

# Health versus Social Life: Social Smoking in College Students in the United States

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## Abstract

*Social smoking is a prevalent but poorly understood behavior that could impose critical health risks on young adults. Social smoking is a type of non-daily smoking which is closely tied to social motives and mostly occurs in the presence of others. From a perspective of the Theory of Planned Behavior (TPB), this study investigated social smoking through an examination of perceived injunctive norms of smoking, motivations of smoking, attitudes of consequences of smoking, and smoking behaviors in college students. Results revealed that 80.7% current smokers (past 30-day) were social smokers. Social smokers held more positive attitudes of smoking and perceived health as of lower value than nonsmokers. Additionally, social smokers reported lower estimations of the benefits of smoking and enjoyed smoking less than regular smokers. Logistic regression analysis revealed that perceived injunctive norms and attitudes towards the consequences of smoking were significant predictors for social smoking. Theoretical and practical applications are discussed.*

**Key Words:** social smoking, the Theory of Planned Behavior, social norms, college culture

## Introduction

Smoking is a leading cause for premature deaths in the United States (U.S. Department of Health and Human Services, 2014). Smoking-related illnesses cause more than 4.4 million deaths in the adult populations annually (Centers for Disease Control and Prevention, 2012). Beginning in the early 1960s, a host of educational campaigns emerged to inform Americans of the negative health consequences of smoking, such as lung cancer, heart diseases, etc. (Krosnick et al., 2006). However, until 2014, approximately 40 million U.S. adults were still cigarette smokers and 76.8% of them smoke every day (Agaku, King, & Dube, 2014).

Young adults have the highest rate of smoking in all age groups in the United States (Ling, Neilands, & Glantz, 2009). Moreover, young adults, especially college students, are more likely to engage in social smoking (Calle, Rodriguez, Walker-Thurmond, & Thun, 2003), which occurs mostly in bars, restaurants, nightclubs (Philpot et al., 1999), and while in the presence of other people (Moran, Weschler, & Rigotti, 2004). Although social smokers tend to smoke less than regular smokers, light smoking (fewer than 10 cigarettes per day) and intermittent smoking still increase the risks for cancer, cardiovascular diseases, impaired fertility, cataracts, and some respiratory diseases (Bjartveit, & Tverdal, 2005; HHS, 2004). Moreover, social smokers are more likely to become daily smokers in the future than nonsmokers (Kenford et al., 2005).

Despite the fact that social smoking imposes critical impact on young adults' health, studies on social smoking remain scant (Hoek et al., 2013). Moreover, social smokers usually identify themselves as nonsmokers to family, friends, and healthcare providers (Schane, Glantz, & Ling, 2009), jeopardizing the opportunity of professional interventions, as well as research opportunities on the etiology of cigarette smoking (Rosa & Aloise-Young, 2015). As investigations of social smoking is both theoretically and practically inadequate, this study aims at addressing the gap in the literature by examining the motivations and attitudes of smoking among social smokers in the context of college culture.

Drawing upon the Theory of Planned Behavior (TPB) (Ajzen, 1985), this study examined college students' attitudes about the consequences of smoking, subjective smoking norms, motivations of smoking, and smoking behaviors. Moreover, the concept of health salience was incorporated and conceptualized as a construct assessing attitudinal strength. Practically, this study informs future anti-smoking campaigns of the characteristics of social smokers. The findings of this study suggested to attack group-specific subjective norms, which could potentially improve the effectiveness of the anti-smoking messages. Theoretically, this study extends the conceptualization of the main constructs of TPB by adding the strength of the attitudes into the investigation of health behaviors.

## Related Literature

### *The Theory of Planned Behavior*

The Theory of Planned Behavior (TPB) postulates that intention is the proximal determinant of behavior (Ajzen, 1985, 1988). Attitude, subjective norms, and perceived control over performing the behavior serve as the three pivotal determinants of the behavioral intention (Ajzen, 1988). Attitude refers to the overall positive or negative evaluation of the behavior. Subjective norms derive from the person's perception about the social pressure to perform or not perform the behavior (Ajzen, 1991). The perceived behavioral control is influenced by both the internal (e.g. ability to perform the behavior) and external (e.g. constraints) control factors. Moreover, TPB posits that the perceived behavioral control could exert direct impact on behavior (Ajzen, 1991).

