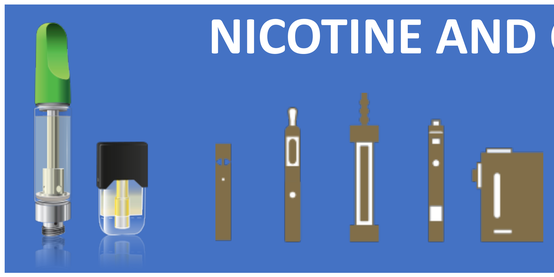
NICOTINE AND CANNABIS VAPING AMONG COLLEGE STUDENTS: FACTORS ASSOCIATED WITH INITIATION, PATTERNS OF USE, AND DEPENDENCY



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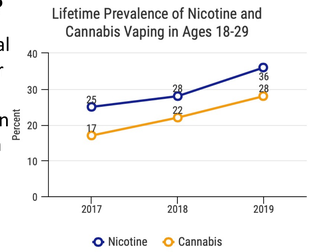
BACKGROUND

WHAT IS VAPING?

- Process of heating liquid, oil/concentrate or plant material at a certain temperature
- High temperatures release aerosol vapors and psychoactive substances (e-cigarettes - nicotine, and cannabis vapes – THC)
- Consumed by inhaling the mixture via a battery-operated electronic device

WHY IS VAPING A PROBLEM?

- 'Vaping culture' encourages dual use of nicotine and cannabis, or experimental use of new substances through vaporization
- Nicotine vaping associated with greater risk of COVID-19
- Vaping associated with E-cigarette or Vaping Associated Lung Injury (EVALI)



- ~ 3000 hospitalized cases and 60 deaths attributed to Vitamin E acetate in cannabis vaping products

WHY IS DUAL USE OF NICOTINE AND CANNABIS VAPING PRODUCTS COMMON?

Gateway Theory	Route of Administration Model
Accounts for initiation sequence for substances. Infers experimentation with substance (e.g., nicotine) increases risk of subsequent use of another substance (e.g., cannabis).	Explains the reverse sequences from cannabis to tobacco, so the shared route by which substances are administered (e.g., inhalation) may account for later initiation to other types of substance use

WHAT IS STILL UNKNOWN ABOUT NICOTINE AND CANNABIS VAPING?

- How dual users (nicotine and cannabis) are demographically and psychologically different than mono users (nicotine vs. cannabis) and nonusers
- Which intrapersonal variables are associated with initiation, and use of these substances and e-cigarette dependency

HYPOTHESES

H1: E-cigarette use and/or cannabis vaping would be more likely to be male, White, and/or of higher socioeconomic status

H2: Any nicotine or cannabis vaping would have higher impulsivity scores compared to nonusers

H3: Single or dual users would report higher family history density addiction scores

H4: Any nicotine or cannabis vaping would have more symptoms of depression and/or anxiety compared to nonusers

METHOD

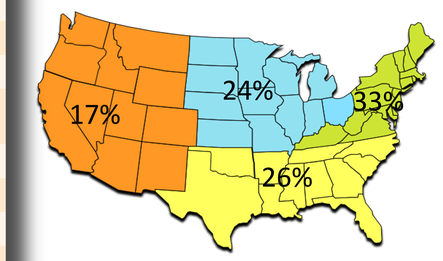
Participants & Procedure

• 2160 participants from 7 different campuses across the United States (see map, right) completed the College Health and Substance Use Experience (CHASE) online survey

• Participants were undergraduates ages of 18-24; 50% first-years; 24% sophomores; 15% juniors; 11% seniors

• Participants were granted course or extra credit

Age	19.25 years
Male	27%
Race/ethnicity	
White	75%
Black / African American	9%
Asian	7%
Mixed Race	5%
Other	5%
Socioeconomic Status (1 to 9 scale)	4.97



Survey Measures

Demographics (Age, Race/Ethnicity, Gender, SES)

History of combustible cigarette and ENDS use (Morean et al., 2017)

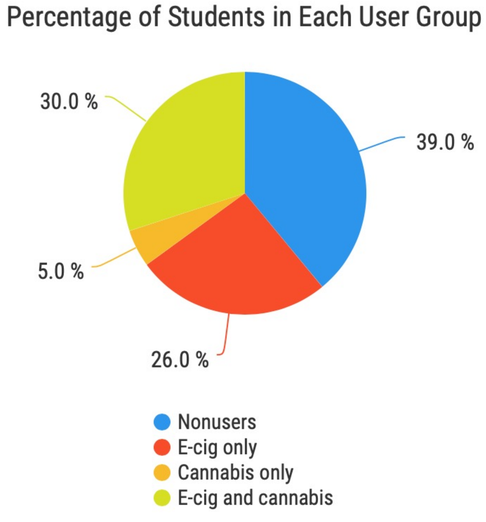
E-cigarette dependence (α=.93) (Hefner et al., 2019; Morean et al., 2018)

