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UNDERSTANDING THE MOTIVATIONAL FACTORS FOR COLLEGE STUDENTS TO  
REMAIN NON-SMOKERS

BY

CHANLER HILLEY

HEALTH PROMOTION

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Submitted in Partial Fulfillment of the  
Requirements for the Degree of Bachelor of Science  
in the Honors Program at  
Coastal Carolina University

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### Understanding the Motivational Factors for College Students to Remain Non-smokers

Cigarette smoking has long been recognized as a negative health behavior. Numerous studies have linked cigarette smoking to cancer, heart and circulatory problems, lung disease, and an array of other health issues, leading to lower quality of life and premature death. There is a wealth of knowledge relating to the negative outcomes of smoking behavior (USDHHS, 2010) and the factors leading to smoking behavior among adolescents (USDHHS, 2012). However, researchers have studied factors leading to nonsmoking behavior much less. Likewise, current interventions focus on decreasing the negative influences that lead to smoking behavior rather than increasing the positive influences that may curb smoking initiation. Through current and previous public health campaigns to decrease smoking initiation, rates of smoking among college-aged adults (18-24) have decreased from 24.4% in 2005 to 18.9% in 2011 (CDC, 2012). While this 5.5% decrease in smoking rates is remarkable, the current rate of smoking among college-aged adults lies only slightly below the national average for all adults, which was 19.0% in 2011 (2012). In order to restructure interventions, it is necessary to first understand the positive influences that lead to nonsmoking behavior, in addition to the factors that lead to smoking behavior. Once we can explain these factors, public health should use the knowledge to restructure preventive campaigns.

While smoking is, in fact, a public health problem, the implications of the behavior extend well beyond public health. Many studies have found that lower achieving students are more likely to be smokers than their higher achieving counterparts (Ruthig et al., 2011). Interestingly, Ruthig et al. also found that increased tobacco use in college men actually predicted lower academic success; this had not previously been observed (2011). Twenty-nine states allow employers to refuse employment to individuals based on their status as a smoker

(Schmidt, Voight & Emanuel, 2013), and not only are students with lower grade point averages more likely to be smokers, tobacco use among college men predicted lower academic achievement (Ruthig, Marrone, Hladkyj & Robinson-Epp, 2011).

The present study uses the Theory of Planned Behavior to understand the motivational factors that lead to a student's nonsmoking behavior, with the hypotheses that: (1) non-smokers will have the most favorable intention to not smoke; (2) non-smokers will have the most favorable attitudes toward non-smoking; (3) non-smokers will have the most favorable social perception of non-smoking; and (4) non-smokers will perceive the most control over their non-smoking.

## **Literature Review**

### **Smoking Among College Students**

Cigarette smoking among young adult college students is a particularly pressing concern for public health, but cigarette smoking has other implications beyond public and individual health. While use of cigarettes by college students rose 28% between the years 1993 and 1999 (Rigotti, Regan, Moran & Wechsler, 2003), the most recent report of the Centers for Disease Control and Prevention (CDC) found that the rate of cigarette smoking among adults aged 18-24 fell to 18.9%. That rate is still just 0.1% lower than the most recent rate for all adults (CDC, 2012). It is important to note, however, that this rate is not of adults actually enrolled in college, but of adults who are of traditional college age. Due to differences in the definition of "current smoker" and other smoking status terms between organizations, smoking rates are often difficult to compare. For example, the CDC defines a current smoker as a person who has smoked at least 100 cigarettes in their lifetime and reports smoking every or some days; the American College Health Association's National College Health Assessment does not define smoking status, rather

it reports frequencies of use; and the current study asked participants to indicate their perception of their own smoking status.

While the specific cause for smoking initiation and continuation among college students remains unclear, it is theorized that the collegiate environment lends itself to the promotion of initiation and continuation of smoking habits (Rigotti, Regan, Moran & Wechsler, 2003). With 42.0% of all adults aged 18-14 attending a college or university in 2012, higher education as a social institution is significant to tobacco industries as a target and, thus, is important to the field of public health as a target (National Center for Education Statistics, 2012, Table 213). The 2012 Report of the Surgeon General also takes note of this. The report contends that, in order to end the “epidemic” of cigarette use in the United States “primary prevention is required, for which our focus must be on youth and young adults” (USDHHS, 2012, p. 3).

Previously, researchers thought that smoking initiation occurred primarily before the age of 18, but the reality is that initiation can, and now commonly does, begin during young adulthood (Ling & Glantz, 2002). In fact, Ling and Glantz note that “the number of 18- to 19 year olds in the early stages of smoking initiation is more than twice the number of 18-year old established smokers” (2002, p. 908). Young adults in the early stages of smoking initiation are still in transition, and have the potential to become habitual smokers, but they also have the potential to become nonsmokers. This is, in part, the reason tobacco campaigns target young adults. The tobacco industry recognizes that the transition from beginning smoking to regular smoking happens in a series of stages. To this end, the companies strategically market to young adults in each of the transitional stages (Ling & Glantz, 2002). Furthermore, young adults are the youngest legal target population for the tobacco industry as per the 1998 Master Settlement Agreement (Ling & Glantz, 2002).

Additionally, Ling and Glantz note that smoking typically begins as a means to connect younger teens with their peers and their social settings, helping them feel accepted and comfortable, but eventually becomes “a habitual response to stress or boredom in adulthood” (2002, p. 909). Interestingly, smoking may serve all of those purposes in young adulthood. This is particularly noteworthy among college students being introduced to a new social group with which they may feel the need to connect. The collegiate environment also subjects students to increased stress due to new academic, social, and other pressures. As indicated by Ling and Glantz (2002), the tobacco industry utilizes the vulnerability of people in stressful situations, including college students, to contribute to the initiation and continuation of smoking. Especially for college students, smoking may begin as a response to stressful situations or social transition, but might continue with further or increased stress (2002). However, the positive aspect to the transitive state of young adults also presents the virtually untapped opportunity of public health to combat the process of producing even more daily smokers (Ling & Glantz, 2002).

Data analyzed by Choi, Harris, Okuyemi, and Ahluwalia indicate that students who are beginning smokers in high school will subsequently become either heavy smokers or nonsmokers in college (Choi, Harris, Okuyemi & Ahluwalia, 2003). This supports the notion that college is a transition phase and that efforts by college administrators to intervene in smoking patterns at their institutions have the potential to be successful. Additionally, half of college student smokers have attempted to quit smoking for at least twenty-four hours, with almost a quarter of those students making five or more attempts (Choi et al., 2003). Therefore, Choi et al. suggest that interventions by colleges and universities propagate the message that nonsmoking is the normative behavior, even though it may be perceived otherwise (2003). This can be partially accomplished by mandating campus buildings as smoke-free and limiting the

advertising and availability of cigarettes to students (Choi et al., 2003). These interventions are important because the higher prevalence of smoking among current and recent college students will likely translate to a higher prevalence in the general adult population in the future, contrary to the recent decline in smoking among that population (Choi et al., 2003).

However, there are some predictors that seem to indicate differing risks of becoming a smoker. Choi et al. recognize that white students had higher rates of smoking than their nonwhite counterparts (2003). But African-American population tend to be underrepresented in current smoking research (Powe, Ross, & Cooper, 2007). Within this population, Powe et al. note that “the incidence of cigarette smoking is also higher for those with lower incomes and less formal education” (2007). They also note in their findings that male students at historically Black colleges and universities who smoke feel more masculine and less anxious, which is consistent with research among other populations (2007). But these colleges have the opportunity to act as deterring agents through their existing structures (Powe et al., 2007). But race is not the only predictor of risks for smoking, and is likely one of the least important. According to social learning models, as indicated by Wetter, Kenford, Welsch, Smith, Fouladi, Fiore, and Baker, family and peers influence smoking behavior (2004). Specifically, the initiation of smoking is associated with peer and parental smoking; conversely, the likelihood of quitting smoking as a young adult is associated with less parental smoking (Wetter et al., 2004). In addition to certain factors predicting smoking behavior, smoking behavior may have further indications, like predicting depression (Wetter et al., 2004).

Overall, cigarette smoking among college students is a public health concern due to the fact that initiation of smoking has transitioned from something that occurs before age 18 into something that occurs in young adulthood. This is due to many factors, including the pressures of

a transitional life period and regulations on the tobacco industry. Likewise, young adulthood and the collegiate years are ideal periods for public health measures to intervene in smoking initiation and continuation.

