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Characteristics and Predictors of Intention to use Cessation Treatment among Smokers with Schizophrenia: Young Adults Compared to Older Adults

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Abstract

Background—Over half of young adults with schizophrenia smoke. Quitting before age 30 could prevent some of the disparate morbidity and mortality due to smoking-related diseases. However, little research has addressed smoking in this group nor evaluated strategies to help young adults with schizophrenia quit smoking.

Methods—We compared demographic and smoking-related characteristics of young adults and those over 30 years of age among 184 smokers with schizophrenia. With a series of regression models, we assessed whether age, gender, smoking characteristics, social norms, attitudes, and perceived behavioral control predicted intention to quit smoking and to use cessation treatments.

Results—Young adults had smoked for fewer years, had lower nicotine dependence, and had lower breath carbon monoxide levels than those over 30, yet awareness of the harms of smoking and readiness to quit were similar between groups. Attitudes about smoking, attitudes about cessation treatment, social norms for cessation treatment, and perceived behavioral control for cessation treatment significantly predicted intention to use cessation treatment. Age was not a predictor of intention to quit, nor to use cessation treatment.

Conclusions—Young adults with schizophrenia are amenable to smoking cessation intervention. Increasing awareness of the safety, efficacy and access to cessation treatments among smokers with schizophrenia and also among those in their social network may improve use of effective cessation treatment. These strategies may enhance the standard educational approach (increasing awareness of harms). Research is needed to evaluate such intervention strategies in smokers with schizophrenia of all ages.

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Keywords

Smoking; Tobacco; Schizophrenia; Cessation treatment; Young adult

INTRODUCTION

People with schizophrenia smoke at three times the rate of the general population [1]. Most start to smoke prior to the onset of their mental illness [2], and persist during young adulthood [3]. Population-based surveys indicate that smokers with schizophrenia are less likely to quit than other smokers [1,4]. Further, they smoke more heavily and extract more nicotine per puff than smokers without schizophrenia [5, 6]. Given the high rates of smoking and heavier dependence, it is not surprising that this group suffers disparate chronic disease morbidity and early mortality [7].

Because the effect of smoking on health is cumulative over time, quitting at any age is beneficial, but quitting earlier in life (e.g. prior to age 30) could prevent the bulk of smoking-related disease and early mortality [8,9]. However, beyond identifying correlates of smoking (e.g.) [3,10], little research has studied smoking and cessation in young people with schizophrenia, who may have different facilitators and barriers to smoking and quitting.

Although smoking cessation interventions improve outcomes(e.g.) [11,12], and cessation medications are safe and tolerable in this group [13], smokers with schizophrenia and other mental illnesses tend to have misinformation about cessation treatment and prefer to try to quit without treatment, leading to unsuccessful quit attempts [14]. Further information is needed to understand the attitudes, knowledge, and intentions of smokers with schizophrenia regarding quitting and using cessation treatment, with a focus on assessing young adults in order to develop effective strategies to engage these smokers into successful cessation efforts.

The Theory of Planned Behavior has been used to understand health behaviors and to design effective health behavior interventions in the general population and among people with schizophrenia and other mental illnesses [15-17]. This theory posits that beliefs and attitudes about the behavior, social norms for a behavior, and perceived control over the health behavior lead to intentions and behavior change [15]. These constructs have been shown to predict intention to quit smoking in the general population [18]. If these constructs predicted intention to quit smoking and also intention to use cessation treatment in smokers with schizophrenia, this theory could be harnessed to develop effective interventions for this group.

In order to better understand how to intervene with young adult smokers with schizophrenia, we examined baseline data from two studies of similar brief motivational interventions (ClinicalTrials.gov identifiers NCT01779440 and NCT02086162) to assess whether young adult smokers with schizophrenia differ from those over 30, and to examine how age, gender, attitudes and beliefs, social norms and perceived behavioral control of smokers with schizophrenia related to intention to quit smoking and intention to use cessation treatment.

