Correlates of Allowing Alternative Tobacco Product or Marijuana Use in the Homes of Young Adults

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abstract **BACKGROUND:** Given the increases in alternative tobacco product (ATP) and marijuana use, we examined self-reported likelihood of allowing ATP and marijuana use in the home among young adults.

METHODS: We analyzed data from a study of students aged 18 to 25 years ($n = 2865$) at 7 Georgia colleges and universities. Variables included: personal, household members', and friends' tobacco (cigarettes, little cigars and cigarillos [LCCs], e-cigarettes, hookah) and marijuana use and the perceived harm to health, harm of byproducts, addictiveness, and social acceptability of each. Regression models were specified to examine correlates of the likelihood of allowing use of each product in the home.

RESULTS: Personal use prevalence ranged from 5.5% for e-cigarettes to 12.5% for marijuana. E-cigarettes were most likely to be allowed in the home; cigarettes were least. Regression indicated that others' use and the perceived social acceptability of using each product was correlated with greater likelihood of allowing the use of a product. A greater likelihood of allowing cigarette and LCC use in the home was only associated with cigarette or LCC use, respectively; a greater likelihood of allowing e-cigarette use was associated with current e-cigarette use; greater likelihood of allowing hookah use was associated with using any product except e-cigarettes; and greater likelihood of allowing marijuana use was associated with LCC and marijuana use. Perceived harm to health, byproduct harms, and addictiveness were differentially related to the likelihood of allowing use of different products.

CONCLUSIONS: ATPs and marijuana may undermine efforts to protect against environmental toxins in the home, thus warranting interventions targeting young adults.

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Although cigarettes continue to be the main source of tobacco use in the United States,^{1,2} various alternative tobacco products (ATPs), including little cigars and cigarillos (LCCs), e-cigarettes, and hookah, have recently been introduced to the US market; the awareness and use of these products have dramatically increased, particularly among young adults.^{3–5} Further compounding this issue, marijuana use has dramatically increased in recent years, particularly in young adults,⁶ with its prevalence of use, daily use,⁶ legalization, and decriminalization increasing.⁷ Indeed, in this new context, the use of ATPs and marijuana is seen as more socially acceptable than cigarette smoking.⁸ Moreover, these products have significantly altered the terrain of substance use, including high rates of polytobacco use and the cause of tobacco and marijuana, particularly in the young adult population.^{9–11}

Compounding these concerns, a 2013 study of young adult college students⁸ documented that LCCs, e-cigarettes, hookah, and marijuana use are seen as less harmful to users' health and less addictive than cigarette smoking despite little data to support such perceptions. For example, LCCs, which can deliver sufficient amounts of nicotine to maintain dependence,¹² can cause several chronic diseases, such as coronary heart disease, lung diseases, and several types of cancer.¹² Additionally, although e-cigarettes represent promise for harm reduction in smokers,^{13–17} they do pose health risks. Research has documented that e-liquids contain detectable levels of carcinogens (eg, formaldehyde and certain tobacco-specific nitrosamines) and toxins (eg, diethylene glycol)^{18,19}; moreover, there are pulmonary health risks.²⁰ Smoking shisha or tobacco from a hookah produces carbon monoxide, nicotine, tar, and heavy metals at levels similar to or higher than those produced by cigarettes.³ Finally, smoking marijuana has

negative health implications, including impaired lung functioning²¹ and immunologic competence of respiratory systems.²² There is also a synergistic effect of tobacco and marijuana smoking in developing chronic obstructive pulmonary disease.²³ This is of concern because tobacco and marijuana co-use is an increasing concern in young adults.^{24,25}

Another prominent concern is that there is limited research regarding the risks associated with exposure to byproducts of ATPs and marijuana. However, it is important to note that combusted tobacco resulting from LCC use contains carcinogens.¹² Additionally, secondhand e-cigarette aerosol can contain nicotine, ultrafine particles, and carcinogenic toxins.²⁶ Research has also documented the uptake of nicotine, the tobacco-specific lung carcinogen nicotine-derived nitrosamine ketone, and the ciliotoxic and cardiotoxic agent acrolein in children living in homes of hookah smokers.²⁷ Another study found that air quality measurements of hookah lounges range from unhealthy to hazardous, according to US Environmental Protection Agency standards, indicating a potential health risk for patrons and employees.²⁸ Related to marijuana, 1 study found more chemicals in marijuana secondhand smoke (SHS) than in tobacco smoke, including nitric oxide, nitrogen oxide, aromatic amines, and hydrogen cyanide.²⁹ Given this previous research, secondhand exposure to the byproducts of ATPs and marijuana should be avoided.

