copies of the informed consent letter (see attached), a survey booklet (see attached), a pencil, and a scantron form. A member of the survey staff will read the informed consent cover letter to the potential participants. Students who choose to participate will sign, date and return one of the two copies of the informed consent letter. They will keep the other copy for their records. To ensure anonymity, the participants will be instructed to refrain from putting their name or social security number anywhere on the survey booklet or on their answer form. The informed consent forms will be collected separately from the scantron forms so participants' identities cannot be linked to their responses. Participants will complete the survey during class time in about 10-15 minutes. Survey assistants will return all materials to Dr. Eddy who, in turn, will send all materials back to the Principal Investigator.

Materials: The Principal Investigator is currently in the process of developing and pilot testing the survey (see attached). Dr. Randall Penfield, a psychometrician and Assistant Professor in the Dept. of Educational Psychology at the University of Florida, is overseeing the instrument development process. Two of three stages of the pilot testing process are completed. During the first stage, 6 content experts in the areas of health education, social psychology, college health, and/or cigarette smoking provided input on a list of potential survey items. A first draft was created based on the expert feedback. Then, nine University of Florida undergraduate students provided qualitative feedback about survey construction, clarity and wording of items, layout, and length. These students identified problems and offered solutions. The survey was revised and is currently being piloted tested with approximately 750 University of Florida undergraduate students. Item response theory and factor analyses will be used to identify questions from the pilot version with the strongest psychometric properties. These questions will be retained for the final instrument. The final version is expected to be shorter than the pilot version and will be ready at the beginning of December.

Debriefing: Deception will not be part of this research, and therefore, no debriefing will be conducted.

INFORMED CONSENT

Instructions: Potential participants will receive two copies of the informed consent letter, the survey booklet, a scantron form, and a pencil. The informed consent letter will be read aloud to the potential participants explaining all of the required elements. Students who choose to participate will be asked to sign and date one copy of the letter and to keep the other copy for their records. Consent forms will be collected separately from the answer forms. Students will be told refrain from putting their name or SSN anywhere on the survey booklet or their answer form so that their responses will remain anonymous.

Copy of letter: See attached.

Children: No participant will be under the age of 18 years.

RISKS AND BENEFITS

Risks: No physical or economic risks, and no more than minimal psychological or social risks, are anticipated for this study. Participants may potentially feel anxious or guilty when asked about cigarette smoking behavior because of the negative social stigma of this behavior. Participants may also feel anxious about ten questions pertaining to drinking behavior and intoxication status because of the nature of these questions and/or because some participants may be too young to legally drink alcohol (see questions 20-22, 35, 42-47).

Pilot study data indicate minimal harm to participants. Approximately 600 students in the pilot stage of this study were invited to give anonymous, 'general' comments and suggestions about the survey. Of the 46 who responded, only one mentioned feeling "sort of guilty" about answering the questions about cigarette smoking. No comments were received about the questions about alcohol consumption or intoxication.

Precautions: The researcher intends to minimize the possibility of negative/anxious feelings by ensuring anonymity and notifying participants verbally, and in writing, that they do not need to answer any question that they do not wish to answer. They will also be informed that they may withdraw their participation at any time without any consequence.

Benefits: All potential participants will be offered a copy of the study results. Otherwise, no compensation or benefits will be awarded. Participants will be informed verbally, and in writing, that the study is not part of their grade for the class and that their choice to participate or refrain from participation will not affect their grade in any way.

IRB Project # : DCJ-02-21

UNIVERSITY OF ALABAMA
INSTITUTIONAL REVIEW BOARD FOR THE PROTECTION OF HUMAN SUBJECTS

REQUEST FOR APPROVAL OF RESEARCH INVOLVING HUMAN SUBJECTS

I. Identifying information (to be completed by Principal Investigator):

Principal Investigator(s): Jane Emmerée, M.Ed.
If PI is a student, Faculty Advisor: Dr. James Eddy, Dept. of Health Science, Univ. of Alabama
Department/College: University of Florida, Dept. of Health Science Education
Address: PO Box 118210, Gainesville, Florida, 32611-8210
Telephone: 352-392-0583, x. 1409
FAX: 352-392-1909
E-mail: emmeree@ufl.edu
Title of Research Project: Social Factor of Cigarette Smoking Initiation Among College Undergraduate Students

Date Submitted: November 15, 2002
Funding Source: I received a $1,000 award from my college to offset costs for this project.

Type of Proposal: __X__ New _____ Revision or supplemental material _____ Renewal (attach Renewal Application)

II. NOTIFICATION OF IRB ACTION (to be completed by IRB):

Type of Review: _____ Full board X Expedited

IRB Action:

X Approved—this proposal complies with University and federal regulations for the protection of human subjects.
Approval is effective until the following date: 11.21.03

Items approved:
X Research protocol (dated 11.21.02)
X Informed consent (dated 11.21.02)
_____ Recruitment materials: _____
_____ Other: _____

_____ Revisions requested—see attached pages for needed revisions.

_____ Disapproved—see attached paged for reasons for disapproval.

Approval signature Dennis C. James Date 11.21.02

Revised 4/15/01

Revised: May 1, 2000
TAMU #_____
(for IRB use only)

Texas A&M University
IRB Application
Protocol for Human Subjects in Research

PART 1: Summary Cover Sheet ☒ **If Requesting Exempt Status Check Here**(See Page 2)

Principal Investigator NameJane Emmeree Faculty/Staff ☐ Graduate Student ☒
Department:Health Science Education, University of Florida, PO Box 118210, Gainesville, FL 32611-8210
Mail StopNA Phone 352-392-0583 x 1409 Email:emmeree@ufl.edu Fax: 352-392-1909
Name of Graduate Committee Chair/Research Advisor if Graduate Student Dr. Steve Dorman
Department Professor and Dept. Head, Health and Kinesiology, TAMU Mail Stop 4243 Phone 845-3124

Project Title Social Factors of Cigarette Smoking Initiation Among College Undergraduate Students
Funding Agency None
Objective Estimate of Risk to Subject: ☐ None ☒ Low ☐ Moderate ☐ High
Existing Documents No Existing Specimens No
Gender of subjects: ☐ Male ☐ Female Both ☒ Age(s): 18 or older Total Participants (est.): 500 at TAMU

Location of Research University of Florida; Texas A&M; University of Alabama; University of Georgia; and Ball State

Source of Subjects:
- ☐ Subject Pool(_____)
- ☒ Other Texas A&M Students
- ☐ Community
- ☐ Prisons
- ☐ School Teacher/Administrator
- ☒ Other Please specify classes

Subject Recruitment:
- ☐ Direct Person-to person contact
- ☐ Telephone Solicitation (Attach a script)
- ☐ Newspaper Ad (Attach a copy)
- ☐ Posted Notices (Attach a copy)
- ☐ Letter (Attach a copy)
- ☒ Other (Please describe) classes

Compensation Yes ☐ No ☒ (Attach payment schedule) Research/Course Credit Yes ☐ No ☒
Deception Yes ☐ No ☒ (Attach debriefing form if yes)

Invasive or Sensitive Procedures: Yes ☐ No ☐
- ☐ Blood Samples
- ☐ Physical Measurements (electrodes, etc.)
- ☐ Other (Specify
- ☐ Urine Samples
- ☐ Stress Exercise
- ☐ Review of Medical/Pysch. Records
- ☐ rDNA

Sensitive Subject Matter: Yes ☒ No ☐
- ☒ Alcohol, Drugs
- ☐ Depression/Suicide
- ☐ Learning Disability
- ☐ Abortion, AIDS/HIV, Sex
- ☐ Psychological Inventory
- ☐ Other please specify

Use of Video ☐ or Audio tapes ☐ (N/A)
If yes, answer the following:
Retained Yes ☐ No ☐
Retained/Length of Time _____
Destroy/Erase Yes ☐ No ☐
Other (explain) _____
Use specified in consent form? Yes ☐ No ☐
Designate who will use or have access to tapes:

Provisions for Confidentiality/Anonymity
- ☒ Replies Coded
- ☒ Secure Storage
- ☒ Anonymous Response **OR**
- ☐ Confidential Response

(Cannot be both anonymous & confidential)

Location Where Signed Consent Forms Will be Filed: In a locked desk in the PI's office.
(Consent forms must be kept on file for 3 years after the completion of the project).*(It is best to keep the forms in a campus office in a locked file cabinet.)*
Do you have any relationship with any or all of the subjects, other than your investigator role? ☐ Yes ☒ No.
If "Yes," you must explain in the source of subjects section and explain how you will avoid any type of coercion. (Doctor-patient, teacher-student, counselor-student, etc.)

Revised: May 1, 2000

REQUEST FOR EXEMPTION from full IRB review

Some research projects involving human subjects are exempt from full review by the IRB. See the attached sheet on research categories exempt from full IRB review. (*Sensitive topics and subjects such as children or minors, pregnant women and prisoners are not considered for exempt research).*

Basis for Exemption [Please refer to attached "Categories Exempt From Full IRB Review."]
(Do not check unless requesting an exemption from full IRB review.)

- ☐ Established educational settings/normal educational practices (a letter of approval from a school official must be obtained and submitted to the IRB before the study can be conducted)(children or minors are not exempt)
- ☐ Use of educational anonymous tests (cognitive, diagnostic, aptitude, advancement; **attach copy**).
- ☒ Survey or interview procedures, [**unless** identifying subjects places them at legal or personal risk, and unless survey or procedures deal with sensitive matters of personal behavior]
- ☐ Observations of public behavior [**unless** identifying subjects places them at legal or personal risk, and unless observations deal with sensitive matters of personal behavior]
- ☐ Anonymous collection or study of existing documents, records, pathological, or diagnostic specimens, which are without any identifiers or codes.
- ☐ Evaluation of agencies and programs for administrative purposes where there was no deviation from standard practice.
- ☐ Taste and food quality evaluation and consumer acceptance studies.