MATERIALS AND METHODS

Study design and procedures

We examined baseline data from two studies of similar, single-session motivational education interventions for smoking cessation among people with schizophrenia and other severe mental illnesses. The interventions were designed for people at any stage of change, and participants did not have to want to quit smoking to participate. Participants for this report comprised the subgroup of 184 participants with schizophrenia spectrum disorders. They provided informed consent and then were assessed by trained interviewers. Participants were paid for research visits. The studies was approved and monitored by the Dartmouth Committee for the Protection of Human Subjects and the institutional review boards of participating sites.

Participants

Participants were recruited between 2012 and 2014 from six outpatient community mental health service organizations in New Hampshire, New Jersey, New York, Massachusetts, and Illinois with flyers and clinician referral. Inclusion criteria for these analyses included: age over 17, diagnosis of schizophrenia spectrum disorders, current mental illness symptom stability, outpatient status, and current daily smoking. Exclusion criteria included not fluent in English, engaged in smoking cessation treatment, current DSM IV-TR diagnoses of drug or alcohol dependence with active use, and pregnant or nursing.

Measures

Demographics and physician-completed DSM IV-TR psychiatric diagnoses were obtained from clinic chart review. With a structured interview and written answer option cue cards, trained interviewers obtained smoking history and characteristics, family history of smoking, social context of smoking, and smoking attitudes. Current substance use was assessed with a quantity-frequency measure to augment substance use disorder diagnosis (for exclusion criteria) [19,20]. Breath expired carbon monoxide [21], was assessed using a Smokerlyzer Breath Carbon Monoxide Monitor (Bedfont Scientific). Level of dependence was assessed with The Fagerström Test for Nicotine Dependence [22], a six-item measure that has been shown to have reasonable internal consistency and test-retest reliability among smokers with schizophrenia [23]. Attitudes about smoking were assessed with the Attitudes Towards Smoking (ATS) Scale, an 18-item scale with three subscales (adverse effects, benefits, pleasure) [24]. Test-retest correlations are high (above 0.81), and the total score (calculated as the benefits plus pleasure subscales minus the adverse effects subscale) has predicted smoking cessation in general population smokers. The Wide Range Achievement Test (WRAT) subtest for reading comprehension (a well validated and widely used assessment to estimate premorbid cognitive function) assessed participants for reading comprehension [25].

A 48 item Theory of Planned Behavior questionnaire was used to assess participants for beliefs about: cessation and using cessation treatment, social norms regarding cessation treatment, and perceived behavioral control over cessation treatment; and well as intentions to quit and to use cessation treatment. We developed this questionnaire using Ajzen’s

method [26], and refined it in previous studies [27,28]. Examples of items include: “Taking nicotine replacement therapy will help me cut down and quit smoking” and “My friends and boyfriend/girlfriend would approve of me using nicotine replacement therapy to quit smoking.” Answer options for these questions utilized a 7-point Likert scale:1=completely disagree; 4 = neutral; 7=completely agree. Research staff also assessed participants for smoking-related stigma and discrimination with the Stigma of Smoking Questionnaire, which includes questions about perceptions of devaluation, perceived differential treatment, social withdrawal, and secrecy related to smoking using a 4 point Likert scale, such as “ Most people think less of a person who smokes” 1=Strongly Disagree, 2= Disagree, 3= Agree, 4= Strongly Agree [29].

Intention to quit smoking was measured with the four-item Stages of Change questionnaire [30], including 1) Precontemplation - not thinking of quitting; 2) Contemplation: thinking of quitting but not in the next month, 3) Preparation: intending to quit in the next month, and 4) Action: Trying to quit now. Answers were collasped as follows: intention to quit is present if answers were 3 or 4; intention to quit was absent if answers were 1 or 2.

Intention to use nicotine replacement therapy to quit and intention to use cessation medication to quit were assessed with continuous variables from the Theory of Planned Behavior Questionnaire described above, including “I have decided to take nicotine replacement therapy to help me quit smoking” and “I have decided to take a medication to help me quit smoking.”