TPB has been applied in a variety of health contexts, such as drinking (e.g. Cooke, Sniehotta, F., & Schüz, 2007), dietary behavior (e.g. Doerksen & McAuley, 2014), and condom use (e.g. Asare, 2015). The predictive utility and the explanatory strength of the TPB has been well documented in the existing literature. For instance, a meta-analytical review by McEachan, Conner, Taylor, and Lawton (2011) reported that, on average, the TPB explained 44.3% of the variance in intention and 19.3% of the variance in behavior. Moreover, the predictive power of the main constructs proposed by TPB is evidenced with strong support (Armitage & Conner, 2001). For example, the three determinants of intention were all found to have significant average correlations with intention (attitude,  $r=.49$ ; subjective norm,  $r=.34$ ; and perceived behavioral control,  $r=.43$ ) (Armitage & Conner, 2001).

### *Social Smoking in College Life*

The rate for tobacco use is as high as 23% in college populations (Johnston, O'Malley, Bachman, & Schulenberg, 2012). College students' smoking behaviors tend to be context-specific. Parties, sports events, and other social situations on American campuses facilitate higher rates of smoking (Etcheverry & Agnew, 2008; Stromberg, Nichter, & Nichter, 2007). Moreover, cigarette smoking is concurrent with other risky-taking behaviors. For instance, smoking is correlated with higher rates of alcohol use and alcohol-related problems (Reed et al., 2007). In return, higher rates of binge drinking among nondaily smokers increases the likelihood of becoming a heavier smoker in the future (White, Bray, Fleming, & Catalano, 2009).

In the context of college life, social smoking has important social utilities, such as facilitating peer interaction across gender, keeping a person awake at a

party, and reaffirming male students' identity as men or bad boys (Nichter et al., 2010). Moreover, college students usually engage in social smoking to pursue peer acceptance (Debevec & Diamond, 2012; Schane et al., 2009). As such, social smokers may be less motivated by the genuine enjoyment of smoking and other personal gratifications when engaging in smoking. Hence, it is hypothesized that social smokers and regular smokers start smoking and continue to smoke for different reasons:

**H<sub>1a</sub>:** *Social smokers will be more likely than regular smokers to smoke for social motives in the stage of initiating smoking.*

**H<sub>1b</sub>:** *Social smokers will be less likely than regular smokers to smoke for personal-gratification motives in the stage of initiating smoking.*

**H<sub>2a</sub>:** *Social smokers will be more likely than regular smokers to smoke for social motives in the stage of continuing to smoke.*

**H<sub>2b</sub>:** *Social smokers will be less likely than regular smokers to smoke for personal-gratification motives in the stage of continuing to smoke.*

Different from smoking in public, social smoking is not stigmatized, but socially acceptable on college campus (Nichter et al., 2010). Social smoking is prevalent among college students (Calle et al., 2003), despite their awareness of the negative health consequences (Hines, Fretz, & Nollen, 1998; Lechner, Meier, Miller, Wiener, & Fils-Aime, 2012). While social smokers regret smoking, the remorse is not sufficient to entail behavioral change (Hoek et al., 2013). One possible explanation is that social smokers may perceive smoking in a more positive light, as they are nondaily smokers and merely use smoking for social purposes. Moreover, social smokers may perceive smoking in a more positive light because of the social benefits, such as an increase of peer interaction and an improvement in sociability. As a result, social smokers may fail to recognize the negative health consequences of smoking and hold more positive expectancies of smoking. Hence, from a perspective of TPB, two hypotheses regarding the attitudinal differences between social smokers and nonsmokers are proposed:

**H<sub>3a</sub>:** *Social smokers will have higher estimations of the benefits of smoking than nonsmokers.*

**H<sub>3b</sub>:** *Social smokers will have lower estimations of the negative outcomes of smoking than nonsmokers.*

**Social Smoking and Social Norms on College Campus**

The TPB posits that the perceived subjective norms determine an individual's behavioral intention, thus, ultimately influence the behavior. Injunctive norms and descriptive norms serve as two types of subjective norms that directly influence behavioral intention (Cialdini, Reno, & Kallgren, 1990). Descriptive norms concern with the actual behaviors of other members in a social group, while injunctive norms are largely based on other group members' morals and beliefs about a behavior, such as perceived approval or disapproval of a behavior (Cialdini et al., 1990).