Any lifetime history of cannabis vaping (Blundell et al., 2018)

Impulsivity (BIS-11) (α=.84) (Patton et al., 1995)

Family history of addiction (Stoltenberg et al., 1998)

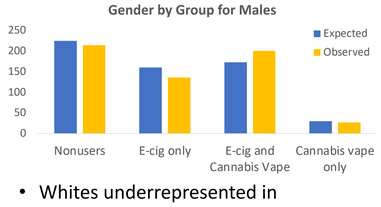
Depression & Anxiety (DASS-21) (Depression α=.91); (Anxiety α=.81) (Lovibond & Lovibond, 1995)



RESULTS

HYPOTHESIS 1

- Found partial support: Males were overrepresented in *e-cig and cannabis vape* group

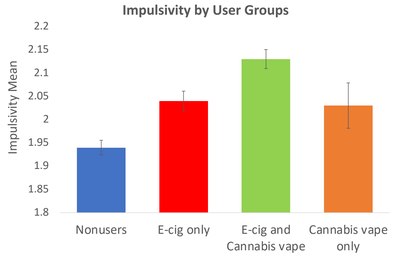


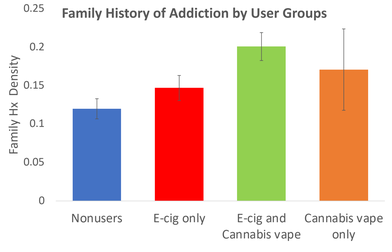
- Whites underrepresented in *nonusers* and *cannabis vape only*
- No SES differences by group

H1: $\chi^2 = 9.263$, $df = 3$, $p = .026$; $\chi^2 = 82.911$, $df = 12$, $p = .000$; $F(3, 2016) = 2.33$, $p = .073$

HYPOTHESIS 2

- Found support: *Nonusers'* impulsivity mean scores significantly lower than all other user groups
- *E-cig and cannabis vape* reported higher scores than *e-cig only*
- *Cannabis vape* only distinct from *nonusers*

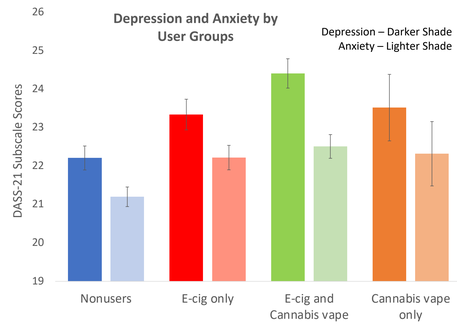




HYPOTHESIS 3

- Found partial support: *E-cig and cannabis vape* users had higher family history density compared to other groups

H2: $F(3, 1075) = 18.20$, $p = .000$
H3: $F(3, 1035) = 4.65$, $p = .003$



HYPOTHESIS 4

Found mixed support: *E-cig and cannabis vape* group reported higher mean depression and anxiety scores from all other user groups

Depression: $F(3, 2155) = 6.84$, $p = .000$
Anxiety: $F(3, 2156) = 4.20$, $p = .006$

EXPLORATORY ANALYSIS

Differences between single and dual users on e-cig use frequency and dependence

- *E-cig and cannabis vape* group reported higher frequency of e-cig use (M=2.68) compared to *e-cig only* group (M=1.22)
- *E-cig and cannabis vape* group reported higher mean dependence score (M=1.65) compared to *e-cig only* group (M=1.35)

CONCLUSIONS

- Consistent with prior research, males were overrepresented in *e-cig and cannabis vape* group. Findings suggest that males tend to engage in risky behavior and are more willing to experiment with novel trends. Whites less likely to identify as nonusers, suggests there may be racial differences in the substances that college students vape.
- *Nonusers* had lower impulsivity compared to other groups, consistent with prior literature. Findings suggest impulsive individuals have increased likelihood of earlier initiation, greater frequency, and dual substance vaping. Through RAM, vaping different substances are perceived at the same cost.
- *E-cig and cannabis vape* users had higher family history density compared to other groups. This suggests that genetic vulnerability in combination with the environment increases the likelihood for dual cannabis and nicotine use.
- *E-cig and cannabis vape* group found to have highest mean depression and anxiety scores. Substances may dysregulate neural circuits that may lead to depressive symptoms, and vaping may relieve negative affect symptoms.

Limitations

- Overall sample relatively homogenous with respect to race and gender
- Participants self-reporting cannot ensure accurate responses
- Impulsivity and Family Hx measures only received by half the sample
- No measure for age of cannabis vaping initiation or cannabis vaping frequency

Implications

- Must replicate findings to confidently describe a user profile "at risk"
- Interventions for college students should address higher impulsivity, family history, depression, and anxiety, especially in dual users
- College campuses may identify users at risk through screening interventions