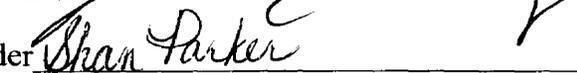


**Social Norms and Smoking Behavior in College Age Students**

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## **Abstract**

The primary objectives of this study were to elicit information on college student's actual smoking behavior and their perception of others smoking behavior and subjective norms to see if a relationship existed. A survey questionnaire was used to address the perception of tobacco use and actual smoking behavior. Fifty-Six college age students (18 to 24 years old) were solicited to complete the questionnaire. The questionnaire consisted of questions regarding: the students feelings about cigarette smoking and their perceived feelings of others including family, friends and significant others, the students own experience with cigarettes and the frequency of their use of cigarettes, the students knowledge of others smoking behavior including, mother, father, siblings, partner, and friends. Results indicated that 55% of the sample had never tried a cigarette while 45% had tried. Of the 45% who tried smoking, 14% were regular smokers. The average age for the first time a participant tried a cigarette was 15 years old. Most students, 79%, indicated they felt smoking was not okay and they felt their parents and siblings thought smoking was not okay. Results found two significant interactions: (1) the relationship between the subjects smoking status and whether or not they felt that smoking was okay and (2) the relationship between the subjects smoking status and whether or not they thought their friends felt smoking was okay. Research specifically targeting college age students smoking behavior is limited. Health education programs regarding tobacco use for the college age student are also limited. With the understanding that peers and social norms have on smoking behavior health educators can develop targeted interventions and conduct further research.

## Chapter 1

### Introduction

Substantial reductions in smoking prevalence were reported for all age groups in the United States from 1993-2000, except for those in the 18-24 year old group (MMWR, 2003). In 2003, young adults between the ages of 18 and 24 reported the highest rate of cigarette use at 40.2% (National Survey on Drug use and Health/NSDUH, 2003).

Colleges and universities in the United States enroll more than 12 million students, the majority of whom are aged 18 to 24 years old (Wechsler, 1998). “The smoking behavior of college students is an important measure of tobacco use among young adults. Over one third of persons aged 18 to 24 attend college, and one quarter attend a 4-year college” (National Household Survey on Drug Abuse/ NHSDA, 1999). However relatively few studies have been done to explore factors/determinants of cigarette smoking in this population (Kear, 2002). Several factors have been proposed for smoking initiation among college students including: increased use of alcohol, new social demands experienced by students upon entering college, perception that smoking is widespread, normative behavior and minimizing the risks associated with smoking (Cairney, 2002).

#### *Research question*

The primary research question to be addressed is, among college students, aged 18 to 24, on the University of Michigan-Flint campus, is there a relationship between the student’s subjective norms on tobacco use and their own smoking behavior? This research question will be investigated and analyzed by surveying a random number of University of Michigan-Flint students through the use of a questionnaire to assess how

many students smoke and the students' perceptions of the extent to which other students smoke.

### *Purpose*

The purpose of this research is to examine the determinants of the likelihood of performing a specific behavior, use of tobacco. The determinants to be addressed are subjective norms, smoking behavior, and the perceived smoking habits of others.

### *Rationale*

The Theory of Reasoned Action (TRA) will be applied to the research question proposed. According to Glanz et al. (1997), TRA focuses on the individual motivational factors, which determine the likelihood of performing a specific behavior, in this case, the use of tobacco. This theory assumes that there are underlying reasons that determine motivation towards a behavior. TRA considers the most important determinate of behavior to be behavioral intention. Behavioral intention is arrived at from the attitude toward the behavior and subjective norms. Subjective norms are determined from an individual's normative beliefs. An individual's normative beliefs are derived from one's peer group and whether an individual believes that the group approves or disapproves of a behavior. An individual's motivation to comply with what the peer group believes affects their behavioral choices. The findings of this study will assist health educators in developing interventions for college students by addressing the underlying reasons why this age group has an increase in tobacco use.

## Chapter 2

### Review of Literature

#### *Epidemiology of smoking-*

According to the American Lung Association, cigarette smoking has been identified as the most important source of preventable morbidity and premature mortality worldwide. Approximately one in five deaths in the United States is attributed to smoking. From 1995 to 1999, smoking killed over 440,000 people (264,087 males and 178,311 females) each year in the United States (American Lung Association, 2003). Adult males and females who smoke in the United States have a decreased life expectancy, losing an average of 13.2 and 14.5 years of life because they smoked (American Lung Association, 2003).

The highest causes of death attributed to smoking in adults were lung cancer (124,813), coronary heart disease (81,976) and chronic airway obstruction (64,735) (American Lung Association, 2003). “The highest smoking-attributable annual death rate in adults was seen in Nevada (414.3 per 100,000), while the lowest rate was in Utah (158.9 per 100,000); in 2002, the smoking-attributable annual death rate in the state of Michigan was 299 per 100,000” (American Lung Association, 2003).

During 1995-1999, the average mortality-related productivity losses attributed to smoking for adults were \$81.9 billion. In 1998, smoking-attributable personal health-care medical expenditures were \$75.5 billion. For each of the approximately 46.5 million adult smokers in 1999, these costs represent \$1,760 in lost productivity and \$1,623 in excess medical expenditures. The economic cost of smoking totaled \$3,383 per smoker per year (MMWR, 2002).

*Prevalence of smoking-*

Americans continue to light up despite the information on the toll it will take on their health and income. In 2001, the median adult current smoking prevalence was 23.4% (MMWR, 2003). “During 1993-2000, substantial reductions in current smoking prevalence were reported for all age groups, except those aged 18-24 years” (MMWR, 2002).