In addition, Berkowitz (2004) emphasized that human behavior is largely influenced by the perceived, rather than the actual, attitudes and behaviors of other group members. Adopting the perceived subjective norms in a social group serves as an avoidant strategy for social sanctions (e.g. rejection, derogation) and social conflicts (Rosenberg & Hovland, 1960). As such, the perceived subjective norms could potentially reflect, if not accurate, the actual social norms in different social groups, thus, differ between social smokers and nonsmokers. In addition, as injunctive norms is a stronger predictor for young adults' smoking cessation than descriptive norms (Phua, 2013), a hypothesis pertaining to the differences in the perceived injunctive norms between nonsmokers and social smokers is proposed:

**H<sub>4</sub>:** *Social smokers have higher levels of perceived injunctive norms than nonsmokers.*

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he strength of attitudes is an integrative dimension of attitudes, which generates distinctive effects on people's cognition and action (Petty & Krosnick, 1995). Attitude strength is an intra-individual attitudinal construct and is composed of multiple attributes (Petty & Krosnick, 1995; Visser & Mirabile, 2004). One important dimension of attitude strength is the perceived importance of attitudes (Krosnick, 1988). The important attitudes are more stable and resistant to change compared with unimportant ones (Krosnick, 1989). Moreover, important attitudes could equip individuals to counter-argue against attitude-challenging information (Krosnick, 1988).

Campus life is embedded with sociocultural contributors that increase risk-taking behaviors (Arnett, 2000; Nelson & Barry, 2005). For instance, the transition to college is accompanied with reduced parental monitoring and exploration of social identity (Arnett, 2000), which could trigger negative emotions (e.g. anxiety, stress) and the desire to gain new experiences about the emerging adulthood through risk involvement,

such as unprotected sex, substance abuse, risky driving, etc. (Arnett, 2000; Rolison & Scherman, 2003; LaBrie, Kenny, Lac, & Garcia, 2009). Moreover, perceived peer participation and peer pressure serve as a powerful contributor to risk involvement in college students (Rolison & Scherman, 2003). As such, the social norms promulgating risk-taking on U.S. campus could weaken the perceived importance of health and encourage social smoking. Thus, a hypothesis concerning the differences in the salience of health between social smokers and nonsmokers is initially forwarded:

**H<sub>5</sub>:** *Social smokers place less value on health than nonsmokers.*

**Method**

To learn more about social smoking and to test the hypotheses, a quantitative survey was developed to examine smoking behavior, motivation of smoking, attitudes about consequences of smoking, perceived injunctive norms of smoking, attitudes and beliefs about consequences of smoking, and salience of health. A detailed review of the sample and recruitment, instrument, procedure, and analyses are included in the following sections.

**Participants**

In total, 253 undergraduate students participated in the study. The sample was composed of 162 (64.0%) female and 90 (35.6%) male participants. The majority of the participants were Caucasian ( $n = 213$ , 84.2%). There were slightly more participants lived on-campus ( $n = 142$ , 56.1%) than those lived off-campus ( $n = 108$ , 42.7%).

**Recruitment and Procedure**

Upon IRB approval, participants were recruited through student sample pool. Students gave consent before they could assess the survey. The participants received 0.5 extra credit point in exchange for their participation.

**Instrument**

An online anonymous questionnaire was developed to test the hypotheses proposed in this study. Qualtrics was used to create, host, and store the data for this research. Scale usage for each variable is delineated in the following sections. Questions included topics of perceived injunctive smoking norms, attitudes towards the consequences of smoking, and salience of health. Participants were asked to identify their level of agreement or disagreement to statements on a five-point Likert scale anchored by 1 = Strongly Agree and 7 = Strongly Disagree. In addition, the participants were

asked to self-report their smoking behavior and basic demographic information, such as gender, ethnicity, location of residence, etc.

**Smoking behavior.** Smoking status was assessed by a single item adopted from Alexander et al., (2015) with six options including “I have never smoked a cigarette, not even a few puffs”; “I have smoked a cigarette or a few cigarettes just to try, but I have not smoked in the past month”; “I used to smoke cigarettes regularly, but I quit”; “I smoke, but less than one cigarette per month”; “I smoke, but less than one cigarette per week”, and “I smoke at least one cigarette per day”. Based on the self-reported smoking behaviors, the participants were categorized into three groups including non-smokers, social smokers, and smokers. Non-smokers included the participants who had never smoked a cigarette, quitted smoking, and smoked a few cigarettes just to try, but have not smoked in the past month. The participants who indicated that they had regularly engaged in some sorts of smoking were categorized as smokers. Among all the smokers, those who indicated that they smoke mainly in the presence of other people were categorized as social smokers.

**Motivation of smoking.** The motivations of smoking consist of two areas: motivations of starting smoking and motivation of continuing smoking. Spielberger’s (1986) scale assessing the psychological determinants of smoking were used to measure the two areas of motivations. The scale were consisted of 15 items and was developed in the form of 5-point Likert scale. Six items interrogated the participants’ motivations for starting smoking. The six items were grouped into two categories: social-norm motives and personal gratification motives. Social norm motives refer to the motivations that are associated with socializing and social norms, such as “I start smoking because a lot of my friends smoke”; and “because I did not want to refuse my friends when they offered me a cigarette”. Other motivations that are correlated with personal utilities were categorized as personal gratification motivations, such as “I start smoking because I thought there must be something satisfying about it because so many people smoke”; “I wanted to see if I would enjoy it”; and “I want to try something new”. The internal reliability of the scale measuring motivations in the stage of initiating smoking was at  $\alpha = .80$ .

