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Young adult former ever smokers: The role of type of smoker, quit attempts, quit aids, attitudes/beliefs, and demographics

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ABSTRACT

Objective. Young adults who smoke are often nondaily users who either quit or transition into dependent smokers. Further, this age group often has been considered an extension of the adult population. This study aims to examine young adult former ever smokers to understand factors associated with their stopping smoking.

Method. Telephone interviews were conducted in 2010 with 4401 young adults in Florida. We examined the association between former ever smokers and sociodemographics, smoking behavior, quit attempts, quit aids, and attitudes/beliefs about smoking.

Results. Thirty-seven percent of young adults were former smokers, 20% were current smokers, and 43% were never smokers. Former smokers were more likely to be female, situational smokers (compared to occasional or established), more likely to have stopped smoking without acknowledging making a quit attempt, less likely to have used a quit aid, and less likely to display pro-tobacco attitudes/beliefs.

Conclusion. Young adult former and current smokers have unique patterns of smoking and stopping smoking. Young adults may require novel intervention techniques to promote prevention and cessation based on these unique smoking patterns. Future research is needed to understand motivations to quit smoking among young adults.

Introduction

Nationally, in 2010, about 34% of young adults (18–25 years) reported smoking in the past 30 days (Substance Abuse and Mental Health Services Administration Center for Behavioral Health Statistics and Quality, 2012), the highest of any age group. Young adulthood is a critical period of transition, with young adults initiating smoking, becoming dependent smokers, or quitting smoking (Dietz et al., 2013). According to the 2012 Surgeon General's Report, among adults who had ever smoked daily, 11% reported having their first cigarette as young adults (19–26), with 31% being daily smokers (US Department of Health and Human Services, 2012). However, not all young adult smokers continue to smoke into adulthood; many smokers (51%) quit during this period (Wetter et al., 2004).

Tobacco control programs across the country use a number of methods to stop or prevent tobacco use. Some of these methods include: legislative policies to ban smoking in public spaces, schools, and businesses; restriction of sales to minors; discontinuation of vending machine cigarette sales; limitation of the number of retailers allowed to sell tobacco products; and economic approaches like increasing the cost of cigarettes (Starr et al., 2005). Another important approach focuses on tobacco advertising and counter-advertising campaigns (National Cancer Institute, 2005). These strategies work together to send anti-tobacco messages to the public and create an environment where non-smoking is the norm.

However, despite these approaches, smoking initiation and use continues. Similar to national estimates, young adults in Florida have the highest percentage of smokers of any age group, with 20.1% being current smokers (Centers for Disease Control and Prevention, 2010). Young adults differ from older adults in their smoking habits in that they are more often nondaily, occasional, or "social" smokers (Moran et al., 2004; Wortley et al., 2003). Moreover, young adults often do not consider themselves to be "real" smokers or have a need to quit (Berg and Schauer, 2012; Berg et al., 2010, 2012b). Therefore, a "one-size fits all" approach to address the adult population may not be most effective

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in preventing this vulnerable population from escalating to established smokers or enabling them to quit. Tobacco control programs, in particular, often have overlooked young adults by targeting prevention messages to youth and cessation messages to older adults.

Public health research on young adult smoking cessation is limited, and the literature is based largely on young adult daily smokers (Song and Ling, 2011). Less attention has been paid to smoking cessation among young adult intermittent smokers, possibly due to varying definitions of nondaily, occasional, or social smoking and the heterogeneity that exists within these nondaily smoking groups (Lenk et al., 2009). Existing literature also focuses predominantly on college students (Freedman et al., 2012; Murphy-Hoefer et al., 2005), whereas evidence suggests that there are important differences in smoking habits between young adults in school and the workforce and even between young adults in two-year colleges and those in four-year colleges (Berg et al., 2011; Dietz et al., 2013; Freedman et al., 2012).

Extant young adult cessation studies show that young adults who represent the age group are most likely to attempt to quit smoking and are more likely to be successful in their quit attempts (Ling and Glantz, 2004; Messer et al., 2008). Past research shows that readiness to quit smoking among young adults is associated with being a social smoker, smoking more for boredom and less for self-confidence, having fewer friends who smoke, binge drinking less frequently (Berg et al., 2012a), being a former daily/converted nondaily smoker compared to native nondaily smoker (Pinsker et al., 2012), and supporting action against the tobacco industry (Ling et al., 2009). A study by Song and Ling (2011) showed that self-identified social smokers were less likely to quit than behavioral social smokers or established smokers, demonstrating that self-perception of smoking is an important factor for cessation in this age group.

