Loose Cigarette Purchasing and Nondaily Smoking Among Young Adult Bar Patrons in New York City

Jamie Guillory, PhD, Michael Johns, PhD, Shannon M. Farley, MPH, and Pamela M. Ling, MD, MPH

Objectives. We examined loose cigarette (loosie) purchasing behavior among young adult (aged 18–26 years) smokers at bars in New York City and factors associated with purchase and use.

Methods. Between June and December 2013, we conducted cross-sectional surveys (n = 1916) in randomly selected bars and nightclubs. Using multivariable logistic regression models, we examined associations of loose cigarette purchasing and use with smoking frequency, price, social norms, cessation behaviors, and demographics.

Results. Forty-five percent (n = 621) of nondaily smokers and 57% (n = 133) of daily smokers had ever purchased a loosie; 15% of nondaily smokers and 4% of daily smokers reported that their last cigarette was a loosie. Nondaily smokers who never smoked daily were more likely than were daily smokers to have last smoked a loosie (odds ratio = 7.27; 95% confidence interval = 2.35, 22.48). Quitting behaviors and perceived approval of smoking were associated with ever purchasing and recently smoking loosies.

Conclusions. Loosie purchase and use is common among young adults, especially nondaily smokers. Smoking patterns and attitudes should be considered to reduce loose cigarette purchasing among young adults in New York City. (*Am J Public Health.* 2015;105:e140–e147. doi:10.2105/AJPH.2014.302518)

Widespread adoption of clean indoor air laws and cigarette tax increases denormalize smoking behavior[1] and decrease smoking rates.[2,3] Although increasing taxes is one of the most effective means of smoking prevention and reduction,[3] the increased price of cigarettes can also lead to tax-avoidant behaviors, such as buying untaxed packs smuggled from states with lower cigarette taxes and purchasing loose cigarettes, or "loosies."[4–6] In New York City (NYC), where a cigarette pack costs about $11.50, it has become common for smokers to purchase discounted packs and individual cigarettes from street peddlers and friends.[7,8]

Much of the research exploring loosie purchasing in the United States has focused on underage or low-income minority populations, often in urban areas.[7,9,10] One study found that in early 1993, 70% of stores in central Harlem sold loosies to minors.[7] Another study conducted with a 2005–2006 convenience sample in inner-city Baltimore found that 77% of African American smokers aged 18 to 24 years had purchased loosies in the past month.[11] Similarly, loosie purchasing in Mexico was more common among younger smokers with lower incomes.[12]

Availability and visibility of loosies can promote smoking and encourage relapse.[13] We defined nondaily smokers as those who smoked on 1 to 29 of the past 30 days.[14,15] Shiffman et al. found that nondaily smokers were more likely than daily smokers to report that social and environmental stimuli motivated their smoking behavior.[16] More specifically, cues such as taste, smell, social goading to smoke, and specific situations (e.g., smoking after meals) are more likely to be reported as motivators to smoke by nondaily smokers than by daily smokers.[16] Because social–environmental cues have substantial impact on nondaily smokers' motivation to smoke, it is likely that the cue of seeing loosies in one's environment also motivates nondaily smokers to smoke.[16]

Previous research substantiates this claim, with 1 study showing that people who regularly saw loosies available for purchase were more likely to be current smokers.[17] Therefore, the widespread availability of loosies may have a greater impact on nondaily smokers. Nondaily smokers make up a third of US smokers,[18,19] and nondaily smoking is increasingly common among young adults.[20] Many young adults who smoke on only some days do not self-identify as smokers,[21] and nondaily smoking is frequently paired with alcohol consumption.[22–24] Nondaily and light smoking carry a lower, but substantial, risk for lung cancer and a similar risk as does daily smoking for cardiovascular disease.[25–27] Occasional smokers also have higher smoking-related morbidity and mortality than do people who have never smoked.[26,28–30]

Nondaily smoking can be a long-term behavior pattern[31,32] or a transition to or from daily smoking.[31] Nondaily smokers include different subgroups that may have very different smoking patterns or motivations to quit.[33,34] Nondaily smokers who previously smoked daily have been defined in previous research as converted nondaily smokers. Nondaily smokers who have never smoked daily are defined as native nondaily smokers.[18,19] Important differences exist between these subgroups of smokers: converted nondaily smokers are more likely to quit smoking than are native nondaily smokers and daily smokers,[18,19] although most converted and native nondaily smokers were unable to remain abstinent for more than 90 days.[19]

Loosie purchasing and use may play an important role in promoting continued tobacco use among nondaily smokers. The 2010 NYC Community Health Survey[35] found that more than one third (34%) of young adult nondaily smokers (aged 18–26 years) reported that their last cigarette smoked was a loosie, compared with 14% of young adult daily smokers. Another study of NYC adults demonstrated that nondaily smokers were more likely to purchase loose cigarettes than were light and heavy smokers.[36] To the best of our

knowledge, little is known about the factors associated with loosie purchasing among nondaily smokers in the United States.

We sought to better understand the factors associated with loosie purchasing among NYC young adults, specifically to determine (1) loosie purchase and use rates among converted nondaily, native nondaily, and daily smokers; (2) whether loosie purchase or use are associated with perceived social norms of smoking behavior; and (3) whether loosie purchasing is associated with smoking cessation intention or behavior.