One important way to reduce exposure to the byproducts of ATPs and marijuana is to establish rules preventing the use of these products in the home. Research related to cigarette smoking indicates that smoke-free home policies have a number of benefits. First, such policies reduce SHS exposure among children and nonsmoking adults.^{30–33}

Second, having smoke-free policies is associated with increased quit attempts and reduced cigarette consumption and chances of relapse among smokers.^{31–33} Third, having rules against use may also alter social norms regarding use and decrease the risk of use initiation by others in the home, particularly by youth.³⁴ These benefits of smoke-free homes may hold in relation to ATP use.

Unfortunately, certain subgroups, such as low-income households,^{35–37} African Americans,³⁵ and those without children or with more family members or friends who smoke,^{34,36–39} are more likely to allow cigarette smoking in personal settings. Moreover, a lower perceived risk of SHS exposure has been associated with less likelihood of having a smoke-free home.⁴⁰ Whether these risk factors apply to allowing the use of ATPs or marijuana in the home is unknown. Particularly relevant is that misperceptions of the safety of the byproducts of ATPs and marijuana may lead young adults to allow the use of these products in their home environments during this transitory period in their lives.

Several gaps in the research need to be addressed. First, how inclined are young adults to allow the use of ATPs or marijuana in the home? Second, what factors place an individual at risk for allowing the use of such products in the home? To address these gaps, in the current study, we leveraged common behavioral theory constructs^{41–43} highlighting the importance of individual perceptions (eg, perceived risk and perceived social acceptability) of behavior and sociocontextual influences on behavior. Specifically, we examined the following: (1) the self-reported likelihood of allowing ATP (ie, LCCs, e-cigarettes, and hookah) and marijuana use in the home and (2) the individual-level (ie, product use, perceptions of risk, and social acceptability) and sociocontextual-level correlates (eg, household

member and friend product use) of these outcomes.

METHODS

Participants and Procedures

The parent study, entitled Project Documenting Experiences with Cigarettes and Other Tobacco in Young Adults (DECOY), was approved by the Emory University and the ICF International Inc institutional review boards as well as those of the participating colleges. Project DECOY is a sequential mixed-methods⁴⁴ longitudinal panel study of 3418 college students ages 18 to 25 years from 7 colleges in Georgia. The colleges include 2 public universities and colleges, 2 private universities, and 2 community and technical colleges located in rural and urban settings as well as a historically black university in a rural area. More detailed information on sampling and recruitment is provided elsewhere⁴⁵ and is briefly summarized here.

Contact information (eg, e-mail addresses) was obtained from the registrar's office of each college and university for students who met eligibility criteria (ie, ages 18–25 years and able to speak English), and the study was promoted on campus via flyers and campus Web sites. Three thousand randomly selected 18- to 25-year-olds were selected from 1 private and 2 public universities. The remainder of the schools had 18- to 25-year-old student populations of <3000; thus, the entire student population of that age range at those schools was included in recruitment. Response rates ranged from 15.4% to 27.6% at the technical colleges; 12.0% and 19.2% at the public colleges and universities; 18.8% and 59.4% at the private universities; and 23.1% at the historically black university. Our overall response rate of 22.9% ($n = 3574$ of 15 607), albeit low, was over a short time frame (24 hours at the private schools to 7 days at

the technical colleges) and met our sampling quota targets.⁴⁵ Our intent was to enroll participants who were engaged in e-mail and were potentially more likely to be retained in the subsequent waves of the larger, multiwave, longitudinal project.