According to the NSUDH 2003, there are several specific demographic areas in which differences in tobacco behavior are notable; e.g. gender, race, region of the country and level of education:

1. Past month cigarette smoking rates increased steadily by age, from 1.7% at age 12 to 44.1% at age 20. Among young adults aged 18 to 24 years, the rate was 44.8%.
2. Males were more likely than females aged 12 or older to be current users of cigarettes, smokeless tobacco, cigars and pipes. Past month cigarette use was 35.9 % for males and 24.0 % for females, and gender differences were even greater for other tobacco products.
3. American Indians and Alaskan Natives were more likely than any other racial/ethnic groups to report the use of tobacco products, with 41% of persons aged 12 or older reporting the use of tobacco. The lowest rates were for Asians at 13.8%.
4. Cigarette use rates varied by region of the country. Past month cigarette use ranged from a low of 19.3 % in the Pacific Division of the West Region, which includes, Alaska, California, Hawaii, Oregon and

Washington to a high of 29.5% in the East South Central Division of the South Region which includes, Alabama, Kentucky, Mississippi, and Tennessee.

5. The prevalence of cigarette smoking decreased with increasing levels of education; among adults aged 18 or older, 14.0% of college graduates smoked cigarettes compared to 35.3% of adults with only a high school diploma.

The 2001 Behavioral Risk Factor Surveillance System (BRFSS) survey looked at the “current smokers” and “some day” smokers. Per the BRFSS, current smokers were defined as those who reported having smoked greater than or equal to 100 cigarettes during their lifetime and who currently smoked every day or some days, while some day smokers were defined as current smokers who responded that they smoked some days. The results of the 2001 survey indicated that the median proportion of some day smokers among current smokers was 23.0%. Compared with the median proportion from 1996 to 2000, 38 states had a significant increase in the proportion of some day smokers among current smokers. In areas with “significant increases in some day smoking, only respondents with at least some college education or a college degree had an increased rate of some day smoking during 1996-2001” (MMWR, 2003).

According to the 2001 Michigan Behavioral Risk Factor Survey (BRFS), 26.1% of adults in Michigan were current smokers. Smoking prevalence declined with increasing age, higher education and income levels. The highest prevalence of smokers was 18-24 year olds at 34.3%. Overall, the proportion of people in Michigan who smoke remained above the United States national median of 23.4%.

Data collected by the Michigan BRFSS survey from 1989-1993 for Genesee County, indicate the smoking prevalence in Genesee County for adults age 18 and older was 25.6%.

*Incidence data for target population*

The Summary of Findings from the 2003 National Survey on Drug Use and Health (NSDUH) reveal approximately 2.7 million people tried their first cigarette in 2003. Seventy six percent of the new users were between the ages of 12 and 17. The rate of initiation among youth 12 to 17 increased from 108.9 to 157.6 per 1,000 new users from 1990 to 1997. For young adults aged 18 to 25, the rate of cigarette initiation increased from 46.8 to 65.3 per 1,000. The average age for initiating daily cigarette use was 19. Cairney et al. (2002) reported a significant number of smokers began to smoke after the age of 17, 20.5% of current smokers and 15.7% of former smokers recalled their age of smoking initiation to be 18 or 19 years old. “Twenty eight percent of current smokers began to smoke regularly at age 19 or older, at which time they were in college” (Wechsler, 1998).

*Factors associated/attributed to increased initiation rate in target population*

The 2003 National Survey on Drug Use and Health module on prevention related measures looked at risk factors associated with an increased likelihood of substance abuse in both individual characteristics and social environments in 12 to 17 year olds. The module also looked at protective factors associated with a decrease in the likelihood of substance use. The findings of this module included:

1. Perceptions of Risk- youth who perceive great risk are generally less likely to use substances than youth who do not. In regards to cigarette use, youth that reported great risk in smoking one or more packs of cigarettes per day had a 9.5% smoking rate while those youth that perceived low/no risk had a 17.2% smoking rate.
2. Parental Disapproval- youth who thought their parents would strongly disapprove of cigarettes were less likely to use tobacco. For example, those youth who perceived their parents would strongly disapproved had a 8.5% smoking rate compared to those who thought their parents would not strongly disapproved with a 45.2% smoking rate.
3. Attitudes About School- youths who had a positive attitude about school were less likely to use tobacco, with a 9.1% smoking rate compared to those students who hated school with a 19.9% smoking rate.
4. The likelihood of smoking increased fourfold for youths who said they sometimes enjoyed slightly dangerous activities, and up to nine fold for those stating they always got a kick out of doing something a little dangerous.
5. Having a few friends who smoked cigarettes was a strong risk factor for current smoking. For 16 to 17 year olds, those with only a few friends who smoked were four times as likely to be smokers themselves.

The 2003 National Survey on Drug Use and Health (NSDUH), looked at the relationship between current cigarette use and the current use of illicit drugs, alcohol and other tobacco products. There was a strong association between the use of cigarettes and the use of illicit drugs, alcohol and other tobacco products. Significantly more smokers,

as compared to nonsmokers, reported past month use of other tobacco products, alcohol and a variety of illicit drugs. Among young people aged 12 to 17, the strength of this association increased dramatically with the intensity of smoking.

### *Problem/Needs*

Wechsler et al. (1998) report in their study, "Increased Levels of Cigarette use Among College Students - A Cause for National Concern," that the prevalence of current (30-day) cigarette smoking in college students rose by 27.8% between 1993 and 1997. "Despite a dramatic reduction in smoking prevalence during the past 30 years, tobacco remains stubbornly popular among adolescents and young adults in whom nearly all smoking starts" (Wechsler, 1998). Colleges and universities in the United States enroll more than 12 million students, the majority of whom are aged 18 to 24 years (Wechsler, 1998). "The smoking behavior of college students is an important measure of tobacco use among young adults. Over one third of persons aged 18 to 24 attend college, and one quarter attend a 4-year college" (NHSDA, 1999).

The statistics collected on smoking trends reveal that the highest prevalence is among 18 to 24 year olds; however, there is little research as to the factors that might explain this trend. "Much of the literature on smoking behavior has focused on adult populations and, more recently, on children and adolescents. A very small body of work has begun to emerge on smoking behaviors among post-secondary students" (Cairney, 2002).

Cairney et al. (2002) propose the following factors for smoking initiation among college students: increased use of alcohol, new social demands experienced by students upon entering college, perception that smoking is widespread, normative behavior and

minimizing the risks associated with smoking. The 1999 National Household Survey on Drug Abuse cites four common reasons that college students gave for their smoking: stress, less supervision, having more free time and the number of their friends who smoke.