METHODS

We obtained a cross-sectional sample of bar-going young adults in NYC using randomized time location sampling as part of a larger study focused on this high-risk population. Methods have been described previously.[37–40] In brief, we conducted interviews with key informants, such as party planners or bar owners, to create a census of bars and nightclubs popular among NYC young adults that included nights of the week and times of night they were frequented. We randomly selected survey data collection venues and times from this list. We stratified venue selection randomization by borough to ensure representation of all 5 NYC boroughs.

We obtained permission to collect data from bar managers at venues, and we paid bar entry fees, when applicable. Trained study personnel visited the selected bars (63 venues and 109 data collection periods). We approached young adults who appeared to be aged 18 to 29 years and invited them to complete paper-and-pencil surveys. Trained personnel explained the study, and participants provided verbal consent. Participants received a study information sheet, a business card with contact information, a link to the study Web site, and $5 payment. We did not include patrons who appeared to be intoxicated or were unable or unwilling to complete consent. Of venue patrons meeting eligibility criteria, 79% agreed to complete surveys.

We collected 1916 surveys between June and November 2013. After we collected surveys, we cross-checked age using participants' birth date, and we included only respondents aged 18 to 29 years by birth date (98.2% of surveys collected were eligible). Of these 1875 surveys, 1730 (92.0%) provided the complete data on smoking behavior needed for the analysis.

Measures

Smoking behavior. Participants reported the number of days in the past 30 days that they smoked at least 1 cigarette, and we asked them, "Have you ever smoked daily?"[14] Using definitions from the American College Health Association and the Substance Abuse and Mental Health Association,[15] we coded those who reported smoking on 30 of the past 30 days as daily smokers. We coded participants who smoked between 1 and 29 days as nondaily smokers.

Combining answers from both questions, we categorized participants into the following categories: nonsmokers (smoked 0 days of past 30 and responded "no" to ever smoking daily), former smokers (smoked 0 days and responded "yes" to ever smoking daily), native nondaily smokers (smoked 1–29 days and responded "no" to ever smoking daily), converted nondaily smokers (smoked 1–29 days and responded "yes" to ever smoking daily), and daily smokers (smoked 30 days and responded "yes" to ever smoking daily).

We also asked participants who reported that they had smoked 1 or more cigarettes in the past 30 days, "On the days that you smoked, how many cigarettes did you smoke per day?" to determine cigarette consumption for the past 30 days. We also asked participants, "Do you consider yourself to be a smoker?" to determine whether they self-identified as smokers.

Loosie purchasing and related behaviors. Respondents self-reported whether they had ever purchased loosies and whether their last cigarette smoked was a loosie. In addition they reported the usual price they paid for a loosie and for packs of cigarettes, locations where they had purchased loosies, and the typical loosie brand they purchased.

Respondents also reported whether their usual cigarette brand and type was menthol or nonmenthol.

Smoking in prohibited locations. We asked participants, "Have you ever smoked in any of the following places in NYC where smoking is prohibited?" We provided a list of the following locations from which to choose: inside a bar or club, at a public park or beach, on a college campus with nonsmoking policies, and other locations where smoking is prohibited.

For multivariable analyses, we summed and dichotomized response categories as participants who had or had never smoked in any prohibited location at any time.

Perceived social norms. To measure descriptive social norms about smoking, participants estimated the percentage of people their age who smoke cigarettes using 10-point percentage increments from 0 to 100.

To measure injunctive social norms, participants estimated how much New Yorkers approved of cigarette smoking and how much "people important to you" approved of cigarette smoking, answering on a 5-point scale ranging from 1 (strongly disapprove) to 5 (strongly approve).[41]

Quitting intentions and behavior. Participants reported their intentions regarding quitting smoking by selecting 1 of 7 standard response categories.[42] For multivariable analyses, we dichotomized quit intention as reporting intention to quit within the next 6 months or not. Participants also reported the number of quit attempts made in the past year.

In multivariable analyses, we dichotomized quit attempt as having ever made a quit attempt or not.

Covariates and demographics. Demographic characteristics reported were gender (male or female), age (continuous), race/ethnicity (White, Black, Asian/Pacific Islander, Hispanic, or other), education (high school graduate or obtained general equivalency diploma, some college, college student, or college graduate), sexual orientation (straight, gay, bisexual, or other), and NYC borough of residence (Manhattan, the Bronx, Brooklyn, Staten Island, or Queens).

We collapsed race/ethnicity categories to form 4 categories for bivariate analyses (White, Black, Hispanic, and other) and dichotomized these categories in multivariable analyses as White and non-White. We collapsed education categories into 2 categories for multivariable analyses: college student or graduate and some college or less.

Statistical Analysis

We computed descriptive statistics detailing demographics for each of the 5 smoker type categories (Table 1) and smoking-related attitudes and behaviors for each of the 3 subtypes of smokers (native nondaily, converted nondaily, or daily; Table 2). We calculated bivariate analyses of demographics and perceived price, smoker type, perceived smoking norms, and quit intentions and attempts by dependent variables using the χ^2 test for categorical variables and the *t* test and *F* test for continuous variables.

Bivariate and multivariable analyses included only participants classified within the 3 smoker subtypes. We analyzed the dichotomous dependent variables ever purchased a loosie and last cigarette smoked was a loosie in separate models (Table 3). We included variables associated with the outcome in bivariate analyses in multivariable models if $P<.25$.[43] We used multivariable logistic regression models using backward-stepwise entry for variables to analyze the association between the 2 dependent variables, smoker type, and all factors meeting the inclusion criteria (Table 4). We included standard demographic variables (gender, race/ethnicity, age, and education) in all multivariable models. We did not include price in regressions because of large amounts of missing data for these variables (20.1% of smokers did not report pack price; 62.2% did not report loosie price). We used SPSS version 21.0 (IBM, Somers, NY) for all data analyses.

