

Associations between use patterns for inhaled nicotine and cannabis products among adults who vape both substances

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Introduction

Co-occurring use (co-use) of nicotine and cannabis is common, and represents a broad range of use behaviors, including *concurrent use*, *sequential use*, and *co-administration*. Co-use has primarily been examined through the lens of smoked tobacco and cannabis. Little is known about characteristics of those who co-use vaped nicotine and cannabis, and the degree to which specific co-use behaviors are associated, based on mode of use and/or substance.

Methods

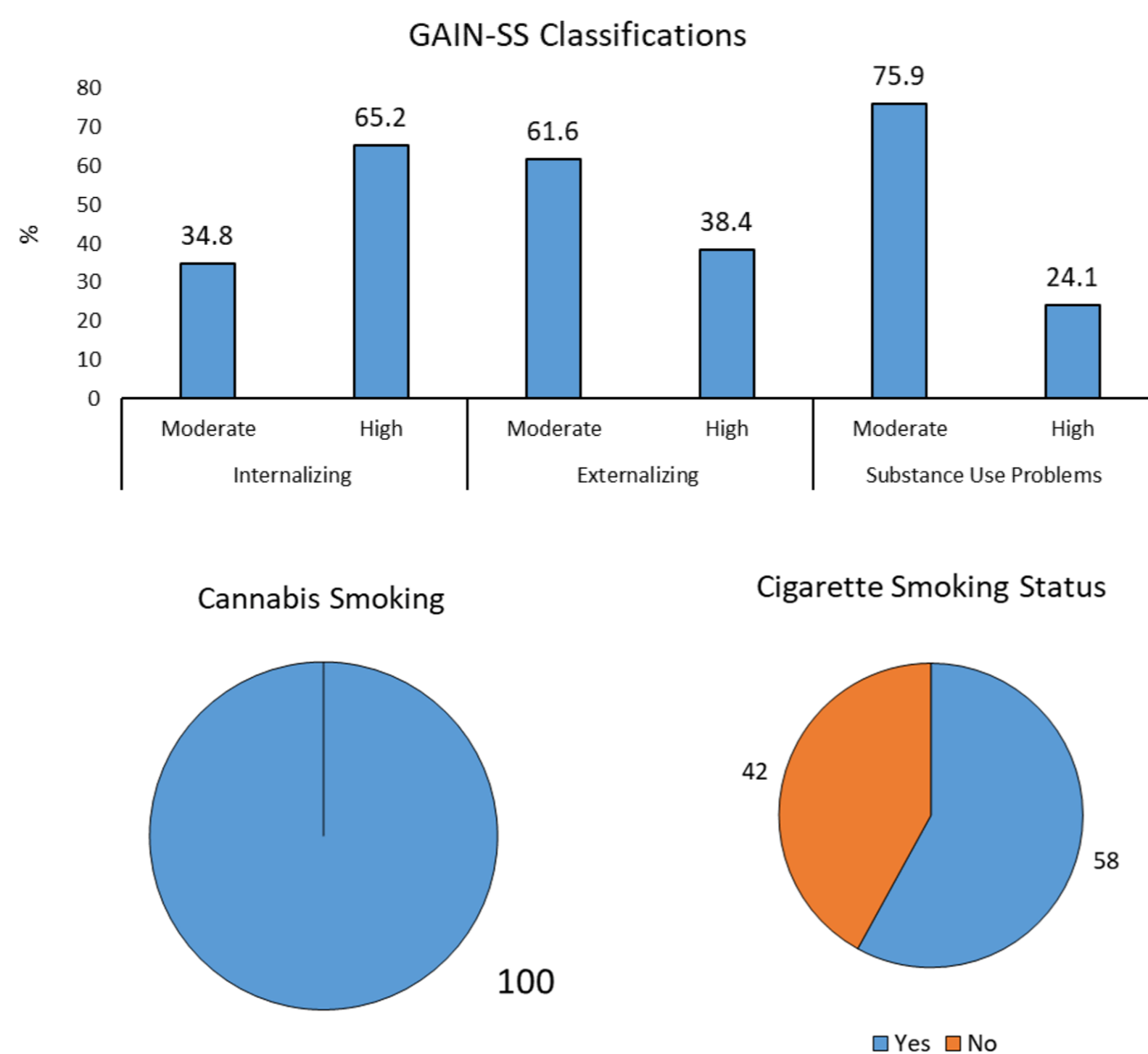
One hundred twelve concurrent users of vaped nicotine and cannabis were recruited from Amazon Mechanical Turk and responded to a survey on inhaled nicotine and cannabis use behaviors.