Abstract:

Please provide a brief statement, in lay terminology, outlining the purpose of this study. *(Why you are doing this research project, and what you propose to learn.)* This study will (1) examine the relationship between social factors and cigarette smoking initiation during college, (2) establish baseline smoking initiation rates for college students, and (3) contribute to the professional literature regarding smoking initiation among undergraduate students.

Revised: May 1, 2000

PART II: Protocol Format for use of Human Subjects in Research

(This begins page 3 of the application)

PART A.

(After Reading the Belmont Report,) **please include the following statement:**

I have read the Belmont Report, "Ethical Principles and Guidelines for the Protection of Human Subjects of Research" and subscribe to the principles it contains. In light of this Declaration, I present for the Board's consideration the following information, which will be explained to the subject about the proposed research:

_____ _____

Jane Emmerée Date

1. SELECTION AND SOURCES OF SUBJECTS

a. Dr. Nikki VanHightower has agreed to allow survey staff to come to 2 sections of her Poli Sci 207 course. This class was selected because of its high proportion of first and second year students of various races and academic majors. Approximately 500 male and female undergraduate students will be asked to participate.
b. Students in attendance on the day of the survey will have a choice to participate.
c. Participants must be 18 years old or older. Participants will attest that they are at least 18 years old on their informed consent letter.
d. No compensation will be awarded for participation, however, participants will be offered a copy of the results once the project is completed.
e. The survey will be administered in the classroom and will take participants between 10-15 minutes to complete.
f. To ensure anonymity, the participants will be told to refrain from putting their name or social security number anywhere on the survey booklet or scantron form. Their signed informed consent letter will be collected separately from their anonymous answer form so their responses can not be linked to their name.
g. The investigator does not have a relationship with the students. The instructor of these classes will not administer the survey. Two or three persons not related to the class will administer the survey.

No advertisements or notices were used to recruit subjects.

2. EXPERIMENTAL PROCEDURE

A. Physical/Behavioral Aspects:

Since most individuals who begin to smoke cigarettes start before they enter college, relatively few studies examine how many college students begin to smoke cigarettes in college and the reasons why they start. This study will use a cross sectional survey format to (1) examine the relationship between social factors and cigarette smoking initiation during college, (2) establish baseline smoking initiation rates for college students, and (3) contribute to the professional literature regarding smoking initiation among undergraduate students.

Undergraduate students at five universities will be asked to participate in this study. IRB approval has been awarded at the Principal Investigator's university—the University of Florida (see attached). IRB proposals are pending at the other four universities: Texas A&M; Ball State University; the University of Alabama, and the University of Georgia. Instructors at each university have given permission to access their classes in January/February, pending approval of each institution's IRB. Approximately 300-500 students at each university are expected to participate.

At Texas A & M Univeristy, 500 students from two sections of Dr. Nikki VanHightower's Political Science 207 class will be asked to participate in this study. The Principal Investigator will send Dr. Dorman (the TAMU Faculty Research Advisor) a protocol for the distribution and collection of survey materials as well as the survey materials. He will train 2-3 TAMU staff or graduate students to assist with survey administration. No person involved in administering the survey will be affiliated with the classes to be surveyed.

Physical/Behavioral Aspects: (continued)

Study participants will receive two copies of the informed consent letter (see attached), a survey booklet (see attached), a pencil, and a scantron form. A member of the survey staff will read the informed consent cover letter to the potential participants. Students who choose to participate will sign, date and return one of the two copies of the informed consent letter. They will keep the other copy for their records. To ensure anonymity, the participants will be instructed to refrain from putting their name or social security number anywhere on the survey booklet or on their answer form. The informed consent forms will be collected separately from the scantron forms so participants' identities cannot be linked to their responses. Participants will complete the survey in class in 10 to 15 minutes. Survey assistants will collect all survey materials at the end of 15 minutes. Survey assistants will return all materials to Dr. Dorman who, in turn, will send all materials back to the Principal Investigator.

The Principal Investigator is currently in the process of developing and pilot testing the survey. Dr. Randall Penfield, a psychometrician and Assistant Professor in the Dept. of Educational Psychology at the University of Florida, is overseeing the instrument development process. Two of three stages of the pilot testing process are completed. During the first stage, 6 content experts in the areas of health education, social psychology, college health, and/or cigarette smoking have provided input on a list of potential survey items. A first draft was created based on the expert feedback. Then, nine University of Florida undergraduate students provided quantitative and qualitative feedback about survey construction, clarity and wording of items, layout, and length. These students identified problems and offered solutions. The survey was revised and is currently being piloted tested with approximately700 University of Florida undergraduate students. Item response theory and factor analyses will be used to identify questions from the pilot version with the strongest psychometric properties. These questions will be retained for the final instrument. The final version is expected to be shorter than the pilot version and will be ready at the beginning of December.

B. Deception or Coercion. No deception or coercion is part of this study.

3. RISKS AND BENEFITS TO SUBJECTS

A. No physical risk and no more than minimal psychological risk are anticipated for this study. Participants may feel anxious or guilty when asked about cigarette smoking behavior because of the negative social stigma of this behavior. Participants may also feel anxious about ten questions pertaining to drinking behavior and intoxication status because of the nature of these questions and/or because some participants may not be old enough to legally drink alcohol (see questions 20-22, 35, 42-47). The researcher intends to minimize the possibility of negative feelings by ensuring anonymity and notifying participants verbally, and in writing, that they do not need to answer any question that they do not wish to answer. Also, that they can withdraw participation at any time without consequence.

Pilot data indicate minimal harm to participants. Approximately 600 students in the pilot stage of this study were invited to give anonymous, 'general' comments and suggestions about the survey. Of the 46 who responded, only one mentioned feeling "sort of guilty" about answering the questions about cigarette smoking. No one commented negatively about the questions about alcohol consumption or intoxication.

B. Participants will be offered a copy of the study results. Otherwise, no compensation or benefits will be awarded. Participants will be informed verbally, and in writing, that the study is not part of their grade for the class and that their choice to participate or refrain from participation will not affect their grade in any way. They will also be informed that they are free to withdraw their consent at any time without negative consequence. Those who do not wish to participate will be informed to sit quietly while others complete the survey. Those who do not participate may also request a copy of the study results.

Revised: May 1, 2000

4. SIGNATURE ASSURANCE: (This should be the last page of Part B.)

Principal Investigator/Graduate Student Assurance Statement:

I understand Texas A & M University's policy concerning research involving human subjects and I agree:

1. To accept responsibility for the scientific and ethical conduct of this research study;
2. To obtain prior approval from the Institutional Review Board before amending or altering the research protocol or implementing changes in the approved consent form:
3. To immediately report to the IRB any serious adverse reactions and/or unanticipated effects on subjects which may occur as a result of this study;
4. To complete, on request by the IRB, the Continuation/Final Review Forms.

SIGNATURE: _____ DATE:

TYPED NAME: Jane Emmerée

***Faculty/Research Advisor's Assurance Statement:**

I certify that I have read and agree with this proposal, that the PI has received adequate training to perform this research, and will receive adequate supervision while performing this research.

SIGNATURE: _____ DATE:

TYPED NAME: Dr. Steve Dorman

*** If the principal investigator is completing this project to meet the requirements of a Texas A & M University academic program, both the student's faculty/research advisor and the departmental head should sign the Signature Assurance Sheet.**

****Department Head**

This is to certify that I have reviewed this research protocol and agree that the research activity is within the mission of the Department and appropriate for the responsibilities and assigned duties of the principal investigator.

SIGNATURE: _____ DATE:

TYPED NAME: Same as Faculty Research Advisor (see above)

****If the principal investigator is also the Head of the department, the College Dean or equivalent should sign the Signature Assurance Sheet.**

VPR
Office of the Vice President for Research

Office of Research Compliance

Administration and Special Programs

Academy for Advanced Telecommunications and Learning Technologies

Institute for Scientific Computation

Laboratory Animal Resources and Research

Microscopy and Imaging Center

Office of Business Administration

Office of Graduate Studies

Office of Sponsored Projects

Texas A&M University Research Park

Texas A&M University

1112 TAMU
710 Administration Building
College Station, Texas
77843-1112

979.845.8585
FAX 979.862.3176

January 21, 2003

MEMORANDUM

TO: Jane Emmeree
Health Science Education
MS

SUBJECT: Social Factors of Cigarette Smoking Initiation Among College Undergraduate Students
2002-598

Approval Date: January 21, 2003 to January 20, 2004

The Institutional Review Board – Human Subjects in Research, Texas A&M University has reviewed and approved the above referenced protocol. Your study has been approved for one year. As the principal investigator of this study, you assume the following responsibilities:

Renewal: Your protocol must be re-approved each year in order to continue the research. You must also complete the proper renewal forms in order to continue the study after the initial approval period.

Adverse events: Any adverse events or reactions must be reported to the IRB immediately.

Amendments: Any changes to the protocol, such as procedures, consent/assent forms, addition of subjects, or study design must be reported to and approved by the IRB.

Informed Consent/Assent: All subjects should be given a copy of the consent document approved by the IRB for use in your study.

Completion: When the study is complete, you must notify the IRB office and complete the required forms.

Dr. E. Murl Bailey, Advisor
Institutional Review Board –
Human Subjects in Research

APPLICATION FOR APPROVAL OF RESEARCH WITH HUMAN RESEARCH PARTICIPANTS

ANSWER ALL 11 QUESTIONS LISTED BELOW.
Carefully answer all questions. Type your responses below each question (*the space will expand to accommodate your answer*). Make sure you address each part of the question. If a question does not apply, answer "Not Applicable." **Do not answer any questions with "see attachments."** *Remember that the Board is made up of people from many different specialties; therefore, we ask that all information be relayed in layman's terms, rather than professional jargon.* DO NOT SUBMIT PORTIONS OF YOUR GRANT APPLICATION OR DISSERTATION AS ANSWERS TO THE QUESTIONS LIST BELOW. Sign the application cover sheet, and if applicable, have a faculty advisor sign in the appropriate space.

