If at First You Don't Succeed: Characterization of Smokers with Late Smoking Abstinence Onset

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Abstract

Most cigarette smoking cessation research has aimed to clarify characteristics associated with initial and sustained abstinence, with less attention paid to predictors of gaining abstinence following an initial failure. The current investigation explored pre-treatment demographic, smoking, and psychiatric characteristics related to gaining abstinence among smokers who failed to attain initial abstinence. Participants were 809 individuals enrolled in extended, 52-week, smoking cessation interventions. Of these, 287 (62.4%) failed to achieve initial abstinence. Gaining abstinence following initial abstinence failure was defined as achieving seven-day point prevalent abstinence at any post-initial abstinence assessment. Compared to those who failed to achieved abstinence during treatment (*Treatment Failures*), those who gained abstinence (*Gainers*) were more likely to be abstinent at post-treatment follow-up assessments conducted at weeks 64 (χ^2 (1, *N*=268)=56.3, *p*<.01) and 104 (χ^2 (1, *N*=231)=37.0, *p*<.01). With regard to correlates of gaining abstinence, *Gainers* were more likely to have a live-in partner (χ^2(1, *N*=283)=3.8, *p*=.05, Cramér's V = .12), identify as Hispanic (χ^2(1, *N*=281)=7.8, *p*<.01, Cramér's V = .17), evidence lower baseline expired breath carbon monoxide (*F*(1, 284)=5.7, *p*=.02, η^2 = .02), report less cigarette dependence (*F*(1, 278)=7.1, *p*<.01, η^2=.03), and report past week

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cannabis use (χ^2(1, N=284)=5.6, *p*=.02, Cramér's *V*=.14). A logistic regression model suggested having a live-in partner (*OR*=5.14, 95% *CI*=1.09–3.02, *p*=.02) and identifying as Hispanic (*OR*=4.93, 95% *CI*=1.20–18.77, *p*=.03) increased the odds of gaining abstinence. These findings provide insight into an understudied area, contributing an initial framework toward understanding gaining abstinence following initial failure.

1. Introduction

Initial sustained abstinence from tobacco during a quit attempt is a robust predictor of long-term smoking cessation (e.g., Hughes, 2004). As such, a large body of research has focused on identifying factors that impede early abstinence (e.g., Caponnetto & Polosa, 2008; Garvey & Bliss, 1992), as well as those that promote long-term maintenance (e.g., Agboola, McNeill, Coleman, & Bee, 2010; Hyland et al., 2004). "Milestone" research has focused on short-term cessation trials (e.g., 10 weeks in length or less) where initial abstinence is characterized by any day of non-smoking occurring within the first two weeks of a cessation attempt (Japuntich, Piper, et al., 2011a; Shiffman et al., 2006; Wileyto et al., 2005). In these studies, calendar data is assessed to determine the number of days between initial abstinence and lapse (defined as any smoking) and between lapse and relapse (defined as seven consecutive days of smoking). For example, Japuntich and colleagues (2011b) found that 88.1% of smokers enrolled in a 7-week clinical trial attained initial abstinence and of these, 73.9% lapsed within an average of 7 days, with 63.9% relapsing within an average of 38 days. Less cigarette dependence, White ethnicity, and having an in-home smoking bans were the strongest predictors of attaining initial abstinence, whereas non-White ethnicity, female gender, non-partnered marital status, less education, smoking at work, and having more smokers in one's social network predicted lapse. Smokers who reported abstinence at home were less likely to relapse.

Alternatively, smokers who initially fail to quit, but go on to attain abstinence later in treatment (Hughes, Kreely, & Naud, 2004) have not been well characterized. Indeed, although many smokers who make a quit attempt are unable to achieve initial sustained abstinence (Hajek, Stead, West, Jarvis, & Lancaster, 2009; Hughes et al., 2004), as many as 98% of these smokers are willing to "recycle" their attempt (Joseph, Rice, An, Mohiuddin, & Lando, 2004). Therefore, just as there is a need to clarify factors associated with initial abstinence, lapse, and relapse among those who initially quit smoking, it is important to better understand characteristics related to attaining abstinence among the large portion of individuals who initially fail to abstain.