Data collection began in fall 2014 and consisted of self-report assessments via an online survey every 4 months for 2 years (during fall, spring, and summer). Current analyses drew from the baseline assessment and Wave 3 data collected in summer 2015. Retention at Wave 3 was 83.2% ($n = 2865$ of 3418). The sample obtained at Wave 3 was not significantly different from our baseline sample in regard to any sociodemographic characteristic; however, we retained a greater proportion of private school students (38.7% vs 42.7% at Wave 3) and a smaller proportion of technical college students (21.9% vs 18.0%; $P < .05$).

Measures

Sociodemographic characteristics assessed at baseline were used in the current study. The remainder of the measures included are drawn from the Wave 3 data collection because these measures were not included at baseline.

Likelihood of Allowing Use in the Home

Because college students may not have the authority to regulate ATP and marijuana use in their current residences (eg, living in university-affiliated housing or living with parents), we assessed our primary outcome by asking, “How likely would you be to allow people to use the following products in your home (regular cigarettes, electronic cigarettes, large cigars, little cigars or cigarillos, hookah, and marijuana)?” Response options for each product ranged from 1 (not at all likely) to 7 (extremely likely).⁸

Sociodemographics

We assessed age, sex, race, ethnicity, and type of residence (eg, dorm,

living with parents, and fraternity or sorority). This latter variable was dichotomized as university-affiliated housing versus other. We also included the type of school attended.

Tobacco and Marijuana Use

Participants were asked, “How many days of the past 30 days did you use cigarettes, little cigars or cigarillos (such as Swisher Sweets or Black & Milds), e-cigarettes (such as Blu or NJOY), hookah, marijuana?” with response options ranging from 0 to 30 for each product. Pictures were presented alongside each product to aid in participant understanding. All use variables were dichotomized as any versus no use in the past 30 days.

Social Factors

We asked if a current household member currently used each tobacco product⁸ and the number of the 5 closest friends using each tobacco product.⁸

Perceptions of Tobacco Products and Marijuana

We also asked about perceptions of each tobacco product (regular cigarettes, LCCs, e-cigarettes, and hookah) and marijuana on a Likert scale of 1 (not at all) to 7 (extremely). Specific questions included the following: “How harmful to your health do you think the use of each of the following products is? How harmful to your health do you think breathing in the byproducts (for example, smoke or vapor) of the following products are? How addictive do you think the following products are? How socially acceptable among your peers do you think the use of each of the following products is? How likely are you to try or continue to use each of the following in the next year?”⁸

Data Analysis

Descriptive statistics of sociodemographics, tobacco and marijuana use, and perceptions of tobacco products and marijuana

were calculated. We then conducted bivariate analyses examining correlates of interest in relation to the likelihood of allowing the use of the various tobacco products and marijuana in the home. We also examined potential collinearity among predictor variables of interest. Multivariable regression models were then specified to assess the self-reported likelihood of allowing the use of each tobacco product and marijuana. Each model included sociodemographics, personal use of each product, household member use of cigarettes and each of the other products (to account for the likelihood of cigarette SHS exposure in the home), friend use of the other products, and perceptions about the products. These variables were chosen to build conceptually sound models based on the fact that perceptions of risk and sociocontextual factors related to a specific behavior influence specific behaviors and attitudes, in this case, those related to the likelihood of allowing the use of a specific tobacco product or marijuana in the home, per classic health behavior theories.^{41–43} Analyses were conducted in Statistical Package for the Social Sciences 23.0 (IBM SPSS Statistics, IBM Corporation, Armonk, NY), and α was set at .05.

RESULTS

Participant Characteristics

The prevalence of use of each product was as follows: 11.7% for cigarettes, 11.1% for LCCs, 5.5% for e-cigarettes, 12.4% for hookah, and 12.5% for marijuana (Table 1). On average, participants indicated that they would most likely allow e-cigarette use in their homes, followed by hookah, marijuana, LCCs, and lastly, cigarettes (Fig 1). However, the mean for allowing the use of each product in the home was low