RESULTS

Study participants had diverse demographic characteristics, and smokers frequently reported nondaily smoking and having purchased loose cigarettes.

Demographic Characteristics

Table 1 presents descriptive statistics. The mean age of the sample was 24 years (median = 24 years). The majority of participants were women (56.6%). Race/ethnicity closely reflected NYC's young adult population estimates from the 2010 US Census for White (35% vs 33%), Hispanic (32% vs 29%), and Asian/Pacific Islander (13% vs 13%) participants. Fewer Blacks participated (16% vs 25%) compared with the young adult Black population. The majority of participants were either current college students (50%) or graduates (32%), with 19% reporting high school education only or some college. The majority of participants

TABLE 1—Sociodemographic Characteristics of the Sample and Relevant Smoker Subgroups: New York City, NY, 2013

Characteristic	Nonsmoker, No. (%) or Mean ±SD	Former Smoker, No. (%) or Mean ±SD	Native Nondaily, No. (%) or Mean ±SD	Converted Nondaily, No. (%) or Mean ±SD	Daily Smoker, No. (%) or Mean ±SD	Total, No. (%) or Mean ±SD	*P*
Total	918 (53.1)	58 (3.1)	185 (9.9)	436 (23.3)	133 (7.1)	1730 (100.0)	
Male	352 (38.4)	27 (46.6)	84 (45.7)	217 (50.0)	69 (51.9)	749 (43.4)	≤.001
Race/ethnicity							≤.001
White	287 (32.3)	26 (46.4)	82 (46.1)	132 (31.1)	66 (51.2)	593 (35.4)	
Black	166 (18.7)	4 (7.1)	11 (6.2)	71 (16.9)	15 (11.6)	267 (15.9)	
Asian/Pacific Islander	118 (13.3)	3 (5.4)	21 (11.8)	57 (13.4)	12 (9.3)	211 (12.6)	
Hispanic	282 (31.7)	21 (37.5)	56 (31.5)	146 (34.4)	32 (24.8)	537 (32.0)	
Native American	11 (1.2)	1 (1.8)	0 (0.0)	7 (1.7)	2 (1.6)	21 (1.3)	
>1 race	25 (2.8)	1 (1.8)	8 (4.5)	11 (2.6)	2 (1.6)	47 (2.8)	
Sexual orientation							.026
Straight	835 (91.1)	49 (84.5)	157 (85.8)	377 (86.7)	108 (81.2)	1526 (88.4)	
Gay	32 (3.5)	3 (5.2)	8 (4.4)	15 (3.4)	6 (4.5)	64 (3.7)	
Bisexual	39 (4.3)	5 (8.6)	13 (7.1)	35 (8.0)	17 (12.8)	109 (6.3)	
Other	11 (1.2)	1 (1.7)	5 (2.7)	8 (1.8)	2 (1.5)	27 (1.6)	
Education							≤.001
High school graduate	101 (11.1)	8 (14.0)	16 (8.6)	60 (13.9)	26 (19.5)	211 (12.3)	
Dropped out of college	42 (4.6)	7 (12.3)	11 (5.9)	29 (6.7)	19 (14.3)	108 (6.3)	
College student	457 (50.1)	20 (35.1)	80 (43.2)	254 (58.7)	41 (30.8)	852 (49.5)	
College graduate	313 (34.3)	22 (38.6)	78 (42.2)	90 (20.8)	47 (35.3)	550 (32.0)	
Age, y	23.28 ±1.82	24.24 ±1.88	23.36 ±1.66	23.56 ±1.60	23.60 ±1.95	23.41 ±1.77	≤.001
Borough							≤.001
Manhattan	378 (41.2)	15 (25.9)	66 (35.7)	244 (56.0)	28 (21.1)	731 (42.3)	
Brooklyn	111 (12.1)	9 (15.5)	29 (15.7)	43 (9.9)	23 (17.3)	215 (12.4)	
Queens	242 (26.4)	21 (36.2)	52 (28.1)	60 (13.8)	50 (37.6)	425 (24.6)	
The Bronx	91 (9.9)	4 (6.9)	20 (10.8)	52 (11.9)	11 (8.3)	178 (10.3)	
Staten Island	84 (9.2)	9 (15.5)	4 (7.6)	28 (6.4)	20 (15.0)	155 (9.0)	
None of above	11 (1.3)	0 (0.0)	4 (2.2)	9 (2.1)	1 (0.8)	26 (1.5)	