### **Theory of Planned Behavior**

The Theory of Planned Behavior is one way to understand this problem. In fact, the theory is one of the most cited in health behavior research, with 4,550 citations in 2010 (Ajzen, 2011). Icek Ajzen developed the Theory of Planned Behavior as an extension of the earlier Theory of Reasoned Action, at the recognition of the limitations of Theory of Reasoned Action. Ajzen and Martin Fishbein first introduced the latter in 1975 as a means of “predicting and explaining volitional behavior” (Ajzen, 1985, p. 12). Theory of Reasoned Action posits that “actions [...] are controlled by intentions, but not all intentions are carried out” (1985, p. 11). In this case, behavioral intention is determined by two factors: attitude toward the behavior and subjective norm. Attitude toward behavior is defined as an “individual’s positive or negative evaluation of performing the behavior” (1985, p. 12), which is measured by an individual’s belief about the outcomes of a behavior and evaluation of those outcomes (Ajzen, 1991). Subjective norm is defined as a “person’s perception of the social pressures put on him to perform or not perform the behavior in question” (Ajzen, 1985, p. 12), and is measured by normative beliefs of specific individuals and a person’s motivation to comply with the beliefs of those individuals (Ajzen, 1991). However, the Theory of Reasoned Action is limited in that the behavior in question must be under volitional control. It is here that Ajzen’s Theory of Planned Behavior begins.

The Theory of Planned Behavior builds upon the Theory of Reasoned Action by taking into account nonvolitional factors and perceived and actual power of control over a behavior.



This perceived behavioral control is measured by “the strength of the attempt” (p. 36) and his or her control over other factors (1985). Ajzen notes that, although the Theory of Reasoned Action was created first, it is a special case of the Theory of Planned Behavior (rather than vice versa) because a person has volitional control over the behavior in the former. Through this extension, Ajzen additionally notes, “intentions can only be expected to predict a person’s *attempt* to perform a behavior, not necessarily its actual performance” (1985, p. 29). In his review of the Theory of Planned Behavior, Ajzen (1991) summarizes:

The theory incorporates some of the central concepts in the social and behavioral sciences, and it defines these concepts in a way that permits prediction and understanding of particular behaviors in specified contexts. Attitudes toward the behavior, subjective norms with respect to the behavior, and perceived control over the behavior are usually found to predict behavioral intentions with a high degree of accuracy. In turn, these intentions, in combination with perceived behavioral control, can account for a considerable proportion of variance in behavior (p. 206).

### **Future Orientation and TPB**

In his original description of the Theory of Planned Behavior, Ajzen notes that most social psychologists agree that human behavior is, for the most part, goal-driven (1985). While this is the consensus, the degree to which humans actually cogitate about the long-term effects of current behaviors on future goals varies. Several studies have been performed to understand college students’ and young adults’ perceptions of possible selves and risky behavior, such as smoking. The notion of a person’s possible self is the holistic view of his or her future and life goals, and can include both the ‘self’ people aspire to become and the ‘self’ people attempt to avoid (Hooker & Kaus, 1994).

Hooker and Kaus (1994) studied individuals in young and middle adulthood to attempt to understand when and how possible selves are developed. They hypothesized that a health-related possible self would emerge in middle adulthood. Additionally, they proposed that people possessing a “health-related possible self, the self-regulatory processes of self-efficacy, outcome expectancy, and goal-oriented activities listed for that possible self” (p. 127) will be more inclined to perform health behaviors that will achieve that image (Hooker & Kaus, 1994). Hooker and Kaus surveyed young adults with a mean age of 31.8 years and middle-aged adults with a mean age of 47.7 years. While both of these mean ages are well beyond the ages of traditional college students (18-24), the implications of the research relate. The authors found that middle-aged adults were significantly more likely to have a health-related possible self than young adults (1994) and, by extension, college students. They noted that health-related possible selves were “completely absent” (p. 129) from almost one third of the young adults they sampled. For the purpose of the present study, the absence of a health-related possible self might imply that younger people are more likely to smoke because they do not possess an image of the possible consequences of cigarette smoking. Additionally, while both young adults and middle-aged adults in their sample had some sort of feared health-related selves, the older adults were more likely to have both a negative and positive image (1994). In essence, young- and middle-aged adults are more likely to possess a mental “future” image of themselves that they fear becoming. While older adults are also likely to have this feared image, they also have a mental “future” image of themselves that is positive. The importance of this lies in motivation. Because both types of health-related possible selves—positive and negative—serve as motivators and older people are more likely to possess both images, it would continue that older adults would engage in healthier behavior (1994, p. 131). The findings of Hooker and Kaus begin to help

understand that health-related possible selves, or future orientations, are developed over time and tend to be less existent in younger populations (1994).

Further research has been conducted to understand the perception of risk among college students as it relates to smoking habits. One specific study by Murphy-Hoefer, Alder, and Higbee (2004) surveyed over 1,000 college students to understand their perceptions of risk. This research is consistent with other findings that smokers, and particularly college students who were smokers, underestimate the consequences of their smoking habits when compared to their nonsmoking counterparts (Murphy-Hoefer, Alder, & Higbee, 2004). Only 58% of frequent smokers surveyed believed people risked being harmed from smoking one to five cigarettes every day (answering “Definitely Yes”), while 64% of their occasional smoking counterparts and 81% of their nonsmoking counterparts believed they were being harmed (2004, p. S373). Additionally, 36% of frequent smokers and 59% of nonsmokers believed people are at risk of harm if they smoke only during the weekend or several days per week, while only 28% of occasional smokers believed the same (2004, p. S373). Finally, 89% of nonsmokers and 84% of occasional and frequent smokers believed people can get addicted to tobacco in a similar fashion as cocaine or heroin addictions, but 71% of the participants had tried smoking and only 7% of smokers believed they would still be smoking 5 years after the survey (2004, p. S373). The fact that college smokers and occasional smokers underestimate the addictive properties and health consequences is evidenced in this data. Specifically, that over 80% of all students viewed tobacco as addictive but almost three-quarters had experimented and less than a tenth felt they would continue to be smoking is alarming. This data suggests that, even though college students are fully aware of the addictive properties of tobacco, they continue to experiment with those

addictive substances. Additionally, smokers might underestimate the difficulty of quitting smoking and staying quit.

However, another study by Kenford et al. suggests that college students do, in fact, have “an excellent sense of the ease or difficulty with which they could stop smoking” (Kenford, Wetter, Welsch, Smith, Fiore & Baker, 2005, p.291). Participants in the Kenford et al. study who recognized it would be hard to quit smoking were more likely to still be smoking at their follow-up four years later. This study, however, focused on college students considered low-level smokers, rather than the spectrum of college smokers, and cannot be generalized to the national collegiate population due to participant demographics.

### **Theory of Planned Behavior Applied to Smoking and Nonsmoking Behavior**

At least one study has been performed to investigate nonsmoking intentions among college students. Nehl et al. report in their 2009 article that the Theory of Planned Behavior “may aid in understanding collegiate nonsmoking intentions and help begin to explain differences in smoking on the basis of ethnicity” (Nehl, Blanchard, Peng, Rhodes, Kupperman, Sparling, Courneya & Baker, 2009, p. 23). At its foundation, the Theory of Planned Behavior is a three-fold model, including attitude toward a behavior, subjective norm, and perceived behavioral control (PBC), all of which influence behavioral intention and, thus, behavior performance (Nehl et al., 2009). Nehl et al. note that attitudes and subjective norm were not strong predictors of nonsmoking intention in Black or white college students (2009). As a result of the stronger association with PBC and behavioral intention observed in this study, the authors note that further research and programming related to nonsmoking should focus on perceived behavioral control, especially in the context of ethnic differences (2009).

Additionally, Brann and Sutton (2009) applied the Theory of Planned Behavior to college students' willingness to communicate about smoking behaviors. College student smokers and nonsmokers were surveyed, hypothesizing that each of the three constructs of the Theory of Planned Behavior (attitudes toward behavior, subjective norm, and perceived behavioral control) would be positively associated with students' behavioral intentions (Brann & Sutton, 2009). Their survey identified three separate communication behaviors: a smoker asking if their smoking was bothersome, telling a smoker that his or her smoking is bothersome, and explaining that smoking is not requisite for having fun. The researchers found that a person's attitude toward the behavior of communication regarding smoking was positively associated with that person's intention to engage in that behavior, while their hypotheses about subjective norm and perceived behavioral control were not supported (p. 203). This study found that students will engage in the communication behavior if they feel it is "good, wise, and rewarding" (p. 204). While this research is not related directly to the act of cigarette smoking, it begins to paint the picture of social norms toward smoking on college campuses. Unlike drinking, which has an immediate impact, the effects of smoking are seen over a much longer period of time. College students were more likely to tell a person who has been drinking that he or she should not drive than they are to tell a person to quit smoking (p. 205) because it is less "good, wise, and rewarding" (p. 204). The students used the possible immediate impacts of driving while drunk to discourage peers from doing so, but were less likely to discourage peers from smoking because the implications are less immediate. For the purpose of this study, this means that college students are more likely to take action on situations and behaviors that have immediate impacts, but not ones that have future or less immediate impacts.