TABLE 1 Project DECOY Participant Characteristics at Wave 3, $N = 2865$

Variable	M (SD) or N (%)
Age, y, M (SD)	20.53 (1.93)
Sex, n (%)	
Female	1846 (64.4)
Male	1019 (35.6)
Hispanic ethnicity, n (%)	218 (7.6)
Race, n (%)	
African American	645 (22.5)
White	1823 (63.6)
Asian American	192 (6.7)
Other	205 (7.2)
School type, n (%)	
Private	1224 (42.7)
Public	804 (28.1)
Technical	516 (18.0)
Historically black	321 (11.2)
Primary residence, n (%)	
University affiliated	1072 (37.4)
Other	1767 (61.7)
Past 30-d use, n (%)	
Cigarettes	334 (11.7)
LCCs	318 (11.1)
E-cigarettes	158 (5.5)
Hookah	354 (12.4)
Marijuana	357 (12.5)
Household member use, n (%)	
Cigarettes	445 (15.5)
LCCs	167 (5.8)
E-cigarettes	147 (5.1)
Hookah	88 (3.1)
Marijuana	381 (13.3)
Friend use, M (SD)	
Cigarettes	0.61 (1.03)
LCCs	0.47 (1.00)
E-cigarettes	0.32 (0.76)
Hookah	0.60 (1.22)
Marijuana	1.13 (1.54)

(ranging from 1.29 for cigarettes to 1.90 for e-cigarettes). Cigarettes were perceived as the most harmful and addictive; hookah was perceived as the most socially acceptable. Finally, participants reported the greatest likelihood of using marijuana in the next year, followed by hookah, e-cigarettes, cigarettes, and LCCs.

Preliminary Analyses

Using 1 product was correlated with using any other product (correlations ranged from 0.15 between e-cigarettes and marijuana and 0.31 between LCCs and hookah). Current use and likelihood of use in the next year were highly correlated

within each product, ranging from 0.38 for LCC users to 0.68 for marijuana users. Thus, the likelihood of future use was not included in the regression analyses. Correlations among our outcome variables ranged from 0.37 between the likelihood of allowing e-cigarette use and allowing marijuana use in the home to 0.72 between the likelihood of allowing cigarette use and allowing LCC use in the home.

We also examined correlations among our key predictors to detect collinearity. The range of correlations were as follows: household member use and perceived social acceptability (0.11 for LCCs to 0.27 for marijuana; $P < .001$), friend use and perceived social acceptability (0.27 for LCCs to 0.51 for marijuana; $P < .001$), household member and friend use (0.23 for hookah to 0.43 for marijuana; $P < .001$), perceived addictiveness and harm to health (0.44 in e-cigarettes to 0.50 in cigarettes; $P < .001$), perceived harm to health and social acceptability (−0.27 for marijuana to 0.11 for cigarettes; $P < .001$), perceived addictiveness and social acceptability (−0.07 for marijuana to 0.11 for cigarettes; $P < .001$), perceived addictiveness and harm of byproducts (0.29 for e-cigarettes to 0.43 for marijuana; $P < .001$), perceived social acceptability and harm of byproducts (−0.24 for marijuana to 0.07 for cigarettes; $P < .001$), and perceived harm to health and harm of byproducts (highest for marijuana at 0.75 but ranging from 0.61 for cigarettes to 0.66 for hookah). Despite this latter high correlation, we decided to retain these variables as distinct predictors in the regression models to examine the predictive validity of each while controlling for the other variables in the model.

Multivariable Regression Results

Results of the multivariable regression analyses are presented in Table 2. Correlates of a greater self-reported

FIGURE 1

Perceptions of tobacco products and marijuana and the likelihood of use in the next year and allowing use in the home. These were measured on a scale of 1 (not at all) to 7 (extremely). A, Perceived harm to health. B, Perceived harm of inhaling byproducts. C, Perceived addictiveness. D, Perceived social acceptability. E, Likelihood of use in the next year. F, Likelihood of allowing use in the home.

likelihood of allowing cigarette use in the home included the following: being Asian American ($P < .001$), current cigarette use ($P < .001$), household member and friend use of cigarettes ($P < .005$), lower perceived harm to health ($P = .011$), and greater perceived social acceptability of cigarette use ($P < .001$). Correlates of a greater likelihood of allowing LCC use in the home included the following: being Asian American ($P < .001$), current LCC use ($P < .001$), household

member and friend use of LCCs ($P < .001$), less perceived harm of LCC byproducts ($P = .028$), and greater perceived social acceptability of LCCs ($P < .001$). Correlates of a greater likelihood of allowing e-cigarette use in the home included the following: being Asian American ($P = .006$), current use of any tobacco or nicotine product and marijuana ($P < .05$), living with a cigarette smoker ($P = .024$) or e-cigarette user ($P < .001$), having more friends who use e-cigarettes