Relevant research on smokers enrolled in a placebo-controlled 10-week bupropion trial found that during the treatment phase, greater cigarette dependence, depressive symptoms, and female gender impeded gaining abstinence. During the follow-up phase, greater cigarette dependence and depressive symptoms impeded attaining abstinence (Wileyto et al.,

2005). An additional and related study examined predictors of gaining abstinence within the context of a smoking cessation trial; yet, its primary focus was on failure attributions, in other words, how smokers explained their initial failure (i.e., attributional style; Spanier, Shiffman, Maurer, Reynolds, & Quick, 1996).

Together, research in this area is relatively nascent, but has begun to elucidate the nature of cessation milestones and their predictors, with a focus on smokers enrolled in brief interventions. The aims of the current investigation were to identify pre-treatment smoking, demographic, and psychosocial characteristics associated with successful smoking abstinence following initial abstinence failure among smokers enrolled in extended, 52-week smoking cessation treatment.

2. Methods

2.1. Procedure

Participants were eight hundred and nine community-recruited smokers enrolled in two 52-week smoking cessation trials conducted between 2003 and 2010 (Study 1: Hall et al., 2009 *n*=402; Study 2: Hall et al., 2011 *n*=407) in the San Francisco Bay Area. Inclusion criteria included being 18 years of age or older and smoking at least 10 cigarettes per day. In addition, those enrolled in Study 1 (Hall et al., 2009) were at least 50 years old and those enrolled in Study 2 (Hall et al., 2011) reported smoking within the first 30 minutes of waking.

Participants who enrolled in either Study 1 (Hall et al., 2009) or Study 2 (Hall et al., 2011) received a standard 12-week intervention including five behavioral counseling sessions. During the first intervention session, participants set a quit date of week 3, the date of their second intervention session. Cognitive-behavioral intervention sessions prior to, and in the initial weeks following, their quit date were designed to prepare them to quit, trouble-shoot barriers to cessation, as well as allow the full effect of cessation medication to take place (e.g., nicotine replacement and bupropion; Hall et al., 2009; Hall et al., 2011). Participants in Study 1 (Hall et al., 2009) received 10 weeks of nicotine gum, and 12 weeks of sustained release bupropion (bupropion SR). At week 8, they were randomized to (1) no additional treatment following the initial 12 weeks; (2) extended nicotine gum, (3) extended cognitive behavior therapy (E-CBT), or (4) extended nicotine gum and E-CBT, combined (Hall et al., 2009). Treatment for participants enrolled in Study 2 (Hall et al., 2011) included 12 weeks of bupropion SR and 10 weeks of the nicotine patch. At week 11 participants in Study 2 were randomized to receive (1) no additional treatment, (2) extended bupropion SR or (3) placebo with brief monthly medication check-ins (4) bupropion SR with E-CBT or (5) placebo with E-CBT (Hall et al., 2011). In both studies, stratified randomization based on baseline self-report of cigarettes smoked daily, gender, and smoking status verified via expired breath carbon monoxide (CO) of 10 parts per million (ppm) or lower, was used to assign participants to their extended treatment program. In addition, in both studies, participants randomized to extended medication treatments were provided with ongoing pharmacological treatment (Study 1: nicotine replacement gum; Study 2: bupropion) for up to 52 weeks, whereas those randomized to extended psychotherapy received 11 individual sessions from weeks 12 through 52. Participants who were not abstinent at any point during

treatment were encouraged by study therapists and medical staff to set a new quit date, regardless of randomization condition. Participants completed major assessments at weeks 12 (the date of their first session post-randomization), 24, and 52 during the intervention period, as well as follow-up assessments at weeks 64 and 104. Participants were compensated $25 for completing each major assessment and were invited to complete these assessments regardless of treatment engagement. For the secondary analyses presented in this paper, we used participants' baseline data and abstinence status, assessed at major assessments during the intervention period (e.g., peri-treatment; weeks 12, 24, and 52), to determine whether they were ever abstinent during treatment.