Because young adults are in a key period of smoking transition, and because there are vast benefits of early cessation (Doll et al., 2005), it is vital to reach this population to increase or strengthen the normative notions of non-smoking. One way is to increase understanding of smoking behaviors among young adults, including quit behaviors and attitudes toward tobacco use. Effective smoking cessation messages or strategies can then help young adults quit before becoming lifelong smokers. In this paper, we examine former ever smokers and how the role of type of smoker, quit attempts, quit aids, and tobacco-related attitudes and beliefs affects stopping smoking. We hypothesize that young adult former ever smokers will be less likely to be established smokers, use quit aids in past attempts, and have pro-tobacco views compared to current smokers.

Methods

Sample

Collected data via telephone interviews in 2010 were part of the evaluation of the Tobacco Free Florida campaign. The final sample is composed of 4401 young adults, 18–24 years. The sampling frame included telephone numbers for young adults from college registrar lists in the state as well as from a vendor generated listed sample focusing on young adults (Genesys. Inc.). The final sample was representative of young adults in Florida by age, gender, race/ethnicity, and educational attainment, based on 2000 Census data (2010 data were not available at the time of the survey). We allowed 10 callbacks to secure the telephone interviews and participants received a $20 incentive for their participation. A detailed account of the study methods has been reported previously (Dietz et al., 2013).

Variables

The dependent variable for smoking status was created from two key tobacco use items. First, we asked participants if they had ever tried cigarette smoking, even one or two puffs. Participants who responded positively were then asked how many days they smoke cigarettes in the last 30 days, even one or two puffs. Respondents who smoked one or more days were considered a current smoker. This is based on the Centers for Disease Control and Prevention (CDC) youth definition of current smoking (Sly et al., 2001); we use this more inclusive definition to capture light/intermittent smokers. Former ever smokers were defined as young adults who had not smoked in the last 30 days, but had responded that they tried cigarette smoking in the past ranging from young adults who ever tried smoking to former established users.

To assess type of smoker, we used two CDC smoking status items: Days smoked per month and number of cigarettes smoked per day. We cross-tabulated these items to create a matrix showing the level of cigarette use (Sly et al., 2001). Young adults who smoked nine or less days per month and smoked four or less cigarettes per day were considered situational smokers (reference), occasional smokers smoked 10 or more days and five or more cigarettes per day, while established users smoked 20 or more days per month and two or more cigarettes per day. For a full description of each item used to create the independent variables, see Appendix 1.

Number of quit attempts is a self-reported item assessed by asking the participant how many times s/he tried to quit smoking in the past. We categorized responses as none (reference), one or two times, or three or more times. To assess participant use of quit aids, we asked if they had ever used a prescription from a physician, used nicotine replacement therapy (NRT), or called a help line or Quitline to quit smoking. We then created a dummy variable so that any of the aforementioned are considered a positive response (1 = yes; 0 = no).

Four attitude/belief indices were derived from questions relating to participants' opinions about government intervention to reduce tobacco use, health risks associated with smoking, smoker characteristics, and smoker/nonsmoker relationships. Response categories were a four category Likert type response (definitely agree, probably agree, probably disagree, or definitely disagree). Indices were scored into low, medium, or high, with the higher score reflecting more pro-tobacco attitudes/beliefs (Dietz et al., 2013). The indices have a moderate level of reliability (Dietz et al., 2013).

The government intervention index assessed participants' support of government involvement to control tobacco based on five items assessing these particular attitudes/beliefs. Young adults with the weakest support for government involvement ranked high in pro-tobacco attitudes/beliefs. Next, the health risks of smoking index, created using four attitude/belief items, assessed participants' perception of the risks related to smoking, with those acknowledging the fewest risks ranking high in pro-tobacco attitudes/beliefs. The smoker characteristic index assessed participants' perception of smokers' personal characteristics using eight attitude/belief items. Participants who viewed smokers more positively were ranked high in pro-tobacco attitudes/beliefs. Finally, the smoker/nonsmoker relationship index assessed participants' views that smokers and nonsmokers tend to be socially isolated from one another. Eight items created this index, with participants who disagreed ranking high in pro-tobacco attitudes/beliefs.