Similarly, the ten items examining participants’ motivations to continue to smoke were categorized into social-norm motives (e.g. “I continue to smoke because most of my friends smoke”) and personal-gratification motives (e.g. “I continue to smoke because I enjoy it”). The scores of each dimensions of smoking motives were average and recorded for analysis. The internal

reliability of the scale assessing the motivations of smoking in the stage of continuing to smoke reached  $\alpha = .95$ .

**Injunctive norms of smoking.** The injunctive norm of smoking was measured by two items developed by Krosnick et al. (2006): “My friends think that I should smoke cigarettes” and “My friends think that I should NOT smoke cigarettes”. In addition, the perceived subjective norms of smoking on social media were also examined by investigating the perceived smoking references (e.g. a box of cigarettes, an ashtray on the table, etc.) and smoking behaviors (e.g. a person smoking a cigar) on social media (van Hoof et al., 2014). The scale was developed based on the findings of van Hoof and colleagues (2014). The mean score for each subscale represented the perceived injunctive norms of smoking and perceived subjective norms on social media (e.g. Facebook, Instagram, Twitter, etc.).

**Attitudes about consequences of smoking.** The expectancies of smoking was measured by the Attitudes about Consequences of Smoking Scale (ABCS) (Budd & Preston, 2001). This scale consists of 27 items and investigates four areas of the consequences: emotional benefits (e.g. smoking makes a person relax), health hazards (e.g. smokers are sick more often), body image (e.g. smoking prevents weight gain), and self-confidence (e.g. smoking makes a person feel more confident). Options ranged from 1 = strongly agree to 5 = strongly disagree. The scores of each subscales were averaged and used to represent the four areas of attitudes and beliefs regarding consequences of smoking. The internal reliability of the scale was tested utilizing Cronbach’s alpha coefficient and reached an overall reliability of  $\alpha = .83$ .

**Salience of health.** The revised version of the scale of Self-Rated Abilities for Health Practices Scale (Becker, Stuijbergen, Oh, & Hall, 1993) was used to measure the value place on health. In order to keep consistent with the scoring in other subscales, the original four-point scale was revised to a five-point Likert scale. The Self-Rated Abilities for Health (Becker et al., 1993) consists of 28 items measuring the subjective ability to perform health-promoting behaviors. Four areas of health-related behaviors were assess, including nutrition (e.g. drink as much water as I need to drink every day), psychological health (e.g. talk to friend and family about the things that are bothering me), exercise (e.g. fit exercise into my regular routine), and responsible health practices (e.g. figure out where to get information on how to take care of my health). The scale reached an internal reliability of  $\alpha = .96$ . In addition, one items directly examining respondents’ perceived salience of was adopted from the study by Krosnick et al., (2006). The items was in the form of a five-point

Likert scale to measure whether living a healthy life would be bad or good for the participants. In total, the scale measuring the salience of health was composed of 29 items ( $\alpha = .95$ ). Options ranged from 1 = strongly agree to 5 = strongly disagree. The scores of the 29 items was averaged and used to represent the salience of health.

**Results**

Among the participants, 134 students (52.3%) were categorized as non-smokers and 119 (47.7%) smokers. The majority of the smokers were social smokers ( $n=96, 80.7%$ ). An overview of the demographics of the three groups and the entire sample is reported in Table 1.

**Table 1** Demographics by groups and overall

	Non-Smokers ( <i>n</i> = 134, 53.2%)	Smokers ( <i>n</i> = 119, 47.2%)		Full Sample N=252
		Social Smokers ( <i>n</i> = 96, 80.7%)	Smokers ( <i>n</i> = 23, 19.3%)	
<b>Gender</b>				
Female	99(73.9%)	53(55.2%)	10(43.5%)	162(64.0%)
Male	35(26.1%)	42(42.8%)	13(56.5%)	90(35.6%)
Other	0	1(1%)	0	1(0.4%)
<b>Ethnicity</b>				
African-American	21(15.7%)	2(2.1%)	2(8.7%)	25(9.9%)
Asian	0	1(1.0%)	0	1(0.4%)
Caucasian	108(80.6%)	87(90.6%)	18(78.3%)	213(84.2%)
Latino	4(3.0%)	3(3.1%)	0	7(2.8%)
Other	1(0.7%)	3(3.1%)	3(13.0%)	7(2.8%)
<b>Location of Residency</b>				
On-Campus	79(59.0%)	53(55.2%)	10(43.5%)	142(56.1%)
Off-Campus	55(41.0%)	40(41.7%)	13(56.5%)	108(42.7%)
Other	0	3(3.1%)	0	3(1.2%)

