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Differences between Intermittent and Light Daily Smokers in a Population of U.S

Military Recruits

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Abstract

Introduction

Few studies have assessed differences between intermittent and light smokers, particularly among young adults. Exploring these differences promotes a systematic approach to research and treatment in low level smokers. This study explored demographic, tobacco-related, and psychosocial predictors of intermittent non daily smoking relative to light smoking among basic military training (BMT) recruits. The impact of smoking status on abstinence rates at follow-up was also assessed.

Methods

Participants were 5,603 U.S. Air Force BMT intermittent non daily ($n = 3,134$) or light daily ($n = 2,469$) smoking recruits participating in a population-based group randomized trial targeting tobacco use prevention and cessation (Klesges et al., 2006). Participants completed baseline measures assessing demographics, tobacco use and history, and common social, attitudinal, and behavioral risk factors for tobacco use. Flights of recruits were randomly assigned to a tobacco use intervention or health education control intervention. At the one-year follow-up, participants reported 7 day point prevalence and continuous abstinence.

Results

Intermittent non daily smoking relative to light daily smoking was associated with lesser perceived addiction, intermittent and daily use of smokeless tobacco, non smoking male and female heads of household, lesser likelihood of smoking while stressed or while bored, and higher likelihood of intentions to quit smoking. Intermittent smokers were significantly more likely than light daily smokers to report abstinence at follow-up.

Discussion

Intermittent and daily light smokers differ on multiple tobacco related and psychosocial variables. Attending to these factors in prevention and cessation programs may enhance abstinence in both groups.

Keywords: Smoking, smoking cessation, young adults, military

Introduction

Smoking is the leading cause of preventable death in the United States (CDC, 2005). Despite a decrease in smoking among middle-aged and older adults, young adult smoking prevalence declines are smaller, and reductions in moderate to heavy smoking have been accompanied by an increase in prevalence of light and intermittent smoking (Pierce, White, & Messer, 2009). Young adults not enrolled in college are twice as likely as those enrolled to be current smokers (Green, McCausland, Xiao, Duke, Vallone, & Heaton, 2007; Lawrence, Fagan, Backinger, Gibson, & Hartman, 2007). One group of young adults who demonstrate high rates of smoking are individuals serving in the military (Nelson & Pederson, 2008); smoking prevalence is higher in military personnel relative to civilians (Bray et al., 2006).

Two particular subgroups of smokers who have received growing attention (Fiore et al., 2008) and have yet to be examined among military personnel are light and intermittent (i.e., non-daily) smokers. Both young adults (SAMHSA, 2004) and ethnic minorities (Ahluwalia et al., 2006; Rodriguez-Esquivel, Cooper, Blow, & Resor, 2009; Trinidad et al., 2009) are predominant in the military and evidence high rates of low level smoking. Therefore, light and intermittent smoking are likely to be especially common in this group.

A pattern of maintaining low levels of smoking (<10 cigarettes per day (cpd); Fiore et al., 2008) has multiple implications. First, even light smoking is deleterious to health such that light smokers are at increased risk for cancer (Bjartveit & Tverdal, 2005; National Cancer Institute, 1998), myocardial infarction (Prescott, Scharling, Osler, & Schnohr, 2002), respiratory symptoms (An, Berg, Klatt, Perry, Thomas, Luo, Ehlinger, & Ahluwalia, 2009), and cardiovascular mortality (Luota, Uutela, & Puska, 2000; Prescott et al., 2002). Second, the literature as to whether light smokers escalate their rates of smoking over time is inconsistent

(Kenford, Wetter, Welsch, Smith, Fiore, & Baker, 2005; Levy, Biener, & Rigotti, 2009). Third, light smokers are less often advised than heavier smokers to quit smoking by their healthcare providers (Koontz et al., 2004; Owen et al., 1995), and are less likely to receive treatment overall (Tong, Ong, Vittinghoff, et al., 2006). Fourth, light smokers often do not exhibit the same levels of tolerance and withdrawal as do heavier smokers (Shiffman, Paty, Kassel, Gnys, & Zettler-Segal, 1994; Soresi, Catalano, Spatafora, Bonsignore, & Bellia, 2005), suggesting that physiological and behavioral factors that are targeted for intervention may need to be modified for this group. Finally, although in a recent telephone cessation trial, low level smoking was not associated with abstinence at follow-up (Reitzel et al., 2009), one recent study targeting lighter smokers (defined as smoking 6-15 cpd) observed higher abstinence rates for those without a history of heavier smoking relative to those with a heavier smoking history at the week 12 follow-up (Gariti, Lynch, Alterman, Kampman, Xie, & Varillo, 2009), which suggests that interventions specifically targeting low level smokers may increase efficacy.