### **Gaps in Research**

College smoking research in general tends to have certain limitations. Some research is limited to only a few participants or participating institutions. Other research is limited in that secondary, and often outdated, data is used to compile statistics. Most of all, the research is limited in that it focuses mostly on the effects of policies or the opinions of students. In the former case, only colleges with existing policies can be studied, often with no data from pre-policy periods. In the latter, administrators may be able to gauge a sense of the student opinion overall, but not at their own institutions. The majority of research aims to better understand smoking cessation among college students. Other research relating to smoking among college students aims to identify factors leading to smoking in hopes of reducing those factors. Very little research identifies factors that lead to nonsmoking among college students. It is here that the present study aims to fill the gap in literature, in hopes of influencing effective programming to increase those positive factors.

## **Methods**

### **Participant Recruitment**

Participants were recruited via an email sent to the entire student population of a mid-sized comprehensive university in the Southeastern United States. While this method of convenience sampling lends itself to voluntary response bias, it gives every student the opportunity to participate, with the assumption that the respondents are representative of the entire university population. The university's Institutional Review Board reviewed and approved recruitment methods and survey instruments. Students received an email inviting them to participate in the web-based survey and informing them of their rights as a participant. A second email (with the same text as the first) was sent to all students the day before the survey closed.

Upon completing the survey, participants were given the option to enter into a drawing for a gift card as an incentive for their participation, but could choose to leave the field blank.

### **Survey Instrument**

The survey instrument was based on the Theory of Planned Behavior, emphasizing attitudes toward the future effects of nonsmoking behavior and normative beliefs focusing on key campus individuals. The survey comprised fifteen demographic items, one item questioning the decision to smoke or not smoke respective to the smoking status of the respondent, fourteen attitudinal items, sixteen subjective norm and normative belief items, three perceived behavioral control items, and one motivational ranking item, for a total of fifty items. Icek Ajzen's *Constructing a theory of planned behavior questionnaire* model served as the basis for the development of the theoretical items in this survey instrument (Ajzen, n.d.).

The survey instrument captured behavioral intention with the items: "I'm likely to **not smoke** in the next 12 months" and "I'm likely to **smoke** in the next 12 months," measured using the later-described Likert scale.

The survey measured attitudes toward the behavior of non-smoking with the following questions: "I value non-smoking," "I do not want to smoke," "I will [...] by choosing not to smoke now" (be healthier in the future; be a better student in the future; save more money in the long-term; get a job more easily in the future; be a benefit to the environment), and "I care about [...]" (my future health; my future academic success; my future savings; my future employment; the future of environmental health). Respondents selected from a 5-item Likert scale ranging from "Strongly Disagree" (1) to "Strongly Agree" (5) all items relating to behavioral intention and attitudes toward the behavior.

The survey instrument measured subjective norms in several ways, all in the context of the same four referents (friends, roommate(s), professors, and the campus community). First, respondents were asked to describe the injunctive normative beliefs of the referents with the item, “My [...] believe I:” and with the responses, “Should Smoke” (1), “Uncertain” (2), and “Should Not Smoke” (3). Additionally, descriptive normative beliefs were measured similarly to injunctive normative beliefs, with the item “Most of my [...],” and with the responses, “Smoke” (1), “Uncertain” (2), and “Do Not Smoke” (3). Next, respondents identified their motivation to comply with each of the referents with the item, “When it comes to my smoking status, I want to do what my [...] think(s) I should do.” Finally, the survey measured the respondents identification with each referent with the item, “When it comes to my smoking status, I want to be like my [...].” Each of the final two items was measured using the same 5-item Likert scale ranging from “Strongly Disagree” (1) to “Strongly Agree” (5).

The final construct of the Theory of Planned Behavior, perceived behavioral control, was measured using the following questions: “I am confident I have the ability to *not smoke* for the next 12 months,” and “It will be easy for me to *not smoke* for the next 12 months,” both of which utilized a 5-item Likert scale ranging from “Strongly Disagree” (1) to “Strongly Agree” (5). Two additional items were included at the end of the survey instrument, one of which asked respondents if they made a conscientious decision to not smoke, and the other, which asked respondents to rank nine factors that motivate them—or would motivate them—to not smoke. The factors included each of the five factors affecting attitudes (academics, health, finances, employment, and environment) and the four key referents (friends, roommate(s), professors, and campus community). Survey content can be found in Table 1.

### **Data Analysis**



Descriptive statistics were used to describe the demographics and characteristics of respondents. Each set of responses (attitude toward the behavior, subjective norm, and perceived behavioral control) was analyzed using one-way analyses of variance (ANOVAs) in IBM SPSS Statistics 2. Due to lack of time and for the sake of brevity, ANOVAs were run with only smoking status as the independent variable. Tukey's honest significant difference (HSD) tests were run concurrently with ANOVAs to compare means between groups and identify means that are significantly different. Crosstabulations were run between smoking status and each of the responses to a ranking of motivation to not smoke, observing the first- and second- most motivating factors, by mode, for each group. The frequency of reporting '1' or '2' for each factor was then divided by the N for that respective factor.

### **Results**

One-way ANOVAs found significant differences between smokers, non-smokers, and occasional smokers for several different categories and responses. Tukey post hoc analyses revealed differences between groups. Crosstabulation reports identified the most and second-most motivating factors to not smoke for each group. Breakdowns of each survey item can be found in Table 3, including response means and confidence intervals for  $\alpha = 0.05$ . Details of Tukey HSD post hoc analyses can be found in Table 4. The crosstabulation report for motivation ranking can be found in Table 5.

### **Participant Demographics**

Participants included 678 respondents, of which one response was completely blank and another provided only demographic information, for a total of 676 useable responses. Respondents were primarily female (69.6%), and were 20-21 years of age (38.1%), and had a GPA of 3.50-4.00 (49.9%). Respondents were overwhelmingly United States citizens, thus

comparisons were not made between that group and non-U.S. citizens. The majority of respondents were college juniors (27.4%); the remainder of participants was 20.9% freshmen, 20.3% sophomores, 26.2% seniors, and 5.3% graduate students. Most respondents indicated they were non-smokers, or never smokers, (77.5%), followed by 14.1% occasional or social smokers, and 8.4% smokers, or daily smokers. (Table 2 contains a breakdown of respondent demographics.) It is important to note that this survey instrument did not collect the actual cigarette use of participants, rather it asked participants to choose the smoking status they considered themselves. This method was intentionally chosen in the context of the Theory of Planned Behavior, which involves participants' perceptions (rather than actuality) of behavior, social norms, and behavioral control. Because the rate of actual smoking was not assessed, comparisons cannot be made with most other data sets that collected only actual smoking rates.

### **Behavioral Intention**

Responses of non-smokers were significantly different than those of smokers and occasional smokers regarding the behavioral intention to not smoke, but responses of smokers and occasional smokers did not differ significantly. Specifically, these groups differed in their likelihood of not smoking in the subsequent twelve months,  $F(2, 671) = 475.369, p < .001$ , and likelihood of smoking in the subsequent twelve months,  $F(2, 672) = 347.019, p < .001$ .

### **Attitudes Toward the Behavior of Non-smoking**

Five attitudinal items yielded statistical significance between all groups (smokers, non-smokers, and occasional smokers). These items determined that each group was significantly different when compared to each of the remaining groups regarding valuation of non-smoking,  $F(2, 672) = 139.711, p < .001$ ; desire to not smoke,  $F(2, 671) = 214.119, p < .001$ ; the effect of non-smoking on academic achievement,  $F(2, 671) = 130.306, p < .001$ ; improvement of

employability,  $F(2, 672) = 75.548, p < .001$ ; and the effect of non-smoking on the environment,  $F(2, 671) = 84.874, p < .001$ .

Other items yielded significant difference, but only when comparing certain groups. Non-smokers significantly differed from the remaining groups,  $F(2, 672) = 40.214, p < .001$ , in their appraisal of the effect of non-smoking on their future health, but comparisons with other groups were not significantly different. Similarly, non-smokers differed significantly,  $F(2, 670) = 25.053, p < .001$ , from smokers and occasional smokers in their concern for their future health. For other items, nonsmokers were significantly different from smokers and occasional smokers, but smokers and occasional smokers were not significantly different from each other. This was the case for concern for future savings,  $F(2, 671) = 10.624, p < .001$ , and concern for future environmental health,  $F(2, 665) = 28.994, p < .001$ .

Three final items yielded three different patterns of statistical significance. Regarding concern for future academic success, non-smokers significantly differed,  $F(2, 672) = 3.481, p = .031$ , from occasional smokers, comparisons between the remaining groups were not significantly different. Occasional smokers significantly differed,  $F(2, 672) = 19.429, p < .001$ , from non-smokers and smokers regarding their appraisal of the effect of non-smoking on future savings. Finally, non-smokers significantly differed,  $F(2, 670) = 3.607, p = .028$ , from smokers in their concern for future employment, while occasional smokers did not differ significantly from non-smokers or smokers.