College is an opportune time to intervene to prevent transition from occasional smoking to regular nicotine-dependent smoking and a time to teach occasional and regular smokers why and how to quit (Wechsler, 1998). Tobacco control interventions for college students are extremely limited; college students are typically offered interventions more suitable for adolescents or older, heavily addicted adult smokers, with little research addressing whether these interventions appeal to, or are effective for this age group (Cairney, 2002).

The high influence peers have on college student's behavior is well documented in the research particularly the influence on alcohol and drug use (Social Norms, 2002). Studies considering over 100 diverse college campuses found that students regularly and grossly overestimated the drunken behavior of their peers; this overestimation is termed a false norm (Social Norms, 2002). "Social Norms are defined as a community's collective expectation for behaviors considered desirable and appropriate. Similar to rules or regulations, norms dictate social behavior, but lack the status of a law or official sanction" (Alesci, 2003).

"Norms are fundamental to understanding social order as well as variation in human behavior. Group norms reflected in the dominant or most typical attitudes, expectations, and behaviors not only characterize these groups, but also regulate group members' actions to perpetuate the collective norm" (Perkins, 2002).

According to Perkins (2002), studies among college students, late adolescence and young adulthood, have produced a sizeable amount of literature on norms relating to drinking behavior. While a limited amount of research on norms and smoking behavior exist according to Kear, 2002. Research indicates the strongest influence on college student's personal behavior from their reference groups (parents, faculty, resident advisors and peers), especially with regard to alcohol and substance abuse, are peers (Perkins, 2002).

Research has shown the large difference between what students believe to be their peer norms and what the actual norms are. "Most students tend to think that their peers are, on average, more permissive in personal drinking attitudes than is the case and that peers consume more frequently and more heavily, on average, than the norm" (Perkins, 2002).

According to Wood et al. (2001) the prevalence of heavy drinking and drinking-related consequences among college students has been documented in at least three national studies; these studies indicate that approximately 40% of college students engage in heavy episodic drinking (consumption of five or more drinks in one sitting). The negative consequences associated with heavy alcohol consumption have been documented and include: high-risk sexual behavior, diminished academic performance, physical aggression and sexual victimization (Wood, 2001). Determining variables associated with or predictive of alcohol abuse in college students have been hypothesized and empirically tested, one of the most promising variables is social influence/peer norms (Read, 2002).

### *Research*

Literature addressing social norms is mainly focused on the use of alcohol not the use of tobacco in college age students. While research on tobacco use and social norms is focused on young teens not the college age student. Both areas of research provide the foundation for the question is there a relationship between subjective norms of tobacco use among peers in college age students and their own smoking behavior?

### *Alcohol behavior in college age students*

Research completed by Weitzman et al. (2002), looked at the individual, social and environmental factors associated with the uptake of binge drinking in first year college students. The aim was to determine which students acquired binge drinking in college referred to as the “uptake group”. The results on normative perceptions about binge drinking indicated that students who acquire binge drinking in college were more likely than those who did not to report inflated definitions of binge drinking. The students in the uptake group also reported they started binge drinking “because everyone else does” and “fitting in with others” as reports of drinking which were not reported by the non-uptake group (Weitzman, 2002).

Results also indicated that family drinking patterns were associated with binge drinking uptake, two thirds of the uptake group reported that their parents drank while growing up as compared to one half of the non-uptake. Two thirds of the non-uptake group reported their parents disapproved of drinking while only one third of the uptake group reported the same.

Among the high school students, who were exposed to, came from or socialized within environments where alcohol was present were more likely to take up binge drinking in college. These same students were more likely to report inflated definitions of binge drinking. High school students who reported drinking at least once a month during their final year of high school were over three times more likely to pick up binge drinking in college.

In a research project by Wood et al. (2001), the role active social influences (offers to drink alcohol) and passive social influences (perceived norms) had on alcohol use and alcohol-related problems in college students was studied. The results from the questionnaire completed by college students, demonstrated that active social influences were directly associated with alcohol use and problems and peer norms demonstrated a direct relationship with use and an indirect relationship with problems. Wood et al. (2001) suggest the findings of the study have implications for the role of various types of social influences in interventions in college student drinkers as “explicit offers and perceived norms still appear to play a critical role in influencing both alcohol use and alcohol-related negative consequences”.

The role of alcohol-related social norms on college students drinking behavior was researched by Read et al. (2002). The research looked at three variables: first, whether perceived norms for college student alcohol use and problems differed by gender and anticipated level of intended Sorority/ Fraternity (Greek) involvement/intent, second, to investigate associations between perceived norms, Greek intent, and alcohol use and problems, and third, to determine whether a relationship between perceived norms, Greek intent, and alcohol use and problems by gender. Perceived norms had significant

associations with both alcohol use and problems. With regards to gender, men had a significant association with Greek intent and peer norms with alcohol use and problems than did women. Read et al. (2002) suggest this research can be used to identify interventions, which target misperceptions about alcohol use and abuse among peers in college.

O'Callaghan et al. (1997) studied the role of attitude, subjective norm, perceived behavioral control, past behavior and intention in explaining alcohol use among young people. The research involved students completing a questionnaire that looked at their attitudes towards and use of alcohol. The students completed a questionnaire and then one month later they completed a second questionnaire, which asked about their actual behavior over the previous 4 weeks.

Analysis of the Theory of Reasoned Action revealed a positive and significant effect of both attitude and subjective norm on intentions to drink and of intentions on actual drinking behavior; a more positive attitude and subjective norm predicted stronger intentions to use alcohol.

The primary conclusion of the research was the importance of the relationship of both normative influences and past behavior in explaining young adult alcohol use. The researchers suggest this research could be used in education programs by emphasizing the negative social aspects of excessive drinking.

In other research on alcohol use in college students, Perkins et al. (1999) researched the actual and perceived norms for alcohol and other drug use. A questionnaire asked students to indicate their own actual drug use within the last year and then asked them about their perceived use of drugs by the average student on campus.