We identified only one intervention study targeting cessation among light and intermittent smokers. In this study, African Americans who smoked on at least 25 of the past 30 days and consumed 10 or fewer cpd were randomly assigned to: 2 mg nicotine gum combined with health education, 2 mg nicotine gum plus motivational interviewing, placebo gum plus health education, or placebo gum plus motivational interviewing. Results indicated that nicotine gum was no better than placebo in increasing cessation; however, at all follow-up time points, health education outperformed motivational interviewing in increasing cessation (Ahluwalia et al., 2006). Although in this study, light smoking was an inclusion criterion, the study did not identify predictors of light smoking. Given the increasing number of (particularly young) adults

who are light and intermittent smokers and the paucity of interventions targeting this group, additional assessment and subsequent treatment studies are clearly needed.

In order to advance the literature on interventions for light and intermittent smoking, efforts should address characteristics relevant to intermittent and light smoking to determine how best to address low level smoking. Many studies have noted factors associated with light smoking relative to heavier smoking such as the tendency to smoke more on weekend days (Colder et al., 2006) and in certain settings (e.g., bars) (Shiffman & Paty, 2006), as well as engaging in indulgent activities such as relaxation, eating, and consuming alcohol (Krukowski et al., 2005; Shiffman & Paty, 2006). In addition, although light smokers report levels of craving while smoking cigarettes that are similar to those of heavier smokers, between cigarette urges to smoke tend to be less common (Shiffman & Paty, 2006). Recently, two studies assessed differences among intermittent and light smokers relative to moderate-heavy smokers in ethnic subgroups. First, Tong, Nguyen, Vittinghoff, and Pérez-Stable (2009) noted that Asian American intermittent and light smokers compared to moderate-heavy smokers were more likely to be women and highly educated. Relative to daily smokers, intermittent smokers were more likely to be women and to have lower household incomes. Second, Boulos, Loffredo, El Setouhy, Abdel-Aziz, Israel, and Mohamed (2009) assessed differences between non daily, light daily, and moderate-heavy male smokers in Egypt. Results indicated that, relative to moderate-heavy daily smokers, non daily smokers tended to be younger and unmarried, with higher levels of education. Compared to moderate-heavy daily smokers, non daily and light daily smokers reported higher rates of planning to quit and self efficacy for quitting. However, in both studies, daily smokers and/or moderate-heavy smokers were the referent groups, somewhat limiting interpretation of differences between non daily and light daily smokers. In a recent population-

based cohort study, Levy, Biener, and Rigotti (2009) assessed differences across four smoking categories: <5 cpd, non daily; <5cpd, daily, 6-10cpd; >10cpd. Results indicated that across smoking categories lighter smokers were generally younger, more highly educated, had higher incomes, were female, were non-White, initiated smoking at a later age, were less nicotine dependent, and were more likely to plan to quit in the next year. Further analyses suggested that relative to very light daily smokers, very light non daily smokers were younger, of higher socioeconomic status, demonstrated a social smoking pattern, initiated smoking later, were less nicotine dependent, and had more recent and planned cessation efforts. These studies contribute to a greater understanding of differences relative to smoking status; however, further studies assessing differences in light and intermittent smokers in large, ethnically diverse, young adult samples are warranted to bolster the ability to tailor cessation interventions to low level smokers.

This study aimed to assess in a population of BMT recruits the baseline characteristics associated with intermittent non daily and light daily smoking, relevant between group differences, and the impact of intermittent versus light smoking on cessation at follow-up.