### **Subjective Norm**

The majority of responses yielding significant differences relating to subjective norm were such that non-smokers were significantly different than occasional smokers and smokers, but smokers and occasional smokers did not yield significant differences when compared to each

other. This was the case for injunctive normative beliefs of friends,  $F(2, 672) = 59.257, p < .001$ ; roommates,  $F(2, 669) = 50.721, p < .001$ ; and professors,  $F(2, 670) = 14.691, p < .001$ ; descriptive normative beliefs of roommates,  $F(2, 661) = 34.884, p < .001$ , and professors,  $F(2, 664) = 7.781, p < .001$ ; and identification with the referent, relating to friends,  $F(2, 660) = 10.797, p < .001$ , and roommates,  $F(2, 657) = 8.612, p < .001$ .

Other responses yielded significant difference but in different patterns, or were not significantly different. Relating to the descriptive normative beliefs of friends, all groups were significantly different,  $F(2, 664) = 112.724, p < .001$ . When comparing smokers to non-smokers and occasional smokers in the context of motivation to comply with the perceived campus norm, there was significant difference,  $F(2, 669) = 3.375, p = .035$ . However, comparisons of non-smokers and occasional smokers did not yield significant difference. Seven responses did not yield significant difference when comparing any of the groups. This was the case for the motivation to comply with roommates,  $F(2, 671) = 1.455, ns$ ; friends,  $F(2, 669) = 1.331, ns$ ; and professors,  $F(2, 669) = 2.648, ns$ ; injunctive normative belief of the campus community,  $F(2, 668) = 2.330, ns$ ; descriptive normative belief of the campus community,  $F(2, 661) = 2.675, ns$ ; and identification with referents, relating to professors,  $F(2, 657) = .815, ns$ , and the campus community,  $F(2, 659) = .585, ns$ .

### **Perceived Behavioral Control**

Significant difference was discovered between all groups and for all survey items in the context of perceived behavioral control. Expectedly, significant differences exist between all groups for both their ability to not smoke for a period of twelve months,  $F(2, 672) = 196.135, p < .001$ , and the ease of not smoking for a period of twelve months,  $F(2, 672) = 360.116, p < .001$ .

Finally, significant difference was found between all groups relating to their conscientious choice to not smoke,  $F(2, 669) = 356.041, p < .001$ .

### **Motivational Factors**

Crosstabulations revealed the first- and second- most motivating factors for each group related to non-smoking. Non-smokers reported concern for their health (77.7%) as the most motivating factor for continuing their behavior and fiscal concern (28.5%) as the second-most motivating factor. Smokers also reported concern for their health (56.4%) as the factor that would most motivate them to not smoke and fiscal concern (35.7%) as the second motivating factor. Finally, occasional smokers reported also that concern for health (58.7%) would be the most motivating factor and concern for finances (25.0%) would be the second-most motivating factor. The top five most and second-most motivating factors for each group can be found in Table 4.

### **Discussion**

The majority of previous research in the area of cigarette smoking and prevention among college students has focused on identifying factors that lead to smoking. Very few studies have been conducted to identify the factors that lead to nonsmoking behavior. In addition, much of this research was conducted in the late 1990s and early 2000s. The age of existing literature alone proves a need for more current data and analysis. Furthermore, little research applies the Theory of Planned Behavior to smoking-related health behavior among college students and only one known article applies the Theory of Planned Behavior to non-smoking behavior among college students, and it does so in comparison of African-American and Caucasian students.

While the previous research investigating factors leading to smoking is important to public health as a means to effectively reduce those factors within the college environment, it is

also important that public health professionals understand the motivational factors that lead to non-smoking. This allows a new perspective for tobacco prevention and a new approach to increasing non-smoking among college students by increasing the factors leading to the behavior. Additionally, the present study provides more current data about nonsmoking college students, as the previous data was collected only once and published three years ago. Finally, it is important to gain a better understanding of the application of the Theory of Planned Behavior as it relates to both smoking and nonsmoking among college students.

The present study set out to understand the nonsmoking intentions and behavior of college students at a public, comprehensive university in the Southeastern United States. The survey results support the hypotheses that nonsmokers: have the most favorable behavioral intention (indicated by both intentional items); have the most favorable attitudes toward the behavior of non-smoking (indicated by all twelve attitudinal items); and perceive the most control over their non-smoking (indicated by all three control items). The hypothesis that non-smokers would have the most favorable social perception of non-smoking was only partially supported. Six of the eight normative belief items indicated that non-smokers had the most favorable beliefs. While most of the remaining eight items regarding identification with the referents and motivation to comply with referents indicated non-smokers as having the most favorable mean, none indicated positive identification or motivation.

Regarding behavioral intention, non-smokers expectedly had the most favorable intentions to not smoke, strongly agreeing that they were unlikely to smoke over the subsequent year and strongly disagreeing that they were likely to smoke over that same period of time. While this is not a new concept, it is notable that smokers and occasional smokers fell closer to neutral than disagree in their responses. Smokers and occasional smokers also agreed that they

were likely to smoke over the next year, but not strongly so. All of this supports the notion that smoking behavior can be intervened upon during the collegiate years.

Non-smokers also had the most favorable attitudes toward the behavior of non-smoking, indicating that they strongly valued non-smoking and had no desire to smoke. On the other hand, smokers were neutral to both of these, and occasional smokers valued non-smoking and desired not to smoke but not strongly. Regardless of these responses, occasional smokers still continue their behavior. Additionally, non-smokers reported having the most favorable attitudes regarding the effects of smoking, specifically consequences to health, academics, savings, employability, and the environment, and concern for the future of those same topics. While non-smokers yielded the highest means, smokers and occasional smokers yielded high means for some of those topics. In particular, smokers agreed that non-smoking would cause them to be healthier in general and save more money over the long-term, disagreed that not smoking would help them become better students and more employable, and were neutral concerning the effect of cigarette smoking on the environment. Occasional smokers agreed that choosing not to smoke would cause them to be healthier, save more money, and benefit the environment, and were neutral to the effects of not smoking on academics and employability.

What is interesting is that all of the groups (non-smokers, smokers, and occasional smokers) reported caring about the future of their health, their academics, their savings, their employment, and the environment, but that smokers and occasional smokers continue to engage in behavior that effects each of these things. This may be an indication that although smokers and occasional smokers might be aware of the health and fiscal implications of smoking, they might be less aware of the effects of smoking on other factors (i.e. academics, employability, and

the environment), and they might be even less aware of the positive repercussions of choosing not to smoke.

Non-smokers reported having favorable normative beliefs for six of the eight items, and were uncertain of the final two, both of which were descriptive normative beliefs. More specifically, they reported favorable injunctive normative beliefs for friends, roommates, professors, and the campus; favorable descriptive normative beliefs for friends and roommates; and uncertain descriptive normative beliefs for professors and the campus community. However, this reporting of uncertainty may not be a negative influence on non-smokers, because they also reported not desiring to assimilate to the actions of any key referents and having no motivation to comply with the beliefs of any key referent. In fact, all groups reported no desire to assimilate or comply with beliefs with any of the key referents.

Smokers reported that their roommates and the campus community believed they should not smoke, and were uncertain about the beliefs of their friends and professors. Occasional smokers believed that their professors thought they should not smoke, but were uncertain about their friends, their roommates, and the campus community. The question to be raised in this case is whether smokers and occasional smokers are actually uncertain of the beliefs of those key referents or choose to remain aloof. However, this would support the notion that college students are reluctant to voice their opinions of peer smoking due to the fact that smoking impacts individuals over a longer period of time (Brann & Sutton, 2009). This has not been observed of faculty and staff or at the institutional level. Again, the extent to which identification with referents and motivation to comply matter might not be significant. This is consistent with the findings of Nehl et al., which concluded attitudes toward the behavior and subjective norm were not strong predictors of non-smoking.



Finally, non-smokers responded most favorably regarding their ability to not smoke for a period of one year, the ease of not smoking for a year, and their conscientious decision to not smoke. In the former two cases, occasional smokers trailed but still responded affirmatively, while smokers disagreed; in the latter, occasional smokers were neutral and smokers disagreed. The responses of occasional smokers is disconcerting due to the fact that quitting is not, in fact, easy. Some previous research contends that low-level smokers have an appropriate attitude regarding their ability to quit, while other research maintains that smokers might underestimate the difficulty of quitting smoking and staying quit (Kenford, Wetter, Welsch, Smith, Fiore & Baker, 2005, p.291). Regarding individuals' conscientious choices to not smoke, non-smokers indicated that they had made a conscientious decision, while occasional smokers were neutral, and smokers expectedly had not. It is worthy of exploration to further understand when and how non-smokers make that decision. However, it is also important to understand how public health can urge smokers and occasional smokers to make that same decision.