($P < .001$), perceiving less harm to health ($P < .001$) and harm of the byproducts of e-cigarettes ($P < .001$), and greater perceived addictiveness ($P < .001$) and social acceptability ($P < .001$) of e-cigarettes. Correlates of a greater likelihood of allowing hookah use in the home included the following: being Asian American ($P = .026$); current cigarette ($P = .008$), LCC ($P < .001$), hookah ($P < .001$), and marijuana ($P < .001$) use; household member and friend use

TABLE 2 Multivariable Regression Predicting the Likelihood of Allowing the Use of Tobacco Products and Marijuana in the Home

Variable	Traditional Cigarettes		LCCs		E-cigarettes		Hookah		Marijuana	
	β	CI	β	CI	β	CI	β	CI	β	CI
Age	.01	−0.01 to 0.03	.00	−0.02 to 0.03	.02	−0.01 to 0.05	.02	−0.01 to 0.05	.04	0.01 to 0.07
Female sex	−.01	−0.08 to 0.08	−.03	−0.12 to 0.06	−.04	−0.16 to 0.08	−.04	−0.16 to 0.09	−.08	−0.19 to 0.03
Hispanic ethnicity	.09	−0.07 to 0.24	.17	0.00 to 0.34	−.15	−0.38 to 0.07	.11	−0.12 to 0.34	.06	−0.15 to 0.27
Race										
White	Ref	—	Ref	—	Ref	—	Ref	—	Ref	—
African American	.03	−0.10 to 0.15	−.03	−0.17 to 0.10	.02	−0.16 to 0.20	.07	−0.11 to 0.25	−.06	−0.22 to 0.11
Asian American	.36	0.20 to 0.52	.39	0.19 to 0.60	.33	0.10 to 0.56	.27	0.03 to 0.50	.18	−0.03 to 0.40
Other	.08	−0.08 to 0.24	.07	−0.14 to 0.27	.07	−0.16 to 0.30	−.09	−0.33 to 0.15	−.10	−0.32 to 0.11
School type										
Private	Ref	—	Ref	—	Ref	—	Ref	—	Ref	—
Public	.06	−0.05 to 0.16	.04	−0.08 to 0.15	.06	−0.09 to 0.21	.04	−0.11 to 0.19	−.11	−0.24 to 0.03
Historically black	.10	−0.03 to 0.23	−.02	−0.16 to 0.12	.05	−0.14 to 0.23	.05	−0.13 to 0.23	−.06	−0.23 to 0.11
Technical college	.11	−0.05 to 0.28	.13	−0.05 to 0.31	.07	−0.18 to 0.31	.14	−0.10 to 0.39	−.02	−0.24 to 0.20
Primary residence										
Dormitory or residence hall	Ref	—	Ref	—	Ref	—	Ref	—	Ref	—
Other	−.06	−0.16 to 0.04	.07	−0.04 to 0.18	.02	−0.13 to 0.17	.06	−0.09 to 0.21	.12	−0.01 to 0.26
Past 30-d use										
Cigarettes	.36	0.22 to 0.50	.16	0.01 to 0.31	.64	0.44 to 0.83	.27	0.07 to 0.47	.13	−0.05 to 0.31
LCCs	.10	−0.03 to 0.24	.37	0.22 to 0.52	.25	0.05 to 0.45	.46	0.26 to 0.66	.30	0.11 to 0.48
E-cigarettes	.04	−0.13 to 0.22	.04	−0.16 to 0.23	1.38	1.10 to 1.65	.13	−0.13 to 0.40	−.03	−0.27 to 0.21
Hookah	.00	−0.13 to 0.12	.03	−0.11 to 0.16	.18	0.00 to 0.36	.85	0.65 to 1.04	.15	−0.02 to 0.31
Marijuana	.07	−0.05 to 0.19	.12	−0.01 to 0.25	.49	0.31 to 0.66	.67	0.49 to 0.86	1.56	1.37 to 1.74
Household member use, cigarettes	.30	0.19 to 0.41	.06	−0.06 to 0.18	.19	0.03 to 0.35	.08	−0.08 to 0.24	.04	−0.11 to 0.19
Household member use ^a	—	—	.55	0.36 to 0.73	.60	0.33 to 0.88	.81	0.48 to 1.14	.50	0.33 to 0.67
Friend use ^a	.07	0.02 to 0.11	.13	0.08 to 0.18	.26	0.18 to 0.34	.18	0.13 to 0.24	.25	0.21 to 0.30
Perceptions ^a										
Harm of use	−.05	−0.08 to −0.01	−.02	−0.06 to 0.01	−.08	−0.11 to −0.04	−.08	−0.11 to −0.04	−.06	−0.09 to −0.02
Harm of byproducts	−.01	−0.04 to 0.02	−.03	−0.06 to 0.00	−.14	−0.17 to −0.10	−.05	−0.09 to −0.01	−.03	−0.07 to 0.00
Addictiveness	.01	0.00 to 0.03	.02	−0.01 to 0.04	.06	0.03 to 0.09	.01	−0.02 to 0.04	.01	−0.02 to 0.03
Social acceptability	.06	0.04 to 0.08	.08	0.06 to 0.10	.17	0.14 to 0.19	.15	0.13 to 0.18	.07	0.05 to 0.10