- Eligible participants were aged 18 or older, residents of the country of Canada or a U.S. state with medical or recreationally-legal cannabis, reported past 30-day use of vaped nicotine *and* vaped cannabis, and usually used their vaping products at least monthly.
- All participants responded to questions about nicotine and cannabis vaping behaviors, while participants who reported smoking cannabis or tobacco cigarettes answered additional questions about use of those products.
- The survey took 25-30 minutes to complete, and participants were paid a total of \$5.00 for their time.

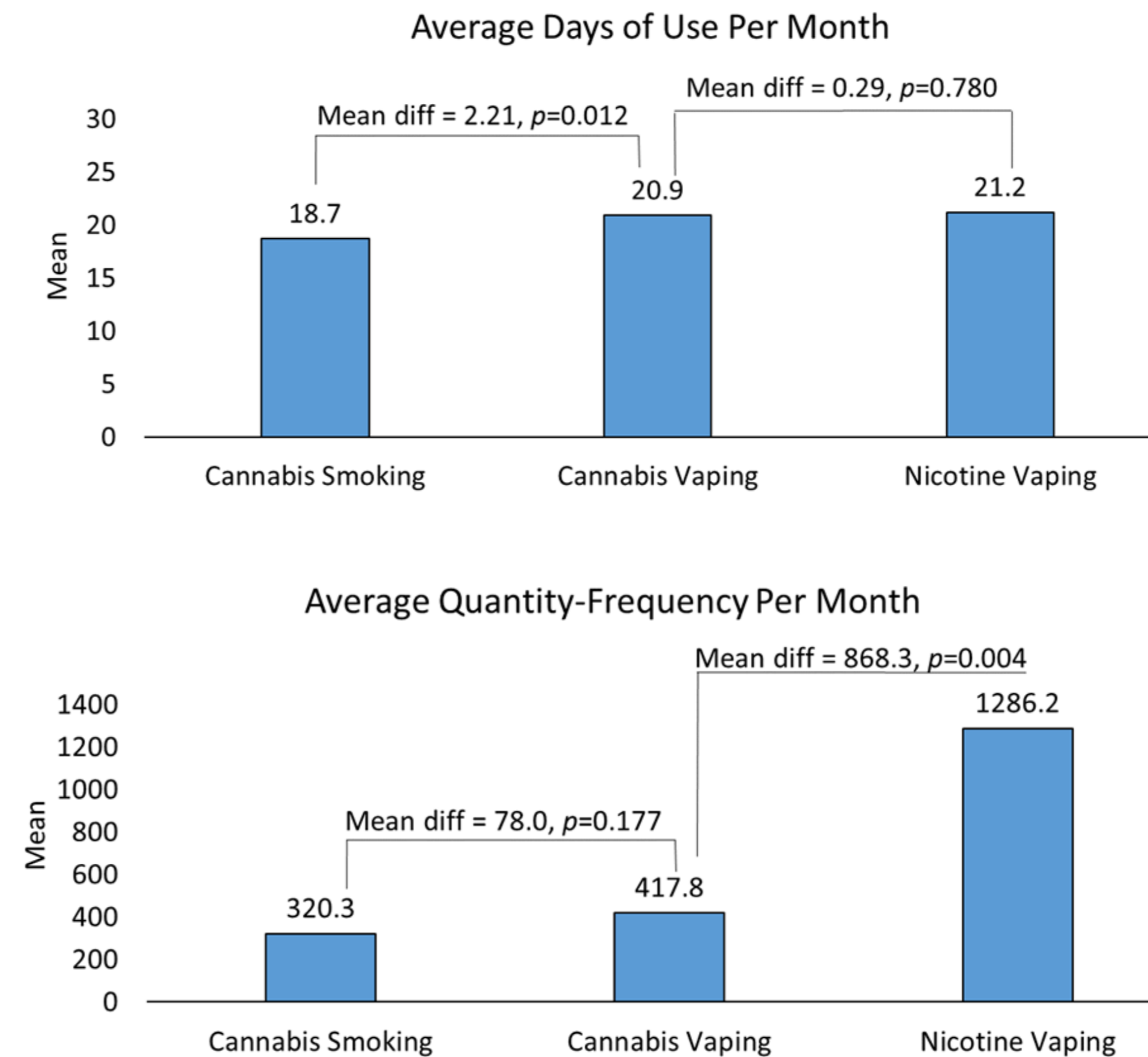
Survey Measures & Data Analysis

- Time Line Follow-Back measures were used to examine inhaled nicotine and cannabis product use frequency. Specific measures were included assessing sequential use and co-administration practices.
- Sociodemographic characteristics as well as internalizing, externalizing, and substance use problem behaviors using the GAIN-SS were measured.
- Univariate and bivariate statistics were used to examine sample characteristics and associations between inhaled products.
- Binary logistic regression was used to examine the association between days of inhaled product use and odds of sequential use and co-administration practices.

Results



Results



Adjusted odds of engaging in sequential use practices (n=112)

	No vs. any chasing	Chasing cannabis smoking with cigarette smoking	Chasing cannabis vaping with nicotine vaping	Chasing cannabis smoking with nicotine vaping	Chasing cannabis vaping with cigarette smoking
Cigarette smoking days/month	0.99	1.13***	0.96	1.00	1.10***
Cannabis vaping days/month	1.04	1.04	1.03	0.97	1.06