The present study is important as it provides more current data about nonsmoking among college students, especially as it relates to the Theory of Planned Behavior. Additionally, the research further supports the utility of campus smoking cessation services and the shift to smoking prevention messages that allude to the future of issues beyond individual and public health. This and related research will allow public health professionals and college administrators to tailor programming toward the goal of increasing factors that lead to a student's choice to remain a nonsmoker, but there is much more research to be done on this topic.

### **Limitations and Future Study**

This study admittedly has several limitations that hinder its generalizability. First, participants were recruited from only one university, and those participants were recruited

through email convenience sampling, which could have introduced voluntary response bias. Secondly, the survey instrument asked participants to indicate their own perceptions of their smoking status (“nonsmoker, never smoke,” “occasional, social smoker,” or “smoker, smoke daily”), but did not collect data regarding the actual amount of cigarettes smoked. This may limit comparisons between this study and others. Finally, nonrespondents were not surveyed; thus, there is no means of comparing respondents to nonrespondents.

First and foremost, future research should begin to explore the specific factors that motivate college students to remain non-smokers. While the current study identifies differences among groups as they relate to attitudes, subjective norm, and perceived behavioral control in the context of non-smoking, it was limited in time to further explore these relationships. In order to improve generalizability, future research should provide a more representative sample of college students across a majority of American colleges and universities. Furthermore, it is important to understand the evolution of a college student’s intent to remain a nonsmoker into his or her intent to smoke, requiring a longitudinal study over the course of the collegiate career.

The present study raised many questions, some of which might be better understood with further analysis of the existing dataset, while others require future and more in-depth study. First, it is important to explore college students’ understandings of the implications of smoking beyond being a health concern. The answer to curbing smoking initiation and increasing cessation may lie here. Secondly, it is important to understand the effect of the vocalicity of colleges as institutions and college staff. While existing research has explored college students’ willingness to communicate regarding smoking, the same should be explored among institutions and staff. Finally, it is pressing to understand how public health can compel smokers to make the same decision to not smoke that non-smokers claim to have already made. Through further

understanding of these questions, public health interventions can be restructured to increase motivational factors leading to non-smoking, while also decreasing factors leading to smoking.

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### Tables

Table 1

#### *Survey Instrument*

Item	Options or Scale
Demographics	
Age:	17 or younger 18 - 19 20 - 21 22 - 25 Older than 25
Please indicate your gender:	Male Female
Are you a US Citizen?	Yes No
Please indicate your home state:	Drop-down list of 50 states and District of Columbia
What is your home country?	Text field
What is your class status?	Freshman Sophomore Junior Senior Graduate Student
Are you Hispanic or Latino?	Yes No
What is your race? Mark all that apply.	American Indian or Alaskan Native Asian Black or African American Native Hawaiian or other Pacific Islander White
Current GPA:	3.50 - 4.00 3.00 - 3.49 2.50 - 2.99

	2.00 - 2.49
	Lower than 2.00
Which of the following describes your living situation?	On-campus with roommates On-campus without roommates Off-campus with unrelated roommates Off-campus with family or related roommates Off-campus without roommates
Are you a student athlete?	No Yes
Which sport?	Baseball Basketball Cross Country Football Golf Lacrosse Soccer Softball Tennis Track & Field Volleyball
Are you a member of a social Greek lettered organization?	No Yes
To which organization to you belong?	NPHC (Divine 9) organization NPC (Panhellenic) sorority NIC (IFC) fraternity
What led to your decision to <i>not smoke</i> ?	Text field (prompted only for non-smokers)
What led to your decision to <i>smoke</i> ?	Text field (prompted for smokers and occasional smokers)
Behavioral Intention	
I'm likely to <b>not smoke</b> in the next 12 months.	5-item Likert scale
I'm likely to <b>smoke</b> in the next 12 months.	5-item Likert scale
Attitude Toward the Behavior of Non-smoking	
I value non-smoking.	5-item Likert scale



I do not want to smoke.	5-item Likert scale
I will be a healthier person in the future by choosing to not smoke now.	5-item Likert scale
I care about my future health.	5-item Likert scale
I will be a better student in the future by choosing to not smoke now.	5-item Likert scale
I care about my future academic success.	5-item Likert scale
I will save more money in the long-term by choosing to not smoke now.	5-item Likert scale
I care about my future savings.	5-item Likert scale
I will get a job more easily in the future by choosing to not smoke now.	5-item Likert scale
I care about my future employment	5-item Likert scale
I will be a benefit to the environment by choosing not to smoke now.	5-item Likert scale
I care about the future of environmental health.	5-item Likert scale
<b>Injunctive Normative Beliefs</b>	
My friends believe I:	3-item scale †
My roommate(s) believe I:	3-item scale †
My professors believe I:	3-item scale †
My campus community believes I:	3-item scale †
<b>Motivation to Comply</b>	
When it comes to my smoking status, I want to do what my friends think I should do.	5-item Likert scale
When it comes to my smoking status, I want to do what my roommate(s) think I should do.	5-item Likert scale
When it comes to my smoking status, I want to do what my professors think I should do.	5-item Likert scale
When it comes to my smoking status, I want to do what my campus community thinks I should do.	5-item Likert scale
<b>Descriptive Normative Belief</b>	
Most of my friends:	3-item scale √
Most of my roommate(s):	3-item scale √
Most of my professors:	3-item scale √
Most of my campus community:	3-item scale √
<b>Identification with Referent</b>	
When it comes to my smoking status, I want to be like my friends.	5-item Likert scale
When it comes to my smoking status, I want to be like my roommate(s).	5-item Likert scale

When it comes to my smoking status, I want to be like my professors.	5-item Likert scale
When it comes to my smoking status, I want to be like my campus community.	5-item Likert scale
<b>Perceived Behavioral Control</b>	
I am confident I have the ability to <i>not smoke</i> for the next 12 months.	5-item Likert scale
It will be easy for me to <i>not smoke</i> for the next 12 months.	5-item Likert scale
I made a conscientious decision to <i>not smoke</i> .	5-item Likert scale
<b>Ranking of Motivational Factors for Not Smoking</b>	
Please rank what motivates you (or would motivate you) to <i>not smoke</i> , where 1 is most motivating and 9 is least motivating.	5-item Likert scale
	<p>I do not want my academics to suffer.</p> <p>I do not want my health to suffer.</p> <p>I do not want to lose money.</p> <p>I do not want to miss future employment opportunities.</p> <p>I do not want to harm the environment.</p> <p>I do not want my friends to disapprove of me.</p> <p>I do not want my roommate(s) to disapprove of me.</p> <p>I do not want my professors to disapprove of me.</p> <p>I do not want my campus community to disapprove of me.</p>

*Note.* 5-item Likert scale ranged from Strongly Disagree (1) to Strongly Agree (5).

† Choices for this scale were ‘Do Not Smoke’ (1), ‘Uncertain’ (2), and ‘Smoke’ (3).

√ Choices for this scale were ‘Should Not Smoke’ (1), ‘Uncertain’ (2), and ‘Should Smoke’ (3).

Table 2  
*Participant demographics (N=678)*

Variable	Frequency	%
Age (n=677)		
17 or younger	8	1.2
18 - 19	205	30.3
20 - 21	258	38.1
22 - 25	144	21.3
Older than 25	62	9.2
Gender (n=675)		
Male	205	30.4
Female	470	69.6
US Citizen (n=674)		
Yes	664	98.5
No	10	1.5
Class Status (n=676)		
Freshman	141	20.9
Sophomore	137	20.3
Junior	185	27.4
Senior	177	26.2
Graduate Student	36	5.3
Current GPA (n=675)		
Lower than 2.00	4	0.6
2.00 - 2.49	37	5.5
2.50 - 2.99	115	17
3.00 - 3.49	182	27
3.50 - 4.00	337	49.9
Student Athlete (n=675)		
Yes	25	3.7
No	650	96.3
Greek Affiliation (n=674)		
Yes	70	10.4
No	604	89.6
Smoking Status		
Non-smoker (never smoker)	524	77.5
Smoker (smoke daily)	57	8.4
Occasional (social smoker)	95	14.1

Table 3  
ANOVA  
*Descriptives*

	I consider myself a(n):	N	Mean	Std. Dev.	95% CI for Mean			
					Lower Bound	Upper Bound	Min	Max
I value non-smoking.	Non-smoker	524	4.77	.606	4.71	4.82	1	5
	Smoker	57	3.26	1.275	2.92	3.60	1	5
	Occasional Smoker	94	3.82	1.136	3.59	4.05	1	5
	Total	675	4.51	.920	4.44	4.58	1	5
I do not want to smoke.	Non-smoker	524	4.86	.503	4.81	4.90	1	5
	Smoker	57	3.28	1.306	2.93	3.63	1	5
	Occasional Smoker	93	3.63	1.121	3.40	3.87	1	5
	Total	674	4.55	.914	4.49	4.62	1	5
I will be a healthier person in the future by choosing not to smoke now.	Non-smoker	524	4.87	.509	4.83	4.92	1	5
	Smoker	57	4.33	.852	4.11	4.56	2	5
	Occasional Smoker	94	4.40	.846	4.23	4.58	1	5
	Total	675	4.76	.635	4.71	4.81	1	5
I care about my future health.	Non-smoker	523	4.87	.519	4.82	4.91	1	5
	Smoker	57	4.40	.776	4.20	4.61	2	5