Statistical analysis

Descriptive statistics were used to characterize the study sample. We tested differences between age groups (young adults and those over 30 years of age) with chi-square tests and t-tests. We then constructed three series of regression models, adjusted for age and gender, to understand the relationships between smoker characteristics and our three dependent variables: intention to quit smoking (dichotomous; see above), intention to use nicotine replacement therapy (continuous; see above), and intention to use cessation medications (varenicline or bupropion; continuous; see above). Variables representing smoker characteristics were added in steps: 1) demographics, 2) severity of smoking and attitudes about smoking, 3) social norms for the target dependent variables, 4) beliefs about the dependent variable, and 5) perceived behavioral control regarding the dependent variable. We used logistic regression in the model with intention to quit within the next month (present or absent) and multivariate ordinary least squares regression in the models with intention to use nicotine replacement therapy for cessation and to use cessation medication (bupropion or varenicline).

RESULTS AND DISCUSSION

Study participants

Demographics and smoking characteristics are shown in Table (1). As expected, the young adults younger, less likely to be married, and reported fewer lifetime psychiatric

hospitalizations. They were more likely to be male. Regression models therefore included gender as a covariate to adjust for the difference in gender between the age groups.

The group smoked an average of 14 cigarettes per day and had a moderate level of nicotine dependence. Less than 15% were classified as heavy smokers (25 cigarettes per day or more). Whites were more likely to be heavy smokers than Blacks and those who endorsed Other Race (27.3% vs.6.2% vs. 6.3 %; Chi2 =15.7; p<.001.

The young adults with schizophrenia had smoked for a shorter period of time than the older adult group (7 vs. 29 years on average) and had significantly lower nicotine dependence scores, with correspondingly lower breath carbon monoxide levels. Young adults were significantly more likely to report past month use of hookah, chew and electronic cigarettes, and they were less likely to report past month use of little cigars.

Both young adults and the smokers over 30 reported high levels of awareness of adverse effects of smoking and also high endorsement of pleasure and benefits from smoking; the composite attitudes scores were negative, indicating overall greater endorsement of negative compared to positive attitudes towards smoking. About a third had tried to quit in the past 3 months. Intention to quit was similar between age groups: about a third of the group was in the preparation or action stage, wanting to quit within a month. Although intentions to use nicotine replacement therapy and cessation medication were similar in young adults and those over 30, young adults indicated a higher preference for quitting without medications, or “cold turkey” (t=-2.06; p=.04).

The *social context* variables are shown in Table (2). Young adults spent time with a greater number of nonsmokers than did the adults over 30(t=-2.17; p=.03) and were more likely to report that smoking was not allowed inside their home(X^2 =17.27, p<.0001). Regarding perceptions of social approval for methods of cessation, young adults reported greater perceptions that friends would approve of their quitting cold turkey (t=-4.22; p=.0001), but perceptions that friends would approve of their using nicotine replacement therapy and cessation medications were positive and not different between the age groups.

Smokers who were more ready to quit smoking endorsed more positive attitudes about smoking cessation medication (r=.26, p<.001) and nicotine replacement therapy (r=.28, p=.0001). Additionally, social norms regarding use of cessation medication and nicotine replacement therapy were stronger for people who were more ready to quit. Those who were more ready to quit smoking reported greater perceptions of friend approval for using cessation medications (F=8.17; p=.0004) and nicotine replacement therapy (F=6.85; p=.001).

Predictors of intention to quit smoking

Bivariate logistic regression models found that attitudes about smoking (ATS composite score) were associated with intention to quit (OR= .92 (89-96), p<.0001); but age, gender, smoking characteristics, social context variables and perceived behavioral control were not associated with intention to quit smoking.

Predictors of intention to use nicotine replacement therapy

As shown in Table (3), in Step 1, age and genders were not significant predictors of intention to use nicotine replacement therapy. In the successive steps (shown in Table (3), smoking characteristics, attitudes about smoking, social norms, beliefs about nicotine replacement therapy, and perceived behavioral control over use of nicotine replacement therapy were significant predictors of intention to use nicotine replacement therapy. The final model, which included all variables (shown in last column in Table (3) accounted for 38% of the explained, unadjusted variance, and 34% of the adjusted explained variance, in intention to use nicotine replacement therapy, and this model was statistically significant ($F=11.06$, $p<.0001$).