Based on the large number of respondents and the diverse demographics, the results showed significantly that many college students misperceive the norms of their peers by perceiving considerably exaggerated substance use as typical at their school. The gap between the self-reported use and perceptions of use could be explained as students' shortsighted impressions of their peers based on limited personal information about each other's habits. Students must rely on impressions from their culture gleaned from behavior that gains the most attention from peers (Perkins, 1999). "The use of various drugs and their behavioral effects can certainly produce actions that gain attention. Casual conversation then reinforces and amplifies these observations into solid beliefs about what everyone is doing" (Perkins, 1999).

#### *Smoking behavior in adolescents*

Smith et al. (1999) researched the predictor variables that influence adolescents to smoke. The variables include: prior beliefs, family influence, peer pressure, advertising and exposure to antismoking information. Overall there were several variables that predicted smoking behavior across all age groups namely, family smoking behavior (siblings and parents), prior beliefs about the dangers of smoking, getting into trouble for smoking, peer pressure and reactions from friends. The number one predictor variable for smoking among all students was siblings who smoke, however for college students' parents smoking ranked first as the predictor variable. With regard to normative pressure, which is defined as indirect pressure on an adolescent arising from socialization with smoking peers to smoke, the study supported previous research on the strong influence of peer pressure on smoking behavior.

Castrucci et al. (2002) examined the association between adolescent smoking behaviors and perception of peer smoking, attitudes about smoking, and the influence of peer and parental attitudes about smoking choices. The results indicated that the external behavioral influences as well as the adolescents own beliefs/values affected their smoking behavior. A majority of adolescents believed that their peers smoked and those students who believed that 50% or more of adolescents their age smoked were more likely to be current smokers. The results also found a relationship between having a positive attitude toward smoking and greater likelihood of being a non-smoker, experimental or current smoker. Students who did not value their friends' opinions about smoking were 28% less likely to smoke and 20% less likely to be a current smoker. The role of parental smoking and the student's value of parental opinion were shown to have a relationship on the likelihood of the students being a current smoker. Those students whose parents smoked and the student did not value parental opinions were 50% more likely to smoke. While students whose parents did not smoke and the student did not value parental opinions were 58% more likely to be a current smoker.

Unger et al. (2002) researched the relationship between an adolescents' estimates of their peers' smoking prevalence and their own smoking behavior. The study looked at variables associated with smoking prevalence estimates. The variables included: respondents' smoking behavior and susceptibility, smoking behavior of best friends, similar others, and students in the respondents' school, perceptions of smoking in the media, perceived access to cigarettes, and cigarette offers. The research indicated that much of the variance in adolescents' smoking prevalence estimates is accounted for by the smoking behavior of their best friends and schoolmates. "Adolescents with smokers

in their social networks and schools may be especially susceptible to smoking, because their peers' smoking may give them the impression that smoking is more normative and prevalent than it actually is" (Unger, 2002).

Alesci et al. (2003) researched the association between the visibility of public smoking and the social norms that influence youth tobacco use. Results of the study indicated that smoking in public places is very obvious, especially to teen smokers. The increased visibility of smoking to student smokers supports their perceptions of smoking as normative or typical. Youths perceived greater social acceptability of smoking where they most often observed smoking in teens and adults thus supporting the relationship that the more smoking is seen by youth, the more they consider smoking socially acceptable and normal.

Eisenberg et al. (2003) hypothesized that young people will be more likely to smoke cigarettes if they perceived a high prevalence of teen smoking, often noticed teens smoking and believed that adults in the community did not care about teen smoking. The results indicated, awareness of other teens smoking and the perception that adults care about and disapprove of teen smoking was significantly related to past month smoking behavior. The researchers state that the presence (or absence) of young people smoking in a variety of settings can send a powerful message about appropriate and expected behavior for adolescents.

*Smoking in College Age Students*

Kear 2002 researched the combined effect of risk-taking tendency, depression, social normative beliefs, and resistance self-efficacy on initiation and continuation of cigarette smoking among college students. Kear 2002 notes, “surprisingly few studies have explored determinants of cigarette smoking” in the college student population.

The results indicated that resistance self-efficacy had the largest impact on smoking behavior as compared to the other three factors. “A smoker was much less likely than a nonsmoker to perceive him- or herself as capable of successfully resisting cigarette offers” (Kear, 2002). Risk-taking tendency was linked with higher reports of smoking among the social network. A high score on the social normative belief index was linked with lower resistance self-efficacy (Kear, 2002).

Each of the variables had an effect on smoking initiation and continuation. There was an inverse relationship between social normative beliefs and smoking resistance self-efficacy; “respondents who reported higher levels of smoking in their environment had lower expectations of their ability to successfully resist cigarette offers, compared to those who were not surrounded by smokers” (Kear, 2002). This study is consistent with others that support that peer and family smoking patterns are significant antecedents to personal smoking behavior (Kear, 2002).

Research on the influence of peer/social norms on smoking behavior in younger teens as well as college students’ alcohol consumption behaviors provide a framework to research the influence of social norms on tobacco use behavior in the college age population.

## Chapter 3

### Methodology and Design

#### *Subjects*

The subjects for this study included 56 students who attended the University of Michigan-Flint, during the Fall semester of 2005. No pre-selection of subjects or a list of names was used for this survey. A sample of convenience was used and obtained by the research worker within the University Pavilion Building. Both male and female students between the ages of 18 and 24 were used for this survey. The research worker made voluntary participation in this research project known to all participants through a consent form and verbal communication.

#### *Variables*

The variables, which were assessed in this study, were identified to determine if a relationship exists between the perception of tobacco use among peers and their own smoking behavior in college age students. The specific variables addressed in this research study were:

- Subjective norms
- Smoking behavior
- Perceived smoking habits of others

*Procedures*

A survey questionnaire developed by Kear 2001 was used to address the perception of tobacco use and actual smoking behavior. For the purposes of this study, the questionnaire was adapted into a written format as the Kear 2001 questionnaire was delivered electronically. The survey questionnaire and request for approval was submitted to the University of Michigan-Flint Review Committee for the Use of Human Subjects in Research. Once approval was received from the committee, the research worker solicited 56 students to complete the questionnaire. The questionnaire consisted of questions regarding: the students feelings about cigarette smoking and their perceived feelings of others including family, friends and significant others, the students own experience with cigarettes and the frequency of their use of cigarettes, the students knowledge of others smoking behavior including, mother, father, siblings, partner, and friends. Participants completed a written response to the survey questions.