Cannabis smoking days/month	0.92	0.99	0.95	0.99	0.95
Nicotine vaping days/month	0.96	0.99	1.08**	1.11***	1.02

Adjusted for age, sex, and GAIN-SS subscales. Confidence intervals suppressed for clarity. Bold & red values are statistically significant at p<0.05.

Adjusted odds of engaging in co-administration behaviors (n=112)

	No vs. any co-admin	Mix nicotine & cannabis oil in an e-cigarette	Mix tobacco & cannabis in dry herb vaporizer	Mix tobacco and cannabis in a joint, bong, bowl, or blunt	Smoke cigarettes dipped in hash oil
Cigarette smoking days/month	0.99	1.05*	1.04	0.97	1.01
Cannabis vaping days/month	0.95	1.01	1.05	0.98	0.99
Cannabis smoking days/month	1.05	1.04	1.06	1.08**	1.07*
Nicotine vaping days/month	1.02	0.98	1.00	1.03	1.03

Adjusted for age, sex, and GAIN-SS subscales. Confidence intervals suppressed for clarity. Bold & red values are statistically significant at p<0.05.

Conclusion

- Those who regularly vape nicotine and cannabis tend to exhibit moderate-to-high mental health and substance use problems, and regularly engage in some form of smoking
- Different co-use practices showed different associations with patterns of use and modes of drug delivery

Concurrent = monthly patterns of use more closely related by substance
Sequential = more frequent sequential use = more frequent overall nicotine use per month
Co-administration = mostly associated with level of smoking

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Disclosures

Maciej L. Goniewicz has served on an advisory board to Johnson & Johnson, and has received funding from Pfizer, a manufacturer of smoking cessation medications. The other authors have no conflicts to declare.