2.2. Measures

Seven-day point prevalence smoking abstinence was verified peri-treatment at weeks 12, 24, 52, and post-treatment at weeks 64 and 104 via CO (<10 ppm) and anatabine/anabasine analyses (<2mg/ml) in Study 1, and via urinary cotinine levels (<60 ng/ml) in Study 2. Baseline measures analyzed included the *Fagerström Test of Cigarette Dependence* (FTCD: Fagerström, 2012) to assess self-reported physiologic cigarette dependence, the *Profile of Mood States* (POMS; McNair, Lorr, & Droppleman, 1989) to measure a range of mood states, the *Social Participation Index* (SPI; Havassy, Hall, & Wasserman, 1991) to measure social engagement, the *Perceived Stress Scale* (PSS; Cohen, Kamarck, & Mermelstein, 1983) to measure perceived current stress, and the *Short-form General Health Survey* (SFGH: Ware, Koslinski, & Keller, 1996) to measure perceptions of mental and physical health. In addition, baseline alcohol and cannabis use were assessed (see Hall et al., 2009; Hall et al., 2011).

2.3. Selection of Participants for Current Analyses

In selecting our participants, we excluded those whose abstinence status was unknown at major peri-treatment assessment points (weeks 12, 24, and 52). Similarly, we excluded all individuals with missing data from analyses assessing long-term, post-treatment abstinence at weeks 64 and 104. Therefore, the maximum N for each analysis was reduced to 753 from 809. At each major assessment period, there was a greater likelihood of abstinence among those who achieved initial abstinence, prior to randomization, as opposed to those who did not (Week 12: 84.5% versus 25.2%, $\chi^2(1, N=752)=166.6$, $p<.01$; Week 24: 69.1% versus 20.6%, $\chi^2(1, N=776)=185.5$, $p<.01$; Week 52: 56.4% versus 14.8%, $\chi^2(1, N=744)=125.6$, $p<.01$); Week 64: 54.1% versus 17.2%, $\chi^2(1, N=717)=95.3$, $p<.01$); Week 104: 49.2% versus 22.1%, $\chi^2(1, N=669)=46.4$, $p<.01$). In addition, those who were not abstinent at the time of randomization but attained abstinence at week 12, just four weeks after randomization, were significantly less likely to be abstinent at each subsequent time point than those who were abstinent at randomization: Week 24: 69.1% versus 47.9%, $\chi^2(1, N=537)=12.4$, $p<.01$; Week 52: 56.4% versus 330.9%, $\chi^2(1, N=529)=15.5$, $p<.01$; Week 64: 54.1% versus 35.3%; $\chi^2(1, N=517)=11.3$, $p<.01$; Week 104: 49.2% versus 32.1%; $\chi^2(1, N=493)=5.8$, $p=.02$. These preliminary analyses confirm that those who achieved initial abstinence differ meaningfully from those who do not. Thus, in the present investigation, we excluded an additional 466 participants who were abstinent on their quit day, resulting in an N of 287, and chose to focus on clarifying characteristics that may support later attainment of abstinence.

Of the remaining 287 participants (Study 1, *n*=126; Study 2, *n*=161), 179 participants who failed to obtain abstinence at any major assessment point during the intervention period were classified as *Treatment Failures*, and 108 who were not abstinent at the time of randomization but later gained abstinence were classified as *Gainers*. Notably, *Gainers* attained initial abstinence at different time points throughout the intervention and did not necessarily maintain abstinence once it was attained (please see Table 1.) Yet, among gainers, no significant differences were observed between baseline characteristics and the point of attaining initial sustained abstinence (i.e., week 12, 24, or 52), which provided justification for examining these individuals as a whole, rather than on the time point in which they gained abstinence.

2.4. Statistical Methods

One-way analysis of variance (ANOVA; for continuous variables) and chi-square (for categorical variables) analyses were used to examine differences between *Gainers* and *Treatment Failures* on pre-treatment smoking, demographic, and psychosocial characteristics as well as follow-up abstinence. Effect sizes were calculated using eta squared for continuous measures and Cramér's V for categorical variables, and we interpreted statistically significant results associated with effect sizes that were in the small range or greater. Next, we simultaneously examined each relevant characteristic in a logistic regression to clarify relative contribution to the odds of being classified as a *Gainer*.

3. Results

3.1. Preliminary Analyses

3.1.1. Demographic and Smoking Characteristics—The final sample, including both *Gainers* and *Nevers* (*N*=287), were a mean of 47.9 years old (*SD*=11.8; 59.6% male) and primarily identified as White (69.7%). Upon study entry, they reported smoking an average of 20.7 (*SD*=8.9) cigarettes daily, with a mean FTCD score of 5.2 (*SD*=2.1) and 71.8% reported smoking within the first 30 minutes of waking. Of those included in this sample, those who were randomized to extended treatments attended an average of 3.8 intervention sessions (*n*=129; *SD*=3.7); however, 24.8% (I=32) did not attend any postrandomization intervention sessions. Finally, *Gainers* were more likely than *Treatment Failures* to be abstinent at post-treatment follow-up assessments conducted at weeks 64 (39.2% versus 3.6%; χ^2 (1, *N*=268)=56.3, *p*<.01) and 104 (44.0% versus 9.5%; χ^2 (1, *N*=231)=37.0, *p*<.01). Please see Table 2 for additional sample characteristics.