	Occasional Smoker	93	4.58	.614	4.45	4.71	2	5
	Total	673	4.79	.578	4.74	4.83	1	5
I will be a better student in the future by choosing not to smoke now.	Non-smoker	523	4.31	1.134	4.21	4.40	1	5
	Smoker	57	2.12	1.364	1.76	2.48	1	5
	Occasional Smoker	94	2.79	1.502	2.48	3.09	1	5
	Total	674	3.91	1.425	3.80	4.02	1	5
I care about my future academic success.	Non-smoker	524	4.89	.430	4.85	4.93	1	5
	Smoker	57	4.88	.381	4.78	4.98	3	5
	Occasional Smoker	94	4.76	.634	4.63	4.89	1	5
	Total	675	4.87	.462	4.84	4.91	1	5
I will save money in the future by choosing not to smoke now.	Non-smoker	524	4.88	.484	4.84	4.92	1	5
	Smoker	57	4.72	.620	4.55	4.88	2	5
	Occasional Smoker	94	4.49	.913	4.30	4.68	1	5
	Total	675	4.81	.590	4.77	4.86	1	5
I care about my future savings.	Non-smoker	524	4.87	.485	4.83	4.91	1	5
	Smoker	57	4.67	.809	4.45	4.88	1	5
	Occasional Smoker	93	4.61	.738	4.46	4.76	2	5
	Total	674	4.82	.567	4.77	4.86	1	5
I will get a job more	Non-smoker	524	4.15	1.123	4.06	4.25	1	5

easily in the future by choosing not to smoke now.	Smoker	57	2.39	1.333	2.03	2.74	1	5
	Occasional Smoker	94	3.22	1.361	2.94	3.50	1	5
	Total	675	3.87	1.300	3.78	3.97	1	5
	Non-smoker	522	4.89	.447	4.85	4.93	1	5
I care about my future employment.	Smoker	57	4.74	.720	4.55	4.93	1	5
	Occasional Smoker	94	4.81	.447	4.72	4.90	3	5
	Total	673	4.87	.478	4.83	4.90	1	5
I will be a benefit to the environment by choosing not to smoke now.	Non-smoker	524	4.67	.735	4.60	4.73	1	5
	Smoker	56	3.27	1.300	2.92	3.62	1	5
	Occasional Smoker	94	3.88	1.269	3.62	4.14	1	5
	Total	674	4.44	.989	4.37	4.52	1	5
I care about the future of environmental health.	Non-smoker	520	4.74	.658	4.68	4.79	1	5
	Smoker	56	4.09	1.100	3.79	4.38	1	5
	Occasional Smoker	92	4.30	.911	4.12	4.49	1	5
	Total	668	4.62	.773	4.56	4.68	1	5
I'm likely to not smoke in the next 12 months.	Non-smoker	524	4.85	.613	4.79	4.90	1	5
	Smoker	57	2.49	1.501	2.09	2.89	1	5
	Occasional Smoker	93	2.45	1.247	2.19	2.71	1	5
	Total	674	4.32	1.293	4.22	4.41	1	5

I'm likely to smoke in the next 12 months.	Non-smoker	524	1.27	.880	1.19	1.34	1	5
	Smoker	57	3.79	1.264	3.45	4.12	1	5
	Occasional Smoker	94	3.53	1.233	3.28	3.78	1	5
	Total	675	1.80	1.384	1.69	1.90	1	5
My friends believe I:	Non-smoker	524	2.81	.448	2.78	2.85	1	3
	Smoker	57	2.39	.559	2.24	2.53	1	3
	Occasional Smoker	94	2.29	.650	2.15	2.42	1	3
	Total	675	2.71	.531	2.67	2.75	1	3
My roommates believe I:	Non-smoker	521	2.79	.454	2.75	2.83	1	3
	Smoker	57	2.37	.587	2.21	2.52	1	3
	Occasional Smoker	94	2.30	.653	2.16	2.43	1	3
	Total	672	2.68	.534	2.64	2.72	1	3
My professors believe I:	Non-smoker	522	2.74	.447	2.70	2.78	1	3
	Smoker	57	2.49	.504	2.36	2.63	2	3
	Occasional Smoker	94	2.52	.523	2.41	2.63	1	3
	Total	673	2.69	.473	2.65	2.73	1	3
My campus community believes I:	Non-smoker	520	2.61	.533	2.57	2.66	1	3
	Smoker	57	2.54	.537	2.40	2.69	1	3
	Occasional Smoker	94	2.49	.582	2.37	2.61	1	3

	Total	671	2.59	.541	2.55	2.63	1	3
I want to do what my friends think I should do.	Non-smoker	523	2.46	1.604	2.32	2.59	1	5
	Smoker	57	2.12	1.310	1.78	2.47	1	5
	Occasional Smoker	94	2.30	1.302	2.03	2.56	1	5
	Total	674	2.41	1.544	2.29	2.52	1	5
I want to do what my roommates think I should do.	Non-smoker	521	2.37	1.590	2.23	2.51	1	5
	Smoker	57	2.12	1.283	1.78	2.46	1	5
	Occasional Smoker	94	2.15	1.261	1.89	2.41	1	5
	Total	672	2.32	1.525	2.20	2.43	1	5
I want to do what my professors think I should do.	Non-smoker	522	2.43	1.562	2.29	2.56	1	5
	Smoker	57	2.00	1.118	1.70	2.30	1	5
	Occasional Smoker	93	2.57	1.448	2.27	2.87	1	5
	Total	672	2.41	1.518	2.30	2.53	1	5
I want to do what my campus community thinks I should do.	Non-smoker	522	2.28	1.488	2.15	2.41	1	5
	Smoker	57	1.81	.972	1.55	2.06	1	4
	Occasional Smoker	93	2.41	1.385	2.12	2.69	1	5
	Total	672	2.26	1.443	2.15	2.37	1	5
Most of my friends:	Non-smoker	519	2.57	.755	2.50	2.63	1	3
	Smoker	55	1.13	.388	1.02	1.23	1	3



	Occasional Smoker	93	1.88	.883	1.70	2.06	1	3
	Total	667	2.35	.869	2.29	2.42	1	3
<hr/>								
Most of my roommates:	Non-smoker	516	2.61	.706	2.55	2.67	1	3
	Smoker	55	1.95	.848	1.72	2.17	1	3
	Occasional Smoker	93	2.09	.893	1.90	2.27	1	3
	Total	664	2.48	.784	2.42	2.54	1	3
<hr/>								
Most of my professors:	Non-smoker	519	2.33	.520	2.28	2.37	1	3
	Smoker	55	2.11	.497	1.97	2.24	1	3
	Occasional Smoker	93	2.16	.425	2.07	2.25	1	3
	Total	667	2.28	.511	2.25	2.32	1	3
<hr/>								
Most of my campus community:	Non-smoker	517	1.96	.694	1.90	2.02	1	3
	Smoker	54	1.83	.694	1.64	2.02	1	3
	Occasional Smoker	93	1.81	.613	1.68	1.93	1	3
	Total	664	1.93	.685	1.88	1.98	1	3
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I want to be like my friends:	Non-smoker	515	2.85	1.622	2.71	2.99	1	5
	Smoker	55	2.16	1.102	1.87	2.46	1	5
	Occasional Smoker	93	2.19	1.200	1.95	2.44	1	5
	Total	663	2.70	1.555	2.58	2.82	1	5
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I want to be like my	Non-smoker	512	2.78	1.640	2.64	2.93	1	5

roommates:	Smoker	55	2.11	1.227	1.78	2.44	1	5
	Occasional Smoker	93	2.23	1.243	1.97	2.48	1	5
	Total	660	2.65	1.578	2.53	2.77	1	5
	Non-smoker	511	2.59	1.401	2.47	2.71	1	5
I want to be like my professors:	Smoker	55	2.42	1.301	2.07	2.77	1	5
	Occasional Smoker	93	2.43	1.237	2.18	2.68	1	5
	Total	659	2.55	1.371	2.45	2.66	1	5
	Non-smoker	514	2.23	1.295	2.12	2.35	1	5
I want to be like my campus community:	Smoker	55	2.40	1.180	2.08	2.72	1	5
	Occasional Smoker	93	2.17	1.100	1.95	2.40	1	5
	Total	662	2.24	1.259	2.14	2.33	1	5
	Non-smoker	524	4.91	.437	4.87	4.95	1	5
I have the ability to not smoke for the next 12 months.	Smoker	57	3.04	1.451	2.65	3.42	1	5
	Occasional Smoker	94	4.18	1.200	3.94	4.43	1	5
	Total	675	4.65	.909	4.58	4.72	1	5
	Non-smoker	524	4.87	.579	4.82	4.92	1	5
It will be easy for me to not smoke for the next 12 months.	Smoker	57	1.93	1.294	1.59	2.27	1	5
	Occasional Smoker	94	3.76	1.457	3.46	4.05	1	5
	Total	675	4.47	1.197	4.38	4.56	1	5