Six demographic characteristics were assessed. Age was categorized as 18–21 years (reference) vs. 22–24 years. Gender was coded male (reference) vs. female. Race/ethnicity is composed of two items and categorized as Non-Hispanic (NH) White (reference), NH Black, Hispanic, and Other. Education level includes college graduate or more (reference), some college, high school graduate, and less than high school, while school versus straight to work status is composed of three items where we assessed if the respondent reported having a high school education or less, was enrolled in a trade/technical school, and his/her level of income (extended education (reference) vs. straight to work). Finally, employment status was categorized as full-time (reference), part-time, unemployed/looking for work, and not in labor force.

Analyses

Descriptive analyses were conducted to identify differences in sociodemographic factors and smoking variables between former ever smokers, current smokers, and never smokers. Multivariate logistic regression was conducted to examine factors affecting former ever smoking relative to current smoking; never smokers were excluded from the analyses. All data analyses were performed using SAS version 9.3 (SAS Institute Inc., Cary, NC). This study was approved by the Institutional Review Board of the University of Miami.

Results

Our sample showed that former ever smokers were light users, with 90% smoking five or fewer days per month and 93% smoking four

cigarettes or less on those days (data not shown). In contrast, only 45% of current smokers smoked on five or fewer days per month and 58% smoked four cigarettes or less on those days. Table 1 shows the prevalence of former, current, and never smoking by sociodemographics, smoking behavior, quit attempts, quit aids, and attitude/belief indices. Forty-three percent of young adults surveyed were never smokers, 37% former ever smokers, and 20% current smokers. Compared to current smokers, former ever smokers were more often situational smokers (versus occasional or established). Former ever smokers less often made at least one quit attempt compared to current smokers, and they less often stopped smoking with the assistance of any type of quit aid (prescription, NRT, or calling a Quitline). Finally, former ever smokers were less likely to score high on all four attitude/belief indices, indicating that they have less pro-tobacco views than current smokers.

Forty-five percent of former ever smokers and 42% of current smokers definitely/probably agreed that the best way to quit smoking is to go cold turkey; however, 84% of former ever smokers definitely/probably agreed that people who want to quit should see a physician, compared to 68% of current smokers (data not shown). Among former ever smokers, 16% definitely/probably agreed that it is a waste of time to call a Quitline compared to 23% of current smokers. The vast majority of current smokers (82%) definitely/probably agreed that whether a smoker quits is not the business of others, compared to 66% of former and 58% of never smokers. Significant differences between the three smoking status groups were found for all variables at the $p < 0.01$ level (data not shown).

Table 2 shows the unadjusted and adjusted odds of former ever smoking by sociodemographics, smoking behavior, number of quit attempts, quit aids, and attitude/belief indices. Adjusting for all other factors, overall former ever smokers were significantly more likely to be female (odds ratio = 1.39, 95% confidence interval = 1.08–1.79) and identify as non-Hispanic Black (OR = 1.83 [95% CI = 1.14–2.94]). When adjusting for age, we also see that females and non-Hispanic Blacks, 18–21 years, are more likely to be former smokers (OR = 1.59 [95% CI = 1.12–2.29] and (OR = 3.10 [95% CI = 1.57–6.13], respectively). Further, young adults, 22–24 years, who were unemployed and looking for work were less likely to be former smokers (OR = 0.52 [95% CI = 0.33–0.84]). Regardless of age, young adults were significantly less likely to be former smokers if they were occasional or established cigarette users compared to situational smokers (see Table 2). A similar pattern also can be seen for the number of quit attempts; that is, former ever smokers were less likely to have made one or two quit attempts (OR = 0.52 [95% CI = 0.39–0.70], OR = 0.51 [95% CI = 0.34–0.77], OR = 0.57 [95% CI = 0.37–0.87], respectively) or three or more quit attempts (OR = 0.15 [95% CI = 0.10–0.22], OR = 0.16 [95% CI = 0.09–0.30], OR = 0.14 [95% CI = 0.08–0.24], respectively) compared to no quit attempts. Next, in general, former ever smokers were less likely to have used any type of quit aid (OR = 0.28 [95% CI = 0.13–0.59]).