TABLE 2—Smoking Attitudes by Smoker Subgroup: New York City, NY, 2013

Variable	Native Nondaily, No. (%) or Mean ±SD	Converted Nondaily, No. (%) or Mean ±SD	Daily Smoker, No. (%) or Mean ±SD	Total, No. (%) or Mean ±SD	*P*
Reported loosie price					
Pack price, $	11.11 ±2.77	11.85 ±1.80	11.13 ±2.61	11.59 ±2.61	≤.001
Loosie price, $	0.82 ±0.58	1.00 ±1.47	0.82 ±0.68	0.93 ±1.19	.424
Ever purchased loosies	73 (39.5)	203 (47.1)	79 (58.5)	355 (47.3)	≤.001
Loosie purchase location (among ever loosie purchasers)					
Bodega	46 (63.0)	162 (79.8)	55 (69.6)	263 (74.1)	.01
Restaurant	3 (4.1)	22 (10.8)	3 (3.8)	28 (7.9)	.058
Liquor store	10 (13.7)	46 (22.7)	12 (15.2)	68 (19.2)	.148
Friend	32 (43.8)	125 (61.6)	41 (51.9)	198 (55.8)	.024
Street	35 (47.9)	113 (55.7)	45 (57.0)	193 (54.4)	.457
Bar	6 (8.2)	12 (5.9)	6 (7.6)	24 (6.8)	.754
Gas station	1 (1.4)	23 (11.3)	6 (7.6)	30 (8.5)	.03
Other	0 (0.0)	1 (0.5)	2 (2.5)	3 (0.8)	.165
Loosie brand (among ever loosie purchasers)					.035
American Spirit	3 (4.1)	14 (6.9)	3 (3.8)	20 (5.6)	
Camel	5 (6.8)	24 (11.8)	6 (7.7)	35 (9.9)	
Newport	37 (50.7)	129 (63.5)	46 (59.0)	212 (59.9)	
Marlboro	16 (21.9)	23 (11.3)	15 (19.2)	54 (15.3)	
Other	6 (8.2)	8 (3.9)	7 (9.0)	21 (5.9)	
Never buy	6 (8.2)	5 (2.5)	1 (1.3)	12 (3.4)	
Menthol smoker	82 (46.6)	307 (71.1)	60 (43.5)	449 (60.2)	≤.001
Last cigarette smoked from					≤.001
Carton	13 (7.1)	36 (8.3)	21 (15.7)	70 (9.4)	
Pack	58 (31.9)	316 (73.1)	97 (72.4)	471 (63.0)	
Loosie	45 (24.7)	44 (10.2)	5 (3.7)	94 (12.6)	
Rolled own	9 (4.9)	8 (1.9)	3 (2.2)	20 (2.7)	
Bummed	36 (19.8)	20 (4.6)	2 (1.5)	58 (7.8)	
Don't know	10 (5.5)	2 (0.5)	5 (3.7)	17 (2.3)	
Haven't smoked in past year	11 (6.0)	6 (1.4)	1 (0.7)	18 (2.4)	
Smoked where prohibited	101 (54.9)	231 (53.2)	116 (84.1)	448 (59.3)	≤.001
Smoking norms					
Percentage my age smoke	48.2 ±19.6	63.3 ±18.4	57.9 ±21.4	58.6 ±20.3	≤.001
New Yorkers approve of smoking	2.84 ±1.02	2.85 ±1.14	3.02 ±1.00	2.88 ±1.09	.26
People important to me approve of smoking	2.23 ±1.03	2.58 ±0.99	2.42 ±1.08	2.47 ±1.02	≤.001
Quit attempt					≤.001
Have not tried to quit	104 (57.5)	283 (65.7)	87 (64.4)	474 (63.5)	
Tried to quit	46 (25.4)	133 (30.9)	46 (34.1)	225 (30.1)	
Haven't smoked in past year	31 (17.1)	15 (3.5)	2 (1.5)	48 (6.4)	
Quit intent					≤.001
Not planning to quit within 6 mo	79 (43.6)	267 (61.4)	97 (71.9)	443 (59.0)	
Quit within 6 mo or quitting now	47 (26.0)	140 (32.2)	37 (27.4)	224 (29.8)	
Quit within past year	34 (18.8)	24 (5.5)	0 (0.0)	58 (7.7)	
Haven't smoked in past year	21 (11.6)	4 (0.9)	1 (0.7)	26 (3.5)	
Cigarettes smoked in past 30 d	7.57 ±12.12	25.53 ±44.37	256.38 ±190.43	62.71 ±126.20	≤.001

Continued

TABLE 2—*Continued*

Nicotine dependence					≤ .001
Smoke less than 30 min after waking	1 (0.6)	73 (17.0)	52 (38.5)	126 (16.9)	
Smoke more than 30 min after waking	101 (56.1)	329 (76.5)	82 (60.7)	512 (68.7)	
Never smoke	78 (43.3)	28 (6.5)	1 (0.7)	107 (14.4)	

TABLE 3—Bivariate Analyses Between 2 Loose Cigarette Dependent Variables and Associated Factors: New York City, NY, 2013