Method

Participants

Air Force active duty personnel, guardsmen, and reservists who entered the U.S. Air Force from October 1999 to October 2000 participated in the parent study (Klesges et al., 2006). However, the current study examined only individuals who engaged in non daily intermittent or daily light smoking (<10 cigarettes per day) at baseline. A total of 5,604 (87% active duty, 10% Air Guard, and 3% reserve) recruits were identified who met this criterion. Baseline analyses were conducted on all recruits in order to obtain a broader understanding of intermittent and light smoking. At follow-up, only active duty personnel were contacted (cf. Klesges et al., 2006). Of

the 4,900 active duty intermittent and light smoking recruits available, a total of 3,828 recruits (78% response rate) completed the 12 month follow-up. Consistent with the parent study (Klesges et al., 2006), only these cases were analyzed. Available case only analyses proceeded as a sizeable number of recruits may remain quit subsequent to BMT (Klesges, Haddock, Lando, & Talcott, 1999), and it is unlikely that only continuing smokers opted not to return follow-up surveys.

Procedure

The study and smoking interventions were incorporated as an official part of Air Force BMT and as such, the smoking cessation intervention was conducted on all recruits. However, completion of the baseline survey was voluntary and informed consent was obtained. These surveys were administered during week two of BMT, and interventions were delivered during the sixth and final week. All recruits were required to stop smoking as soon as they entered the Air Force base; therefore, all participants were involuntarily abstinent for nearly 2 weeks at baseline.

Informed consent for the survey was obtained from all participants; subsequently Air Force flights (similar to platoons), not individuals, were randomized to the treatment (75%) or control (25%) conditions. The study protocol was approved by the National Institutes of Health as well as by the institutional review boards of the University of Memphis, University of Missouri—Kansas City, and the US Air Force at Wilford Hall Medical Center in San Antonio, TX (now part of the San Antonio Military Medical Center).

Treatment and control sessions were delivered during the last week of BMT and consisted of two 1-hr sessions. Follow-up forms were mailed 1 year later to all active duty participants who reported being current or former tobacco users at baseline. Staff who conducted

follow-ups were not blind to treatment assignment at follow-up. Additional details about the intervention are available elsewhere (Klesges et al., 2006).

Measures

The baseline questionnaire measured four general domains. First, basic demographics were assessed, including height and weight, gender, ethnicity, age, education level, and total family income. Next, history of tobacco use was assessed, including the use of cigarettes, smokeless tobacco, cigars, pipes, clove cigarettes, and bidis. The smoking categories included never smokers (never smoked, not even a puff), experimental smokers (smoked on only 1–2 occasions), former smokers (smoked at least one cigarette per day regularly but had quit in the past 6 months, quit between 6 months and one year ago, and quit more than one year ago), and regular smokers (smoked regularly up to the beginning of BMT). Intermittent, non-daily smokers were those who indicated that “they smoked, but not every day.” Light smokers endorsed smoking every day and subsequently reported on a separate item consuming 10 or fewer cpd. Nicotine dependence was measured by a modified version (Haddock, Lando, Klesges, Talcott, & Renaud, 1999) of the Fagerström Test for Nicotine Dependence (Heatherton, Kozlowski, Frecker, & Fagerström, 1991). Age of a first puff of a cigarette was also assessed. Participants reported on the smoking status of both the male and female heads of households, their estimate of how many of their friends smoke, intake of alcohol (no intake, one a month, 2 to 4 times a month, at least once a week, and either almost every day or daily), as well as their history of use of both smokeless tobacco products and cigars prior to BMT. Perceived rebelliousness, willingness to take health risks, feelings of sadness, and a tendency to smoke when stressed or when bored were all assessed with the same response options. These variables were rated on a 5 point scale ranging from strongly disagree to strongly agree. For purposes of analysis, responses

were subsequently condensed to three categories (disagree to strongly disagree, agree to strongly agree, and neutral).

Perceived likelihood of developing a smoking-related illness compared to others their age was measured as a five point range from “definitely will not” to “definitely will.” These response options were subsequently reduced to “definitely not or unlikely,” “likely or definitely will,” or “neither” (the reference group in all subsequent analyses). Perceived health was measured in a 5 point range from “poor” to “excellent” and reduced to fair to poor, very good to excellent, or good (the reference category for analyses). Perceived level of addiction to cigarettes was originally assessed using a 5-point scale (definitely addicted to cigarettes, probably addicted to cigarettes, not very addicted to cigarettes, probably not addicted to cigarettes, definitely not addicted to cigarettes) and subsequently condensed to “not very to probably not addicted,” “probably or definitely addicted,” and “not very addicted.” Finally, intention to quit was measured as “planning to stay quit,” “thinking about staying quit,” or “not planning to stay quit,” with “not planning to stay quit” as the referent group.