Finally, we see that attitude/belief factors also affect tobacco use behaviors among young adults, particularly among 18–21 year olds. Former ever smokers were less likely to score medium or high in pro-tobacco attitude/belief indices. Young adult former ever smokers were four to four and a half times more likely to have positive views of government interventions against the tobacco industry, despite their age range. Among 18 to 21 year olds, former ever smokers were twice as likely to have positive attitudes about the health risks associated with tobacco use (OR = 0.45 [95% CI = 0.23–0.88]). Overall, young adult former ever smokers were approximately three to five times more likely to have negative attitudes toward smokers and approximately two to four times more likely to have negative views of smoker/nonsmoker relationships.

Table 1
Sociodemographic characteristics, smoking behavior, and cessation factors of young adult former, current, and never smokers, data from Florida, 2010.

Characteristics	Former smokers	Current smokers	Never smokers	p-Value
	n (%)	n (%)	n (%)	
	n = 1623	n = 893	n = 1885	
Age				
18–21 years	858 (52.9%)	497 (55.7%)	1200 (63.7%)	
22–24 years	765 (47.1%)	396 (44.3%)	685 (36.3%)	<0.01
Sex				
Male	787 (48.5%)	547 (61.3%)	844 (44.8%)	
Female	836 (51.5%)	346 (38.7%)	1041 (55.2%)	<0.01
Race				
NH White	984 (60.8%)	615 (69.3%)	985 (52.4%)	
NH Black	186 (11.5%)	68 (7.7%)	417 (22.2%)	
Hispanic	295 (18.2%)	144 (16.2%)	272 (14.5%)	
Other	153 (9.5%)	61 (6.8%)	206 (10.9%)	<0.01
Completed education				
College graduate or more	466 (28.7%)	193 (21.6%)	392 (20.8%)	
Some college	896 (55.2%)	469 (52.6%)	1121 (59.6%)	
High school graduate	179 (11.1%)	118 (13.2%)	281 (14.9%)	
Less than HS	81 (5.0%)	112 (12.6%)	89 (4.7%)	<0.01
School vs. work				
Extended education	1242 (76.5%)	582 (65.2%)	1391 (73.8%)	
Straight to work	381 (23.5%)	311 (34.8%)	494 (26.2%)	<0.01
Employment status				
Employed full-time	311 (19.2%)	168 (18.8%)	258 (13.7%)	
Employed part-time	567 (34.9%)	288 (32.3%)	676 (35.9%)	
Unemployed/looking for work	671 (41.4%)	393 (44.0%)	878 (46.7%)	
Not in labor force	73 (4.5%)	44 (4.9%)	70 (3.7%)	<0.01
Type of smoker			–	
Situational	1414 (87.3%)	362 (40.5%)		
Occasional	183 (11.3%)	432 (48.4%)		
Established	23 (1.4%)	99 (11.1%)		<0.01
Number of quit attempts			–	
None	1147 (71.6%)	193 (27.4%)		
1–2	393 (24.5%)	295 (41.8%)		
3+	63 (3.9%)	217 (30.8%)		<0.01[a]
Received Rx to quit			–	
Yes	4 (0.9%)	36 (7.0%)		
No	463 (99.1%)	476 (93.0%)		<0.01[a]
Used NRT to quit			–	
Yes	21 (4.5%)	114 (22.3%)		
No	446 (95.5%)	397 (77.7%)		<0.01[a]
Called Quitline to quit			–	
Yes	3 (0.6%)	23 (4.5%)		
No	467 (99.4%)	489 (95.5%)		<0.01[a]
Government intervention index				
Low	154 (9.7%)	17 (1.9%)	324 (17.8%)	
Medium	1248 (79.0%)	508 (57.7%)	1407 (77.3%)	
High	178 (11.3%)	355 (40.4%)	89 (4.9%)	<0.01
Health risk index				
Low	262 (16.8%)	92 (10.6%)	294 (16.4%)	
Medium	1086 (69.8%)	563 (65.0%)	1279 (71.4%)	
High	208 (13.4%)	211 (24.4%)	219 (12.2%)	<0.01
Smoker characteristic index				
Low	165 (10.7%)	31 (3.6%)	283 (15.9%)	
Medium	1201 (78.2%)	524 (60.5%)	1357 (76.3%)	
High	170 (11.1%)	311 (35.9%)	139 (7.8%)	<0.01
Smoker/nonsmoker relationship index				
Low	206 (13.3%)	27 (3.2%)	349 (19.5%)	
Medium	1230 (79.2%)	555 (65.4%)	1365 (76.4%)	
High	117 (7.5%)	266 (31.4%)	73 (4.1%)	<0.01

[a] p-Value comparing former and current smokers only.