Deliver or send your original application packet ***plus one copy*** to the Human Subjects office. Do not submit changes until an initial review has been completed; all applications are reviewed as quickly as possible. **Studies may take as long as 6-8 weeks for the review process. Failure to follow instructions will delay the review process.**

1. **PROBLEM ABSTRACT: State rationale and research question or hypothesis (why is this study important and what do you expect to learn?).**
The purpose of this study is to (1) examine the relationship between social factors and cigarette smoking initiation during college, (2) establish baseline smoking initiation rates for college students, and (3) contribute to the professional literature regarding smoking initiation among undergraduate students.
Rationale: Since the majority of cigarette smokers begin to smoke in middle or high school, very little data exist about why college students begin to smoke cigarettes. National surveys of college students assess smoking initiation by age rather than educational environment, so incidence rates of smoking initiation in college remain unknown. Findings of smoking initiation among high school students indicate that starting to smoke is a social phenomenon. Therefore, it is hypothesized that social factors may contribute to smoking initiation among college students. This study explores three social variables—sociability, perceived social norms, and smoking-related behavior of friends/roommates--and their influence on cigarette smoking initiation among college students.

2. **DESIGN: Identify your research design and specific factors or variables, conditions or groups in your study, and any control conditions. Indicate the number of research participants assigned to each condition or group, and describe plans for data analysis.**
This is a cross sectional, correlational study using a survey for data collection. Three independent variables include sociability, perceived social norms of smoking behavior, and smoking-related beahvior of friends/roommates. The dependent variable is cigarette smoking initiation after beginning college (post-high school graduation). Control variables include: drinking behavior (alcohol), beginning college at age 17-22 years old, smoking behavior of parents, living environment, and grade point average. Participants who began to smoke in college will be compared to those who did not begin to smoke in college. A multiple logistic regression model will be used to analyze the data and test the hypotheses.

3. **RESEARCH PARTICIPANTS:**
   a. **List approximate number of participants 300, targeted age group 18 -24 Years Old (specified in years) and targeted gender Male And Female;**

   b. **Method of selection and recruitment - List inclusion and exclusion criteria. Describe the**

recruitment procedures. Be sure to include the source(s) of participants. NOTE: If you are recruiting research subjects/participants from an institution(s) other than the UGA, include authorization letter from the appropriate official(s) of the institution(s) with your application.

1. Number of subjects: 300 at UGA. Between 300-500 at each of the other four universities. IRB approval has been obtained at the University of Florida and is pending at the other universities. See attached for IRB approval from UF, and a list of faculty advisors at each institution.

2. Description of subject population: Undergraduate classes with a large proportion of freshman and sophomore students have been selected (since data indicate that the vast majority of undergraduates who begin to smoke in college, start their freshman or sophomore year). All selected classes are electives or part of the general education requirements for undergraduates at each university. They contain males and females as well as students of various races and academic majors. At UGA, potential participants will be undergraduate students enrolled in an Introductory Health class in the spring. Students must be 18 years old or older to participate.

3. Inclusion/exclusion criteria: Participants must be at least 18 years old. Persons under 18 years old will be excluded from the study. The participant will not be excluded from the study after he/she has started the survey, although he/she may choose to withdraw at any time for any reason without penalty.

Is there any working relationship between the researcher and the participants/subjects? Yes☐ No☒, If yes, explain.

c. **Describe any incentives, follow-ups or compensation to be used with individual participants. This includes payment, gifts, extra credit, etc. NOTE: Extra credit must not be offered unless there are equal non-research participation options available to students.**

None

4. **PROCEDURES: State in chronological order what research participant is expected to do and what the researcher will be doing during the interaction. Indicate the expected duration/time commitment of each research activity.**

The Principal Investigator will send Dr. Fors (the UGA Faculty Research Advisor) a protocol for the distribution and collection of survey materials along with the survey materials. He will train 2-3 staff or graduate students to assist him with survey administration. No person involved in administering the survey will be an instructor in a class to be surveyed.

Study participants will receive two copies of the informed consent letter (see attached), a survey booklet (see attached), a pencil, and a scantron answer form. The informed consent cover letter will be read to the potential participants. Students who choose to participate will sign, date and return one of the two copies of the informed consent letter. They will keep the other copy for their records. To ensure anonymity, the participants will be instructed to refrain from putting their name or social security number anywhere on the survey booklet or on their answer form. The informed consent forms will be collected separately from the scantron forms so participants' identities cannot be linked to their responses. Participants will complete the survey during class time in about 10-15 minutes. Dr. Fors will send all materials back to the Principal Investigator.

5. **MATERIALS: List in sequence all questionnaires and/or tasks given to the research participants. Attach a labeled copy of all written instruments to each copy of the application. Each attachment should be identifiable from your description given here. If an interview will be conducted you must include an interview script or set of questions.**

Each student in class will be given a survey booklet, a pencil, two copies of the informed consent letter, and a scantron answer sheet. The informed consent letter will be read aloud and students will be aked if they have any questions. Those who choose to participate will sign and date one copy of the informed consent letter. They will then complete the anonymous survey. The booklet and answer form will be collected separately from the signed informed consent letter.

6. **RISK: The IRB seeks information about risks that a research participant may encounter as a result of data collection and any that may arise in the future as a direct result of the research. In both cases, carefully describe any such risks and how you plan to minimize them. The latter must include the availability and limits of treatment for sustained physical or emotional injuries. (NOTE: any incident directly related to research participation causing significant discomfort, stress or harm should be reported to the IRB immediately):**

   a. **CURRENT RISK: Describe any psychological, social, legal, economic or physical discomfort, stress or harm that might occur to the participants as a result of their research participation. How will these be held to the absolute minimum?**

   1. Potential risks: No physical or economic risks, and no more than minimal psychological or social risks, are anticipated for this study. Participants may potentially feel anxious or guilty when asked about cigarette smoking behavior because of the negative social stigma of this behavior. Participants may also feel anxious about ten questions pertaining to drinking behavior and intoxication status because of the nature of these questions and/or because some participants may be too young to legally drink alcohol (see questions 20-22, 35, 42-47). Pilot study data indicate minimal harm to participants, and if it does occur, it is rare. Approximately 700 students in the pilot stage of this study were invited to give anonymous, 'general' comments and suggestions about the survey. Of the 46 who responded, only one mentioned feeling "sort of guilty" about answering questions about cigarette smoking. No comments were received about the questions about alcohol consumption or intoxication.

   2. Precautions: The researcher intends to minimize the possibility of negative/anxious feelings by ensuring anonymity and notifying participants verbally and in writing that they do not need to answer any question that they do not wish to answer. They will also be informed that they may withdraw their participation at any time without consequence.

   b. **FUTURE RISK: How are all research participants protected from potentially harmful future use of the data collected in this project? Specify whether the results of participation will be anonymous or confidential (it cannot be both). By anonymous, the IRB means that the researcher does not know the results of the subject's participation. If there is any way for the researcher to identify data as related to a specific individual then only confidentiality may be promised. Confidential means the researcher may be able to identify a participant's results but will not reveal the participant's identity to anyone else. Person-to person interviews are never anonymous. Describe your plans to maintain confidentiality, and state who will have access to the data and in what role. Be sure to provide specific measures planned to remove any direct identifiers, as well as data storage. You must justify retention of identifying information on any data or forms. DO NOT ANSWER THIS QUESTION WITH "NOT APPLICABLE".**

   Results will be anonymous. Participants will be informed verbally, and in writing, not to put names or social security numbers anywhere on the survey booklet or answer form. The signed informed consent letters will be collected separately from the answer forms. Completed survey materials will be stored in a locked filing cabinet in the Dr. Fors' office until sent via U.S. mail to the Principal Investigator. The PI will store data and signed informed consent letter in a locked filing cabinet in her office. Only the five members of the Principal Investigator's dissertation committee will have access to the data.

7. **BENEFIT: State the benefits the participants will gain from the study and the benefits that humankind will receive. In some cases, the participants will receive credit toward some course requirement. Most, hopefully, will derive educational benefits, especially if they are students. You must also indicate how your project will benefit humankind, e.g., advance our knowledge of some phenomenon or help solve a practical problem. As in the RISK section, you must acknowledge the benefits of your study for the IRB to judge whether benefit exceeds risk to the participant. You MUST list benefits in order for your study to be approved. Potential benefits of the research must outweigh any risk associated with research participation.**

   a. **Identify any potential beneficial effects on the participants that might result from the research;**

   All potential participants will be offered a copy of the study results. Otherwise, no compensation or benefits will be awarded. Participants will be informed verbally and in writing that the study is not part of their grade for the class and that their choice to participate or not will have no affect their grade in any way.

   b. **You must identify any potential benefits that humankind in general will gain from this research.**

   Cigarette smoking is the leading cause of preventable death in the United States. The majority of college students who smoke cigarettes indicate that they want to quit, but very few succeed. Because quitting is so difficult, preventing individuals from starting to smoke has become a major focus of national tobacco control efforts. This study investigates potential reasons why college students begin to smoke in college. Findings may lead to information that college health professionals can use to identify at-risk individuals and to guide the design of prevention programs tailored to their specific needs, attitudes, and beliefs.