The 1-year follow-up questionnaire assessed smoking status as well as any tobacco use during the past year. Continuous abstinence was assessed by asking, “Have you used any tobacco product since BMT?” (a “no” response was defined as quit). Seven-day point prevalence abstinence was assessed by asking, “Have you used any of the following tobacco products in the past 7 days?” Participants could not endorse any form of tobacco use during these periods in order to be classified as abstinent. The procedure at follow-up was to first mail the questionnaire, and if participants did not respond to a total of two mailings, they were then contacted by phone, and the questionnaire was administered over the phone.

Approach to Analyses

Non daily smokers were those who reported smoking prior to BMT in a non daily manner, while light daily smokers reported smoking between 1 and 10 cpd. The association between relevant variables and intermittent (vs. daily light) smoking was examined via logistic regression. In addition, the influence of intermittent smoking (vs. daily light) smoking on cessation after the BMT smoking ban was examined both after considering the impact of a cessation intervention provided during BMT and a possible interaction between smoking status and assignment to treatment group.

Each recruit was nested within a flight, and flights were the unit of randomization to intervention provided during BMT. The impact of this nesting was negligible and not statistically different from 0 in a multi-level model; intra-class correlation (ICC) = .004, $\chi^2(1) = .08, p = .39$. ICCs for 7 day point prevalence and continuous cessation outcomes were less than .008, $ps > .26$. Therefore, standard multivariate logistic regression was employed. All predictor variables were included in the multivariate model estimated, as all univariate logistic models predicting intermittent smoking were significant. The full model presented examines the impact of each covariate of interest on intermittent smoking adjusting for all other covariates.

Results

Descriptive characteristics for categorical (see Table 1) and continuous predictors (see Table 2) show the significant associations of all variables with intermittent versus daily light smoking. All demographic, tobacco use related, and psychosocial variables were associated with smoking status at the univariate level ($p = .05$).

The multivariable model predicting intermittent smoking fit the data, $\chi^2(46) = 3059.63, p < .001$; Hosmer-Lemeshow $\chi^2(5277) = 4943.80, p > .99$ (see Table 3). Intermittent vs. daily light smoking was associated with the use of smokeless tobacco products either intermittently, odds

ratio (OR) = 1.98, $p < .001$, or daily, OR = 5.39, $p < .001$, as were increasing age of the first puff of a cigarette, OR = 1.03, $p = .05$, a lesser perceived likelihood of developing a smoking related illness, OR = 1.40, $p < .001$, and a lesser perceived addiction to cigarettes, OR = 2.03, $p < .001$. Greater number of cigarettes per day was negatively associated with intermittent smoking, OR = .67, $p < .001$, and endorsing that one is likely or definitely addicted to cigarettes, OR = .36, $p < .001$, was less associated with intermittent versus daily light smoking. Yet, thinking about quitting, OR = 1.70, $p < .001$, and planning to quit, OR = 1.85, $p < .001$, during BMT were also associated with intermittent smoking, indicating higher intention to quit among intermittent non daily smokers relative to daily light smokers.

Non daily smoking was also associated with non smoking female, OR = 1.24, $p < .05$, and male heads of household, OR = 1.24, $p < .05$, one category of friend smoking: some friends (i.e., approximately 20-40%) smoking, OR = 1.46, $p < .001$, and consumption of alcohol approximately once a week, OR = 1.37, $p < .01$. Intermittent smoking was less associated with the endorsement of the statement that one would likely develop a smoking related illness, OR = .70, $p < .01$, smoking when stressed, OR = .62, $p < .001$, and smoking when bored, OR = .73, $p < .001$.

Finally, cessation rates differed between non daily intermittent and daily light smokers both in terms of 7 day point prevalence abstinence, $\chi^2(1) = 206.79$, $p < .001$, and continuous abstinence, $\chi^2(1) = 170.45$, $p < .001$. Multivariable logistic regression adjusting for the potential influence of treatment group assignment and the interaction of intermittent smoking with treatment group assignment (see Table 4) did not change the relationship between smoking status and cessation. At follow-up, 45% of intermittent smokers and 23% of daily light smokers

reported 7 day abstinence from smoking. Moreover, 41% of intermittent smokers and 22% of daily light smokers reported continuous abstinence.

