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Short Communication

Correlates of other tobacco use in a community sample of young adults

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HIGHLIGHTS

- 61% of 18-25 year olds reported past month other tobacco use
- Users tended to be Caucasian and younger
- Tobacco use was associated with impulsivity and alcohol consumption
- Other tobacco use is a problem and not necessarily motivated by harm reduction

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ABSTRACT

Background: Young adult use of alternative nicotine and tobacco products (ANTPs) has increased dramatically since 2000. While recent studies address ANTP prevalence, relatively little is known about predictors of use. This secondary analysis examined demographic, personality, and other substance use factors as predictors of past month ANTP use.
Methods: Community participants (n = 319; 51% female) completed an online survey during the initial stage of a larger study, for which all were required to have smoked cigarettes and consumed alcohol in the past month. The survey assessed demographics, impulsivity, and past-month frequency of cigarette, alcohol, and marijuana use.
Results: The majority (61%) of participants endorsed ANTP use in the past 30 days. The odds of ANTP use were associated with Caucasian ethnicity, younger age, more frequent alcohol use, and with the sensation seeking and positive urgency components of impulsivity.
Conclusion: These data suggest that ANTP use among young adults is a substantial problem, and that there is a need for interventions that target tobacco use generally rather than cigarette smoking only.

1. Introduction

Over several decades, accumulated knowledge about the health effects of cigarette smoking, combined with substantial regulatory and public health efforts, have led to a substantial reduction in the prevalence of cigarette smoking in the US (Centers for Disease Control and Prevention, 2012). However, recent surveys have shown a substantial increase in young adults' use of alternative nicotine and tobacco products (ANTPs; (Arrazola, Dube, & Engstrom, 2012)). ANTPs include products that are long-established in the US (e.g., smokeless tobacco) as well as new products and those whose use has increased dramatically (e.g., e-cigarettes, hookah, cigarillos). ANTP use has more than doubled in the past 15 years (Centers for Disease Control and Prevention, 2012); this change is likely associated with increased access, lack of regulation (Morris, Fiala, & Pawlak, 2012), and misperceptions about the health consequences of ANTP relative to cigarette use (Arrazola et al., 2012; Lauterstein et al., 2014; Solds & Dorsey, 2005).

While a number of recent studies have begun to shed light on the prevalence of ANTP use among young adults, relatively little is known about predictors of use. Factors that have been associated with young adult ANTP use include impulsivity, other substance use, cigarette use, male sex, family tobacco use, and White ethnicity (Fielder, Carey, & Carey, 2012; Jamil, Elsouhag, Hiller, Arnetz, & Arnetz, 2010; Jordan & Delnevo, 2010; Ramo, Young-Wolff, & Prochaska, 2015; Sterling & Mermelstein, 2011). However, a limited number of studies to date have tended to focus on one specific ANTP; additionally, the studies that have examined young adult ANTP use have consisted primarily of college samples. In the present study of predictors of ANTP use, we focused on demographic and other substance use predictors, as well as impulsivity. Impulsivity was chosen because we have previously

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shown that it prospectively predicts cigarette initiation (Doran et al., 2013), progression (Doran & Trim, 2013), and frequency (Doran et al., 2011) in adolescent and young adult samples.

The increasing rate of ANTP use among young adults has multiple potential negative consequences. First, most ANTPs appear to have adverse health effects, including increasing users' risk of cardiovascular and respiratory disease as well as cancer (Baker et al., 2000; Critchley & Unal, 2003; Fakhreddine, Kanj, & Kanj, 2014; Maziak, 2013). An additional concern is the potential impact of ANTP use on cigarette smoking. The prevalence of ANTP use is significantly higher among current smokers compared with non-smokers (Lee, Hebert, Nonnemaker, & Kim, 2014; Sargent, 2014). It is possible that increased nicotine exposure from ANTP use may accelerate the trajectory of nicotine dependence and heighten the probability and rate of transition to heavier cigarette smoking (Doran, Godfrey, & Myers, in press). Relatedly, ANTP use among non-smokers may promote smoking initiation. Recent data from the National Youth and Adult Tobacco Surveys indicate that intent to smoke conventional cigarettes was two times higher for non-smokers who had ever used e-cigarettes versus those who had never used e-cigarettes (Bunnell et al., 2015; Coleman et al., 2015).

The purpose of the present secondary analysis was to examine predictors of ANTP use in a community sample of young adult cigarette smokers. Based on previous findings, we hypothesized that demographic (male sex, younger age, Caucasian ethnicity) and individual difference (higher impulsivity, more frequent use of cigarettes, alcohol, and marijuana) factors would be associated with greater probability and greater frequency of ANTP use.