As Table 1. confirms, non-smokers were primarily female ( $n = 99, 73.9%$ ) and lived on-campus ( $n = 79, 59.0%$ ). There were more African-American ( $n = 21, 15.7%$ ) in the non-smoker group than in the smoker group ( $n = 4, 3.3%$ ). Except that, there were no significant differences in demographics among the three groups.

$H_{1a}$ ,  $H_{1b}$ ,  $H_{2a}$ , and  $H_{2b}$  queried whether there were differences in the motivations of smoking between social smokers and regular smokers.  $H_{1a}$  posited that social smokers will be more likely to be influenced by social factors to start smoking than regular smokers. No significant differences were found in social-norm motives for beginning smoking between social smokers and regular smokers. Thus,  $H_{1a}$  was not supported.

$H_{1b}$  stated that social smokers will be less likely to be influenced by personal-gratification factors to start smoking than regular smokers. No significant differences were found in personal-gratification motives between social smokers and regular smokers in the stage of initiating smoking. Thus,  $H_{1b}$  was not supported.

$H_{2a}$  posited that social smokers will be more likely than regular smokers to be influenced by social factors to continue to smoke. No significant differences were found in social motives for continuing smoking between social smokers and regular smokers. Thus,  $H_{2a}$  was not supported.

$H_{2b}$  surmised that social smokers will be less likely to be influenced by personal-gratification factors to start smoking than regular smokers. Significant differences were found in personal-gratification motives between social smokers ( $\mu = 3.75, SD = 1.03$ ) and regular smokers ( $\mu = 3.11, SD = 1.09$ );  $t(117) = 2.63, p < .05$ . The findings suggested that personal-gratification motives were less salient in social smokers than in regular smokers in the stage of continuing to smoke. Thus,  $H_{2b}$  was supported.

$H_{3a}$  and  $H_{3b}$  focused on the differences between social smokers and nonsmokers in the attitudes about consequences of smoking. Significant differences were found in the attitudes about the benefits of smoking between nonsmokers ( $\mu = 3.90, SD = .69$ ) and social

smokers ( $\mu = 3.37$ ,  $SD = .66$ );  $t(228) = -5.86$ ,  $p < .001$ . The findings suggest that social smokers reported more positive attitudes towards the benefits of smoking than nonsmokers. Thus,  $H_{3a}$  was supported.

Specifically, significant differences were found in the three areas of benefits of smoking. For perceived emotional benefits, significant differences were found between nonsmokers ( $\mu = 3.76$ ,  $SD = .76$ ) and social smokers ( $\mu = 3.09$ ,  $SD = .72$ );  $t(228) = 221.06$ ,  $p < .001$ . The findings suggested that social smokers were more positive about the emotional benefits of smoking. For perceived self-confidence benefits, significant differences were found in the between nonsmokers ( $\mu = 4.11$ ,  $SD = .96$ ) and social smokers ( $\mu = 3.26$ ,  $SD = .96$ );  $t(228) = 207.11$ ,  $p < .001$ . The findings suggest that social smokers were more positive about the self-confidence benefits of smoking than nonsmokers. For body-image-related benefits, significant differences were found in the perceived body-image benefits between nonsmokers ( $\mu = 3.53$ ,  $SD = .96$ ) and social smokers ( $\mu = 3.26$ ,  $SD = .96$ );  $t(228) = 211.06$ ,  $p < .05$ . The findings suggest that social smokers were more positive about the body-image benefits of smoking than nonsmokers.

$H_{3b}$  queried that social smokers will have less negative attitudes to the health hazards of smoking than nonsmokers. Significant differences were found in the perceived self-confidence benefits between nonsmokers ( $\mu = 1.70$ ,  $SD = .616$ ) and social smokers ( $\mu = 2.03$ ,  $SD = .67$ );  $t(228) = 192.57$ ,  $p < .001$ . The findings suggest that social smokers were less negative about the health hazards result from smoking than nonsmokers. Thus,  $H_{3b}$  was supported.