Dependent Variable	Last Cigarette Smoked Was a Loose Cigarette, OR (95% CI)	Ever Purchased a Loose Cigarette, OR (95% CI)
Perceived cost		
Loosie	0.90 (0.65, 1.24)	1.90 (0.70, 5.14)
Pack	0.82*** (0.74, 0.92)	0.96 (0.90, 1.04)
Have smoked where prohibited	1.31 (0.83, 2.07)	4.42*** (3.21, 6.07)
Perceived smoking norms		
Percentage my age smoke	1.00 (0.98, 1.01)	1.01** (1.01, 1.02)
New Yorkers approve of smoking	1.37** (1.11, 1.68)	1.60*** (1.38, 1.85)
People important to me approve of smoking	0.92 (0.74, 1.14)	1.29** (1.11, 1.49)
Quitting		
Intend to quit in next 6 mo	2.83*** (1.73, 4.64)	2.26*** (1.63, 3.14)
Have made quit attempt	2.09** (1.31, 3.31)	2.22*** (1.60, 3.08)
Smoker type		
Daily smoker (Ref)	1.00	1.00
Native nondaily	9.14*** (3.51, 23.79)	0.47** (0.30, 0.73)
Converted nondaily	2.95* (1.14, 7.60)	0.63* (0.43, 0.94)
Demographics		
Male	0.95 (0.62, 1.47)	1.05 (0.79, 1.40)
Race/ethnicity		
White (Ref)	1.00	1.00
Hispanic	2.53* (1.43, 4.48)	1.93*** (1.36, 2.74)
Black	2.34* (1.13, 4.85)	1.14 (0.71, 1.82)
Other	2.31* (1.17, 4.55)	1.10 (0.71, 1.70)
Sexual orientation		
Straight (Ref)	1.00	1.00
Gay	1.93 (0.76, 4.92)	1.50 (0.71, 3.17)
Bisexual	1.03 (0.47, 2.25)	2.44** (1.41, 4.21)
Other	0.55 (0.07, 4.23)	1.39 (0.50, 3.89)
Education		
College student	0.57 (0.30, 1.08)	0.11*** (0.06, 0.19)
College graduate	0.87 (0.45, 1.67)	0.18*** (0.10, 0.32)
Some college	0.77 (0.31, 1.92)	0.35** (0.16, 0.74)
High school graduate (Ref)	1.00	1.00
Age	1.01 (0.89, 1.15)	0.98 (0.91, 1.08)

Note. CI = confidence interval; OR = odds ratio.
*$P < .05$; **$P < .01$; ***$P < .001$.

TABLE 4—Multivariable Analyses Between 2 Loose Cigarette–Related Dependent Variables and Associated Factors: New York City, NY, 2013

Dependent Variable	Last Cigarette Smoked Was a Loose Cigarette, OR (95% CI)	Ever Purchased a Loose Cigarette, OR (95% CI)
Have smoked where prohibited	. . .	3.02*** (2.01, 4.53)
Perceived smoking norms		
Percentage my age smoke	. . .	. . .
New Yorkers approve of smoking	1.40** (1.09, 1.81)	1.30** (1.09, 1.55)
People important to me approve of smoking	. . .	. . .
Quitting		
Intend to quit in next 6 mo	2.50** (1.41, 4.41)	. . .
Have made quit attempt	. . .	1.70** (1.15, 2.50)
Smoker type		. . .
Daily smoker (Ref)	1.00	1.00
Native nondaily	7.27*** (2.35, 22.48)	
Converted nondaily	2.41 (0.83, 7.06)	
Demographics		
Male	1.16 (0.66, 2.02)	1.10 (0.76, 1.58)
White	0.30** (0.15, 0.60)	0.66* (0.46, 0.96)
College student or graduate	1.07 (0.55, 2.06)	0.30*** (0.19, 0.47)
Age	0.92 (0.77, 1.09)	1.00 (0.89, 1.12)

Note. CI = confidence interval; OR = odds ratio. We adjusted ORs for all other variables in the table.
*$P < .05$; **$P < .01$; ***$P < .001$.

reported living in Manhattan (42%), followed by Queens (25%), Brooklyn (12%), the Bronx (10%), and Staten Island (9%).

Smoking-Related Attitudes and Behaviors

Forty-four percent of respondents were current (smoked 1 or more of the past 30 days) smokers, and the majority of those (58%) were converted nondaily smokers. Consistent with the literature, nondaily smoking was more common than was daily smoking among Black and Hispanic smokers (Table 1).[44] College students were more likely to be native and converted nondaily (vs daily) smokers than were those in other education categories. Most converted (56%) and native (36%) nondaily smokers lived in Manhattan. The largest number of daily smokers lived in Queens (38%).

Many smokers (47%) reported having ever purchased loosies, and 13% of smokers reported that their last cigarette was a loosie. Native nondaily smokers (26%) reported their last cigarette was a loosie more frequently than did converted nondaily (10%) and daily (4%) smokers. Reported cost of loosies did not differ across smoker subtypes. Bodegas were the most popular loosie purchase location among ever purchasers (74% had purchased at a bodega), followed by from friends (56%) and from street peddlers (54%).

Most smokers (59%) reported that they typically smoked menthol cigarettes, and 71% of converted nondaily smokers reported menthol as their typical cigarette type. Newport was the most commonly purchased loosie brand among those who had ever purchased loosies (60%).

Factors Associated With Purchase and Use of Loose Cigarettes

We conducted bivariate analyses examining associations between each of these factors and the dependent variables (Table 3), followed by multivariable analyses (Table 4). The adjusted odds ratio (AOR) of the last cigarette smoked being a loosie was significantly greater for native nondaily smokers (AOR = 7.27; 95% confidence interval [CI] = 2.35, 22.48) than for daily smokers (converted nondaily compared with daily). With regard to social norms, for each 1-unit increase in New Yorkers' perceived approval of smoking, the odds of the last cigarette smoked being a loosie increased (AOR = 1.40; 95% CI = 1.09, 1.81), as did the odds of having ever purchased a loosie (AOR = 1.30; 95% CI = 1.09, 1.55). Smoking where prohibited was associated with having ever purchased a loosie (AOR = 3.02; 95% CI = 2.01, 4.53). In addition, intention to quit within the next 6 months was associated with last smoking a loosie (AOR = 2.50; 95% CI = 1.41, 4.41). Having made a quit attempt was also associated with ever purchasing a loosie (AOR = 1.70; 95% CI = 1.15, 2.50).