3.1.2. Tests for Group Differences—Chi-square analyses were used to examine whether *Treatment Failure* and *Gainer* status differed by cessation trial (Hall et al., 2009; Hall et al., 2011) or treatment randomization. These preliminary analyses revealed no significant differences between *Treatment Failures* and *Gainers* based on study enrollment (*p*=.11; Hall et al., 2009; Hall et al., 2011) or randomization to E-CBT, extended medication, E-CBT and medication, and brief conditions (*p*=.24).

3.2. Primary Analyses

See Table 2 for a summary of chi-square and ANOVA findings. *Gainers* were more likely to have a live-in partner (χ^2 (1, *N*=283)=3.8) and identify as Hispanic (χ^2(1, *N*=281)=7.8). With regard to baseline smoking characteristics, *Gainers* evidenced lower expired CO (*F*(1, 284)=5.7), and lower FTCD (*F*(1, 278)=7.1) than *Treatment Failures.* Finally, *Gainers* were more likely to report *past week cannabis use* at baseline (χ^2 (1, *N*=284)=5.6) than *Treatment Failures*.

Table 3 presents results of a multivariate logistic regression model predicting *Gainer/ Treatment Failure* status. Variable selection was based upon significant relations to *Gainer/ Treatment Failure* status as determined by univariate ANOVA and chi-square analyses. Live-in partner status (yes/no), Hispanic status (yes/no), baseline FTCD score, baseline expired CO, and baseline past week use of cannabis (yes/no) were simultaneously entered into the regression model. Having a live-in partner (*OR*=5.14, 95% *CI*[1.09, 3.20], *p*<.02) and identifying as Hispanic (*OR*=4.93, 95% *CI*[1.20–18.78], *p*=.03) significantly increased the odds of being a *Gainer.* In addition, a trend-level relation suggested those who evidenced lower baseline CO and lower FTCD increased the odds of being a *Gainer.* The inclusion of Study (i.e., Study 1 or Study 2) in the regression model did not change results.

4. Discussion

The current investigation sought to characterize smokers who gained abstinence following initial failure. In this sample, among baseline variables assessed, we found that having a live-in partner, identifying as Hispanic, less severe cigarette dependence, and current marijuana use were each related to gaining abstinence. While some of these findings are consistent with a body of research literature (e.g., less severe cigarette dependence; Fagerström, 2012; Japuntich et al., 2011b; Tønnesen, 2009), others were more novel. Interestingly, no other measured baseline characteristics were significantly related to gaining abstinence following initial failure including age, gender, education, treatment attendance, perceived health, perceived stress, social participation, or mood disturbance.

A large body of work suggests that social support, partner support in particular, is associated with positive cessation outcomes (Westmaas, Bontemps-Jones, & Bauer, 2010); for example, initiating a quit attempt (Murray, Johnston, Dolce, Lee, & O'Hara, 1995), latency to lapse (Japuntich et al., 2011b), and cessation (Lee & Kahende, 2007). However, an index of social participation used in the current investigation, which assessed close relationships and engagement in social activities (Havassy et al., 1991), was not related to gaining abstinence. Thus, the mechanism by which having a live-in partner relates to gaining abstinence in the current study is not clear. Notably, interventions designed to specifically address partner support have been equivocal (Park, Tudiver, Schultz, & Campbell, 2004), suggesting the need to continue to clarify causal models linking partner status, social support, and outcomes (Westmaas et al., 2010). Work in this area would be greatly aided by clearer conceptualization of type and quality of social support (e.g., peer versus partner; smoker versus non-smoker), relevance to various aspects of cessation (e.g., contemplation, initiation, maintenance), and the development of theoretically-driven models by which causal pathways may be examined experimentally (Westmaas et al., 2010).