8. **CONSENT PROCESS: How will legally effective informed consent be obtained from all research participants and, when applicable, from parent(s) or guardian(s)? If DECEPTION is used in your study, describe how participants will be deceived, why it is necessary, and how you will debrief the participants. Provide the IRB with a copy of a written debriefing. Also include in the consent form a statement such as "In order to make this study a valid one, some information about my participation will be withheld until completion of the study." In certain instances, such as mail-out surveys, a cover letter may be used, but it should include at least the information required in a consent form. This is known as implied consent format. If written consent will not be obtained, a full explanation of the reasons must be submitted for approval, including assurance that risk to the participant will be minimal. Be sure to answer this question and supply the appropriate consent document. Refer to Section VIII of the IRB Guidelines for additional information and the required consent format. A checklist is available to help you ensure that you have included all the necessary components.** A written consent form will be used as part of this study. Each participant will sign, date and return one copy to the researcher. A copy will be provided for participants' records. (The informed consent form is attached).

9. **VULNERABLE PARTICIPANTS including MINORS: If minors or other vulnerable participants are involved, outline procedures to obtain their agreement (assent) to participate, in addition to the consent of parent(s) or guardian(s). Describe in any other special procedures that will be used to minimize risk to these vulnerable subjects. When you use MINORS or other VULNERABLE POPULATIONS, informed consent must be obtained from parent(s) or guardian(s), or a clear justification must be provided so that the IRB can determine if they will approve to waive the requirement. An understandable explanation of your procedures should also be presented to minors and other vulnerable participants, and they should be given an opportunity to volunteer their participation. This is called "assent" for people who cannot give "legally effective informed consent." An assent script or form should be attached to the application submitted to the IRB.**

No vulnerable participants will be involved.

10. **ILLEGAL ACTIVITIES: Participants must be assured their data is either anonymous or will remain confidential. If the data will be confidential you must inform research participants that you may not be able to guarantee confidentiality if disclosure should be required by law (see Number 5 in the consent format in Section VIII of the IRB Guidelines). Some ILLEGAL ACTIVITIES must be reported, (e.g., child abuse). When anonymous questionnaires are used but written informed consent is necessary, consent forms may be signed and returned separately. This procedure avoids any possibility of linking names to the data. Does the data to be collected relate to illegal activities? Yes☒ No☐. If yes, explain.** Questions ask about intoxication level. Drinking alcohol is illegal for persons under 21 years old. The survey will be anonymous to protect the identity of these individuals. The signed consent form will be collected separately from the anonymous answer forms. Participants will be informed verbally and in writing that they can leave any question blank and can withdraw from participation at any time without consequence.

11. **Check all of the following that apply to this application:**

This application is being submitted for a class assignment. ☐

This application is being submitted to conduct a pilot study. ☐

The protocol described in this application project involves the use of audio-taping. ☐

The protocol described in this application project involves the use of video-taping ☐

This application is being submitted for Thesis Research, exit exam research or an applied project. ☐

This application is being submitted for Dissertation Research ☒

Recruitment flyers or advertisements will be utilized. ☐ **Attach for review.**

College students under 18 years of age may be recruited for participation. ☐
If Yes, parental consent or a waiver must be secured.

The activity described in this application involves another institution(s). ☒
(EXAMPLES: school, university, hospital, prison, agency)
If yes,
1) List below each institution that will be utilized for/or involved in recruitment and/or data collection.
2) Indicate the county and state in which each institution is located.
3) Attach a written letter of authorization from each institution or indicate that the authorization is pending.

The researcher proposed to collect data at 5 universities in early 2003. Attached is a list of faculty advisors at each univeristy and their contact information.

1. The University of Florida, Alachua County, Florida. IRB approval has been obtained (see attached)
2. Ball State University, Delaware County, Indiana. IRB approval is pending.
3. The University of Alabama, Tuscaloosa County, Alabama. IRB approval is pending.
4. Texas A& M University, Brazos County, Texas. IRB approval is pending.

Names and addresses of collaborators:

(Note: IRB approval was obtained at the University of Florida on October 4, 2002 and a copy of the approval letter is attached. IRB approval is pending at all other universities).

	Faculty Advisor/Collaborator
1. University of Florida	Dr. Jill Varnes Professor Dept. of Health Science Education PO Box 118210 Gainesville, FL 32611-8210 Telephone: 352-392-2404 Email: varnes@aa.ufl.edu
2. Texas A & M	Dr. Steve Dorman Professor and Dept. Head Dept. of Health and Kinesiology College Station, TX 77843 979-845-3124 sdorman@tamu.edu
3. University of Alabama	Dr. James Eddy Department Chair Dept. of Health Science 200A Foster Tuscaloosa, AL 35487-0311 205-348-2956 jeddy@bama.ua.edu
4. University of Georgia	Dr. Stuart Fors Department Chair Dept. of Health Promotion and Behavior Athens, Georgia 30602-6522 706-542-4365 stufors@arches.uga.edu
5. Ball State University	Dr. Rebecca A. Brey Associate Professor Department of Physiology and Health Science Ball State University Muncie, IN 47306 765- 285-3758 rbrey@bsu.edu

The University of Georgia
Office of The Vice President for Research
DHHS Assurance ID No. : M1047

Institutional Review Board
Human Subjects Office
606A Graduate Studies Research Center
Athens, Georgia 30602-7411
(706) 542-6514; 542-3199
Fax No. (706) 542-5638

APPROVAL FORM

Date Proposal Received: 2002-11-14 **Project Number:** H2003-10386-0

Name	Title	Dept/Phone	Address	Email
Ms Jane Emmeree	MI	Health Promotion & Behavior Ramsey Center	3441 NW 22nd Drive Gainesville FL 32605 (352) 335-8005	emmeree@ufl.edu
Dr. Stuart W. Fors	CO	Health and Human Performance 315 Ramsey Center +6522 542-4635		

Title of Study: Social Factors of Cigarette Smoking Among College Undergraduate Students

45 CFR 46 Category: Administrative 2

Modifications Required for Approval and Date Completed:
Revised consent form.

Approved : 2002-12-04 Begin date : 2002-12-04 Expiration date : 2003-06-04

NOTE: Any research conducted before the approval date or after the end data collection date shown above is not covered by IRB approval, and cannot be retroactively approved.

Number Assigned by Sponsored Programs:

Funding Agency:

Form 310 Provided: No

Your human subjects study has been approved as indicated under IRB action above.

Please be aware that it is your responsibility to inform the IRB . . .
. . . of any adverse events or unanticipated risks to the subjects or others within 24 to 72 hours; . .
. . . of any significant changes or additions to your study and obtain approval of them before they are put into effect; . . .
. . . that you need to extend the approval period beyond the expiration date shown above; . . .
. . . that you have completed your data collection as approved, within the approval period shown above, so that your file may be closed.

For additional information regarding your responsibilities as an investigtor refer to the IRB Guidelines.
For your convenience in obtaining approval of changes, extending the approval period, or closing your file, we are providing you with a blue Researcher Request form. Detach this blue form, complete it as appropriate, sign and date it, then return it to the IRB office. Keep this original approval form for your records.

Copy:
Dr. Mark G. Wilson

Christina A. Joseph, Ph.D.
Chairperson, Institutional Review Board

I. TITLE, PURPOSE OF THE STUDY, AND RATIONALE:

1. Title: Social Factors of Cigarette Smoking Initiation among College Undergraduate Students
2. Purpose of the study: This study will (1) examine the relationship between social factors and cigarette smoking initiation during college, (2) establish baseline smoking initiation rates for college students, and (3) contribute to the professional literature regarding smoking initiation among undergraduate students.
3. Rationale: Since the majority of cigarette smokers begin to smoke in middle or high school, very little data exist about why college students begin to smoke cigarettes. National surveys of college students assess smoking initiation by age rather than educational environment, so incidence rates of smoking initiation in college remain unknown. Findings of smoking initiation among high school students indicate that starting to smoke is a social phenomenon. Therefore, the PI hypothesizes that social factors may contribute to smoking initiation among college students. This study explores three social variables—sociability, perceived social norms, and smoking-related behavior of friends/roommates--and their influence on smoking initiation among college students.

II. DESCRIPTION OF THE SUBJECT POPULATION:

1. Number of subjects: 400 at Ball State; between 300-500 at the other four universities.
2. Description of subject population: Undergraduate classes with a large proportion of freshman and sophomore students have been selected (since data indicate that the vast majority of undergraduates who begin to smoke in college, start their freshman or sophomore year). Selected classes are electives or part of the general education requirements for undergraduates at each university. All classes have historically contained males and females, as well as students of various races and academic majors. Between 300-500 students will be surveyed at each of the five participating universities. At BSU, undergraduate students, 18 years old or older, enrolled in two sections of HSC 160 in the spring will be asked to participate.
3. Inclusion/exclusion criteria: Participants must be at least 18 years old. Persons under 18 years old will be excluded from the study. The participant will not be excluded from the study after he/she has started the survey, although he/she may choose to withdraw at any time for any reason without penalty.

III. SUBJECT RECRUITMENT

1. Method: Instructors from the two largest sections of HSC 160 were contacted and asked to give permission to access their classes in the spring for this study. Both granted permission, pending approval of the Ball State's IRB. No advertisements will be used to recruit students.

IV. METHODS AND PROCEDURES

1. Description of methods and procedures: The Principal Investigator will send Dr. Brey, (the BSU Faculty Research Advisor) a protocol for the distribution and collection of survey materials along with the survey materials. She will train 2-3 staff or graduate students to assist her with survey administration. No person involved in administering the survey will be an instructor in a class to be surveyed.

   Study participants will receive two copies of the informed consent letter (see attached), a survey booklet (see attached), a pencil, and a scantron answer form. Dr. Brey will read the informed consent cover letter to the potential participants. Students who choose to participate will sign, date and return one of the two copies of the informed consent letter. They will keep the other copy for their records. To ensure anonymity, the participants will be instructed to refrain from

putting their name or social security number anywhere on the survey booklet or on their answer form. The informed consent forms will be collected separately from the scantron forms so participants' identities cannot be linked to their responses. Participants will complete the survey in class in about 10-15 minutes. Dr. Brey will send all materials back to the Principal Investigator.