White race/ethnicity was negatively associated with last smoking and ever purchasing a loosie. Those with some past college credits or a high school education or less were more likely to have ever purchased a loosie than were respondents currently in college or those who had graduated from college.

DISCUSSION

Loosie purchasing is a common behavior among bar-going young adult smokers in NYC, with almost half of smokers reporting that they had purchased loosies; it was common among all smoker types and within all 5 boroughs of

NYC. Although daily smokers most frequently reported ever purchasing a loose cigarette, nondaily smokers who never smoked daily (i.e., native nondaily smokers) were more likely to report that their last cigarette smoked was a loosie.

Nondaily smokers made up about a third of all participants in the study and 81% of current smokers, whereas 70% of nondaily smokers were former daily smokers. Although these converted nondaily smokers did not differ from daily smokers in loosie purchasing behaviors, native nondaily smokers differed from daily smokers in loosie purchasing, demonstrating that it is important to consider subtypes of nondaily smokers in future studies or interventions. Although research has suggested that high cigarette pack prices are a major motivator for loosie purchasing,[11,21] the behavior is also associated with native nondaily smoking, perceived smoking approval, and the intention to quit smoking.

Native nondaily smokers reported smoking fewer cigarettes in the past 30 days and first smoking more than 30 minutes after waking (compared with less than 30 minutes) than did other smoker subgroups (post hoc comparisons using least significant difference criterion: cigarettes per day: $P<.05$; nicotine dependence: $P<.001$), so they may be better able to maintain this smoking behavior with loose cigarettes alone (Table 2).

Smokers who intended to quit or had made a quit attempt were more likely to have last smoked and ever purchased a loosie. These findings suggest that smokers may use loosie purchasing to limit the number of cigarettes smoked, although it is unknown whether this is an efficacious strategy for cutting down. It is also unknown whether these smokers viewed loosie purchase as a step toward cessation or if they intended to continue low-level use of cigarettes indefinitely. Because of research showing that loosies present a barrier to cessation,[11,21] further investigation is warranted. Additionally, both nondaily smokers and those who purchase loose cigarettes instead of packs may be resistant to traditional smoking cessation messages, as they may not regard themselves as "real" smokers.

Our data suggest that this is the case with nondaily smokers, who are less likely to self-identify as smokers (64%) than are daily smokers (95%; $P<.001$). The reduced availability of loosies may be especially effective for reducing smoking among nondaily smokers. However, we cannot be sure whether enforcement of loosie-selling bans will lead loosie purchasers to stop purchasing cigarettes at all or to begin buying packs.

Black and Hispanic young adults were more likely to have recently smoked loosies and more likely to be nondaily smokers, which is consistent with previous research.[7,8,10] To the extent that education can be considered a proxy for socioeconomic status, our finding that fewer college students or college graduates had ever purchased loosies is consistent with research showing more loosie purchasing among lower-income young adults.[12] We did not distinguish between high school graduates or those with a general equivalency diploma and those who did not complete high school, so the findings cannot be extended to this group.

Regarding social acceptability, we found that smokers who believed New Yorkers approve of smoking were more likely to have purchased loosies, along with those who had smoked in prohibited places. Taken together, these findings suggest that some smokers may perceive NYC to be a social environment where rule breaking is socially acceptable, including the purchase of loose cigarettes. However, we did not ask whether participants were aware that purchasing loose cigarettes was illegal. Qualitative exploration of attitudes about the acceptability of smoking, rule breaking, and purchasing loosies might further inform efforts to improve enforcement of laws prohibiting loosie sales in NYC.

Previous research has shown that educating sellers about laws prohibiting loosie sales is effective in increasing compliance in central Harlem,[7] although this intervention study took place more than 20 years ago. Loosie selling is supported by the community, as our findings suggest that retailers, particularly bodegas, continue to be a significant (although not the only) source of loose cigarettes in NYC. These retailers should be targeted for similar education interventions that have been shown to be effective in NYC in previous research.[7]

Another interesting aspect of loosie sales is brand availability: Newport cigarettes were reported most often as the typical loosie brand (60%). Newport was also reported as the usual brand of 47% of current smokers in this sample (followed by Marlboro at 21%). The popularity of the Newport brand among young adult bar goers in NYC might be related to Newport's widespread availability as a loosie. Newport promotions targeting young people and its distribution in bodegas in NYC warrant further investigation.

Our results may not generalize to other geographical locations, age groups (i.e., adolescents, older adults), or groups other than bar-going young adults, most of whom are aged 21 years or older. The data are cross-sectional and cannot speak to changes over time in smoking or loosie purchasing. We also cannot establish any predictor variables as causes of loosie purchasing or loosie smokers, and our results are subject to reverse causality. Future research should be conducted using a population-based sample to illuminate important differences that might emerge on the basis of the NYC borough of residence or other sociodemographic characteristics.