No pre-selection of subjects or a list of names was used for this survey. A sample of convenience was used and obtained by the research worker within the University Pavilion Building. Both male and female students between the ages of 18 and 24 were used for this survey. If a student was not in the required age range, the research worker thanked them for their time and explained they could not participate. An informed consent form was attached to each survey, which detailed the survey and directions to complete the survey. Confidentiality of all information was explained to the participants. Each participant was informed that the completed research/thesis would be available at both the University of Michigan-Flint Library and the Department of Health Sciences and Administration.

### *Design*

A cross-sectional design was utilized to investigate the relationships between the variables of interest. Subjective norms, smoking behavior and others smoking behaviors were thought to have a direct relationship to the college students smoking behavior. Data was obtained using a descriptive questionnaire consisting of 16 questions and 5 voluntary questions regarding individual demographics.

### *Data Analysis*

Descriptive analysis of each section of the survey: subjective norms, smoking behavior, others smoking behavior and voluntary demographics was completed for both frequency and percent of total responses. A bivariate tabular analysis or Chi-square Test was completed to assist in determining whether or not there was a relationship between each of the subjective norm questions and respondent smoking status. The descriptive analysis and the Chi-square test are further discussed in the results and discussion sections of this thesis.

## Chapter 4

### Results

The purpose of this study was to determine if University of Michigan-Flint student's aged 18 to 24 subjective norms on tobacco use and their own smoking behavior were related. A sample of 56 students voluntarily completed a survey. The survey items measured subjective norms, smoking behavior, others smoking behavior and demographic information.

#### *Sample*

A total of 56 University of Michigan- Flint students participated in the survey. Sixty-four percent of the sample was female and 36% was male (see Table 1.0).

The participants' age range was limited to 18 to 24 years old. Forty-one percent of the sample was 18 years old, 23% was 19 years old, 4% was 20 years old, 20% was 21 years old, none of the participants were 22 years old, 5% were 23 years old and 7% were 24 years old (see Table 1.0).

The class ranking of the participants occurred in the following breakdown, 38% freshman, 30% sophomores, 20% juniors, 9% seniors and 3% graduate students (see Table 1.0).

The ethnic distribution of the sample included 80% White, not Hispanic, 9% African American, 2% Hispanic, 4% Asian, and 5% indicated other (see Table 1.0).

**Table 1.0** *Demographic profile of total sample (n=56)*

<b>Variable</b>	<b>Total</b>	<b>% of total</b>
<b>Sex</b>		
Male	20	36%
Female	36	64%
<b>Age</b>		
18 years old	23	41%
19 years old	13	23%
20 years old	2	4%
21 years old	11	20%
22 years old	0	0%
23 years old	3	5%
24 years old	4	7%
<b>Current year in college</b>		
Freshman	21	38%
Sophomore	17	30%
Junior	11	20%
Senior	5	9%
Graduate Student	2	3%
<b>Ethnicity</b>		
White, not Hispanic	45	80%
African American	5	9%
Hispanic	1	2%
Asian	2	4%
East Indian	0	0%
American Indian	0	0%
Other:	3	5%

*Smoking Behavior*

Information on the smoking behavior of the sample is presented in Table 2.0. Fifty-five percent of the participants reported never trying a cigarette; the remaining 45% had tried cigarettes with the first cigarette tried at the average age of 15 (see Table 2.0).

Participants responded to reasons why they tried cigarette smoking the first time. Fourteen percent reported peer pressure as the main reason, followed by 9% curiosity and wanted to, 4 % family, 3% appearance and 2% because it was risky (see Table 2.0).

The two variables utilized for determining cigarette use in 30 days, revealed the following responses from the participants: 86% had not smoked at all and 14% had smoked. Of the 14% that smoked, the average number of cigarettes smoked per day was 5 cigarettes (see Table 2.0).

The two variables utilized for determining cigarette use in one-year/365 days, indicated the following: 72% had not smoked even one cigarette while 29% had smoked at least one cigarette. During the 365-day period, the average number of cigarettes smoked was 4 per day (see Table 2.0).

Participants indicated they had tried cigarette smoking however when asked when they started smoking regularly, 88% indicated they were not smokers and 12% reported smoking regularly with the average age of 15 (see Table 2.0).

**Table 2.0** *Smoking Behavior of total sample (n=56)*

Variable	# of responses	% of total
<b>How old were you when you tried a cigarette for the first time?</b>		
Never smoked	31	55%
Average age	15	
<b>Main reason you tried cigarette smoking the first time</b>		
Peer pressure	8	14%
Curiosity	5	9%
Wanted to	5	9%
Family	2	4%
Appearance/cool	2	3%
Risky	1	2%
<b>During the past 30 days, how many days did you smoke cigarettes?</b>		
Zero	48	86%
# smoking responses	8	14%
<b>During the past 30 days, how many cigarettes did you smoke on average each day?</b>		
Zero	48	86%
# smoking responses	8	14%
Average #	5	
<b>During the past year, how many days did you smoke even 1 cigarette?</b>		
Zero	40	72%
# smoking responses	16	29%
<b>During the past year, on the days you smoked, how many did you smoke on average each day?</b>		
Zero	43	77%
# smoking responses	13	23%
Average #	4	
<b>How old were you when you first started smoking regularly?</b>		
Zero	49	88%
# smoking responses	7	12%
Average #	15	

*Other's Smoking Behavior*

The smoking behavior of other's within each participant's social environment including where applicable: mother, father, partner and friends were addressed in the survey. For the participants father: 46% never smoked, 18% quit smoking, 4% occasionally smoke, 5% smoke regularly, but not daily, and 27% smoke daily (see Table 3.0).

For the participants mother: 63% never smoked, 16% quit smoking, 5% smoke regularly, but not daily, 14% smoke daily and 2% was NA (see Table 3.0).