2. Materials: The Principal Investigator is currently in the process of developing and pilot testing the survey (see attached). Dr. Randall Penfield, a psychometrician and Assistant Professor in the Dept. of Educational Psychology at the University of Florida, is overseeing the instrument development process. Two of three stages of the pilot testing process are completed. During the first stage, 6 content experts in the areas of health education, social psychology, college health, and/or cigarette smoking have provided input on a list of potential survey items. A first draft was created based on the expert feedback. Then, nine University of Florida undergraduate students provided qualitative feedback about survey construction, clarity and wording of items, layout, and length, and they identified problems and offered solutions. The survey was revised and is currently being piloted tested with approximately 700 University of Florida undergraduate students. Item response theory and factor analyses will be used to identify questions from the pilot version with the strongest psychometric properties. These questions will be retained for the final instrument. The final version is expected to be shorter than the pilot version and will be ready at the beginning of December.

V. ANONYMITY/CONFIDENTIALITY OF DATA

1. Data will be collected on anonymous answer sheets. Participants will be informed verbally, and in writing, to refrain from putting their names or social security numbers anywhere on the survey booklet or answer form. The signed informed consent letters will be collected separately from the answer forms. Dr. Brey will oversee the data collection process. The instructors of the two HSC 160 classes will not participate in the data collection process. Survey materials will be stored in a locked filing cabinet in Dr. Brey's office until sent via U.S. mail to the Principal Investigator. The PI will store data and signed informed consent letter in a locked filing cabinet in her office. Only the five members of the Principal Investigator's dissertation committee will have access to the data.

VI. POTENTIAL RISKS AND BENEFITS

1. Potential risks: No physical or economic risks, and no more than minimal psychological or social risks, are anticipated for this study. Participants may potentially feel anxious or guilty when asked about cigarette smoking behavior because of the negative social stigma of this behavior. Participants may also feel anxious about ten questions pertaining to drinking behavior and intoxication status because of the nature of these questions and/or because some participants may be too young to legally drink alcohol (see questions 20-22, 35, 42-47). Pilot study data indicate minimal harm to participants. Approximately 600 students in the pilot stage of this study were invited to give anonymous, 'general' comments and suggestions about the survey. Of the 46 who responded, only one mentioned feeling "sort of guilty" about answering the questions about cigarette smoking. No comments were received about the questions about alcohol consumption or intoxication.

2. Precautions: The researcher intends to minimize the possibility of negative/anxious feelings by ensuring anonymity and notifying participants verbally and in writing that they do not need to answer any question that they do not wish to answer. They will also be informed that they may withdraw their participation at any time without consequence.

3. Potential benefits: All potential participants will be offered a copy of the study results. Otherwise, no compensation or benefits will be awarded. Participants will be informed verbally, and in writing, that the study is not part of their grade for the class and that their choice to participate or refrain from participation will not affect their grade in any way.

VII. SUBJECT INCENTIVES/INDUCEMENTS TO PARTICIPATE

1. No incentives or inducement to participate will be provided.

VIII. OTHER FINANCIAL CONSIDERATIONS

1. No expenses are associated with participation in this research project.
2. No risk of physical injury is expected, and therefore, the need to spend money on treatment due to injury is not needed.

IX. INFORMED CONSENT

1. Instructions: Potential participants will receive two copies of the informed consent letter, the survey booklet, a scantron form, and a pencil. The informed consent letter will be read aloud to the potential participants explaining all required elements. Students who choose to participate will be asked to sign and date one copy of the letter and to keep the other copy for their records. All signed consent forms will be collected separately from the answer forms.

2. Copy of the letter: See attached.

ACADEMIC AFFAIRS
OFFICE OF ACADEMIC RESEARCH AND SPONSORED PROGRAMS

Muncie, Indiana 47306-0155
Phone: 765-285-1600
Fax: 765-285-1624

INSTITUTIONAL REVIEW BOARD

TO: Jane Emmeree
University of Florida
Dept of Health Science Education
PO BOX 118210
Gainesville, FL 32611-8210

FROM: Bryan Byers, Chair
Institutional Review Board

DATE: November 21, 2002

RE: Human Subjects Protocol I.D. – IRB #03-157

The Institutional Review Board has recently approved your project titled "Social Factors of Cigarette Smoking Initiation Among College Undergraduate Students "as reviewed as an expedited study. Such approval is in force from November 21, 2002 to November 20, 2003.

It is the responsibility of the P.I. and/or faculty supervisor to inform the IRB:

- when the project is completed, or
- if the project is to be extended beyond the approved end date,
- if the project is modified,
- if the project encounters problems,
- if the project is discontinued.

Any of the above notifications should be addressed in writing to the Institutional Review Board, c/o the Office of Academic Research & Sponsored Programs (2100 Riverside Avenue). Please reference the above identification number in any communication to the IRB regarding this project. Be sure to allow sufficient time for extended approvals.

pc: Rebecca Brey

rlb

APPENDIX C
PARTICIPANT CONSENT LETTERS

October 7, 2002

Dear UF Student:

I am a doctoral student at the University of Florida. As part of my dissertation research, I am recruiting first and second year undergraduate students, at least 18 years old, to help me create a college student smoking survey. I would like both smokers and non-smokers to give input. Participants will help create a well-designed survey that will be distributed on five college campuses in January. The purpose of the final study will be to learn about college students' smoking patterns. The results will guide smoking prevention and cessation programs.
Your willingness to give input on a draft of the survey is not part of your grade for this class and is voluntary. Your decision will not affect your grade in any way. You are free to withdraw your consent and discontinue participation at any time without consequence. Your participation will take about 30 minutes. You do not have to answer any question you do not wish to answer. Participation involves no anticipated risks and your responses will be anonymous.

If you have any questions, please contact me at emmeree@ufl.edu or (352) 392-0583, ext. 1409. You may also contact my supervisor, Dr. Jill Varnes, at varnes@aa.ufl.edu or (352) 392-0583 ext. 1309 or 392-2404. If you have any questions regarding your rights as a research participant, please contact the University of Florida Institutional Review Board, University of Florida, Box 112250, Gainesville, FL 32611-2250; phone (352) 392-0433.
If you are willing to participate, please sign this letter and return it to your instructor, Terri Mitchell, by the end of class on Oct. 9. (A second copy of this letter is provided for your records). If more than 10 students agree to participate, I will randomly select 10 to give input. If you are selected, I will email you a draft of the survey with detailed instructions. To ensure your anonymity, do not return any survey materials to me via email and do not put your name anywhere on the materials. Return them to Terri Mitchell by Monday, Oct. 14. She will give you a 45-minute long-distance phone card for your participation. If you choose to withdraw from the study at any time, inform Ms. Mitchell. She will still give you your phone card. Final study results will also be provided if you request them below.

Thanks for your consideration!

Jane Emmerée, M.Ed., C.H.E.S.
Project Director

I have read the procedure described above for the College Student Smoking Survey. I attest that I am at least 18 years old, voluntarily agree to participate, and have received a copy of this project description.

_____ _____ _____

Participant's Name (Print) **Participant's Signature** **Date**

Email Address: (Print neatly) _____

Number of semesters at UF (post-high school): _____

☐ Check here if you would like to receive a copy of the final manuscript.

Dear Student:

I am a doctoral student at the University of Florida working on my dissertation research. You can help me learn more about college student's smoking behavior by completing a short survey as a part of a multi-campus research project. The purpose of this study is to find out whether social factors influence college student's smoking behavior. Although we have a great deal of reliable information about the smoking behavior of high school students, information about college students is lacking. Should you choose to participate, the information you provide will assist health professionals develop smoking prevention and cessation services on college campuses.

This study is not part of your grade for this class. Your instructor has agreed to set aside 15 minutes of class time for those who choose to participate. Your participation is voluntary and your decision will not affect your grade in this class in any way. You are free to withdraw your consent and discontinue participation at any time without consequence. The survey will take 10-15 minutes. You do not have to answer any question you do not wish to answer. Participation involves no anticipated risks and your responses will be anonymous. If you choose not to participate, please sit quietly while others complete the survey.

If you have any questions, please contact me at emmeree@ufl.edu or (352) 392-0583, ext. 1409. You may also contact my supervisor, Dr. Jill Varnes, at varnes@aa.ufl.edu or (352) 392-0583 ext. 1309 or 392-2404. If you have any questions regarding your rights as a research participant, please contact the University of Florida Institutional Review Board, University of Florida, Box 112250, Gainesville, FL 32611-2250; phone 352-392-0433.

If you intend to participate, please sign this letter. By signing below, you give me permission to report your anonymous responses as aggregated data in the final manuscript that I will submit to my faculty supervisory committee. To ensure your anonymity, give your instructor this letter before you fill out a questionnaire and do not put your name anywhere on the questionnaire or the scan tron form. A second copy of this letter is provided for your records. Study results will be provided to all participants who request them.

Thanks for your consideration!

Jane Emmerée, M.Ed., C.H.E.S.
Project Director

I have read the procedure described above for the College Student Smoking Survey. I attest that I am at least 18 years old, voluntarily agree to participate, and have received a copy of this project description.

_____ _____

Participant's Signature **Date**

If you would like to receive a copy of the final manuscript submitted to the instructor, neatly PRINT your name and either an email address or a complete mailing address below:

Social Factors of Cigarette Smoking Initiation Among College Undergraduate Students

The purpose of this research is to find out whether social factors influence college student's cigarette smoking initiation behavior. Very little research has been done about the reasons why individuals begin to smoke cigarettes while attending college. Findings from this study may lead to information that will assist health professionals create smoking prevention programs on college campuses.

