Enjoyment and other reasons for electronic cigarette use: Results from college students in New York

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HIGHLIGHTS

- Affective reasons for using electronic cigarettes may relate to the popularity of e-cigs.
- 72.1% of current (past 30-day) electronic cigarette users report using for enjoyment.
- Current daily electronic cigarette users are more likely to use for quitting purposes.

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ABSTRACT

Background: Young people are more likely to have experimented with e-cigarettes (e-cigs) compared with older adults. Few studies identify reasons for experimentation/use of e-cigs among young people; we sought to discover what drives college students to use e-cigs.
Methods: Undergraduate students (ages 18–23) at four universities in New York State were surveyed. Among e-cig ever users (n = 429), reasons for use were examined. A multinomial logistic regression model analyzed the relative risk of reasons for using e-cigs among discontinued, current non-daily and current daily e-cig users.
Results: Using e-cigs for enjoyment was associated with current non-daily (RR = 2.11, 95% CI = 1.18–3.75) and current daily use (RR = 19.1, 95% CI = 3.71–98.54). Non-daily use was related to use because e-cigs are less toxic than cigarettes (RR = 2.80, 95% CI = 1.75–4.50). More daily users reported use to quit smoking compared with either non-daily or discontinued users (53.3% vs. 12.2% and 13.3%, respectively; p < 0.05). Among current users, 72.3% used for enjoyment, compared with 42.9% of discontinued users (p < 0.05).
Discussion: In contrast to adults, who often report e-cig use to quit smoking, young people are less likely to use for this reason. The exception was daily e-cig users, who often reported use for quitting/reduction of smoking. Rather, college students report usage reasons related to affect (e.g. enjoyment). Overall, enjoyment was reported more often than was use for quitting smoking; affective reasons likely play a role in the popularity of e-cigs and should be considered in future assessments of e-cig users.

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1. Introduction

Among U.S. adults (≥18 years), cigarettes are the most commonly used tobacco product (Agaku, King, Husten, et al., 2014). More recently, non-cigarette tobacco products (e.g. little cigars/cigarillos, smokeless tobacco, hookah, e-cigarettes [e-cigs]) have become increasingly popular, especially among young adults (18–24 years); recent 2014 data among middle and high school students show that past 30-day use of e-cigs has surpassed past 30-day tobacco cigarette prevalence (Agaku

et al., 2014). The popularity of e-cigs has been rising among both adolescents and adults since they entered the market in 2007 (Ayers, Ribisl, & Brownstein, 2011; Camenga, Delmerico, Kong, et al., 2014; Dockrell, Morison, Bauld, & McNeill, 2013; Ramo, Young-Wolff, & Prochaska, 2015). With increases in use, there is concern among public health officials as to whether e-cigs represent a "gateway" to future tobacco cigarette smoking and whether e-cigs will lead to nicotine addiction among youth (Arrazola, Singh, Corey, et al., 2015; Dutra & Glantz, 2014; Riker, Lee, Darville, & Hahn, 2012). The other side of this argument supports the concept of e-cigs as a harm reduction product to reduce cigarette smoking; (Cahn & Siegel, 2010) e-cigs are often marketed as "safer" alternatives to cigarette smoking.

Surveys of U.S. adults indicate that the highest prevalence of e-cig use is among 18–24 year olds (Adkison, O'Connor, Bansal-Travers,

et al., 2013; Agaku et al., 2014; King, Alam, Promoff, Arrazola, & Dube, 2013; Regan, Promoff, Dube, & Arrazola, 2013). College students are included in the age group shown to be at increased risk for using non-traditional tobacco products, including e-cigs (Cobb & Abrams, 2011; Pearson, Richardson, Niaura, Vallone, & Abrams, 2012; Regan et al., 2013). College students are often drawn to novel products (Choi, Fabian, Mottey, Corbett, & Forster, 2012) and are generally more accepting of e-cig use in public compared with cigarette smoking in public (Trumbo & Harper, 2013).

Among adult e-cig users, reasons for use most commonly include curiosity, influence of friends or family, to quit/reduce cigarette consumption, and cost (Caponnetto, Campagna, Cibella, et al., 2013; Dawkins, Turner, Roberts, & Soar, 2013; Etter & Bullen, 2011; Goniewicz, Lingas, & Hajek, 2012; Kralikova, Kubatova, Truneckova, Kmetova, & Hajek, 2012; Pepper, Ribisl, Emery, & Brewer, 2014; Vickerman, Carpenter, Altman, Nash, & Zbikowski, 2013). Reasons for use of e-cigs among young adults have not been studied in depth and primarily focus on *beliefs or perceptions* of e-cigs. In a study among young adults (ages 20–28), about one-half (45%) of those aware of e-cigs agreed the product could help people quit smoking, however, specific reasons for personal use/experimentation with e-cigs were not collected (Choi & Forster, 2013). A Canadian study among young adult smokers (16–30 years old) reported that e-cig users conveyed *interest* in using e-cigs to quit smoking (80.4%) or, as a replacement for combustible cigarettes (77.8%). Despite reported *interest* in use, this study did not ask users about particular reasons for their use/experimentation with the product (Czoli, Hammond, & White, 2014a).