CI, confidence interval; —, not applicable.

^a Indicates use of the respective product.

of hookah ($P < .001$); perceiving less harm to health ($P < .001$) and harm of hookah byproducts ($P = .006$); and greater perceived social acceptability of hookah ($P < .001$). Correlates of a greater likelihood of allowing marijuana use in the home included the following: being older ($P = .010$), current LCC ($P < .001$) and marijuana use ($P < .001$), household member and friend use of marijuana ($P < .001$), and greater perceived social acceptability of marijuana use ($P = .047$).

DISCUSSION

The current analyses identified both common and unique correlates of self-reported likelihood of allowing the use of a range of tobacco

products and marijuana. First, the high concurrent use of tobacco and marijuana^{24,25,46} may explain the high correlation between the likelihood of allowing the use of these tobacco products and marijuana in the home. The current findings are consistent with previous research indicating high concordance between allowing cigarette smoking and marijuana use in the homes of young adults.⁴⁷

Sociodemographics, personal use, sociocontextual factors, and perceptions of tobacco and marijuana were associated with the self-reported likelihood of allowing various tobacco products and marijuana use in the home. Regarding personal tobacco and

marijuana use behaviors, a greater self-reported likelihood of allowing cigarette use and LCC use in the home was only associated with cigarette or LCC use, respectively, demonstrating some specificity in relation to personal use, which theory would suggest.^{41,42} A greater likelihood of allowing e-cigarette use in the home was associated with current use of any tobacco product or marijuana, aligning with findings that e-cigarette use was most likely to be allowed in the home. A greater likelihood of allowing hookah use in the home was associated with the use of any tobacco product or marijuana except e-cigarettes, which may highlight that hookah use was the second-most likely to be used in the home

(after e-cigarettes). Finally, a greater likelihood of allowing marijuana use in the home was associated with LCC and marijuana use, potentially indicating the co-use of the 2 products (eg, blunts).^{11,25,48}

In relation to the perceived health risks, a greater likelihood of allowing the use of cigarettes in the home was associated only with lower perceived harm to the health of the user, whereas a greater likelihood of allowing LCCs was associated with lower perceived risks of LCC SHS exposure. A greater likelihood of allowing e-cigarette or hookah use was associated with lower perceived risk of both harm to the health of the user and harm of the respective byproducts. The higher perceived addictiveness of e-cigarettes was also correlated with a greater likelihood of allowing e-cigarette use in the home; perceptions of addictiveness of the various products did not contribute to any of the other regression models. Interestingly, those who were more likely to allow e-cigarette use in their homes were more also likely to be users of all tobacco products and marijuana. As such, they may use e-cigarettes as a harm-reduction strategy and assess the use of and exposure to e-cigarettes as less harmful than the use of and exposure to the other products. Finally, a greater likelihood of allowing marijuana use in the home was unrelated to either, which may indicate that allowing use in the home may be more influenced by sociocontextual factors than perceived risk. This might also be attributed to the illegal status of marijuana in Georgia, which was the setting for this study. Along these lines, a previous study found that more young adults reported complete cigarette smoke-free home policies than marijuana smoke-free home policies, whereas more prohibited the smoking of marijuana than cigarettes in vehicles.⁴⁷ Vehicles are more visible to the public;

therefore, the legal ramifications of getting caught smoking marijuana may be enough to deter an individual from smoking in that setting.