For the participants partner which included boyfriend, girlfriend, husband or wife, 39% never smoked, 4% quit smoking, 7% occasionally smoke, 7% smoke daily and 43% was NA (see Table 3.0).

For the participant's friends, 45% never smoked, 4% quit smoking, 30% occasionally smoke, 9% smoke regularly, but not daily, 10% smoke daily and 2% was NA (see Table 2.0).

**Table 3. 0 Other's Smoking Behavior (n= 56)**

Variable	Response	Total % of total	
Father	Never smoked	26	46%
	Quit smoking	10	18%
	Occasionally smoke	2	4%
	Smokes regularly, but not daily	3	5%
	Smokes daily	15	27%
	NA	0	0%
Mother	Never smoked	35	63%
	Quit smoking	9	16%
	Occasionally smoke	0	0%
	Smokes regularly, but not daily	3	5%
	Smokes daily	8	14%
	NA	1	2%
Partner	Never smoked	22	39%
	Quit smoking	2	4%
	Occasionally smoke	4	7%
	Smokes regularly, but not daily	0	0%
	Smokes daily	4	7%
	NA	24	43%
Most of my friends	Never smoked	25	45%
	Quit smoking	2	4%
	Occasionally smoke	17	30%
	Smokes regularly, but not daily	5	9%
	Smokes daily	6	10%
	NA	1	2%

*Subjective Norms*

Five questions make up the subjective norm portion of the survey, beginning with how each respondent feels about smoking cigarettes 21% indicate it is OK while 79% indicate it is NOT OK (see Table 4.0).

The results indicate that the participants feel that 18% of their parents feel smoking is OK, while 79% indicate it is NOT OK and 3% were NA (see Table 4.0).

In regards to siblings, 13% thought their siblings would feel smoking was OK while 73% felt NOT OK would be their sibling's response and 14% were NA (see Table 4.0).

The participants indicated that 11% of their partners feel smoking is OK while 46% feel it is NOT OK and 43% were NA (see Table 4.0).

Finally the participants responded to how they felt most of the friends felt about smoking cigarettes, 46% thought their friends were OK with smoking while 54% thought their friends were NOT OK with smoking (see Table 4.0).

**Table 4.0 Subjective Norms (n=56)**

Variable	Response Total % of total		
I feel that smoking is	OK	12	21%
	NOT OK	44	79%
My parents feel that smoking cigarettes is	OK	10	18%
	NOT OK	44	79%
	NA	2	3%
My siblings feel that smoking cigarettes is	OK	7	13%
	NOT OK	41	73%
	NA	8	14%
My partner feels that smoking cigarettes is	OK	6	11%
	NOT OK	26	46%
	NA	24	43%
Most of my friends feel that smoking cigarettes is	OK	26	46%
	NOT OK	30	54%

*Bivariate Analysis/ Chi-square*

Further analysis was completed on the 5 questions that comprised the subjective norms portion of the survey. The purpose was to determine whether or not there was a relationship between each of the subjective norm questions and respondent smoking status. The Chi-square test of independence was chosen, as it is a nonparametric procedure that examines whether or not two variables are independent of one another.

**Table 5.0** *Chi-square analysis of independence of subjective norms and smoking status (n=56)*

Variable	Value	df	Asymp. Sig
1. I feel smoking is OK/NOT OK	8.9168	1	0.01
2. My parent(s) feel that smoking is OK/NOT OK	1.0066	2	1.00
3. My sibling (s) feel that smoking is OK/NOT OK	0.7482	2	1.00
4. My partner feels that smoking is OK/NOT OK	0.6596	2	1.00
5. Most of my friends feel that smoking is OK/NOT OK	8.3918	1	0.01

A chi-square test of independence was calculated comparing the subjects' smoking status and the subjects' beliefs about how other's feel about their smoking (see Table 5.0). A significant interaction was found (chi-square (1) = 8.9168,  $p < .01$ ) between subjects smoking status and whether or not they felt that smoking was OK.

No significant relationship was found (chi-square (2) = 1.0066,  $p > 1.0$ ) between subject's smoking status and whether or not they thought their parents felt smoking was OK. Further, no significant relationship was found (chi-square (3) = 0.7482,  $p > 1.0$ ) between subject's smoking status and whether or not they thought their siblings felt smoking was OK. And no significant relationship was found (chi-square (4) = 0.6596,  $p > 1.0$ ) between subject's smoking status and whether or not they thought their partner felt smoking was OK.

With the final variable, a significant interaction was found (chi-square (5) = 8.3918,  $p < .01$ ) between subjects smoking status and whether of not they thought their friends felt smoking was OK.

## **Chapter 5**

### **Discussion**

#### *Summary*

The purpose of this study was to look at three variables: subject's smoking behavior, others smoking behavior and subjective norms and their relationship with the smoking status of college age students.

The primary objectives of this study were to elicit information on college student's actual smoking behavior and their perception of others smoking behavior and subjective norms to see if a relationship existed. A thorough review of the literature was conducted. Literature regarding the use of tobacco in college age students was limited however research on the use of alcohol in college age (18 to 24 years old) students and the use of tobacco in adolescents (12 to 17 years old) was prevalent. Further exploration of the research revealed several variables that have contributed to the increase in both of those behaviors and provided useful information that could then be linked to tobacco use in college age students.

This study utilized a 21-question survey, which addressed subjective norms, smoking behavior, other's smoking behavior and demographics.

#### *Smoking Behavior*

Each subject's smoking behavior was addressed in the survey with several specific questions regarding when they first smoked, actual smoking behavior in the last 30 days and in the last 356 days. Results from these questions indicate that 55% of the sample report never having tried a cigarette. While 45% of the sample indicated having tried

smoking, within this 45% the first cigarette was smoked at the average age of 15. Kear (2001) reports the national average of college age students for having ever smoked is 54%. The sample in this study indicated a lower than average percent for ever trying a cigarette.

While 45% of the sample reported smoking a cigarette in their lifetime, only 14% reported regular smoking in the last 30 days. This percentage is comparable to the national average of 15% of regular smoking in college age students (Kear, 2001).