Predictors of intention to use smoking cessation medications

Table (4) presents the results of the regression analyses examining predictors of using smoking cessation medications (bupropion and varenicline). In the successive steps, smoking characteristics, attitudes about smoking, social norms, beliefs about cessation medication, and perceived behavioral control significantly predicted intention to use nicotine replacement therapy. The final model, which included all variables (shown in last column in Table 4) accounted for 26% of the explained, unadjusted variance, and 22% of the explained, adjusted variance, in intention to use smoking cessation medication and was significant ($F=6.46$, $p<.0001$).

DISCUSSION

This large group of smokers with schizophrenia, we found key similarities and differences between young adults and adults over 30. The young adults had, as expected, smoked for a shorter period of time than the older adult group (7 vs. 29 years on average), and, similar to general population young adults, they reported lower levels of nicotine dependence [31], and were more likely to use additional tobacco products, such as hookah and electronic cigarettes [32]. Also, as expected given trends in the U.S. [33,34], the young adult group reported higher levels of contact with nonsmokers and home indoor smoking restrictions. Despite their shorter smoking careers and lower level of dependence, the young adults with schizophrenia endorsed a similarly high level of awareness of the negative effects from smoking compared to the level of interest in adults over 30. Additionally, age did not significantly predict intention to quit or to use cessation treatment –indicating that young adults are similar to adults over 30 regarding their interests in cessation and cessation treatment.

We found that measures of attitudes about smoking, social norms for using cessation treatment, attitudes about cessation treatment and perceived control over using cessation treatment all predicted intention to use cessation treatment. These data provide some support for use of the Theory of Planned Behavior in the development of interventions and insight into strategies for engaging smokers with schizophrenia into cessation treatment. Public health efforts and the medical community have focused on increasing smokers' awareness of the harms of smoking. Our data indicate that smokers with schizophrenia are indeed aware of these harms, and this awareness was related to intention to quit smoking. However,

awareness of smoking harms is not enough. These data indicate that, consistent with the Theory of Planned Behavior(15), perceptions about cessation treatments, the social norms for cessation treatments, and perceived behavioral control for using treatments contributed to intention to use them. Thus efforts to engage smokers with schizophrenia into effective cessation interventions should address these areas. This is particularly important because medications such as bupropion and varenicline combined with counseling may be the most robust cessation treatments for smokers with schizophrenia [13,35-37]. To enhance engagement, smokers' knowledge and attitudes about cessation treatments can be improved with education, motivational strategies, and decision support [38-41].

Additionally, the knowledge and attitudes of the family and friends of smokers with schizophrenia can also be improved to shift social norms related to cessation treatments. Recent research has begun to document the social influences on use of smoking cessation treatment [42]. Thus improving the knowledge of these smokers' social networks regarding the safety and efficacy of cessation treatment could increase their willingness to support and encourage smokers with schizophrenia. Since the young adults spent more time with nonsmokers, nonsmoking peers could potentially be harnessed as facilitators of smoking cessation.

Further, access to cessation treatment remains critical and should be well advertised, thus increasing perceived behavioral control over using cessation treatments. While most Medicaid programs provide reimbursement for some form of biological cessation treatment, access may be limited by a variety of insurance company restrictions such as prior authorization and copays [43], or may be financially unobtainable for most smokers with schizophrenia due to low income [44].

A previous summary of world samples reported between 1991 and 2004 indicated that 31% to 46% of outpatient smokers with schizophrenia were heavy smokers [45], whereas only 13% of our sample consisted of heavy smokers. The proportion of heavy smokers was lower in our study sample in part due to the relatively large proportion of African Americans, who tend to be light smokers [46]. However, only 27% of White people in this group smoked heavily, a proportion that is lower than in previously reported clinical samples [45].