$H_4$  stated that social smokers will have higher levels of perceived injunctive norms than nonsmokers. Significant differences were found in the perceived injunctive norms between nonsmokers ( $\mu = 2.89$ ,  $SD = .71$ ) and social smokers ( $\mu = 2.64$ ,  $SD = .79$ );  $t(228) = -3.97$ ,  $p < .001$ . The findings suggest that nonsmokers perceived higher levels of disapproval of smoking than social smokers. Thus,  $H_4$  was supported.

$H_5$  posited that social smokers will place less value on health than nonsmokers. Significant difference

was found in the salience of health between social smokers ( $\mu = 1.92$ ,  $SD = .61$ ) and nonsmokers ( $\mu = 1.68$ ,  $SD = .54$ );  $t(228) = 3.16$ ,  $p < .01$ . The findings suggest that social smokers placed less value on health than nonsmokers both cognitively and behaviorally. Thus,  $H_5$  was supported.

Further analysis was conducted to determine whether there were significant differences between social smokers and regular smokers in the number of cigarettes consumed, attitudes towards smoking, perceived injunctive norms of smoking, and salience of health. An independent-samples t-test revealed that social smokers ( $\mu = 17.88$ ,  $SD = 60.39$ ) consumed significantly fewer cigarettes per month than regular smokers ( $\mu = 72.91$ ,  $SD = 111.11$ );  $t(117) = -3.25$ ,  $p < .01$ . For attitudes towards the consequences of smoking, significant differences were found in the area of emotional benefits and self-confidence. Social smokers ( $\mu = 3.09$ ,  $SD = .72$ ) were more negative about the emotional benefits of smoking than regular smokers ( $\mu = 2.69$ ,  $SD = .78$ );  $t(117) = 2.36$ ,  $p < .05$ . Additionally, social smokers ( $\mu = 3.64$ ,  $SD = .75$ ) revealed significantly more negative attitudes than regular smokers ( $\mu = 3.16$ ,  $SD = .85$ ) towards self-confidence-related consequences of smoking;  $t(117) = 2.36$ ,  $p < .05$ . No significant differences were found in the salience of health, injunctive norms of smoking, health hazards and body-image-related beliefs of smoking between the social smokers and regular smokers.

To learn more about the characteristics of social smokers, a logistic regression model was constructed to predict social smoking based on perceived injunctive norms, attitudes towards smoking, and salience of health. A Wald test for the global utility of the full model was significant,  $\chi^2(6, N = 253) = 74.85$ ,  $p < .001$ , indicating that the predictors, as a set, reliably distinguished between the social smokers and nonsmokers. The correct classification rate was 78% for the nonsmokers and 71% for social smokers, with an overall rate of 75%. A summary of the logistic regression is reported in Table 2.

**Table 2** Logistic regression analysis of nonsmokers and social smokers using attitudes of the consequences of smoking, injunctive smoking norms, and salience of health

Independent Variables	B	SE B	e <sup>B</sup>	Prob.
Injunctive smoking norms	1.08	.29	2.95	.00***
Salience of Health	.38	.30	1.47	.20
Perceived health hazards	.69	.27	2.00	.010**
Self-confidence	1.18	.39	3.25	.003**
Body-image	-.33	.18	.72	.085
Emotional Benefits	-1.94	.38	.14	.000***
Constant	-.25			
Model	Nagelkerke R <sup>2</sup> = .37, Wald $\chi^2$ (6, n = 230), p< .001***			

Note: The dependent variable in this analysis is smoking behavior coded as 0 = nonsmoker and 1 = social smoker.

\*p< .05. \*\*p< .01. \*\*\*p< .001

As Table 2. demonstrates, the Wald criterion indicated that injunctive smoking norms ( $p < .001$ ), beliefs about emotional benefits of smoking ( $p < .001$ ), perceived health hazards of smoking ( $p < .01$ ), and beliefs about self-confidence-related consequences of smoking ( $p < .01$ ) made significant contribution to the prediction, where the attitudes and beliefs of the consequences of smoking scored from 1=strongly agree to 5=strongly disagree and injunctive norm from 1=highly disapprove to 5=highly approve. Health salience and body-image-related beliefs were not significant predictors of social smoking. Exp(B) value (injunctive norms) indicated that when perceived approval of smoking is increased by one unit, the odds ratio is 2.95 times as large and therefore the students are 2.95 times more likely to be social smokers. Exp(B) value (perceived health hazards) demonstrated that when the unawareness of the health hazards is raised by one unit, the odds ratio is 2.00 times as large and therefore students are 2.00 more times likely to be social smokers. Exp(B) value (self-confidence) indicated that when the perceived self-confidence-related consequences of smoking is raised

by one unit, the odds ratio is 3.25 times as large and therefore students are 3.25 more times likely to be social smokers. Exp(B) value (emotional benefits) indicated that when the negative attitudes of the emotional benefits is raised by one unit, the odds ratio is .14 as large and therefore students are .86 times less likely to be social smokers.