Discussion

Multiple predictors of non daily smoking relative to light smoking were observed; however, no demographic variables were noted as significant predictors of smoking status in the multivariable models. Recent studies have demonstrated low level smokers relative to moderate/heavy smokers (Boulos et al., 2009; Tong et al., 2009) and relative to heavier light smokers (Levy et al., 2009) were more often female, more highly educated, and younger (among other inconsistent demographic findings). That none of the demographic predictors distinguished intermittent and light daily smokers in this study may be a result of different smoking status comparisons or the uniqueness of this military cohort relative to other studies. For example, Boulos et al. (2009) assessed low level smoking relative to moderate/heavy smoking in an Egyptian sample, and Tong et al. (2009) assessed similar differences in California based Asian Americans. As such, it may be that demographic predictors of lower level smoking are more readily observable with greater breadth of smoking status representation. Moreover, those studies (Boulos et al., 2009; Tong et al., 2009) and the Levy et al. (2009) study (which did assess differences among non daily and daily light smokers), all included a larger age distribution relative to the current study. It may be that in a young adult sample, demographic differences between non daily and light daily smokers are less salient, as a result of reduced age variance, limited time since age of initiation, or a generational effect indicating that smoking status differences are narrowing in current young adults.

With regard to tobacco-related predictors, intermittent and daily use of smokeless tobacco demonstrated among the strongest relationships to non daily smoking relative to daily light

smoking. Previous studies have suggested non trivial rates of combined smoking and smokeless tobacco use in youth (Severson, Forrester, & Biglan, 2007) and young adults in the military (Vander Weg et al., 2008), and one study has indicated that among military personnel high rates of smokeless tobacco use were observed particularly among those smoking fewer than 10 cpd (Peterson et al., 2007). The current results indicate more smokeless tobacco use is associated with less smoking. Although the reasons for this are unclear, it could be that for some, intermittent use of one tobacco product serves as a substitute for the other. Despite the ongoing debate regarding smokeless tobacco use as a potential smoking harm reduction strategy (e.g., Timberlake, Huh, & Lakon, 2009), strong evidence is lacking to support such interventions. As such, both prevention and intermittent and light smoking cessation efforts should continue to assess alternative tobacco use and include components designed to educate youth and young adults to the hazards of all forms of tobacco use, both when used alone and in combination.

Consistent with past studies, fewer cigarettes smoked per day, lesser perceived addiction to cigarettes, later age of initiation (Levy et al., 2009), and lesser perceived likelihood of developing a smoking related illness were associated with non daily smoking relative to light daily smoking. Later age of first cigarette and lower number of smoking days and cigarettes smoked on smoking days also distinguished never-daily intermittent smokers from former-daily intermittent smokers in a recent study (Nguyen & Zhu, 2009). These findings suggest a pattern of smoking, smoking history, and addiction related differences relative to smoking status.

Both thinking about and planning to quit smoking were associated with intermittent non daily smoking relative to light daily smoking. These findings are consistent with previous studies indicating greater intention to quit associations with lower levels of smoking (Boulos et al., 2009; Levy et al., 2009). Although the link between intention and future behavior may be modest

(Rise, Kovac, Kraft, & Moan, 2008), studies demonstrate this relationship exists (Manfredi, Cho, Crittenden, & Dolocek, 2007; Pai & Edington, 2008). Evidence supports a focus on both the motivational and volitional processes associated with intention to promote cessation (Armitage & Arden, 2008); thus, adding volitional elements to intermittent and light smoking interventions may capitalize on observed intention rates in intermittent smokers and enhance intention rates in light daily smokers to promote cessation in both groups.

Psychosocial smoking related variables were related to intermittent smoking relative to light daily smoking such that intermittent smoking was associated with both non smoking female and male heads of household, and lesser reports of smoking when stressed or when bored. Studies have shown that smoking in adolescents is related to a social context more permissive of smoking (Buller, Borland, Woodall, Hall, Burris-Woodall, & Voeks, 2003) and living with smokers (Robinson et al., 2006). In one recent study (Pierce, White, & Messer, 2009), a smoke-free home significantly increased the odds of being a light or intermittent smoker. Additionally, smoke-free environments (e.g., home, workplace) increase the likelihood of abstinence (Fiore et al., 2008).