For this project, you will be asked to fill out a questionnaire about cigarette smoking behavior (or your intentions to smoke if you do not smoke). This study is not part of your grade for this class. Your participation is voluntary and you must be at least 18 years old to participate. Refusal to participate will not affect your grade in this class in any way. You are free to withdraw your consent and discontinue participation at any time for any reason without penalty or prejudice from the investigator. The survey will take about 15 minutes. Your responses will remain anonymous, and you do not have to answer any question you do not wish to answer. Do not put your name or social security number anywhere on the survey.

The foreseeable risks or ill effects from participating in this study are minimal. No compensation or benefits for your participation will be provided, other than study results will be provided if you request them below. If you choose not to participate, please sit quietly while others complete the survey.

If you have questions about your rights as a research participant, please contact Ms. Sandra Smith, Coordinator of Research Compliance, Office of Academic Research and Sponsored Programs, Ball State University, Muncie, IN 47306, (765) 285-5070.

If you intend to participate, please sign one of the copies of this letter and keep the second copy for your records. To ensure your anonymity, the signed copy will be collected separately from your answer form. By signing below, you give the principal investigator permission to report your anonymous responses as aggregated data in a final manuscript to be submitted to my faculty supervisory committee.

I, _____, agree to participate in this research project titled "Social Factors of Cigarette Smoking Among College Undergraduate Students." I have read and understand the explanation provided to me. I have had all of my questions answered to my satisfaction, and I voluntarily agree to participate in this study. I attest that I am at least 18 years old and have been given a copy of this consent form.

(Over)

_____ _____

Participant's Signature **Date**

If you would like to receive a copy of the final results of this study, neatly PRINT your name and either an email address or a complete mailing address below:

Principal Investigator:
Jane Emmerée, Ph.D. Candidate
Department of Health Science Education
University of Florida
Gainesville, FL 32611-8210
Telephone: (352) 392-05893
Email: emmeree@ufl.edu

Faculty Sponsor:
Dr. Rebecca Brey, Associate Professor
Department of Physiology and Health Science
Ball State University
Muncie, IN 47306
Telephone: (765) 285-5961
Email: rbrey@bsu.edu

Edition Date: January 2003

Information Sheet

Social Factors of Cigarette Smoking Initiation Among College Undergraduate Students

I am a doctoral student at the University of Florida working on my dissertation research. You can help me learn more about college student's cigarette smoking behavior by completing a short survey as a part of a multi-campus research project. The purpose of this study is to find out whether social factors influence college student's smoking initiation behavior. Should you choose to participate, the information you provide will assist health professionals with smoking prevention services on college campuses. Approximately 1,200 college students from five universities are expected to participate in this project.

You were chosen to participate because you are enrolled in Pol Sci 207, however, this study is not part of your grade in this class. Your class was selected because it is a general education elective at TAMU and historically contains male and female undergraduate students of a variety of races and academic majors. This study is not part of your grade for this class. Your instructor has agreed to set aside 15 minutes of class time for those who choose to participate. Your participation is voluntary and your decision will not affect your grade in this class in any way. You are free to withdraw your consent and discontinue participation at any time without penalty or prejudice. You do not have to answer any question you do not wish to answer. The survey is anonymous and will take about 15 minutes. Do not put your name or social security number anywhere on the survey. You must be at least 18 years old to participate.

The foreseeable risks or ill effects from participating in this study are minimal. There is no compensation or benefits for your participation, however, study results will be provided to any participant or non-participant who emails me at emmeree@ufl.edu. If you choose not to participate, or you are under 18 years old, please sit quietly while others complete the survey. You are welcome to ask the survey staff questions any time during the survey process.

If you have any questions after the survey has been administered, please contact me at PO Box 118210, Gainesville, FL 32611-8210, (352) 392-0583, ext. 1409, emmeree@ufl.edu. You may also contact Dr. Steve Dorman, my research supervisor at TAMU at the Department of Health and Kinesiology, College Station, TX 77843, sdorman@hlkn.tamu.edu, (979) 845-3124.

This research study has been reviewed and approved by the Institutional Review Board-Human Subjects in Research at Texas A&M University. For research-related problems or questions regarding subjects' rights, contact the Institutional Review Board through Dr. Michael W. Buckley, Director of Support Services, Office of the Vice President for Research at (979) 458-4067.

Thank you for your consideration!

Jane Emmerée, M.Ed., C.H.E.S.
Principal Investigator

Date: _____

COLLEGE STUDENT SMOKING SURVEY CONSENT FORM

I, _____, agree to participate in the research study titled "Social Factors of Cigarette Smoking Initiation Among College Students" conducted by Jane Emmerée from the Department of Health Science Education at the University of Florida under the direction of Dr. Stuart Fors, Department of Health Promotion and Behavior at the University of Georgia, (706) 542-4365. I understand that I do not have to take part in this study and that I can stop taking part at any time without giving any reason, and without penalty. My participation or non-participation in this survey will have no impact on my grades. I can ask to have all of the information about me returned to me, removed from the research records, or destroyed.

The reason for this study is to find out how many college students started smoking cigarettes before and after college and possible reasons why they start in college. If I choose to participate, I will be one of approximately 1,200 other college students from five universities who are expected to participate. I will not benefit directly from this research, however, participation in this study may lead to information that will help health professionals create smoking prevention programs for college students. I can request a copy of the results of this study by providing my email and/or my U.S. mailing address at the bottom of this form.

If I volunteer to take part in this study, I will be asked to do the following things:

1) Sign, date, and return this consent form separately from my answer form.
2) Refrain from putting my name or any other personal identifier on my survey or answer form.
3) Answer questions about cigarette smoking behavior that will take 10-15 minutes.

No risk is expected. Some questions may cause mild anxiety, however, this is rare. I understand that I do not have to answer any question that causes me discomfort and that there is no penalty for leaving any question blank. I can choose to withdraw my participation in this research at any time without penalty or prejudice.

My responses and the results of this participation will be anonymous. The only persons who will have access to my anonymous data are the primary investigator's graduate faculty committee members or faculty advisors.

The survey staff will answer any further questions about the research study now or while I take the survey. The primary investigator can be reached by telephone at (352) 392-0583, or by email at emmeree@ufl.edu.

I understand that I am agreeing by my signature on this form to take part in this research project and understand that I will receive a signed copy of this consent form for my records. I attest that I am at least 18 years old.

Jane Emmerée	_____	_____
Name of Researcher	Signature	Date

Telephone: (352) 392-0583, ext. 1409
Email: emmeree@ufl.edu

_____	_____	_____
Name of Participant	Signature	Date

I would like a copy of the results of this research. Please neatly print your name and provide an email address and/or a U.S. mailing address below:

Additional questions or problems regarding your rights as a research participant should be addressed to Chris A. Joseph, Ph.D. Human Subjects Office, University of Georgia, 606A Boyd Graduate Studies Research Center, Athens, Georgia 30602-7411; Telephone (706) 542-3199; E-Mail Address IRB@uga.edu.

Spring 2003

Dear Student:

I am a doctoral student at the University of Florida working on my dissertation research. You can help me learn more about college student's cigarette smoking behavior by completing a short survey as a part of a multi-campus research project involving over 1,000 participants. The purpose of this study is to find out whether social factors influence college student's smoking initiation behavior. Should you choose to participate, the information you provide will assist health professionals with smoking prevention services on college campuses.

This study is not part of your grade for this class. Your instructor has agreed to set aside 15 minutes of class time for those who choose to participate. Your participation is voluntary and you must be at least 18 years old to participate. Refusal to participate will not affect your grade in this class in any way. You are free to withdraw your consent and discontinue participation at any time without penalty. The survey will take about 15 minutes. Your responses will remain anonymous, and you do not have to answer any question you do not wish to answer. Do not put your name or social security number anywhere on the survey. Participation involves no more than minimal risk. No compensation or benefits for your participation will be provided, other than study results will be provided to anybody who requests them below. If you choose not to participate, please sit quietly while others complete the survey.

If you have any questions, please contact me at emmeree@ufl.edu, University of Florida, PO Box 118210, Gainesville, FL 32611-8210or (352) 392-0583, ext. 1409. You may also contact my faculty advisor at the University of Alabama, Dr. James Eddy, Chair of the Department of Health Science at jeddy@bama.ua.edu or (205) 348-2956.

If you intend to participate, please sign one of the copies of this letter and keep the second copy for your records. To ensure your anonymity, the signed copy will be collected separately from your answer form. By signing below, you give me permission to report your anonymous responses as aggregated data in a final manuscript to be submitted to my faculty supervisory committee.

Thanks for your consideration!

Jane Emmerée, M.Ed., C.H.E.S.
Principal Investigator

I understand that this research study has been reviewed and approved by the Institutional Review Board at the University of Alabama. For research-related problems or questions regarding participants' rights, I can contact the Chair of the Institutional Review Board at the University of Alabama at (205) 348-5152. I have read and understand the explanation provided to me. I have had all of my questions answered to my satisfaction, and I voluntarily agree to participate in this study. I attest that I am at least 18 years old and have been given a copy of this consent form.

_____ _____
Participant's Signature Date

If you would like to receive a copy of the final results of this study, neatly PRINT your name and either an email address or a complete mailing address below:

APPENDIX D
THE COLLEGE STUDENT SMOKING SURVEY

The College Student Smoking Survey

. . . for smokers and non-smokers!

Instructions:

- Please do not write your name anywhere on this survey.
- If you are at least 18 years old and would like to participate, please sign and date the bottom portion of this page.
- Use a pencil, a black pen, or a blue pen and completely fill in the circle that corresponds to your response.
- Select only one response for each question.
- Skip any question you are uncomfortable answering.
- If you make a mistake, erase it completely if using a pencil. If using a black or blue pen, cross through the incorrect response and bubble in the correct response.