Discussion

We hypothesized that overall young adult former ever smokers would be less likely to be established smokers, have used a quit aid in past attempts, and have pro-tobacco views compared to current smokers. Our results suggest that the former ever smokers in our sample were overwhelmingly light (situational or occasional) smokers, who essentially stopped smoking without making what they considered to be an actual quit attempt. They also quit smoking largely without the assistance of traditional quit aids, indicating that

Table 2
Unadjusted and adjusted[a] odds of former smoking by sociodemographic characteristics, smoking behavior, cessation factors, and attitudes and beliefs, data from Florida, 2010.

Characteristic	All young adults				18–21 year olds		22–24 year olds	
	Unadjusted odds		Adjusted odds[a]		Adjusted odds[a]		Adjusted odds[a]	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Age								
18–21 years	1.00	–	1.00	–	–	–	–	–
22–24 years	0.89	0.76–1.05	1.03	0.78–1.36	–	–	–	–
Sex								
Male	1.00	–	1.00	–	1.00	–	1.00	–
Female	1.68*	1.42–1.98	1.39*	1.08–1.79	1.59*	1.12–2.27	1.22	0.83–1.80
Race								
NH White	1.00	–	1.00	–	1.00	–	1.00	–
NH Black	1.71*	1.27–2.30	1.83*	1.14–2.94	3.10*	1.57–6.13	0.94	0.46–1.93
Hispanic	1.28*	1.02–1.60	1.31	0.93–1.85	1.29	0.80–2.07	1.34	0.80–2.23
Other	1.57*	1.15–2.15	1.56	0.99–2.46	1.88	0.98–3.61	1.26	0.65–2.47
Completed education								
College graduate or more	1.00	–	1.00	–	1.00	–	1.00	–
Some college	0.79*	0.65–0.97	0.74	0.53–1.03	0.60	0.31–1.72	0.73	0.48–1.09
HS graduate	0.63*	0.47–0.84	0.94	0.50–1.79	0.78	0.30–2.05	1.01	0.37–2.74
Less than HS	0.30*	0.22–0.42	0.56	0.28–1.11	0.42	0.16–1.15	0.73	0.22–2.37
School vs. work								
Ext education	1.00	–	1.00	–	1.00	–	1.00	–
Straight to work	0.57*	0.48–0.69	0.95	0.59–1.52	0.81	0.45–1.47	1.30	0.60–2.81
Employment status								
Employed full-time	1.00	–	1.00	–	1.00	–	1.00	–
Employed part-time	1.06	0.84–1.35	0.87	0.61–1.26	1.16	0.66–2.03	0.85	0.52–1.37
Unemployed/looking for work	0.92	0.74–1.16	0.83	0.59–1.18	1.48	0.85–2.56	0.52*	0.33–0.84
Not in labor force	0.90	0.59–1.36	0.84	0.44–1.60	1.09	0.40–2.97	0.71	0.30–1.70
Type of smoker								
Situational	1.00	–	1.00	–	1.00	–	1.00	–
Occasional	0.11*	0.09–0.13	0.22*	0.16–0.29	0.22*	0.15–0.33	0.19*	0.12–0.29
Established	0.06*	0.04–0.10	0.10*	0.06–0.19	0.05*	0.01-0.14	0.15*	0.07–0.31
Number of quit attempts								
None	1.00	–	1.00	–	1.00	–	1.00	–
1–2	0.22*	0.18–0.28	0.52*	0.39–0.70	0.51*	0.34–0.80	0.57*	0.37–0.87
3+	0.05*	0.04–0.07	0.15*	0.10–0.22	0.16*	0.09–0.30	0.14*	0.08–0.24
Used any quit aid[b]								
No	1.00	–	1.00	–	–	–	–	–
Yes	0.27*	0.15–0.48	0.28*	0.13–0.59	–	–	–	–
Government intervention index								
Low	1.00	–	1.00	–	1.00	–	1.00	–
Medium	0.27*	0.16–0.45	0.53	0.27–1.06	0.53	0.19–1.50	0.46	0.17–1.23
High	0.06*	0.03–0.09	0.25*	0.12–0.51	0.22*	0.07–0.67	0.23*	0.08–0.65
Health risk index						–		
Low	1.00	–	1.00	–	1.00	–	1.00	–
Medium	0.68*	0.52–0.88	0.84	0.58–1.24	0.65	0.36–1.17	0.98	0.59–1.65
High	0.35*	0.26–0.47	0.65	0.41–1.03	0.45*	0.23–0.88	0.94	0.49–1.80
Smoker character index								
Low	1.00	–	1.00	–	1.00	–	1.00	–
Medium	0.43*	0.29–0.64	0.68	0.38–1.22	0.40*	0.17–0.97	1.35	0.60–3.05
High	0.10*	0.07–0.16	0.34*	0.18–0.65	0.18*	0.07–0.47	0.74	0.30–1.81
Smoker/nonsmoker relationship index								
Low	1.00	–	1.00	–	1.00	–	1.00	–
Medium	0.29*	0.19–0.44	0.59	0.34–1.03	0.60	0.27–1.34	0.43*	0.19–0.99
High	0.06*	0.04–0.09	0.28*	0.15–0.54	0.26*	0.11–0.65	0.24*	0.09–0.62