Although Hispanic status was significantly related to gaining abstinence, given the small number of Hispanics in the current study, this finding warrants replication and should be interpreted with caution. However, existing research suggests that Hispanic smokers may be more resilient to the negative effects of low socioeconomic status on smoking outcomes than their non-Hispanic counterparts (Margerison-Zilko & Cubbin, 2013) and better able to maintain abstinence self-efficacy in the presence of negative emotional states as compared to non-Hispanic Whites (Martinez et al., 2010). This may be particularly relevant in response to negative affect stemming from a failed quit attempt (e.g., Kirchner, Shiffman, & Wileyto, 2012).

Our study found several additional interesting relations; although marginal when considered in the context of other associations, they are worth mentioning. First, our findings indicate cannabis use was associated with gaining abstinence. This is consistent with other work that has found that cannabis use generally has no relation to cigarette use remission (Lopez-Quintero et al., 2011) or cessation outcomes (Hendricks, Delucchi, Humfleet & Hall, 2012) or vice versa (Peters & Hughes, 2010). In addition, recent research suggests cannabis is commonly used to manage withdrawal from other substances (e.g., alcohol; Lucas et al., 2013), yet, to our knowledge, this is the first study suggesting successfully attaining abstinence following initial failure may be more likely among those who use marijuana. Last, despite the intensive pharmacological and behavioral intervention offered to participants in the current study's clinical trials, baseline biological and subjective indices of heavy cigarette use were associated with less likelihood of successfully gaining abstinence.

Although not germane to the present investigation, it is notable that just 37.6% (108/287) of participants who failed to quit on their quit day gained sutained abstinence at at least one peri-treatment assessment, whereas 50.4% (235/466) of smokers who successfully quit on their quit day maintained their abstinence throughout the intervention duration (i.e., at every peri-treatment assessment point). This finding, combined with relatively few significant predictors of gaining abstinence, suggests that extended interventions are most effective for smokers who initially attain abstinence, and underscore the need to better characterize and target characteristics that aid and hinder successfully gaining abstinence following an initial failure. Intervention programs may benefit from therapeutic adjuncts designed specifically for smokers who do not achieve initial abstinence. Nevertheless, 44.0% of participants who gained abstinence were abstinent 1-year post-treatment. This finding underscores the importance of perseverance in smoking cessation, and the need to understand individual difference variables that may clarify who are able to persist in cessation, versus those who do not, via empirical inquiry such as the current investigation.

The current study is limited by its reliance on descriptive data collected at baseline and assessment of abstinence only at major assessment points. Future research on *Gainers* may benefit from an examination of temporal changes in indices relevant to cigarette use throughout a cessation attempt as well as the use of ecological momentary assessment and longitudinal designs that can account for the dynamic nature of predictor variables as well as daily changes in cigarette consumption (e.g., Shiffman & Waters, 2004). In addition, novel behavioral and self-report indices designed to clarify individual differences that affect gaining abstinence during treatment (e.g., emotional vulnerability and stress provocation

paradigms; Brown et al., 2009; McKee et al., 2011), may offer additional insights into individual variability in the ability to recycle a quit attempt. Importantly, because Study 1 recruited smokers who were at least 50 years old, the generalizability of our findings may be limited, although age was not a significant correlate of outcome in the present study. Nevertheless, the current study provides valuable initial insight into several factors that may increase the likelihood of quit recycling and highlights the need for further examination of this phenomenon that has otherwise received limited attention in the research literature.

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Highlights

- Little research has characterized cigarette smokers who recycle failed quit attempts

- We examined pre-treatment predictors of gaining abstinence in an extended intervention

- Having a live-in partner, Hispanic status, greater treatment attendance, greater cigarette dependence, and recent cannabis use were associated with gaining abstinence after initial failure

- Findings inform additional research and targeted interventions to increase quit recycling

Table 1

Abstinent status of *Gainers* at Each Time Point

| | Week 12 | Gainer abstinent status | | | |
		Week 24	Week 52	Week 64	Week 104
% Abstinent, whole Sample	67.3% (72/107)	54.7% (58/106)	39.8% (41/103)	41.0% (41/100)	36.1% (30/83)
% Abstinent at prior time point	0%	47.9% (34/71)	44.6% (25/56)	85.4% (35/41)	86.7% (26/30)