Studies of intermittent and light smoking differences associated with a tendency to smoke when stressed or bored appear to be non existent in the literature. Although self reported stress seems to be clearly related to reduced smoking abstinence (Fiore et al., 2008), the relationship between boredom relief and relapse to smoking has been inconsistent (McEwen, West, & McRobbie, 2008; Richmond et al., 2006), and no studies of the impact of boredom-related smoking and cessation are noted. Future studies of intermittent and light smokers should consider these situations as contexts in which smoking may be more likely to occur and use valid

measures to assess smoking in response to stress and boredom, as well as the impact on subsequent cessation.

Regardless of treatment condition, intermittent non daily smokers quit smoking at significantly higher rates than daily light smokers. Two considerations are noteworthy. First, it may be that six weeks of forced abstinence promotes cessation to a greater degree than other cessation paradigms. This is consistent with results of the larger study in all smokers (Klesges et al., 2006) and the original large scale study in BMT recruits (Klesges et al., 1999). Although studies of forced smoking bans are emerging, for example from psychiatric wards (e.g., Etter, Khan, & Etter, 2008), cessation after discharge or exiting the banned environment are not yet frequently considered. Future studies should evaluate bans and particularly subsequent cessation rates when appropriate. Second, consistent with the typical finding that heavier smoking is related to reduced abstinence (Fiore et al., 2008), light daily smokers may require more intensive intervention relative to non daily smokers (in this case, above and beyond the smoking ban).

Strengths, Limitations, and Future Directions

Despite clear study strengths to include a large sample size, sociodemographic diversity, and the use of a young adult cohort, three limitations are noteworthy. First, the study was performed within a large sample of BMT recruits; thus, generalizability to other young adults is unknown. Second, self reports of smoking and smoking status were used; in a sample of this size whose follow-ups were conducted across the country, biochemical verification of smoking status was not feasible. Finally, detailed information was not collected regarding the frequency (e.g., number of days per week) of intermittent smoking and the contexts in which it occurred, thereby limiting what we know about the smoking patterns of this group.

In summary, intermittent non daily smokers achieved smoking abstinence at higher rates than daily light smokers after a six week smoking ban. Multiple tobacco-related and psychosocial predictors of intermittent smoking relative to light daily smoking were observed. Tailoring intermittent and light smoking interventions to characteristics that distinguish the two groups by targeting the heavier daily light smokers may bolster cessation rates in both groups.

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Competing Interests

The authors have no competing interests.

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Table 1: Demographic Characteristics of Daily Light and Intermittent Smoking Air Force Recruits, $N = 5,604$ (Daily Light $n = 2,469$, 44%; Intermittent $n = 3,134$, 56%)