2. Materials and methods

2.1. Sample

Participants (n = 319, 51.1% female) were young adults (M = 22.0, SD = 2.1). In terms of race/ethnicity, 45.5% identified as non-Hispanic Caucasian, 27.0% as Hispanic or Latino, 12.9% as Asian American, and 7.8% as being from multiple racial or ethnic backgrounds. Eligibility for the parent study, which focused on motives for using alcohol and cigarettes together, included being 18–25 years old and having simultaneously used alcohol and cigarettes at least once in the past 30 days.

2.2. Procedure

Participants were recruited via online advertising in a local free newspaper for a study of predictors of simultaneous alcohol and tobacco use. Candidates completed a brief screening assessment of eligibility. Screens were reviewed by research staff, and individualized links to the survey were sent to those who were eligible. Participants indicated informed consent and completed surveys online via Survey Monkey (Palo Alto, CA), and were paid for their time. All procedures were approved by the University of California, San Diego Institutional Review Board.

2.3. Measures

Demographic variables were assessed at the beginning of the survey, including sex, age, and racial/ethnic background. For analytic purposes, race/ethnicity was dichotomized to compare participants who identified as non-Hispanic Caucasian to all other groups.

ANTP use was assessed with an item that asked participants to indicate whether they had used each of the following within the past 30 days: e-cigarettes, hookah or waterpipe, smokeless tobacco, snus, cigars or cigarillos, nicotine replacement products, or none of these.

Alcohol use was assessed via self-report of quantity and frequency of alcohol use for the past 30 days.

Marijuana use was assessed using a single item on which participants reported frequency of use over the past two weeks: not at all, 1–2 days, several days, more than half the days, or nearly every day.

Nicotine dependence was measured using the Cigarette Dependence Scale (Etter, 2008; Etter, Le Houezec, & Perneger, 2003), a 12-item scale that has been shown to differentiate between daily and intermittent smoking (Stillwell & Tunney, 2012).

Smoking intentions were assessed with two items on which respondents estimated the likelihood that their smoking would increase in the future and the likelihood that they would develop a problem with smoking in the future. Both items were rated on a scale from 1 (strongly disagree) to 5 (strongly agree). Scores on these items were averaged to create a single smoking intent score.

Impulsivity was assessed via the short form of the UPPS-P Impulsive Behavior Scale (Cyders, Littlefield, Coffey, & Karyadi, 2014). The SUPPS-P includes four items from each of five subscales reflecting related but distinct facets of impulsivity: sensation seeking, lack of premeditation, lack of perseverance, and positive and negative urgency. Subscale scores were determined by calculating the mean of the items making up each subscale. Internal consistency was low for the lack of perseverance (Cronbach's $\alpha = 0.63$) and lack of premeditation ($\alpha = 0.53$) subscales, but acceptable for the sensation seeking ($\alpha = 0.77$) and positive ($\alpha = 0.83$) and negative ($\alpha = 0.80$) urgency subscales.

2.4. Analytic plan

Two parallel analyses were conducted, with identical predictors: sex, age, ethnicity, impulsivity subscales, the number of days using cigarettes, alcohol in the past 30 days, and marijuana use in the past two weeks. To address the possibility that smokers may use ANTPs as part of a harm reduction or smoking cessation strategy, smoking intentions were also included in both models. The first analysis used binary logistic regression to determine the impact of the predictors on the probability of participants engaging in any ANTP use over the past 30 days. The second analysis used Poisson regression to model the association between the predictors and the number of different ANTP products used during the same period. All analyses were conducted using Intercooled Stata 13.0 (StataCorp LLP, College Station, TX).

3. Results

3.1. Preliminary analyses

Demographic and descriptive statistics are shown in Table 1. The majority of participants (60.8%) endorsed use of at least one ANTP in the past 30 days. In terms of individual ANTPs, 39.2% reported past 30-day use of e-cigarettes, 39.8% hookah, and 27.6% cigars and/or cigarillos; 37.3% reported using two or more ANTPs. Among users of multiple ANTPs, the most common combinations were hookah and e-cigarettes (n = 85, 26.6%), hookah and cigars/cigarillos (n = 53, 16.6%), and cigars/cigarillos and e-cigarettes (n = 47, 14.7%). ANTP use was higher among males, college students, and recent marijuana users, but these differences were not significant in univariate tests. ANTP users were more likely to identify themselves as Caucasian [χ^2 (1) = 6.63, $p = .010$]. In terms of student status, 23% reported full-time and 1.6% part-time enrollment at four-year colleges or universities; 14.3% reported full-time and 9.1% part-time enrollment in two-year community college programs.

3.2. Primary analyses

In the logistic model (see Table 2), the likelihood of ANTP use was not associated with sex, smoking intentions, or frequency of marijuana use. In terms of impulsivity, the effects of premeditation, perseverance, and negative urgency were not significant. As expected, there was a significant relationship between age and ANTP probability, such that each additional year was associated with a 19% decrease in the odds of past