#### *Other's Smoking Behavior*

Research on smoking in young adolescents has consistently found that one's social environment and influences play a role in the use of tobacco. In this survey, the participants were asked a series of questions regarding the smoking behavior of their father, mother, partner and friends. The results indicated that 46% of participants fathers never smoked, 63% of mothers never smoked, and 45% of friends smoked. Each of these three influences could have a relationship on the 55% of respondents who indicated they never smoked.

#### *Subjective Norms*

The high influence peers have on college student's behavior is well documented in the research particularly the influence on alcohol and drug use (Social Norms, 2002).

Norms are fundamental to understanding social order as well as variation in human behavior. Group norms reflected in the dominant or most typical attitudes, expectations, and behaviors that regulate group members' actions to perpetuate the collective norm (Perkins, 2002).

Participants were asked 5 questions regarding subjective norms to determine if they thought smoking was OK or NOT OK and what they thought others believed. Seventy-nine percent of the subject's indicated smoking was NOT OK. While 21% indicated smoking was OK. Statistical analysis indicated a significant interaction between subjects smoking status and whether or not they felt that smoking was OK.

The participants also indicated they believed that 79% of parents felt smoking was NOT OK, 73% of siblings felt smoking was NOT OK, and 46% of partners felt smoking was NOT OK. Statistical analysis indicated no significant interaction between subjects smoking status and whether or not parents, siblings or partners felt smoking was OK.

Results indicated that participants believed that 54% of their friends felt smoking was NOT OK. While 46% indicated they thought their friends believed smoking was OK. Statistical analysis indicated a significant interaction between subjects smoking status and whether or not they felt that their friends thought smoking was OK.

The significant interaction between actual smoking status and individual beliefs that smoking is OK as well as the significant relationship between actual smoking status and the perception that friends believe smoking is OK is consistent with literature findings that indicate the importance of peer attitudes and actions (Kear, 2001).

### *Strengths of the Study*

The results of this study indicated a significant relationship between actual smoking behavior and the social norms of their peer group. Research specifically targeting college age students smoking behavior is limited. With the understanding that peers and social norms have on smoking behavior health educators can develop targeted interventions and conduct further research.

### *Limitations of the Study*

The sample size for this study was small (56 participants) and the percentage of subjects who self reported as being regular smokers was only 14% of the sample. Furthermore, although the age range of the sample was limited to 18-24 years, a high proportion of participants were 18 years old (41%) thereby limiting the representitiveness of the sample for the older end of the age range. The sample was gathered in a popular on campus location during the lunch hour, which may have been a time constraint for some participants. Lastly, the survey tool utilized was originally designed for an electronic web based interaction. However, this study was in a written format with personal solicitation by this research worker for students to participate.

### *Conclusions*

Cigarette smoking is on the rise in college age students (18 to 24 years old). Literature and research on why this increase is occurring is limited. The primary objectives of this study were to elicit information on college student's actual smoking behavior and their perception of others smoking behavior and subjective norms to see if a relationship existed. These variables have been indicated as factors in the increase in drinking in college age students and the onset of smoking in adolescents. The significant relationship between subjects smoking status and whether or not they felt that smoking was OK and whether or not they felt their friends thought smoking was OK can be used to conduct further research on the topic and to develop health interventions that target college age students.

*Recommendations for future research*

This research targeted the role normative beliefs and subjective norms have on behavior, i.e. smoking. Further research could target the role of behavioral beliefs and attitude toward the behavior so that both components of the Theory of Reasoned Action could be analyzed. There are other determinants of behavior that could be researched in regard to smoking including: motivation, decision-making, and self-efficacy (the students ability to say no).

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## Appendix 1 Participant Consent Form

### **Information for Subjects Completing *Social Norms and Smoking Behavior in College Age Students***

The following information is being presented to help you decide if you would like to be part of this research survey. If you do not understand any part of this form, please ask for clarification.

**Title of Study:** Social Norms and Smoking Behavior in College Age Students

**Research Worker:** Kelly L. Tucker, Candidate for Master of Science in Health Education, Department of Health Sciences & Administration, University of Michigan- Flint.

**Principal Investigator:** Joan Cowdery, PhD, University of Michigan- Flint, Department of Health Sciences & Administration

**Purpose of Study:** This is a study to gather information about perception of tobacco use and actual use of tobacco. Your answers are helpful, whether you smoke or not.

**Procedure:** All students enrolled at University of Michigan- Flint for the Fall 2004 semester will receive an email with an invitation to participate in this survey. Any student between the ages of 18 to 24 can participate, students not within this age range will be asked to disregard the email. You will be asked questions about your opinions regarding smoking, your smoking experience, and smoking habits of your family and friends. If you agree to take part in this survey, you will be asked to complete the questionnaire, which will take about 10 – 15 minutes.

**Confidentiality:** Your privacy and research records will be kept confidential to the extent provided by federal, state and local law. You will not be asked to identify yourself at the time you answer the questions, nor will any identifying information be collected electronically. All survey responses will be stored in a locked file. Approved staff of the research team at the University of Michigan- Flint, Department of Health Sciences and Administration and The University of Michigan- Flint Review Committee for the Use of Human Subjects in Research may inspect the files from this research survey.

The results of this survey may be published. The data obtained from you will be presented in group form. The published results will not include your name or any other details that would in any way identify you.

**Payment:** You will not be paid for participating in this study, nor are there any costs to you.

**Risk and Benefits:** There are no known risks associated with taking part in this survey. There are no direct benefits to you for taking part in this survey; however, the results will

be useful in developing interventions for smoking prevention programs in college age adults.

**Volunteering to Be Part of this Research Survey:** Your participation in this study is voluntary. You may choose not to answer questions that make you uncomfortable or to withdraw from the study at any time. If you choose not to take part, or if you withdraw, there will be no penalty or loss of benefits that you are entitled to receive. Your decision about whether to participate in this survey will no way affect your academic standings at the University.

**Funding for this survey:** This survey is not being paid for by any funds contributed by foundations or agencies in Genesee County or by the federal government through a grant to the University of Michigan- Flint.