	Daily Light		Intermittent		χ^2		Daily Light		Intermittent		χ^2
	<i>n</i>	%	<i>n</i>	%			<i>n</i>	%	<i>n</i>	%	
Gender					$\chi^2 (1)=33.95, p< .01$	Cigar Use					$\chi^2 (4)=26.63, p< .01$
Male	1,702	69	2,379	76		Never used	613	25	758	24	
Female	767	31	755	24		Experimental use	1,274	51	1,528	49	
Ethnicity					$\chi^2 (4)=28.28, p< .01$	Former	49	2	43	1	
Non-Hispanic White	1,716	70	2,058	66		Intermittent use	488	20	772	25	
African American	346	14	442	14		Daily use	45	2	32	1	
Hispanic	183	7	359	12		Rebelliousness					$\chi^2 (2)=7.74, p< .05$
Asian American/Pacific Islander	125	5	137	4		Neutral	696	28	943	30	
Other ethnicity	99	4	138	4		Disagree	1,315	53	1,694	54	
Education					$\chi^2 (1)=32.28, p< .01$	Agree	458	19	497	16	
12 or fewer years	1,996	81	2,332	74		Willingness to Take Health Risks					$\chi^2 (2)=5.92, p=.05$
13 or more years	473	19	801	26		Neutral	319	13	344	11	
Annual Household Income					$\chi^2 (3)=10.21, p< .01$	Disagree	2,054	83	2,649	85	
Less than \$21000	486	20	545	18		Agree	96	4	141	4	
\$21000 to \$50000	958	39	1,163	37		Feel Sad and Blue Most of the Time					$\chi^2 (2)=8.97, p< .01$
\$50001 to \$80000	583	23	824	26		Neutral	378	15	453	14	
\$80001 and above	442	18	602	19		Disagree	1,931	78	2,531	81	
Female Head of Household					$\chi^2 (2)=93.97, p< .01$	Agree	160	7	151	5	
Does smoke	831	34	692	22		Perceived Health Status					$\chi^2 (2)=67.42, p< .01$
Does not smoke	1,489	60	2,235	71		Good	1,274	52	1,479	47	
No female head of household	149	6	207	7		Poor to fair	435	17	388	12	
Male Head of Household					$\chi^2 (2)=68.94, p< .01$	Very good to excellent	758	31	1,267	41	
Does smoke	882	36	832	27		Perceived Likelihood of Getting a Smoking-related Illness Relative to Same-aged peers					$\chi^2 (2)=440.31, p< .01$
Does not smoke	1,270	51	1,950	62		Neither	1,237	50	998	32	
No male head of household	317	13	352	11		Unlikely or not at all	846	34	1,937	62	
% Friends Who Smoke					$\chi^2 (3)=183.95, p< .01$	Likely or definitely	386	16	199	6	
Almost all, 80% and above	1,052	43	859	27		Plan to Quit after BMT					$\chi^2 (2)=183.97, p< .01$
Many, 50 - 79%	851	34	1,113	36		Do not plan to quit	438	18	353	11	
Some, 20 - 40%	415	17	837	27		Thinking about staying quit	1,451	59	1,526	49	
Hardly any, 0 - 20%	151	6	325	10		Plan to stay quit	576	23	1,251	40	
Alcohol Consumption					$\chi^2 (4)=20.22, p< .01$	Tendency to Smoke When Stressed					$\chi^2 (2)=413.88, p< .01$
Do not drink	758	31	841	27		Neutral	308	13	645	21	
Once a month	456	18	559	18		Disagree	204	8	795	25	
2 - 4 times a month	708	29	913	29		Agree	1,953	79	1,692	54	
At least once a week	424	17	670	21		Tendency to Smoke when Bored					$\chi^2 (2)=485.16, p< .01$
Almost daily or daily	123	5	151	5		Neutral	442	18	747	24	
Smokeless Tobacco Use					$\chi^2 (4)=114.42, p< .01$	Disagree	279	11	1,029	33	
Never used	1,616	65	1,883	60		Agree	1,748	71	1,358	43	
Experimental use	596	24	692	22		Perceived Addiction					$\chi^2 (2)=1,600, p< .01$

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Former	92	4	108	4	Not very addicted	736	30	848	27
Intermittent use	128	5	224	7	Unlikely or not at all	380	15	1,950	62
Daily use	37	2	227	7	Likely or definitely	1,350	55	333	11

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Table 2: Continuous Demographic Variables

	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	Range	
Age	19.86	1.85	20.07	2.13	17.08 - 36.50	$t(5601)=-3.78, p< .01$
Cigarettes Per Day	8.02	2.40	3.86	2.86	1.00 - 10.00	$t(5342)=57.12, p< .01$
Age of First Puff	14.11	2.77	14.81	2.84	2.00 - 27.00	$t(5595)=-9.21, p< .01$

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Table 3: Multivariate Logistic Regression Predicting Intermittent vs. Daily Smoking