The lower levels of smoking found in this study suggests that the level of nicotine dependence in people with schizophrenia may be declining in a pattern similar to the general U.S. population [31]. Alternatively, use of other noncombustible products supplementing cigarettes, such as electronic cigarettes, may have contributed to lower use of combustible tobacco, lower breath CO readings, and possibly erroneous lower ratings of nicotine dependence. Research on the impact of electronic cigarettes on smoking in schizophrenia is in early stages [47-49]. Nevertheless, a lower level of combustible tobacco smoking is promising for health impacts, but "light smoking" is still associated with substantially elevated risks for cardiovascular diseases, cancers and other diseases compared to no smoking [9,50]. People with schizophrenia are still much more likely to start smoking cigarettes and less likely to quit smoking then people without schizophrenia [1], thus they remain an important disparity population in need of intervention.

Several study limitations warrant discussion. These cross-sectional data describe smokers with schizophrenia who were willing to enroll in a motivational education intervention study. While we enrolled a diverse group from clinics in five states, these smokers may not be representative of all smokers with schizophrenia. Additionally, smoking cessation is a key outcome that was not assessed in this cross-sectional study. Future analyses will evaluate whether baseline characteristics relate to quit attempts and cessation over time.

CONCLUSION

This study shows that young adult smokers with schizophrenia differ from adults over age 30 in patterns similar to general population smokers, yet young adults with schizophrenia had substantial levels of awareness of the negative effects of smoking and similar levels of desire to quit. The relationships we found between social norms, beliefs, and perceived behavioral control for use of nicotine replacement therapy and cessation medications indicate that ongoing efforts to engage smokers with schizophrenia of all ages into effective treatment need to address these concepts. Further research is needed to evaluate strategies to help smokers with schizophrenia engage in cessation activities and to utilize effective cessation treatment.

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Table 1

Socio demographic and smoking characteristics of 184 participants with schizophrenia.

	Total Group	Young adult	Adult
	N=184 (100%)	N=43 (23.4%)	N=141 (76.7%)
Demographics			
Male, N (%) **	132 (71.4)	39 (90.7)	93 (66.0)
Age, mean (SD) ***	42.96 (12.7)	25.74 (3.6)	48.21 (9.4)
Never married, N (%) **	148 (80.4)	42 (97.7)	106 (75.2)
Years education, mean (SD)	11.88 (2.3)	12.09 (1.9)	11.81 (2.4)
WRAT reading score, mean (SD)	50.06 (10.8)	50.63 (13.3)	49.94 (10.2)
Race and ethnicity			
White, N (%)	55 (29.9)	12 (27.9)	43 (30.5)
Black, N (%)	97 (52.7)	24 (55.8)	73 (51.8)
Other race, N (%)	32 (17.4)	7 (16.3)	25 (17.7)
Hispanic, N (%)	22 (12.0)	3 (7.0)	19 (13.5)
Lifetime psychiatric hospitalizations, mean (SD) ***	10.3 (12.7)	6.1 (5.2)	11.6 (14.0)
Smoking Characteristics			
Cigarettes/day, mean (SD)	14.01 (10.3.)	12.50 (12.8)	14.47 (9.4)
Light smokers (<15 cigarettes/day), N (%)#	117 (63.6)	31 (72.1)	86 (61.0)
Moderate smokers (15-25 cigarettes/day), N (%)	44 (23.9)	10 (23.3)	34 (24.1)
Heavy smokers (>25 cigarettes/day, N (%)	23 (12.9)	2 (4.7)	21 (14.9)
Fagerstrom dependence score, mean (SD) **	5.0 (2.0)	4.2 (2.1)	5.24 (2.0)
Breath Carbon Monoxide, mean (SD) ***	25.9 (19.5)	15.9(10.5)	28.7 (20.5)
Age first started smoking regularly, mean (SD) *	19.0 (6.5)	17.7 (2.7)	19.4 (7.2)
Quit attempt in past 3 months, N (%)	54 (29.4)	16 (37.2)	38 (27.0)
Attitudes and knowledge about smoking			
ATS Adverse effects of smoking[a], mean (SD)	38.59 (8.3)	39.21 (7.7)	38.40 (8.5)
ATS Benefits of smoking[a], mean (SD)	14.32 (3.5)	14.21 (3.7)	14.35 (3.4)
ATS Pleasure of smoking[a], mean (SD)	14.05 (3.7)	14.72 (3.8)	13.85 (3.7)
ATS Summary score, mean (SD)	-10.21 (10.8)	-10.28 (9.5)	-10.20 (11.2)
Knowledge score smoking and cessation treatment[b], mean (SD)	64(16.3)	63 (17.3)	65 (16.0)
Tobacco product use[1]			
Prerolled cigarettes	150 (82.9)	36 (83.7)	114 (82.6)
Loose tobacco for rolling cigarettes	10 (5.5)	1 (2.3)	9 (6.5)
Both prerolled and loose tobacco for cigarettes	21 (11.6)	6 (14.0)	15 (10.9)
Mini Cigars *	73 (39.7)	11 (25.6)	62 (44.0)
Cigars	31 (16.9)	11(25.6)	20 (14.2)