**Questions and Contacts:** If you have any questions about this research survey, call Kelly Tucker, P.T. at (586) 942-8333 or Joan Cowdery, PhD. at 810-762-3172.

**Participant Consent:**

- I have fully read this consent form describing this research survey.
- I have had the opportunity to question one of the persons in charge of this research and have received satisfactory answers.
- I understand that there are no benefits or risks and that I am being asked to take part in this research survey. I freely give my consent to participate in the research survey as outlined in this form.
- I understand that by completing the survey and returning it via email, I am consenting to participate and for the researchers to use my response data.

**Investigator Statement:** The nature of the above study has been thoroughly explained to the participant. I hereby certify that to the best of my knowledge the participant understands the nature, demands, risks, and benefits involved in participating in this survey.

\_\_\_\_\_  
Signature of Investigator  
Or Authorized research investigators  
Designated by the Principal Investigator

\_\_\_\_\_  
Printed Name of Investigator

\_\_\_\_\_  
Date

**Institutional Approval of Research Survey and Informed Consent:** This research project/survey and informed consent form were reviewed and approved by the Department of Health Care Studies at the University of Michigan-Flint and the University of Michigan-Flint Review Committee for the Use of Human Subjects in Research.

## Appendix 2

### Survey Questionnaire Regarding *Social Norms and Smoking Behavior in College Age Students*

**Introduction and Instructions:** You will be asked questions about your opinions regarding smoking, your smoking experience, and smoking habits of your family and friends. If you agree to take part in this survey, you will be asked to complete the questionnaire, which will take about 10 – 15 minutes.

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#### **SUBJECTIVE NORMS**

The next 5 questions ask about opinions regarding cigarette smoking. Mark the response (OK, NOT OK, or NA) that you believe most accurately describes the person's feelings about cigarette smoking. Please answer all of the questions, even if you feel no answer is perfect and you have to make a "guess".

1. I feel that smoking cigarettes is
  - a. OK
  - b. NOT OK
  
2. My parent(s) feel that smoking cigarettes is
  - a. OK
  - b. NOT OK
  - c. NA
  
3. In general, my sibling (s) feel that smoking cigarettes is
  - a. OK
  - b. NOT OK
  - c. NA
  
4. My partner (boyfriend, girlfriend, husband, wife) feels that smoking cigarettes is
  - a. OK
  - b. NOT OK
  - c. NA
  
5. Most of my friends feel that smoking cigarettes is
  - a. OK
  - b. NOT OK
  - c. NA

---

**SMOKING BEHAVIOR**

The following 7 questions ask about your own smoking experience. Please provide the most accurate answer you can remember.

1. How old were you when you tried a cigarette for the first time?  
\_\_\_\_\_ Years old

2. What was the main reason you tried cigarette smoking the first time? You may list more than one reason. Please insert a comma between each reason.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

3. During the past 30 days, on how many days did you smoke cigarettes? If none, record "0" (zero).  
\_\_\_\_\_ Days

4. During the past 30 days, on the days you smoked, how many cigarettes did you smoke on average each day? If none, record "0" (zero).  
\_\_\_\_\_ Cigarettes per day

5. During the past year, how many days did you smoke even one cigarette? If none, record "0" (zero). (There are 365 days per year).  
\_\_\_\_\_ Days in the past year

6. During the past year, on the days you smoked, how many cigarettes did you smoke on average each day? If none, record "0" (zero).  
\_\_\_\_\_ Cigarettes per day

7. How old were you when you first started smoking regularly? If you never smoked regularly, please indicate "no".  
\_\_\_\_\_ Years old

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**OTHER'S SMOKING BEHAVIOR**

The next 4 questions ask about the smoking habits of your family and friends. Please choose the answer that you believe best describes the smoking behavior of the person listed. Please answer all of the questions, even if you feel no answer is perfect and you have to make a "guess".

**1. My father**

- \_\_\_\_\_ Never smoked
- \_\_\_\_\_ Quit smoking
- \_\_\_\_\_ Occasionally smokes
- \_\_\_\_\_ Smokes regularly, but not daily
- \_\_\_\_\_ Smokes daily
- \_\_\_\_\_ NA

**2. My mother**

- \_\_\_\_\_ Never smoked
- \_\_\_\_\_ Quit smoking
- \_\_\_\_\_ Occasionally smokes
- \_\_\_\_\_ Smokes regularly, but not daily
- \_\_\_\_\_ Smokes daily
- \_\_\_\_\_ NA

**3. My partner (boyfriend, girlfriend, husband, wife)**

- \_\_\_\_\_ Never smoked
- \_\_\_\_\_ Quit smoking
- \_\_\_\_\_ Occasionally smokes
- \_\_\_\_\_ Smokes regularly, but not daily
- \_\_\_\_\_ Smokes daily
- \_\_\_\_\_ NA

**4. Most of my friends**

- \_\_\_\_\_ Never smoked
- \_\_\_\_\_ Quit smoking
- \_\_\_\_\_ Occasionally smokes
- \_\_\_\_\_ Smokes regularly, but not daily
- \_\_\_\_\_ Smokes daily
- \_\_\_\_\_ NA

---

**DEMOGRAPHICS**

## 1. Sex

\_\_\_\_\_ Male  
\_\_\_\_\_ Female

## 2. Current age:

\_\_\_\_\_ Years old

## 3. Current year in college:

\_\_\_\_\_ Freshman  
\_\_\_\_\_ Sophomore  
\_\_\_\_\_ Junior  
\_\_\_\_\_ Senior  
\_\_\_\_\_ Graduate student

## 4. Race/Ethnic background

\_\_\_\_\_ White, not Hispanic  
\_\_\_\_\_ African American  
\_\_\_\_\_ Hispanic  
\_\_\_\_\_ Asian  
\_\_\_\_\_ East Indian  
\_\_\_\_\_ American Indian  
\_\_\_\_\_ Other: please list

## 5. Who do you live with?

\_\_\_\_\_ I live alone  
\_\_\_\_\_ I live with a partner (spouse, boyfriend, girlfriend)  
\_\_\_\_\_ I live with a roommate  
\_\_\_\_\_ I live with my parents or a family member