	OR	<i>p</i>	95% CI	
Female Gender	0.99	0.95	0.82	- 1.21
13+ Years of Education	1.14	0.21	0.93	- 1.41
Annual Household Income (ref. is Less than \$21000)				
\$21000 to \$50000	1.07	0.57	0.85	- 1.33
\$50001 to \$80000	1.14	0.30	0.89	- 1.46
\$80001 and above	1.11	0.44	0.85	- 1.45
Ethnicity (ref. is Non-Hispanic Whites)				
African American	0.80	0.06	0.63	- 1.01
Hispanic	0.99	0.92	0.75	- 1.29
Asian American/Pacific Islander	0.83	0.29	0.58	- 1.18
Other ethnicity	1.15	0.46	0.79	- 1.67
Female Head of Household (ref. is "does smoke")				
Does not smoke	1.24	0.02	1.04	- 1.49
No female head of household	1.37	0.08	0.97	- 1.93
Male Head of Household (ref. is "does smoke")				
Does not smoke	1.24	0.02	1.04	- 1.48
No male head of household	0.98	0.86	0.75	- 1.27
% Friends Who Smoke (ref. is 80% and above)				
Many, 50 - 79%	1.10	0.29	0.92	- 1.32
Some, 20 - 40%	1.46	0.00	1.18	- 1.80
Hardly any, 0 - 20%	1.14	0.39	0.84	- 1.54
Alcohol Consumption (ref. is "does not drink")				
Once a month	1.00	0.97	0.80	- 1.26
2 - 4 times a month	1.22	0.06	1.00	- 1.50
At least once a week	1.37	0.01	1.08	- 1.74
Almost daily or daily	1.09	0.67	0.74	- 1.59
Smokeless Tobacco Use (ref. is never used)				
Experimental use	1.12	0.28	0.91	- 1.36
Quit	1.20	0.40	0.79	- 1.81
Intermittent use	1.98	0.00	1.41	- 2.79
Daily use	5.39	0.00	3.36	- 8.63
Cigar Use (ref. is never used)				
Experimental use	1.00	0.97	0.82	- 1.23
Quit	0.83	0.55	0.45	- 1.52
Intermittent use	1.02	0.89	0.79	- 1.30
Daily use	0.55	0.08	0.28	- 1.08
Rebelliousness (ref. is neutral)				
Disagree	0.88	0.17	0.73	- 1.06
Agree	0.90	0.39	0.71	- 1.14
Willingness to Take Health Risks (ref. is neutral)				
Disagree	1.02	0.89	0.79	- 1.31
Agree	1.29	0.26	0.83	- 2.02
Low Mood (ref. is neutral)				
Disagree	0.85	0.15	0.68	- 1.06
Agree	0.78	0.20	0.54	- 1.14
Perceived Health Status (ref. is good health)				
Poor to fair	1.02	0.90	0.81	- 1.27
Very good to excellent	1.11	0.25	0.93	- 1.31
Likelihood of Getting Sick (ref. is neutral)				
Unlikely or not at all	1.40	0.00	1.19	- 1.65
Likely or definitely	0.70	0.01	0.54	- 0.91
Plan to Quit after BMT (ref. is "do not plan to quit")				
Thinking about staying quit	1.70	0.00	1.35	- 2.14
Plan to stay quit	1.85	0.00	1.43	- 2.39
Smoking When Stressed (ref. is neutral)				

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Disagree	0.75	0.06	0.56	-	1.01
Agree	0.62	0.00	0.50	-	0.77
Smoking when Bored (ref. is neutral)					
Disagree	1.14	0.30	0.89	-	1.46
Agree	0.73	0.00	0.61	-	0.89
Perceived Addiction (ref. is "not very addicted")					
Unlikely or not at all	2.03	0.00	1.68	-	2.45
Likely or definitely	0.36	0.00	0.30	-	0.43
Age	1.03	0.17	0.99	-	1.08
Cigarettes Per Day	0.67	0.00	0.66	-	0.69
Age of First Puff	1.03	0.05	1.00	-	1.06

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Table 4: Predicting 7 Day Point Prevalence and Long Term Abstinence
7 Day Point Prevalence
Abstinence

	OR	<i>p</i>	95% CI		OR	<i>p</i>	95% CI		OR	<i>p</i>	95% CI		OR	<i>p</i>	95% CI	
Treatment Group	1.02	0.81	0.87	- 1.19					1.06	0.49	0.90	- 1.24	1.03	0.82	0.79	- 1.35
Intermittent Vs. Daily					2.78	0.00	2.41	- 3.20	2.78	0.00	2.41	- 3.20	2.70	0.00	2.02	- 3.61
Treat. X Intermittent													1.04	0.82	0.74	- 1.45
Likelihood of Cessation																
	OR	<i>p</i>	95% CI		OR	<i>p</i>	95% CI		OR	<i>p</i>	95% CI		OR	<i>p</i>	95% CI	
Treatment Group	0.96	0.57	0.82	- 1.12					0.99	0.87	0.84	- 1.16	0.93	0.60	0.71	- 1.22
Intermittent Vs. Daily					2.58	0.00	2.23	- 2.98	2.58	0.00	2.23	- 2.98	2.41	0.00	1.80	- 3.23
Treat. X Intermittent													1.09	0.60	0.78	- 1.53