Our results highlight the importance of addressing nondaily smoking and loose cigarette purchasing in NYC. Increasing the enforcement of laws may be an important way to affect tobacco use among nondaily smokers, who may be more difficult to reach with traditional cessation messages. In November 2013, the NYC Council passed a bill setting a minimum pack price for cigarettes and little cigars, and increasing fines and penalties for selling loose cigarettes. Enforcement began in August 2014. Because nondaily smokers are more easily influenced by environmental cues,[16] decreasing accessibility to loosies may decrease tobacco use in this increasingly prominent group of smokers. Increased enforcement and compliance with loose cigarette policies in bodegas is a logical starting place to address this problem. ■

About the Authors

At the time of the analysis and writing, Jamie Guillory was with the Center for Tobacco Control Research and Education, Cardiovascular Research Institute, University of California, San Francisco. Michael Johns and Shannon M. Farley are with the New York City Department of Health and Mental Hygiene, New York, NY. Pamela M. Ling is with the Division of General Internal Medicine, Department of Medicine, and the Center for Tobacco Control Research and Education, University of California, San Francisco.

Correspondence should be sent to Pamela M. Ling, MD, MPH, Professor of Medicine, Center for Tobacco Control Research and Education, University of California, San Francisco, 530 Parnassus Ave., Suite 366, San Francisco, CA 94143 (e-mail: pamela.ling@ucsf.edu). Reprints

can be ordered at http://www.ajph.org by clicking the "Reprints" link.

This article was accepted December 5, 2014.

Contributors

J. Guillory conceptualized the study, conducted the analysis, and led the writing. M. Johns and S. M. Farley helped conceptualize the study and contributed to the writing and editing. P. M. Ling oversaw the project, wrote the original grant for the project, helped to conceptualize the study, and contributed to analysis, writing, and editing. All authors approved the final article.

Acknowledgments

This study was supported by a parent grant focused on high-risk populations of bar-going young adults from the National Cancer Institute, National Institutes of Health ([NIH] award CA-U01-154240) and funding from the New York City Department of Public Health.

Note. The content is solely the responsibility of the authors and does not represent the official views of the NIH or the New York City Department of Public Health.

Human Participant Protection

All study procedures were reviewed and approved by the Committee on Human Research of the University of California, San Francisco. Participants provided verbal informed consent.

References

1. US Department of Health and Human Services. *Reducing Tobacco Use: A Report of the Surgeon General.* Atlanta, GA: Centers For Disease Control and Prevention; National Center for Chronic Disease Prevention and Health Promotion; 2000.

2. Centers for Disease Control and Prevention. Vital signs: current cigarette smoking among adults aged ≥ 18 years—United States, 2005–2010. *MMWR Morb Mortal Wkly Rep.* 2011;60(35):1207–1212.

3. Chaloupka FJ, Tauras JA. The power of tax and price. *Tob Control.* 2011;20(6):391–392.

4. Hyland A, Bauer JE, Li Q, et al. Higher cigarette prices influence cigarette purchase patterns. *Tob Control.* 2005;14(2):86–92.

5. Coady MH, Chan CA, Sacks R, Mbamalu IG, Kansagra SM. The impact of cigarette excise tax increases on purchasing behaviors among New York city smokers. *Am J Public Health.* 2013;103(6):e54–e60.

6. Davis KC, Grimshaw V, Merriman D, et al. Cigarette trafficking in five northeastern US cities. *Tob Control.* 2014;23(e1):e62–68.

7. Gemson DH, Moats HL, Watkins BX, Ganz ML, Robinson S, Healton E. Laying down the law: reducing illegal tobacco sales to minors in central Harlem. *Am J Public Health.* 1998;88(6):936–939.

8. Shelley D, Cantrell MJ, Moon-Howard J, Ramjohn DQ, VanDevanter N. The $5 man: the underground economic response to a large cigarette tax increase in New York City. *Am J Public Health.* 2007;97(8):1483–1488.

9. Latkin CA, Murray LI, Clegg Smith K, Cohen JE, Knowlton AR. The prevalence and correlates of single cigarette selling among urban disadvantaged drug users in Baltimore, Maryland. *Drug Alcohol Depend.* 2013;132(3):466–470.

10. Smith KC, Stillman F, Bone L, et al. Buying and selling "loosies" in Baltimore: the informal exchange of cigarettes in the community context. *J Urban Health.* 2007;84(4):494–507.

11. Stillman FA, Bone L, Avila-Tang E, et al. Barriers to smoking cessation in inner-city African American young adults. *Am J Public Health.* 2007;97(8):1405–1408.

12. Thrasher JF, Villalobos V, Dorantes-Alonso A, et al. Does the availability of single cigarettes promote or inhibit cigarette consumption? Perceptions, prevalence and correlates of single cigarette use among adult Mexican smokers. *Tob Control.* 2009;18(6):431–437.

13. Conklin CA, Robin N, Perkins KA, Salkeld RP, McClernon FJ. Proximal versus distal cues to smoke: the effects of environments on smokers' cue-reactivity. *Exp Clin Psychopharmacol.* 2008;16(3):207–214.

14. American College Health Association. American College Health Association–National College Health assessment spring 2007 reference group data report (abridged). *J Am Coll Health.* 2008;56(5):469–479.

15. American College Health Association. American College Health Association–National College Health assessment spring 2008 reference group data report (abridged): the American College Health Association. *J Am Coll Health.* 2009;57(5):477–488.

16. Shiffman S, Dunbar MS, Scholl SM, Tindle HA. Smoking motives of daily and non-daily smokers: a profile analysis. *Drug Alcohol Depend.* 2012;126(3):362–368.

17. Stillman FA, Bone LR, Milam AJ, Ma J, Hoke K. Out of view but in plain sight: the illegal sale of single cigarettes. *J Urban Health.* 2014;91(2):355–365.