Important definitions for this survey:

- Mildly intoxicated: "Happy," "relaxed," and/or "carefree." No noticeable motor impairment (e.g., no slurred speech or clumsiness).
- Moderately intoxicated: "Tipsy" or "buzzed." Minor--but noticeable--impairments in balance, judgment, memory, reasoning, and/or speech. No nausea or feeling sick.
- Extremely intoxicated: "Unable to function." Slurred speech, stumbling, incoherence, memory loss, "sloppy," and total loss of judgment ("stupid"). Magnified emotions: anger, agitation, frustration, crying, paranoia, denial. Nausea and vomiting.

1. How old were you when you began your first year of college? (i.e., the first year you attended a 2- or 4-year college after you graduated from high school)

- O 17 or younger
- O 18
- O 19
- O 20
- O 21
- O 22
- O 23
- O 24 or older

2. How long has it been since you began your first year of college?

- O 6 months or less
- O 7 – 12 months
- O 13 – 18 months
- O 19 – 24 months
- O 25 – 30 months
- O 31 – 36 months
- O over 36 months

3. How old were you when you first tried smoking (actively inhaling) a cigarette, even just a puff or two? (For all questions on this survey, "cigarette" includes tobacco or clove)

- O 17 or younger
- O 18
- O 19
- O 20
- O 21
- O 22
- O 23 or older
- O I never tried smoking **(If never, go to # 12)**

4. How old were you when you smoked your first whole cigarette?

- O 17 or younger
- O 18
- O 19
- O 20
- O 21
- O 22
- O 23 or older
- O I never smoked this much **(If never, go to #12)**

5. When was the first time that you:	Prior to my first year of college	During my first 6 months of college	During my second 6 months of college	During my second year of college	After my second year of college	I have never done this
tried a cigarette, even a puff or two?	O	O	O	O	O	O
					If never, go to #12	
smoked a whole cigarette at one sitting?	O	O	O	O	O	O
					If never, go to #12	

OVER ⇒

5. (cont.) When was the first time that you:	Prior to my first year of college	During my first 6 months of college	During my second 6 months of college	During my second year of college	After my second year of college	I have never done this
purchased a pack of cigarettes for personal use?	O	O	O	O	O	O
smoked alone?	O	O	O	O	O	O
smoked on 2 or more days during any one month?	O	O	O	O	O	O
smoked a total of 100 cigarettes?	O	O	O	O	O	O
smoked on 20 days during any one month?	O	O	O	O	O	O
smoked at least one cigarette a day for 30 consecutive days?	O	O	O	O	O	O

6. In the past 30 days, which best describes your cigarette smoking behavior?

- O I never smoked, not even a puff or two ⇒ **go to #11**
- O I tried a cigarette, but only a puff or two.
- O I take puffs from cigarettes on occasion, but have not smoked a whole cigarette at one sitting.
- O I smoked one or more whole cigarettes.

7. In the past 30 days, on how many days did you smoke?

- O 1 day
- O 2 days
- O 3 - 5 days
- O 6-10 days
- O 11-20 days
- O 21-29 days
- O all 30 days

8. On the days that you smoked, how many cigarettes, on average, did you smoke? (20 cigarettes/pack)

- O Just a few puffs
- O 1 cigarette
- O 2 - 5
- O 6 – 10
- O 11 – 20
- O 21 or more

9. In the past 30 days:	Yes	No
Did you ever smoke alone?	O	O
Did you smoke only when you were drinking alcoholic beverages?	O	O

10. In the past 30 days:	Yes	No
Did you smoke only when you were mildly intoxicated? **(See definitions of "intoxication" on the top of page 2)**	O	O
Did you smoke only when you were moderately intoxicated?	O	O
Did you smoke only when you were extremely intoxicated?	O	O

5. (cont.) When was the first time that you:	Prior to my first year of college	During my first 6 months of college	During my second 6 months of college	During my second year of college	After my second year of college	I have never done this
purchased a pack of cigarettes for personal use?	O	O	O	O	O	O
smoked alone?	O	O	O	O	O	O
smoked on 2 or more days during any one month?	O	O	O	O	O	O
smoked a total of 100 cigarettes?	O	O	O	O	O	O
smoked on 20 days during any one month?	O	O	O	O	O	O
smoked at least one cigarette a day for 30 consecutive days?	O	O	O	O	O	O

6. In the past 30 days, which best describes your cigarette smoking behavior?

- O I never smoked, not even a puff or two ⇒ **go to #11**
- O I tried a cigarette, but only a puff or two.
- O I take puffs from cigarettes on occasion, but have not smoked a whole cigarette at one sitting.
- O I smoked one or more whole cigarettes.

7. In the past 30 days, on how many days did you smoke?

- O 1 day
- O 2 days
- O 3 - 5 days
- O 6-10 days
- O 11-20 days
- O 21-29 days
- O all 30 days

8. On the days that you smoked, how many cigarettes, on average, did you smoke? (20 cigarettes/pack)

- O Just a few puffs
- O 1 cigarette
- O 2 - 5
- O 6 – 10
- O 11 – 20
- O 21 or more

9. In the past 30 days:	Yes	No
Did you ever smoke alone?	O	O
Did you smoke only when you were drinking alcoholic beverages?	O	O

10. In the past 30 days:	Yes	No
Did you smoke only when you were mildly intoxicated? **(See definitions of "intoxication" on the top of page 2)**	O	O
Did you smoke only when you were moderately intoxicated?	O	O
Did you smoke only when you were extremely intoxicated?	O	O

11. Think back to the month just before you started your first year of college. Did you smoke at least one whole cigarette on two or more days that month?	Yes O ⇒ **Go to question #13** No O ⇒ **Continue with question #12**

12. On the first day that you arrived on campus your first year, how do you think you would have responded if asked whether you would smoke a cigarette . . .	Definitely No	Probably No	Definitely Yes	Probably Yes	I don't get this drunk	I don't drink alcohol
any time during your first year of college?	O	O	O	O		
if you were mildly intoxicated? (definition on p. 2)	O	O	O	O	O	O
if you were moderately intoxicated? (definition on p. 2)	O	O	O	O	O	O
if you were extremely intoxicated? (definition on p. 2)	O	O	O	O	O	O
if a new, "nonromantic" friend of the same gender offered you one?	O	O	O	O		
if a new, "nonromantic" friend of the opposite gender offered you one?	O	O	O	O		
if a new boyfriend/girlfriend offered you one?	O	O	O	O		
if someone that you wanted to date offered you one?	O	O	O	O		
if a roommate offered you one?	O	O	O	O		
if a sorority sister/fraternity brother offered you one?	O	O	O	O	Not applicable: O	

OVER ⇒

13. During your first year of college, how often, on average, do/did you:	Never	1-2 times per month	1 time a week	2 times a week	3 times a week	≥ 4 times a week
go out to socialize?	O	O	O	O	O	O
go out to drink?	O	O	O	O	O	O
go to organized parties or social functions?	O	O	O	O	O	O
get moderately intoxicated? (definition on p. 2)	O	O	O	O	O	O
get extremely intoxicated? (definition on p. 2)	O	O	O	O	O	O
have 5 or more alcoholic drinks at one sitting? (A drink is a bottle of beer, a glass of wine, a wine cooler, a shot glass of liquor, or a mixed drink)	O	O	O	O	O	O

14. How *accurately* does each of the following statements describe you during your first year of college?	Very Accurate	Moderately Accurate	Very Inaccurate	Moderately Inaccurate
Socializing with others is/was important to me.	O	O	O	O
I typically spend/spent the majority of my free time with friends.	O	O	O	O
I like/liked going to clubs or bars.	O	O	O	O
I like/liked to go to large parties.	O	O	O	O
I make/made friends easily.	O	O	O	O
I typically spend/spent the majority of my free time alone.	O	O	O	O
I like/liked being perceived by others my age as a social person.	O	O	O	O

15. Of all the first year students on your campus (during your first year of college), how many would you guess:	1 out of 10 or fewer (≤ 10%)	1 out of 4 (25%)	2 out of 4 (50%)	3 out of 4 (75%)	More than 3 out of 4 (> 75%)
tried smoking (even a puff or two) for the first time after they began college?	O	O	O	O	O
smoked a whole cigarette for the first time after they began college?	O	O	O	O	O
smoked on 2 or more days in one month for the first time during their first 6 months of college?	O	O	O	O	O
smoked on 2 or more days in one month for the first time during their second 6 months of college?	O	O	O	O	O

16. Of all the first year students on your campus who smoke/smoked cigarettes (during your first year of college), how many would you guess:	1 out of 10 or fewer (≤ 10%)	1 out of 4 (25%)	2 out of 4 (50%)	3 out of 4 (75%)	More than 3 out of 4 (> 75%)
smoke/smoked only when socializing?	O	O	O	O	O
smoke/smoked only when drinking alcoholic beverages?	O	O	O	O	O
smoke/smoked only when mildly intoxicated? (see definitions for "intoxication" on p. 2)	O	O	O	O	O
smoke/smoked only when moderately intoxicated?	O	O	O	O	O
smoke/smoked only when extremely intoxicated?	O	O	O	O	O

17. During your first year of college, how many of the following people smoke/smoked cigarettes?	None	Some	Most	All	Not Applicable
Your best friends	O	O	O	O	O
Your romantic partner(s)	O	O	O	O	O
Your college roommate(s)	O	O	O	O	O
Your sorority sisters/fraternity brothers	O	O	O	O	O

18. During your first year of college, how often do/did the following people offer you cigarettes?	Never	Rarely	Sometimes	Often	Not Applicable
Your best friends	O	O	O	O	O
Your romantic partner(s)	O	O	O	O	O
Your college roommate(s)	O	O	O	O	O
Your sorority sisters/fraternity brothers	O	O	O	O	O

19. During your first year of college, how often do/did the following people encourage you to smoke cigarettes?	Never	Rarely	Sometimes	Often	Not Applicable
Your best friends	O	O	O	O	O
Your romantic partner(s)	O	O	O	O	O
Your college roommate(s)	O	O	O	O	O
Your sorority sisters/fraternity brothers?	O	O	O	O	O

20. What was your grade point average:	I haven't been in college this long	2.4 or lower	2.5 - 2.9	3.0 – 3.4	3.5 or higher
at the end of your first 6 months of college?	O	O	O	O	O
at the end of your first year of college?	O	O	O	O	O

21. Did one or more of your parents or guardians smoke cigarettes the month just before your first year of college?
O Yes
O No

22. Does one or more of your parents or guardians currently smoke cigarettes?
O Yes
O No

23. What's your gender?
O Male
O Female

24. How old are you?

- O 17 or younger
- O 18
- O 19
- O 20
- O 21
- O 22
- O 23
- O 24 or older

25. What university do you attend?

- O Ball State
- O Univ. of Alabama
- O Univ. of Florida
- O Univ. of Georgia
- O Texas A & M

26. What best describes/described your living situation during the majority of your first year of college?

- O I live/lived in a residence hall alone.
- O I live/lived in a residence hall with one or more roommates.
- O I live/lived in a sorority/fraternity house.
- O I live/lived off campus alone.
- O I live/lived off campus with one or more roommates.
- O I lived with my parent(s) or guardian(s).