	Non-smoker	522	4.83	.615	4.78	4.88	1	5
I made a conscientious decision to not smoke.	Smoker	56	2.27	1.328	1.91	2.62	1	5
	Occasional Smoker	94	3.10	1.415	2.81	3.39	1	5
	Total	672	4.38	1.216	4.28	4.47	1	5

Table 4  
Multiple Comparisons, Tukey HSD

Dependent Variable	(I) I consider myself a(n):	(J) I consider myself a(n):	Mean Difference (I-J)	Sig.	95% CI		
					Lower Bound	Upper Bound	
I value non-smoking.	Non-smoker	Smoker	1.502*	.000	1.25	1.76	
		Occasional Smoker	.946*	.000	.74	1.15	
	Smoker	Non-smoker	-1.502*	.000	-1.76	-1.25	
		Occasional Smoker	-.556*	.000	-.86	-.25	
	Occasional Smoker	Non-smoker	-.946*	.000	-1.15	-.74	
		Smoker	.556*	.000	.25	.86	
	I do not want to smoke.	Non-smoker	Smoker	1.576*	.000	1.34	1.81
			Occasional Smoker	1.222*	.000	1.03	1.41
Smoker		Non-smoker	-1.576*	.000	-1.81	-1.34	
		Occasional Smoker	-.354*	.010	-.64	-.07	
Occasional Smoker		Non-smoker	-1.222*	.000	-1.41	-1.03	
		Smoker	.354*	.010	.07	.64	
I will be a healthier person in the future by choosing not to smoke now.		Non-smoker	Smoker	.541*	.000	.34	.74
			Occasional Smoker	.470*	.000	.31	.63
	Smoker	Non-smoker	-.541*	.000	-.74	-.34	
		Occasional Smoker	-.071	.762	-.31	.17	
	Occasional Smoker	Non-smoker	-.470*	.000	-.63	-.31	
		Smoker	.071	.762	-.17	.31	
	I care about	Non-smoker	Smoker	.463*	.000	.28	.65

my future health.	Smoker	Occasional Smoker	.286*	.000	.14	.43
		Non-smoker	-.463*	.000	-.65	-.28
	Occasional Smoker	Occasional Smoker	-.177	.144	-.40	.04
		Non-smoker	-.286*	.000	-.43	-.14
	Smoker	Smoker	.177	.144	-.04	.40
		Occasional Smoker	2.183*	.000	1.79	2.58
I will be a better student in the future by choosing not to smoke now.	Non-smoker	Occasional Smoker	1.519*	.000	1.20	1.84
		Non-smoker	-2.183*	.000	-2.58	-1.79
	Smoker	Occasional Smoker	-.664*	.003	-1.14	-.19
		Non-smoker	-1.519*	.000	-1.84	-1.20
	Occasional Smoker	Smoker	.664*	.003	.19	1.14
		Smoker	.014	.974	-.14	.16
I care about my future academic success.	Non-smoker	Occasional Smoker	.136*	.023	.01	.26
		Non-smoker	-.014	.974	-.16	.14
	Smoker	Occasional Smoker	.122	.256	-.06	.30
		Non-smoker	-.136*	.023	-.26	-.01
	Occasional Smoker	Smoker	-.122	.256	-.30	.06
		Smoker	.162	.107	-.03	.35
I will save money in the future by choosing not to smoke now.	Non-smoker	Occasional Smoker	.392*	.000	.24	.54
		Non-smoker	-.162	.107	-.35	.03
	Smoker	Occasional Smoker	.230*	.046	.00	.46
		Non-smoker	-.392*	.000	-.54	-.24
	Occasional Smoker	Smoker	-.230*	.046	-.46	.00
		Smoker	.204*	.025	.02	.39
I care about my future savings.	Non-smoker	Occasional Smoker	.257*	.000	.11	.41
		Non-smoker	-.204*	.025	-.39	-.02
	Smoker	Occasional Smoker	.054	.835	-.17	.27
		Non-smoker	-.257*	.000	-.41	-.11

		Smoker	-.054	.835	-.27	.17
I will get a job more easily in the future by choosing not to smoke now.	Non-smoker	Smoker	1.767*	.000	1.38	2.15
		Occasional Smoker	.929*	.000	.62	1.24
		Smoker	-1.767*	.000	-2.15	-1.38
	Smoker	Occasional Smoker	-.837*	.000	-1.30	-.37
		Non-smoker	-.929*	.000	-1.24	-.62
		Smoker	.837*	.000	.37	1.30
I care about my future employment.	Non-smoker	Smoker	.156*	.050	.00	.31
		Occasional Smoker	.084	.255	-.04	.21
		Non-smoker	-.156*	.050	-.31	.00
	Smoker	Occasional Smoker	-.072	.642	-.26	.12
		Non-smoker	-.084	.255	-.21	.04
		Smoker	.072	.642	-.12	.26
I will be a benefit to the environment by choosing not to smoke now.	Non-smoker	Smoker	1.398*	.000	1.11	1.69
		Occasional Smoker	.783*	.000	.55	1.02
		Non-smoker	-1.398*	.000	-1.69	-1.11
	Smoker	Occasional Smoker	-.615*	.000	-.97	-.26
		Non-smoker	-.783*	.000	-1.02	-.55
		Smoker	.615*	.000	.26	.97
I care about the future of environmental health.	Non-smoker	Smoker	.647*	.000	.40	.89
		Occasional Smoker	.432*	.000	.23	.63
		Non-smoker	-.647*	.000	-.89	-.40
	Smoker	Occasional Smoker	-.215	.203	-.51	.08
		Non-smoker	-.432*	.000	-.63	-.23
		Smoker	.215	.203	-.08	.51
I'm likely to not smoke in the next 12 months.	Non-smoker	Smoker	2.354*	.000	2.08	2.63
		Occasional Smoker	2.394*	.000	2.17	2.61
	Smoker	-2.354*	.000	-2.63	-2.08	

		Occasional Smoker	.040	.957	-.29	.37
	Occasional Smoker	Non-smoker	-2.394*	.000	-2.61	-2.17
		Smoker	-.040	.957	-.37	.29
I'm likely to smoke in the next 12 months.	Non-smoker	Smoker	-2.522*	.000	-2.84	-2.20
		Occasional Smoker	-2.265*	.000	-2.52	-2.01
	Smoker	Non-smoker	2.522*	.000	2.20	2.84
		Occasional Smoker	.258	.256	-.13	.64
	Occasional Smoker	Non-smoker	2.265*	.000	2.01	2.52
		Smoker	-.258	.256	-.64	.13
My friends believe I:	Non-smoker	Smoker	.429*	.000	.27	.59
		Occasional Smoker	.528*	.000	.40	.66
	Smoker	Non-smoker	-.429*	.000	-.59	-.27
		Occasional Smoker	.099	.454	-.09	.29
	Occasional Smoker	Non-smoker	-.528*	.000	-.66	-.40
		Smoker	-.099	.454	-.29	.09
My roommates believe I:	Non-smoker	Smoker	.419*	.000	.26	.58
		Occasional Smoker	.489*	.000	.36	.62
	Smoker	Non-smoker	-.419*	.000	-.58	-.26
		Occasional Smoker	.071	.676	-.13	.27
	Occasional Smoker	Non-smoker	-.489*	.000	-.62	-.36
		Smoker	-.071	.676	-.27	.13
My professors believe I:	Non-smoker	Smoker	.250*	.000	.10	.40
		Occasional Smoker	.220*	.000	.10	.34
	Smoker	Non-smoker	-.250*	.000	-.40	-.10
		Occasional Smoker	-.030	.921	-.21	.15
	Occasional Smoker	Non-smoker	-.220*	.000	-.34	-.10
		Smoker	.030	.921	-.15	.21
My campus	Non-smoker	Smoker	.070	.626	-.11	.25

community believes I:		Occasional Smoker	.124	.101	-.02	.27
		Non-smoker	-.070	.626	-.25	.11
Smoker		Occasional Smoker	.054	.820	-.16	.27
		Non-smoker	-.124	.101	-.27	.02
Occasional Smoker		Smoker	-.054	.820	-.27	.16
		Smoker	.332	.271	-.17	.84
I want to do what my friends think I should do.	Non-smoker	Occasional Smoker	.157	.635	-.25	.56
		Non-smoker	-.332	.271	-.84	.17
Smoker		Occasional Smoker	-.175	.778	-.78	.43
		Non-smoker	-.157	.635	-.56	.25
Occasional Smoker		Smoker	.175	.778	-.43	.78
		Smoker	.246	.481	-.25	.75
I want to do what my roommates think I should do.	Non-smoker	Occasional Smoker	.220	.404	-.18	.62
		Non-smoker	-.246	.481	-.75	.25
Smoker		Occasional Smoker	-.026	.994	-.63	.58
		Non-smoker	-.220	.404	-.62	.18
Occasional Smoker		Smoker	.026	.994	-.58	.63
		Smoker	.429	.106	-.07	.93
I want to do what my professors think I should do.	Non-smoker	Occasional Smoker	-.141	.687	-.54	.26
		Non-smoker	-.429	.106	-.93	.07
Smoker		Occasional Smoker	-.570	.066	-1.17	.03
		Non-smoker	.141	.687	-.26	.54
Occasional Smoker		Smoker	.570	.066	-.03	1.17
		Smoker	.473*	.049	.00	.94
I want to do what my campus community thinks I should do.	Non-smoker	Occasional Smoker	-.129	.705	-.51	.25
		Non-smoker	-.473*	.049	-.94	.00
Smoker		Occasional Smoker	-.602*	.035	-1.17	-.03
		Non-smoker	.129	.705	-.25	.51