* Statistically significant at the $p < .05$ level.
[a] Adjusted for all other covariates in the table.
[b] Either NRT, prescription or called a Quitline. Estimates are calculated from a separate model restricted to those who had tried to quit at least once.

they stopped smoking by cutting back or going cold turkey. Our results also suggest that young adult former ever smokers displayed fewer pro-tobacco views than current smokers. Specifically, they were more likely to support government interventions to reduce smoking, see smokers as having negative characteristics, and view smoker/nonsmoker relationships as negative. However, former ever smokers did not differ from current smokers in their views about the health risks of smoking. Further, when we compared these same factors among 18–21 year olds versus 22–24 year olds, we found that many of the statistically significant associations remained, with a few exceptions. As young adults moved into the 22–24 year old age range, some of the associations were no longer significant among former ever smokers. It may be that these changes are an indicator of how young adult lifestyles and attitudes/beliefs are in transition as they move from dependent to independent adults.

The results of this analysis must be considered with several limitations. First, collected data are cross-sectional, representing young adults from Florida, which limits the ability to make causal references, examine individual behavior change, or generalize findings to other areas. Second, while we were able to classify young adult current and former ever smokers by their type of use, we did not directly ask participants whether they self-identified as smokers. Self-reported data of this nature can be helpful for informing public health strategies focusing on young adults since smoking perceptions can impact behaviors and willingness to quit (Berg et al., 2009; Harris et al., 2008). Third, because we used an inclusive definition of smoking to capture light and intermittent smokers, we were unable to determine what proportion of

former smokers had simply tried cigarettes (ever smoked), but never progressed in their smoking habits to become more established users. In general, varying definitions make comparisons across studies difficult and highlight the potential need for a definition unique to young adults whose smoking patterns do not lend themselves to either adolescent or adult definitions (Freedman et al., 2012). Lastly, we did not collect data on the age of smoking initiation to allow us to determine smoking duration. There are likely to be significant differences in quit patterns and methods used among those who smoked since youth versus those who started in young adulthood; however, these differences may largely be accounted for by our examination of the type of smoker variable (situational, occasional, established).

With these qualifications in mind, our data suggest that former ever smokers were more likely to be light/intermittent smokers, a pattern that also holds for current smokers in this age group; only 11% of the young adult current smokers were established users, with the majority of young adult smokers being occasional or situational smokers. However, because current smokers had multiple unsuccessful quit attempts, unlike former ever smokers, it may be that nicotine dependence plays a larger role than previously thought (Shiffman et al., 2012; Tindle and Shiffman, 2011).