27. How do you usually describe yourself?

- O African American/Black
- O American Indian/Alaskan Native
- O Asian
- O Latino/Hispanic
- O Pacific Islander
- O White/Caucasian
- O Multi-racial

28. What best describes/described your credit load:	Full-time	Part-time	I haven't attended college this long
during your first 6 months at college?	O	O	O
during your second 6 months at college?	O	O	O
this semester?	O	O	

General Comments (please print or write neatly below):

Thanks for your participation!

APPENDIX E
FINAL SURVEY SCALE ANALYSES

Table E-1. Reliability Analysis for Perceived Prevalence of Peers' Smoking Behavior Scale

Item	*M*	*SD*
Tried	1.294	1.118
Whole	1.122	.993
First Six Months	1.129	.995
Second Six Months	1.143	1.054
Socialize	1.800	1.079
Alcohol Consumption	1.904	1.091
Mildly Intoxicated	1.576	1.006
Moderately Intoxicated	1.714	1.084
Extremely Intoxicated	1.881	1.307

Number of items: 9
Number of response choices: 5
Composite data:
n = 1,224
Mean = 13.561
Variance = 48.688
SD = 6.978

Table E-2. Item-Total Statistics for Perceived Prevalence of Peers' Smoking Behavior Scale

Item	Corrected Item-Total Correlation	Alpha if Item Deleted
Tried	.549	.874
Whole	.590	.871
First Six Months	.590	.871
Second Six Months	.569	.872
Socialize	.572	.872
Alcohol Consumption	.687	.862
Mildly Intoxicated	.705	.861
Moderately Intoxicated	.719	.859
Extremely Intoxicated	.667	.865

n = 1,224
Coefficient Alpha = .880

Table E-3. Reliability Analysis for Smoking-Related Behavior of Friends and Roommates Scale

Item	*M*	*SD*
Friends	.693	.738
Partner	.398	.701
Roommate	.481	.830
Greek	.746	.722
Offer best friend	.664	.947
Offer roommate	.414	.854
Offer Greek	.640	.923
Offer partner	.368	.819
Encourage best friend	.278	.623
Encourage roommate	.193	.562
Encourage Greek	.229	.610
Encourage partner	.165	.519

Number of items: 12
Number of response choices: 4
Composite data:
n = 503
Mean = 5.264
Variance = 42.091
SD = 6.488

Table E-4. Item-Total Statistics for Smoking-Related Behavior of Friends and Roommates Scale

Item	Corrected Item-Total Correlation	Alpha if Item Deleted
Friends	.693	.901
Partner	.588	.912
Roommate	.611	.912
Greek	.594	.912
Offer best friend	.753	.905
Offer roommate	.715	.907
Offer Greek	.734	.906
Offer partner	.729	.906
Encourage best friend	.682	.909
Encourage roommate	.598	.912
Encourage Greek	.643	.910
Encourage partner	.661	.911

n = 503
Coefficient Alpha = .916

Table E-5. Reliability Analysis for Sociability Scale

Item	*M*	*SD*
Importance	.763	.257
Perception	.703	.263
Bars	.511	.378
Party	.588	.361
Free time	.742	.275
Ease	.761	.245
Alone	.744	.278
Frequency socialize	.657	.263
Frequency party	.395	.261

Number of items: 9
Number of response choices: 4
Composite data:
n = 1,231
Mean = 5.863
Variance = 2.956
SD = 1.719

Table E-6. Item-Total Statistics for Sociability Scale

Item	Corrected Item-Total Correlation	Alpha if Item Deleted
Importance	.666	.808
Perception	.516	.823
Bars	.524	.826
Party	.669	.805
Free time	.560	.818
Ease	.526	.822
Alone	.401	.835
Frequency socialize	.570	.817
Frequency party	.546	.820

n = 1,231
Coefficient Alpha = .836

Table E-7. Reliability Analysis for Susceptibility to Smoke Scale

Item	*M*	*SD*
Upcoming year	.318	.613
Same gender	.261	.520
Opposite gender	.272	.534
Boy/girlfriend	.246	.477
Date	.251	.493
Roommate	.240	.484
Greek	.262	.533
Mildly Intoxicated	.461	.745
Moderately Intoxicated	.523	.792
Extremely Intoxicated	.611	.836

Number of items: 10
Number of response choices: 4
Composite data:
n = 622
Mean = 3.44
Variance = 26.65
SD = 5.162

Table E-8. Item-Total Statistics for Susceptibility to Smoke Scale

Item	Corrected Item-Total Correlation	Alpha if Item Deleted
Upcoming year	.813	.947
Same gender	.870	.946
Opposite gender	.868	.945
Boy/girlfriend	.820	.948
Date	.803	.948
Roommate	.875	.946
Greek	.830	.947
Mildly Intoxicated	.832	.947
Moderately Intoxicated	.814	.949
Extremely Intoxicated	.711	.955

n = 622
Coefficient Alpha = .953

Table E-9. Reliability Analysis for Alcohol Consumption Scale

Item	*M*	*SD*
Drinking Frequency	1.750	1.588
Moderately Intoxicated	1.480	1.445
Extremely Intoxicated	.817	1.126
Frequency Five or More	1.216	1.470

Number of items: 4
Number of response choices: 6
Composite data:
n = 1,233
Mean = 5.261
Variance = 27.753
SD = 5.268

Table E-10. Item-Total Statistics for Alcohol Consumption Scale

Item	Corrected Item-Total Correlation	Alpha if Item Deleted
Drinking Frequency	.897	.929
Moderately Intoxicated	.912	.918
Extremely Intoxicated	.824	.951
Frequency Five or More	.896	.923

n = 1,233
Coefficient Alpha = .947

APPENDIX F
LIST OF FACULTY ADVISORS

1. Ball State University	Dr. Rebecca A. Brey Associate Professor Department of Physiology and Health Science Muncie, IN 47306 765.285.3758 rbrey@bsu.edu
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5. University of Georgia	Dr. Stuart Fors Department Chair Department of Health Promotion and Behavior Athens, GA 30602-6522 706.542.4365 stufors@arches.uga.edu

APPENDIX G
DATA COLLECTION PROTOCOL

Data Collection Instructions

1. Read the script out loud a couple times before the class.
2. Have your assistant(s) distribute the surveys while you read the script.
3. If participants have questions about the wording or response choices of an item, do not try to interpret the question for them, just say: "Select the best response for you, or leave it blank if you are unsure about it."
4. Thank the students for their participation.
5. Return all completed surveys to me as soon as all surveys at your school have been completed (you can recycle any extra surveys).

Data Collection Script:

Hello. I'm _____ and am helping a Ph.D. candidate from the University of Florida with her dissertation research. We are passing out a packet with an information sheet explaining of her study and a short survey. Please do not begin the survey until I go over the instructions with the entire class. It'll only take me a minute.

The principal investigator of this study is Jane Emmerée (pronounced "Em – er – ay"). Her study examines why people begin to smoke cigarettes in college. Jane needs input from nonsmokers, current smokers, and former smokers. The yellow cover page is yours to read and keep for your records. The survey takes most people 10 minutes or less to complete.

Now, I'd like to briefly go over a few important points about completing the survey. Since the pages will be scanned, it's extremely important that you completely bubble in the response circles. Check marks or "x's" over the circle won't scan well. Don't put your name anywhere on the survey, and please do not make any extraneous marks or comments near any response bubble. This will mess up the scanning. There's a place for comments at the end of the survey.

You can use a pencil or a black or blue pen. If you make a mistake, cross through it and then bubble in your new response. Choose one response for each item. Skip any question that you're uncomfortable answering.

Are there any questions about completing the survey?

OK. When you're done with the survey, please bring them to the _____ (front of the classroom, back of the classroom, or both).

Thank you!

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BIOGRAPHICAL SKETCH

Jane Emmerée is originally from the Milwaukee area. She graduated from the University of Wisconsin at Stevens Point with a bachelor's degree in physical education/wellness. Jane completed her degree in 1986, and then worked at the National Wellness Institute in Stevens Point. Her responsibilities there included directing the National Wellness Conference and assisting with worksite wellness projects.

After working three years at the National Wellness Institute, Jane decided to pursue a master's degree. In the fall of 1989, she moved to Athens, Georgia, enrolling in the Department of Health Promotion and Behavior. In 1991, she moved to Gainesville, Florida, to take a position at the University of Florida's Student Health Care Center. For over eight years, she coordinated health promotion programs and services for college students. Her areas of expertise included body image, eating disorders, stress management, peer education, weight management, and wellness.

Jane received her Ph.D. in the spring of 2003 with specialties in health communication and research design. She returned to the University of Florida, Student Health Care Center, in April 2003 and serves as the Assistant Director of Health Education Programs.