		Smoker	.602 <sup>*</sup>	.035	.03	1.17
		Smoker	1.441 <sup>*</sup>	.000	1.19	1.69
	Non-smoker	Occasional Smoker	.687 <sup>*</sup>	.000	.49	.89
Most of my friends:		Non-smoker	-1.441 <sup>*</sup>	.000	-1.69	-1.19
	Smoker	Occasional Smoker	-.754 <sup>*</sup>	.000	-1.05	-.45
		Non-smoker	-.687 <sup>*</sup>	.000	-.89	-.49
	Occasional Smoker	Smoker	.754 <sup>*</sup>	.000	.45	1.05
		Smoker	.665 <sup>*</sup>	.000	.42	.91
	Non-smoker	Occasional Smoker	.524 <sup>*</sup>	.000	.33	.72
Most of my roommates:		Non-smoker	-.665 <sup>*</sup>	.000	-.91	-.42
	Smoker	Occasional Smoker	-.141	.511	-.44	.16
		Non-smoker	-.524 <sup>*</sup>	.000	-.72	-.33
	Occasional Smoker	Smoker	.141	.511	-.16	.44
		Smoker	.217 <sup>*</sup>	.007	.05	.39
	Non-smoker	Occasional Smoker	.164 <sup>*</sup>	.011	.03	.30
Most of my professors:		Non-smoker	-.217 <sup>*</sup>	.007	-.39	-.05
	Smoker	Occasional Smoker	-.052	.817	-.25	.15
		Non-smoker	-.164 <sup>*</sup>	.011	-.30	-.03
	Occasional Smoker	Smoker	.052	.817	-.15	.25
		Smoker	.130	.379	-.10	.36
	Non-smoker	Occasional Smoker	.157	.104	-.02	.34
Most of my campus community:		Non-smoker	-.130	.379	-.36	.10
	Smoker	Occasional Smoker	.027	.971	-.25	.30
		Non-smoker	-.157	.104	-.34	.02
	Occasional Smoker	Smoker	-.027	.971	-.30	.25
		Smoker	.683 <sup>*</sup>	.005	.17	1.19
I want to be like my friends:	Non-smoker	Occasional Smoker	.653 <sup>*</sup>	.000	.25	1.06
	Smoker	Non-smoker	-.683 <sup>*</sup>	.005	-1.19	-.17



		Occasional Smoker	-.030	.993	-.64	.58
	Occasional Smoker	Non-smoker	-.653*	.000	-1.06	-.25
		Smoker	.030	.993	-.58	.64
I want to be like my roommates:	Non-smoker	Smoker	.674*	.007	.15	1.19
		Occasional Smoker	.557*	.005	.14	.97
	Smoker	Non-smoker	-.674*	.007	-1.19	-.15
		Occasional Smoker	-.117	.899	-.74	.51
	Occasional Smoker	Non-smoker	-.557*	.005	-.97	-.14
		Smoker	.117	.899	-.51	.74
I want to be like my professors:	Non-smoker	Smoker	.171	.654	-.29	.63
		Occasional Smoker	.159	.559	-.20	.52
	Smoker	Non-smoker	-.171	.654	-.63	.29
		Occasional Smoker	-.012	.999	-.56	.54
	Occasional Smoker	Non-smoker	-.159	.559	-.52	.20
		Smoker	.012	.999	-.54	.56
I want to be like my campus community:	Non-smoker	Smoker	-.167	.621	-.59	.25
		Occasional Smoker	.061	.902	-.27	.39
	Smoker	Non-smoker	.167	.621	-.25	.59
		Occasional Smoker	.228	.537	-.28	.73
	Occasional Smoker	Non-smoker	-.061	.902	-.39	.27
		Smoker	-.228	.537	-.73	.28
I have the ability to not smoke for the next 12 months.	Non-smoker	Smoker	1.877*	.000	1.64	2.11
		Occasional Smoker	.731*	.000	.54	.92
	Smoker	Non-smoker	-1.877*	.000	-2.11	-1.64
		Occasional Smoker	-1.146*	.000	-1.43	-.86
	Occasional Smoker	Non-smoker	-.731*	.000	-.92	-.54
		Smoker	1.146*	.000	.86	1.43
It will be easy	Non-smoker	Smoker	2.940*	.000	2.67	3.21

for me to not smoke for the next 12 months.	Smoker	Occasional Smoker	1.115 <sup>*</sup>	.000	.90	1.33
		Non-smoker	-2.940 <sup>*</sup>	.000	-3.21	-2.67
	Occasional Smoker	Occasional Smoker	-1.825 <sup>*</sup>	.000	-2.15	-1.50
		Non-smoker	-1.115 <sup>*</sup>	.000	-1.33	-.90
I made a conscientious decision to not smoke.	Non-smoker	Smoker	2.564 <sup>*</sup>	.000	2.28	2.84
		Occasional Smoker	1.736 <sup>*</sup>	.000	1.51	1.96
	Smoker	Non-smoker	-2.564 <sup>*</sup>	.000	-2.84	-2.28
		Occasional Smoker	-.828 <sup>*</sup>	.000	-1.16	-.49
	Occasional Smoker	Non-smoker	-1.736 <sup>*</sup>	.000	-1.96	-1.51
		Smoker	.828 <sup>*</sup>	.000	.49	1.16

Table 5

*Crosstabulation Report - Smoking Status vs. Motivational Factors for Not Smoking*

Variable	Frequency	N	%
<b>Most Motivating for Non-Smokers</b>			
I do not want my health to suffer.	405	521	77.7
I do not want to lose money	159	520	30.6
I do not want my academics to suffer.	124	519	23.9
I do not want to miss future employment opportunities.	104	518	20.1
I do not want to harm the environment.	86	517	16.6
<b>Second-Most Motivating for Non-Smokers</b>			
I do not want to lose money	148	520	28.5
I do not want my academics to suffer.	73	519	14.1
I do not want my health to suffer.	43	521	8.3
I do not want to harm the environment.	41	517	7.9
I do not want to miss future employment opportunities.	40	518	7.7
<b>Most Motivating for Smokers</b>			
I do not want my health to suffer.	31	55	56.4
I do not want to lose money	16	56	28.6
I do not want my academics to suffer.	7	55	12.7
I do not want to miss future employment opportunities.	5	55	9.1
I do not want my friends to disapprove of me.^	3	55	5.5
I do not want my roommate(s) to disapprove of me.^	3	55	5.5
I do not want my professors to disapprove of me.^	3	55	5.5
<b>Second-Most Motivating for Smokers</b>			
I do not want to lose money	20	56	35.7
I do not want my health to suffer.	10	55	18.2
I do not want to miss future employment opportunities.	4	55	7.3
I do not want my roommate(s) to disapprove of me.^	2	55	3.6
I do not want my campus community to disapprove of me.^	2	55	3.6
<b>Most Motivating for Occasional Smokers</b>			
I do not want my health to suffer.	54	92	58.7
I do not want my academics to suffer.	23	91	25.3
I do not want to lose money	23	92	25.0
I do not want my roommate(s) to disapprove of me.^	10	92	10.9
I do not want my professors to disapprove of me.^	10	92	10.9
I do not want my campus community to disapprove of me.^	10	92	10.9
<b>Second-Most Motivating for Occasional Smokers</b>			
I do not want to lose money	23	92	25.0
I do not want my health to suffer.	14	92	15.2
I do not want my academics to suffer.	10	91	11.0
I do not want to harm the environment.	8	91	8.8
I do not want my professors to disapprove of me.	8	92	8.7

^. Responses were tied and are in no particular order.