Drawing upon the TPB, a logistic regression was conducted to predict smoking status (nonsmokers and smokers) based on injunctive smoking norms, attitudes about the consequences of smoking, and salience of health. A test of the full model against a constant only model was statistically significant, indicating that the predictors as a set reliably distinguished between nonsmokers and smokers,  $\chi^2(6, N = 253) = 74.85, p < .001$ . Nagelkerke's R<sup>2</sup> of .40 indicated a moderate relationship between prediction and grouping. Prediction success overall was 76% (75% for nonsmokers and 77% for smokers). A summary of the logistic regression is reported in Table 3.

**Table 3** Logistic regression analysis of smokers and nonsmokers using attitudes of the consequences of smoking, injunctive smoking norms, and salience of health

Independent Variables	B	SE B	e <sup>B</sup>	Prob.
Injunctive smoking norms	1.11	.27	3.03	.000***
Salience of Health	.29	.29	1.33	.32
Perceived health hazards	.67	.26	1.96	.011*
Self-confidence	1.05	.37	2.85	.005**
Body-image	-.29	.18	.75	.108
Emotional Benefits	-1.91	.37	.15	.000***
Constant	-.25			
Model	Nagelkerke R <sup>2</sup> = .40, Wald $\chi^2$ (6, N = 253), p< .001***			

Note: The dependent variable in this analysis is smoking behavior coded as 0 = nonsmoker and 1 = smoker.

\*p< .05. \*\*p< .01. \*\*\*p< .001

As Table 3. affirms, the Wald criterion demonstrated that injunctive smoking norms ( $p < .001$ ), beliefs about emotional benefits ( $p < .001$ ), perceived health hazards of smoking ( $p < .05$ ), and beliefs about self-confidence-related consequences of smoking ( $p < .001$ ) made significant contribution to the prediction, where the attitudes and beliefs of the consequences of smoking scored from 1=strongly agree to 5=strongly disagree and injunctive norm scored from 1=highly disapprove to 5=highly approve. Health salience was not a significant predictor. Exp(B) value (injunctive norms) indicated that when perceived approval of smoking is increased by one unit, the odds ratio is 3.03 times as large and therefore the students are 3.03 times more likely to be smokers. Exp(B) value (perceived health hazards) demonstrated that when the unawareness of health hazards is decreased by one unit, the odds ratio is 1.96 times as large and therefore students are 1.96 more times likely to be nonsmokers. Exp(B) value (self-confidence) indicated that when the perceived self-confidence-related consequences of smoking is raised by one unit, the odds ratio is 2.85 times as large and therefore students are 2.85 more times likely to be nonsmokers. Exp(B) value (emotional benefits) indicated that when the negative expectations of the emotional benefits is raised by one unit, the odds ratio is .15 as large and therefore students are .85 times less likely to be nonsmokers.

### Discussion

From a perspective of TPB, this study investigated social smoking through an examination of the perceived injunctive norms of smoking, attitudes towards smoking, and motivations of smoking in the context of college life. Compared with nonsmokers, social smokers had more positive attitudes towards the consequences of smoking, placed less value on health, and reported higher levels of perceived injunctive norms of smoking. Compared with regular smokers, social smokers consumed fewer cigarettes per month, perceived personal gratifications of smoking as less important, and held more negative attitudes about the benefits of smoking. Moreover, the findings of this study support the propositions of TPB (Ajzen, 1985) that injunctive smoking norms and attitudes towards smoking served as two major predictors of smoking behaviors. In addition, consistent with previous findings that social smoking is prevalent among college students (e.g. Calle et al., 2003), this study found that the majority (80.7%,  $n=96$ ) of the smokers were social smokers.

Social motives undergird the basis for understanding social smoking. For instance, social motivations were more salient in social smokers than in

regular smokers in the stage of continuing to smoke. In a similar vein, when compared with nonsmokers, social smokers reported more positive attitudes towards the benefits of smoking, including body-image-related benefits, improvement in self-confidence, and emotional benefits. In fact, the perceived benefits of smoking are embedded with social utilities (e.g. smoking makes a person fit in better with other people, smoking makes parties more fun, smoking promotes socializing, etc.).