	Total Group	Young adult	Adult
	N=184 (100%)	N=43 (23.4%)	N=141 (76.7%)
Hookah *	4 (2.2)	3 (7.0)	1 (0.7)
Chew *	2 (1.1)	2 (4.7)	0
Electronic *	29 (15.8)	11 (25.6)	18 (12.8)
Menthol	145 (80.6)	34 (81.0)	111 (80.4)
Stage of change for cessation			
Ready to quit this month, N (%)	53 (28.8)	10 (23.3)	43 (30.5)
Thinking of quitting but not in next month, N (%)	57 (31.0)	16 (37.2)	41 (29.1)
Not thinking of quitting, N (%)	74 (40.2)	17 (39.5)	57 (40.4)
Intention to use cessation treatment, Mean (SD)[c]			
Intention to use nicotine replacement therapy	3.8 (2.1)	3.6 (1.8)	3.8 (2.2)
Intention to use cessation medication	3.4(2.1)	3.0 (2.0)	3.5 (2.1)

WRAT - Wide Range Achievement TestATS - Attitudes Towards Smoking Scale

* p<.05;

** p<.01;

*** p<.001; Young adults significantly different form older adults

White were more likely than Blacks and Other Race to be in the heavy smoker group

[a] Adverse effects of smoking possible range = 10-50; Benefits and Pleasure of smoking possible range 4-20

[b] Knowledge scores ranged from 16.6 - 91.6% correct, possible range = 0-100

[c] 1=completely disagree; 7= completely agree

[1] 1 subject used cigars only, 2 subjects used mini cigars only

Table 2

Social context, perceptions of approval and stigma among smokers with schizophrenia.

	Total Group	Young adult	Adult
Social context of smoking	**N=184**	**N=43**	**N=141**
Smoking allowed inside home, N (%) ***	89 (48.6)	9 (20.9)	80 (57.1)
Family (of origin) member smokes, N (%)	161 (87.5)	37 (86.1)	124 (87.9)
Smoking companions past week, Mean (SD)	2.98 (6.5)	2.97 (4.5)	2.99 (7.0)
Nonsmoking companions past week, Mean (SD) *	2.25 (3.2)	3.20 (3.6)	1.98 (3.0)
Perceptions of social approval for cessation strategies			
Friends/boy- or girlfriend approval for quitting cold turkey ***	4.98 (1.8)	5.86 (1.4)	4.71 (1.9)
Friend approval NRT	5.17 (1.8)	5.55 (1.6)	5.06 (1.9)
Friend approval cessation medication	4.86 (1.7)	5.07 (1.8)	4.80 (1.7)
Smoking-related stigma and discrimination concerns			
Social Withdrawal Score (range 0-9), Mean (SD)	5.12 (1.9)	4.51 (2.0)	5.36 (1.8)
Devaluation Score (range 0-6), Mean (SD)	3.1 (1.4)	2.6 (1.4)	3.21 (1.4)
Secrecy, N (%)	73 (39.7)	22 (51.2)	51 (36.2)
Perceived Differential Treatment, N (%)	50 (27.2)	11 (25.6)	39 (27.7)

* $p \leq .05$;

** $p \leq .01$;

*** $p \leq .001$;

Table 3

Ordinary least squares regression predicting intention to use Nicotine Replacement Therapy.