About one-quarter to one-half of young adults surveyed (both users and non-users) believe e-cigs are safer than tobacco cigarettes (Choi & Forster, 2013; Goniewicz & Zielinska-Danch, 2012; Sutfin, McCoy, Morrell, Hoeppner, & Wolfson, 2013). The perception that a product is less harmful or has benefits over the use of another product has been shown to increase interest in trial (Choi et al., 2012), and there is evidence among young adults suggesting that those with lower e-cig harm perceptions are more likely to use e-cigs (Czoli, Hammond, & White, 2014b; Saddleson et al., 2015). Despite these beliefs and perceptions about e-cigs, again, there is limited research available about *why* college students themselves experiment with and/or continue to use e-cigs.

Two studies have reported on reasons for e-cig use among young adults. Among young adult cigarette smokers (18–25 years old; smoked ≥1 cigarette in past month), e-cig use for quitting purposes was more common in those who were more dependent on nicotine and those interested in quitting; reasons for use other than quitting were not asked (Ramo et al., 2015). Among middle, high school and college students in Connecticut, top reasons for experimenting with e-cigs were curiosity (54.4%), appealing flavor (43.8%), and peer influences (31.6%) (Kong, Morean, Cavallo, Camenga, & Krishnan-Sarin, 2014). Marketing e-cigs towards adolescents and young adults through the use of advertising and flavors likely influences experimentation with these products (Couch, Chaffee, Essex, & Walsh, 2014; Rigotti, Moran, & Wechsler, 2005; Trumbo, 2015). Although regulations have been proposed, currently there are no standing regulations on e-cigarettes by the Food and Drug Administration (FDA). Additional evidence about why young adults are interested in e-cigarettes could aid in informing regulation of these products.

The goal of the present study was to examine reasons for use among a college sample of e-cigarette users and to explore whether these differences varied by e-cig status (discontinued, current non-daily, and current daily e-cig users). We hypothesized that enjoyment of e-cigarettes would contribute to use among college students based on a *behavioral affective associations model*, which indicates that there are feelings and emotions associated with certain behaviors (Kiviniemi & Bevins, 2008). We were also interested in reasons for use among students who never smoked a tobacco cigarette. Understanding e-cig use

among never smokers could play a role in addressing concerns about e-cigs serving as a potential "gateway" product to future use of combustible tobacco products.

2. Materials and methods

2.1. Sample

Undergraduate students (ages 18–23) in selected classes (e.g., psychology/health behavior-related courses) at four New York State (NYS) (outside of New York City) universities participated in a web-based survey in the fall of 2013 (n = 1437), providing informed consent for this IRB-approved research. The survey instrument and procedures are described in detail in Saddleson et al. (2015) The sub-sample for this study (n = 429) included those who had ever tried e-cigs.

2.2. Demographics

Age was a continuous variable; the data set was restricted to 18–23 year olds. *Gender* was a binary variable (male/female); self-reported data on *race/ethnicity* was used to create a categorical variable based on responses to two items: 1) race, and 2) ethnicity (Hispanic/non-Hispanic); a three category variable was constructed: Non-Hispanic white/Caucasian, non-Hispanic non-whites (all races excluding white/Caucasian), and Hispanic (regardless of race).

2.2.1. Tobacco cigarette smoking status
Never smokers (never tried a tobacco cigarette, not even a puff), *experimenters* (have smoked <100 cigarettes in lifetime, and did not smoke any cigarettes in the past 30 days), *discontinued smokers* (smoked ≥100 cigarettes in lifetime, but did not smoke any cigarettes in the past 30 days), and *current smokers* (have smoked at least 1 day out of the past 30). For multivariable analyses, smoking status was collapsed into three categories (never smokers, experimenters and ever smokers [current and discontinued smokers]), due to few discontinued smokers in our sample (n = 17).

2.2.2. E-cigarette status
Ever use, but not in the previous 30 days was classified as *discontinued e-cigarette user. Current non-daily use* included use on 1–29 days in the previous 30 days, *current daily* use included use on all 30 days.

2.2.3. Past 30-day non-cigarette tobacco use
A binary variable (any/none) based on reports of any use in the past 30 days of: cigars, pipes, chewing tobacco, snuff, snus, hookah, clove cigarettes, bidis, or other.

2.2.4. Past 30-day binge drinking
"Considering all types of alcoholic beverages, how many times during the past 30 days did you have 5 (for males)/4 (for females) or more drinks on an occasion?" Binary variable (any/none).

2.2.5. Marijuana use
"During the last 12 months, how often did you use marijuana (cannabis, weed, pot)?" was scored as a binary variable (any/none).

2.2.6. E-cigarette reasons for use
E-cigarette ever users were asked for a level of agreement (or disagreement) with statements describing their reasons for current or past e-cig use. The scale included: strongly agree, agree, neutral, disagree, and strongly disagree, adapted from Etter and Bullen (2011). We asked all users about twelve reasons for use with the statement "I use/used an e-cigarette…": …because I enjoy(ed) it, …to deal with my craving for tobacco, …to quit smoking or avoid relapsing to