Beyond the motivations of social smoking, intriguing findings can be detected in the juxtaposition between the awareness of the potential health hazards and the behavior of social smoking. Within this study, nearly half of all the participants in this study engaged in social smoking and other forms of smoking. Surprisingly, social smokers and smokers scored an average of 2.02 and 2.13 respectively in the perceived health hazards of smoking, indicating a moderate awareness (2 = moderately agree) of the negative health consequences. One possible explanation lies in the social norms favoring risk-taking in college life (Arnett, 2000; Nelson & Barry, 2005), which could weaken students' ability to counter-argue health-threatening attitudes. Moreover, as perceived peer participation and peer pressure contribute to risk involvement (Rolison & Scherman, 2003), college students may comply with the perceived smoking norms in the belief that the health-related costs of smoking would be compensated by a leverage of peer acceptance. Consequently, social smokers might be more vulnerable to the perceived smoking norms on college campuses.

An additional explanation of the juxtaposition between the awareness of the health risks and the behavior of social smoking could be gleaned from Cognitive Dissonance Theory (Festinger, 1957). Cognitive Dissonance Theory postulates that people are driven by an inner desire to hold all the attitudes and beliefs in harmony and avoid conflicting attitudes (Festinger, 1957). It is plausible that social smokers may internalize the normalization of risk-taking and adopt the belief that socializing is more important than health. The findings pertaining to health salience in this study corroborates the explanation that social smokers perceived health as less important than nonsmokers. As such, adopting the notion of health salience could be a more fruitful way in deciphering the attitudinal and behavioral characteristics of social smokers.

The findings of this study bear out the original propositions of TPB (Ajzen, 1988) that subjective norms and the attitudes of a behavior are two major predictors of behavior. Logistic regression analysis revealed that injunctive norms of smoking, attitudes about the emotional benefits, perceived health hazards of



smoking, and beliefs about self-confidence-related benefits of smoking were significant predictors of smoking. Moreover, the model explained 40% of the variances in smoking behavior, which is consistent with the findings of literature on TPB's reliable predictive utility and explanatory strength (McEachan et al., 2011).

It is important to note that this study has several limitations. The major limitation of this study lies in the small sample size. In addition, there were more females than males in the sample. Future studies could utilize larger and more representative samples to explore the attitudinal and behavioral characteristics of social smokers in college populations. As social smoking poses challenges to traditional smoking intervention practices (Schane et al., 2009), continued investigations into this prevalent smoking behavior must be ascertained. In fact, the tobacco industry has extensively explored social smoking behavior since 1970s and utilized the findings to attract the social smoker segment (Schane et al., 2009). As such, social smokers could be vulnerable to the tobacco ads that emphasize the social benefits of smoking (Schane et al., 2009).

Moreover, published studies on social smoking provided inconsistent definitions and conceptualization of social smoking, which embodied challenges to the identification of social smokers (Song & Ling, 2011). As social smoking is demonstrably different from regular smoking, continued investigations are warranted to develop reliable measurements to specifically identify social smokers and assessing their attitudes and perceptions about smoking. Future studies examining social smoking should not be restricted to the social aspects of the behavior as there could be unconventional attitudes and behaviors resided in the social practice of smoking.

The differences found between social smokers and nonsmokers urge researchers to incorporate the notion of health salience in the continued explorations of health behaviors with the potential for more robust effects. For instance, mixed findings were reported surrounding social-norm based health campaigns. Many

studies supported the success of social norms campaigns (e.g. DeJong et al., 2006; Neighbors et al., 2004), while some other field studies failed to find significant changes in deleterious behaviors (e.g. Granfield, 2005; Russell, Clapp, & DeJong, 2005). Health salience could be important in deciphering such mixed findings.

In addition, from a perspective of attitude strength, the concept of health salience could provide noteworthy implications for health campaign planners. For instance, correcting the misconceptions of subjective norms and attacking the right norms should be regarded of equal importance. In the context of social smoking, future anti-smoking campaigns targeting at college populations, especially social smokers, could emphasize the importance of health, along with the injunctive norms surrounding smoking. Finally, future investigations of health behaviors, especially risky health behaviors, should focus more on the effects of social contexts and social identity on people's attitudes towards a health behavior.

### Conclusion

Overall, this study provided considerable insights in deciphering the motivations and attitudes of smoking among social smokers. Considering the unique characteristics of social smokers, attacking social-benefits-based perceptions about smoking could serve as a more fruitful way to prevent and intervene social smoking in the context of college culture. Additionally, as mixed findings were reported in field studies regarding social-norm based health campaigns, increasing the students' perceived value of health may improve the effectiveness of future anti-smoking campaigns. Future studies examining social smoking should not be restricted to using the scales and variables designed for regular smoking, as there could be unconventional attitudinal and behavioral phenomenon among social smokers.

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