Sociocontextual factors also played an important role. Specifically, household member and friend use of the products, as well as a greater perceived social acceptability of the products, were associated with a greater likelihood of allowing use in the home; this also aligns with theory^{41,42} and previous research.^{34,36–39} Additionally, household member use of cigarettes was associated with a greater likelihood of allowing e-cigarette use in the home, which may be related to the potential use of e-cigarettes in efforts toward cessation or harm reduction.^{49,50}

Regarding sociodemographics, being Asian American was associated with a greater likelihood of allowing the use of any product in the home except marijuana. This may be a reflection of cultural differences such that certain Asian American populations are particularly sensitive to accommodating guests or others present in their homes.^{51–53} It is also interesting to note that being African American was associated with a greater likelihood of allowing hookah and marijuana use in the home in bivariate analyses, but these results did not hold in the regression models. In this sample, African Americans were more likely to be hookah and marijuana users,⁴⁵ so the regression results may have accounted for race via these variables. This finding is consistent with previous findings indicating that African Americans are less likely to report smoke-free home policies.^{54,55} Finally, being older was associated with a greater likelihood of allowing marijuana use in the home, which may be related to a greater exposure to marijuana use and information about the impact of marijuana use over time.

Understanding the correlates associated with the likelihood of allowing the use of various tobacco products and marijuana in the home has important implications for research and practice. The factors we identified in this study may be useful to target in future interventions in which researchers seek to promote the adoption of tobacco- and marijuana-free policies in personal settings. The implementation of such policies may impact social norms surrounding tobacco and marijuana use and may be an important component of antismoking socialization.^{32,39,56} Moreover, such policies will impact the health effects that exposure brings to nonusers and children. Additionally, smoke-free policies may impact the level of use of the various tobacco products and marijuana, as they have done for cigarette use.^{31,32,54}

This study has some limitations. First, the study sample is drawn from colleges and universities in Georgia, is subject to selection bias, and may not generalize to all young adults. However, our sample is diverse in terms of race and ethnicity, geographic location (urban versus rural), and socioeconomic backgrounds. Second, our outcome measure did not assess actual policies regarding the allowance of the use of tobacco and marijuana but rather the self-reported likelihood of allowing use in the home in the future. As such, the cross-sectional design limits the extent to which we can determine if these reports are valid over time. These analyses are also limited by the self-report nature of the assessments. Additionally, whether a participant was aware of the substance use of others (eg, parents or friends) is a limitation of the data. Finally, not all potential variables of interest could be included in the regression models, particularly given the associations

among the range of potential predictor variables. As such, our decisions regarding what factors to include in the multivariable analyses were driven by theory and acknowledged that attitudes specific to an outcome were most critical to include in the regression analyses.

CONCLUSIONS

This sample of young adult college students reported being most likely to allow e-cigarette use in their homes, followed by hookah, marijuana, LCCs, and lastly, cigarettes. This indicates that ATP and marijuana may be undermining previous efforts to establish homes that are free from the environmental

toxins that result from the use of these products, which poses a significant public health issue. Personal use of these products, sociocontextual factors, and perceived harm to health and harm of byproducts were highly correlated with the likelihood of allowing use of the various products in the home. Moreover, the likelihood of allowing the use of various products in their homes reflect polysubstance use patterns displayed in the literature (ie, concurrent use of LCCs and marijuana). These findings suggest important intervention targets and future research questions that must be addressed to protect young adults who are making decisions about their home environments.

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ABBREVIATIONS

ATP: alternative tobacco product
 DECOY: Documenting Experiences with Cigarettes and Other Tobacco in Young Adults
 LCC: little cigar and cigarillo
 SHS: secondhand smoke

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