18. Pinsker EA, Berg CJ, Nehl EJ, Prokhorov AV, Buchanan TS, Ahluwalia JS. Intent to quit among daily and non-daily college student smokers. *Health Educ Res.* 2013;28(2):313–325.

19. Tindle HA, Shiffman S. Smoking cessation behavior among intermittent smokers versus daily smokers. *Am J Public Health.* 2011;101(7):e1–e3.

20. Wortley PM, Husten CG, Trosclair A, Chrismon J, Pederson LL. Nondaily smokers: a descriptive analysis. *Nicotine Tob Res.* 2003;5(5):755–759.

21. Brown AE, Carpenter MJ, Sutfin EL. Occasional smoking in college: who, what, when and why? *Addict Behav.* 2011;36(12):1199–1204.

22. Berg CJ, Ling PM, Hayes RB, et al. Smoking frequency among current college student smokers: distinguishing characteristics and factors related to readiness to quit smoking. *Health Educ Res.* 2012;27(1):141–150.

23. Campbell ML, Bozec LJ, McGrath D, Barrett SP. Alcohol and tobacco co-use in nondaily smokers: an inevitable phenomenon? *Drug Alcohol Rev.* 2012;31(4):447–450.

24. Harrison EL, Desai RA, McKee SA. Nondaily smoking and alcohol use, hazardous drinking, and alcohol diagnoses among young adults: findings from the NESARC. *Alcohol Clin Exp Res.* 2008;32(12):2081–2087.

25. Bjartveit K, Tverdal A. Health consequences of smoking 1–4 cigarettes per day. *Tob Control.* 2005;14(5):315–320.

26. Pope CA 3rd, Burnett RT, Krewski D, et al. Cardiovascular mortality and exposure to airborne fine particulate matter and cigarette smoke: shape of the exposure–response relationship. *Circulation.* 2009;120(11):941–948.

27. Schane RE, Ling PM, Glantz SA. Health effects of light and intermittent smoking: a review. *Circulation.* 2010;121(13):1518–1522.

28. Jiménez-Ruiz C, Kunze M, Fagerström KO. Nicotine replacement: a new approach to reducing tobacco-related harm. *Eur Respir J.* 1998;11(2):473–479.

29. Luoto R, Uutela A, Puska P. Occasional smoking increases total and cardiovascular mortality among men. *Nicotine Tob Res.* 2000;2(2):133–139.

30. US Department of Health and Human Services. *The Health Consequences of Smoking: A Report of the Surgeon General.* Atlanta, GA: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion; 2004.

31. Evans NJ, Gilpin E, Pierce JP, et al. Occasional smoking among adults: evidence from the California Tobacco Survey. *Tob Control.* 1992;1(3):169–175.

32. Gilpin E, Cavin SW, Pierce JP. Adult smokers who do not smoke daily. *Addiction.* 1997;92(4):473–480.

33. Jiang N, Lee YO, Ling PM. Young adult social smokers: their co-use of tobacco and alcohol, tobacco-related attitudes, and quitting efforts. *Prev Med.* 2014;69C:166–171.

34. Song AV, Ling PM. Social smoking among young adults: investigation of intentions and attempts to quit. *Am J Public Health.* 2011;101(7):1291–1296.

35. The New York City Department of Health and Mental Hygiene. Survey data on the health of New Yorkers. 2010. Available at: http://www.nyc.gov/html/doh/html/data/survey.shtml. Accessed April, 20, 2014.

36. Sacks R, Coady MH, Mbamalu IG, Johns M, Kansagra SM. Exploring the next frontier for tobacco control: nondaily smoking among New York City adults. *J Environ Public Health.* 2012;2012:145861.

37. Jiang N, Ling PM. Impact of alcohol use and bar attendance on smoking and quit attempts among young adult bar patrons. *Am J Public Health.* 2013;103(5):e53–e61.

38. Ling PM, Lee YO, Hong J, Neilands TB, Jordan JW, Glantz SA. Social branding to decrease smoking among young adults in bars. *Am J Public Health.* 2014;104(4):751–760.

39. Fallin A, Neilands TB, Jordan JW, Ling PM. Secondhand smoke exposure among young adult sexual minority bar and nightclub patrons. *Am J Public Health.* 2014;104(2):e148–e153.

40. Lee YO, Bahreinifar S, Ling PM. Understanding tobacco-related attitudes among college and noncollege young adult hookah and cigarette users. *J Am Coll Health.* 2014;62(1):10–18.

41. Hamilton WL, Biener L, Brennan RT. Do local tobacco regulations influence perceived smoking norms? Evidence from adult and youth surveys in Massachusetts. *Health Educ Res.* 2008;23(4):709–722.

42. DiClemente CC, Prochaska JO, Fairhurst SK, Velicer WF, Velasquez MM, Rossi JS. The process of smoking cessation: an analysis of precontemplation, contemplation, and preparation stages of change. *J Consult Clin Psychol.* 1991;59(2):295–304.

43. Hosmer DW Jr, Lemeshow S. *Applied Logistic Regression.* Hoboken, NJ: Wiley; 2004.

44. Husten CG, McCarty MC, Giovino GA, Chrismon JH, Zhu B. Intermittent smokers: a descriptive analysis of persons who have never smoked daily. *Am J Public Health.* 1998;88(1):86–89.