Note: *N*=107

Table 2

Baseline Characteristics by Gainer or Never Status

	Sample %; M (SD)	Gainer %; M (SD) (n=108)	Never %; M (SD) (n=179)	Effect size	p value
Overall	--	37.6% (n=108)	62.4% (n=179)	--	--
Demographic Characteristics					
Age	48.0 (11.8)	47.4 (12.9)	48.2 (11.0)	.00es	.59
Sex (male)	59.6%	62.0%	58.1%	.04^{v}	.51
Education				.12^{v}	.26
Less than high school	3.2%	0.9%	4.6%		
High school and some college	52.3.0%	49.5%	54.0%		
College degree and some graduate work	32.4%	36.4%	29.9%		
Graduate degree	12.1%	13.1%	11.5%		
Number of Treatment Sessions Attended	3.8 (3.7; n=129)	4.3 (3.9)	3.6 (3.5)	.00es	.34
Live-in Partner (yes)	35.0%	42.1%	30.7%	.11^{v}	.04
Hispanic (yes)	4.3%	8.7%	1.7%	.12^{v}	.04
Smoking Characteristics					
Cigarettes smoked per day	20.7 (8.9)	19.7 (7.9)	21.2 (9.4)	.00es	.13
Years of Regular Smoking	29.3 (12.1)	28.2 (13.0)	30.0 (11.5)	.00es	.24
FTCD^{1}	5.2 (2.1)	4.8 (2.2)	5.4 (1.9)	.02es	<.01
Expired Breath Carbon Monoxide	21.5 (10.8)	19.6 (9.9)	22.7 (11.2)	.02es	.02
Other Substance Use and Psychiatric Characteristics					
Past Week Alcohol Use, baseline (yes)	62.7%	67.0%	60.1%	.07^{v}	.25
Past week, Days of Alcohol Use, baseline	4.7 (6.5)	4.9 (6.0)	4.7 (6.7)	.00es	.70
Past week Cannabis Use, baseline (yes)	20.1%	27.4%	15.7%	.14^{v}	.01
Past week, Days of Cannabis Use, baseline	0.55 (1.5)	.80 (1.9)	.40 (1.3)	.02es	.03
Perceived Physical Health^{2}	49.0 (8.7)	48.4 (9.5)	50.1 (7.1)	.01es	.12
Perceived Mental Health^{2}	49.9 (8.8)	50.9 (8.0)	448.4 (9.5)	.01es	.16

	Sample %; *M (SD)*	Gainer %; *M (SD)*	Never %; *M (SD)*	*Effect size*	*p* value
Perceived Stress[3]	19.8 (7.4)	18.9 (6.8)	20.3 (7.7)	.01[es]	.13
Social Participation[4]	4.7 (1.6)	4.74 (1.7)	4.7 (1.5)	.00[es]	.87
POMS Total Mood Disturbance[5]	17.1 (29.2)	14.1 (28.8)	18.9 (29.3)	.01[es]	.19

Note: N=287 (*ns* range from 269 to 287)

[1] Fagerstrom Test of Cigarette Dependence (Fagerström, 2012);

[2] Short Form Health Survey:

[3] Perceived Physical and Mental Health Composite Scores (Ware, Koslinski, & Keller, 1994);

[4] Social Participation Index (Havassy et al., 1991);

[5] Profile of Mood States (POMS; McNair & Droppelman, 1971).

[es] Eta squared

[v] Cramér's V

Table 3

Logistic Regression Analysis with Baseline Characteristics Predicting Gaining Abstinence in an Extended Tobacco Cessation Program (n=273)

| | | | | Gain in Abstinence | | |
| | | | | | 95% CI for *OR* | |
Variables	*B*	*SE*	Wald χ^2	*OR*	Lower	Upper
Partner Status *	.62	.28	5.14	1.87	1.09	3.20
Hispanic Status *	1.56	.70	4.93	4.75	1.20	18.78
Carbon Monoxide[+]	−.03	.01	3.44	.98	.95	1.00
Cigarette Dependence[+]	−.11	.07	2.61	.89	.78	1.02
Cannabis Use	.44	.32	1.87	1.56	.83	2.94

Note:

[+] .10>p>.05;

*
p < .05.

Partner Status (Current, live-in partner: 0=no, 1=yes); Hispanic (0=no, 1=yes); Carbon Monoxide (expired breath carbon monoxide); Cigarette Dependence (FTCD: Fagerström, 2012); Cannabis Use (past week cannabis use: 0=no; 1=yes).