While our data indicate that young adult former ever smokers rarely used a traditional quit aid, we did not ask about the use of other unconventional quit methods, such as cutting back, switching to light cigarettes, or using other tobacco products which have been shown to be common among youth and young adults (Centers for Disease Control and Prevention, 2006). It is possible that in our study, former ever smokers used these unconventional methods to stop smoking. Nondaily smokers often are excluded from smoking cessation intervention studies because they do not meet the eligibility criteria (Fagan and Rigotti, 2009; Schane et al., 2009); it is, therefore, unclear what types of cessation aids are most successful and acceptable among smokers who are light/intermittent users. Further research is needed among nondaily smokers, specifically young adults, to identify the most acceptable quit aid (if any) for this group.

To bolster these findings, Berg et al. (2012b) found similar differences in the number of quit attempts and aids used comparing daily and nondaily young adult smokers. Many standard cessation methods are established for daily smokers consuming more than 10 cigarettes per day (Food and Drug Administration, 2001) and who likely have higher levels of nicotine dependence. Indeed, these recommendations, therefore, may not be appropriate for young adult nondaily smokers or users who do not consider themselves to be smokers.

Finally, our data suggest that young adult former ever smokers have low pro-tobacco views, except for attitudes/beliefs toward the health risks associated with smoking. In fact, attitudes toward the health risks of smoking were similar to those held by current smokers. This indicates that young adults are aware of the health risks of smoking, but, given the long latency of most smoking-related diseases, these risks do not seem personally relevant to them (Brown et al., 2011). There is considerable evidence of the health risks associated with nondaily smoking (An et al., 2009; Schane et al., 2009, 2010), and a number of tobacco control programs highlight this fact to encourage smokers to quit. However, if young adults are not influenced by this, then tobacco control programs should consider new strategies targeting other motivators to encourage young adults to stop smoking or maintain their nonsmoking status.

Conclusion

The young adult years are often a time of transition where young adults are moving toward social and economic independence and lifestyle and attitude/belief factors are in flux. The data indicate that the young adult years can be a time of experimentation with risky behaviors like tobacco use. In fact, in a national survey, approximately 17% of young adults reported having their first cigarette between 19 and 26 years of age (United States Department of Health and Human Services, 2012). Further, it is during the young adult years where many young adults transition from being nonsmokers to experimenters or intermittent smokers, therefore, it is imperative to intervene to encourage these individuals to stop smoking before they become nicotine dependent (US Department of Health and Human Services, 2012). According to the 2012 Surgeon General's Report, few prevention and cessation interventions exist targeting this population and even fewer target young adults who go straight to work. The report also highlights how young adults are not users of evidence-based cessation interventions (US Department of Health and Human Services, 2012). Our data suggest a similar pattern of behavior with most young adults merely stopping smoking and not making a formal quit attempt. In contrast, adult current and former smokers often self-identify as a smoker or regular tobacco user and are nicotine dependent (Brown et al., 2011; Goodwin et al., 2011; Hymowitz et al., 1997). Furthermore, adulthood differs from the young adult years in that adults are inclined to be socially and economically stable since they often have finished their education, are economically independent, are getting married, and so forth. Therefore, based on these factors, a distinction can be made between the young adult and adult years, and it may be that anti-tobacco efforts are needed to target young adults separately from the rest of the adult population.

The results of this study can help enlighten and inform comprehensive tobacco control programs; future anti-tobacco strategies focusing on the young adult population may want to deemphasize health and cessation messages and emphasize other strategies to increase or maintain a nonsmoking normative environment. Because young adults display unique smoking patterns and often have different perceptions of what defines a smoker and smoking cessation (Berg and Schauer, 2012; Berg et al., 2010; Brown et al., 2011), they should be targeted in novel ways to address these beliefs. One example might be to create messaging that specifically focuses on the negative images of smokers, the social unacceptability of smoking, and the harmful effects of smoke on others, as has been suggested in other studies of this population (Schane et al., 2009). Longitudinal and qualitative studies examining smoking patterns and motivators to quit would be helpful in identifying differences in cessation factors within this age group. Research also is needed to understand the effectiveness of traditional quit aids among young adults and whether these methods are well-perceived in this group.

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Conflict of interest statement

The authors declare that there are no conflicts of interest.

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