	Model 1			Model 2			Model 3			Model 4			Model 5		
Predictor Variables	***B***	***SE B***	**β**	***B***	***SE B***	**β**	***B***	***SE B***	**β**	***B***	***SE B***	**β**	***B***	***SE B***	**β**
(Step 1) Demographics															
Age	0.01	0.01	0.08	0.01	0.01	0.08	0.01	0.01	0.08	0.01	0.01	0.09	0.01	0.01	0.06
Gender	0.49	0.35	0.1	0.62	0.35	0.13	0.43	0.35	0.09	0.08	0.32	0.02	0.09	0.31	0.02
(Step 2) *Smoking characteristics*															
Fagerstrom				-0.08	0.08	-0.07	-0.06	0.08	-0.06	-0.04	0.07	-0.03	-0.04	0.07	-0.03
Attitudes Toward Smoking				-0.04***	0.01	-0.25	-0.03*	0.01	-0.16	-0.02	0.01	-0.12	-0.02	0.01	0.04
(Step 3) *Social Norms*															
Friends would approve							0.29***	0.09	0.25	0.18*	0.08	0.15	0.13	0.08	0.11
Know someone							0.1	0.06	0.13	0.04	0.05	0.05	0.04	0.05	0.05
(Step 4) *Beliefs*															
NRT Importance										0.31***	0.10	0.22	0.24*	0.10	0.17
Positive attitudes										0.14***	0.03	0.29	0.12***	0.03	0.25
(Step 5) *Perceived Behavior Control*															
If I wanted, I could…													0.28**	0.10	0.21
R^2		**0.02**		**0.09**			**0.17**					**0.34**			**0.38**
Adjusted R^2		**0.01**		**0.07**			**0.14**					**0.31**			**0.34**

Note: SE = standard error;

* = p < .05,

** = p < .01,

*** =p<.001

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Table 4

Ordinary least squares regression predicting intention to use cessation medication.

	Model 1			Model 2			Model 3			Model 4			Model 5		
	B	**SE B**	**β**	**B**	**SE B**	**β**	**B**	**SE B**	**β**	**B**	**SE**	**β**	**B**	**SE**	**β**
Predictor Variables															
(Step 1) Background Characteristics															
Age	0.02	0.01	0.11	0.02	0.01	0.1	0.02	0.01	0.1	0.01	0.01	0.06	0.01	0.01	0.06
Gender	0.12	0.35	0.03	0.19	0.35	0.04	0.04	0.34	0.01	0.13	0.33	0.03	0.1	0.32	0.02
(Step 2) Smoking characteristics															
Fagerstrom				0.02	0.08	0.02	0.04	0.08	0.04	0.06	0.07	0.06	0.07	0.07	0.07
Attitude Towards Smoking				-0.04	0.01	-0.23	-0.03	0.01	-0.17	-0.03	0.01	-0.14	-0.02	0.01	-0.11
(Step 3) Social Names															
Friends Approve							0.32***	0.09	0.28	0.13	0.09	0.11	0.08	0.09	0.07
Know someone							0.01	0.06	0.02	0.02	0.06	0.02	0.03	0.05	0.04
(Step 4) Beliefs															
Medication										0.04	0.09	0.03	-0.01	0.09	-0.01
importance										0.13***	0.03	0.33	0.12***	0.03	0.29
Positive attitude															
(step 5) Perceived Behavioral control															
if I wanted I could													0.24**	0.08	0.22
R^2	0.01			0.07			0.04				0.22			0.26	
Adjust R^2	0.002			0.04			0.11				0.18			0.22	

Note: SE=standard error,

*
=p< 05,

**
= p< 01,

***
=p<001