Comprehensive Evaluation of Cannabis Use Assessment among College Students

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INTRODUCTION

- As the landscape of cannabis legalization and product availability continues to shift, traditional measures of "frequency of use" may fail to capture the nuance required to predict cannabis-associated harms
- Modern consumption patterns involve a diverse array of administration modes—including flower, concentrates, dabs, and edibles—each with varying potencies and typical ages of onset
- We sought to examine how cannabis use patterns across 4 different forms relates to negative cannabis-related consequences (MACQ) and cannabis use disorder symptoms (CUDIT-R)

METHOD

PARTICIPANTS

- College students recruited from one of the participating sites of the Addictions Research Team across three waves of data collection (n=11,620)
- Our analytic sample was restricted to past month cannabis users (n=3,205)
- The sample was mostly female (72%) and non-Hispanic white (72%): Native American (3%), Asian (9%), Black (16%). M_{AGE} = 20.76

MEASURES

- A comprehensive battery of cannabis use items was developed by the Measurement Group of the Addictions Research Team to further extend the cannabis use patterns captured by the Daily Sessions, Frequency, Age of Onset, and Quantity of Cannabis Use Inventory (DFAQ-CU, Cuttler & Spradlin, 2017)
- Negative cannabis-related consequences were measured using the brief form of Marijuana Consequences Questionnaire (MACQ; Simons et al., 2012)
- Cannabis use disorder symptoms were assessed using the Cannabis Use Disorder Identification Test (CUDIT-R; Adamson et al., 2010)

RESULTS

- First, we provide detailed information regarding the forms of cannabis used, frequency, quantity, intoxication, and potency for each product type (flower, concentrates, dabs, edibles; see Table 1)
- Second, we examine how each of these domains of cannabis use relate to cannabis-related outcomes (i.e., negative cannabis-related consequences [MACQ], cannabis use disorder symptoms [CUDIT-R]) at the bivariate level (see Table 1)
- Third, we used elastic net regression to identify the most salient predictors of cannabis-related outcomes
- Fourth, we conducted hierarchical regressions with a stepwise procedure to explore how much variance could be additionally explained using predictors beyond past 30-day use (see Table 2)

Table 1. Descriptive statistics and bivariate correlations with cannabis-related outcomes

							Pearson r's	
		N	Min	Max	Mean	SD	MACQ	CUDIT-R
	MACQ	3123	0	21	4.47	4.50	1	.693**
	CUDIT-R	3120	0	32	9.23	6.17	.693**	1
	Past 30-Day Use (in days)	**3205**	**1**	**30**	**10.35**	**10.46**	**.384****	**.609****
Flower	General Freq. (1 [Never] - 8 [1+ times a day] scale)	3172	1	8	3.95	2.33	.331**	.483**
Concentrates	General Freq.	3158	1	8	2.90	2.31	.255**	.350**
Dabs	General Freq.	3194	1	8	1.97	1.68	.163**	.245**
Edibles	General Freq.	3191	1	8	2.76	1.78	.038*	.093**
Flower	Typical Past Week Freq. (past week days used)	3167	0	7	1.55	2.32	.286**	.474**
Concentrates	Typical Past Week Freq.	3155	0	7	1.05	2.06	.244**	.370**
Dabs	Typical Past Week Freq.	3189	0	7	0.32	1.11	.081**	.160**
Edibles	Typical Past Week Freq.	3182	0	7	0.37	0.98	0.003	.064**
Flower	Past Month Freq. (past month days used)	3166	0	31	6.62	9.58	.313**	.499**
Concentrates	Past Month Freq.	3153	0	31	4.17	8.16	.257**	.388**
Dabs	Past Month Freq.	3190	0	31	1.30	4.42	.084**	.169**
Edibles	Past Month Freq.	3184	0	31	1.44	3.45	.001	.067**
Flower	Typical # of Sessions (for a typical use day)	3163	0	24	1.09	1.49	.277**	.378**
Concentrates	Typical # of Sessions	3155	0	26	0.95	1.93	.265**	.338**
Flower	Typical Hours Intoxicated (for a typical use day)	3162	0	24	2.46	2.86	.273**	.408**
Concentrates	Typical Hours Intoxicated	3152	0	24	1.71	2.92	.262**	.371**
Dabs	Typical Hours Intoxicated	3187	0	24	1.14	2.45	.166**	.244**
Edibles	Typical Hours Intoxicated	3181	0	24	2.41	3.02	.085**	.114**
Flower	Quantity (in grams for a typical use day)	2644	0	14	0.50	0.96	.162**	.252**
Flower	Quantity (in hits for a typical use day)	2540	0	38	3.80	4.83	.214**	.335**
Concentrates	Quantity (in hits)	2811	0	34	1.85	3.38	.172**	.237**
Dabs	Quantity (in hits)	2965	0	20	0.87	1.96	.108**	.138**
Edibles	Quantity (in mg THC for a typical use day)	2643	0	116	15.46	27.78	.124**	.163**
Flower	Typical Subjective Intox. (1[Not at all]–10 [Extremely] scale)	3145	0	10	4.43	2.73	.252**	.301**
Concentrates	Typical Subjective Intox.	3121	0	10	3.20	2.69	.220**	.236**
Dabs	Typical Subjective Intox.	3164	0	10	2.96	3.08	.217**	.267**
Edibles	Typical Subjective Intox.	3162	0	10	4.42	3.37	.089**	.075**
Flower	THC Potency (%)	1769	0	35	12.33	14.32	.344**	.466**
Concentrates	THC Potency (%)	2251	0	100	21.02	36.17	.270**	.357**
Dabs	THC Potency (%)	2429	0	100	9.70	26.97	.179**	.268**
Edibles	THC Potency (mg THC)	2049	0	100	13.58	27.72	.129**	.175**
	# of Forms used in last month Summed	3203	1	5	2.17	1.09	.280**	.341**
	Lifetime Use Duration (in years)	3165	0	50	3.82	4.01	.082**	.123**
	Marijuana Use Grid-Frequency (42 different possible time windows one typically uses)	3205	0	42	5.78	7.89	.333**	.491**
	Marijuana Use Grid-Quantity (42 different possible time windows coupled with approximate quantity)	2872	0	420	7.70	19.76	.130**	.232**

RESULTS

- Using elastic net regressions testing different sets of predictors based on the form used, it was evident that the most salient predictor in ALL models across the MACQ and CUDIT-R was **past 30-day use**
- Hierarchical regressions suggest that estimates of quantity, intoxication, and potency predict negligible variance in cannabis-related outcomes, perhaps due to the high levels of inaccuracy in these self-report measures

Table 2. Hierarchical Regression Results		Past month use only	All relevant predictors	Secondary Predictors
MACQ	N	R^2	R^2	
Flower	1392	.166	.214	MUG Freq, Num. of forms used, MUG Quant, days in past month specific form used
Concentrate	1914	.133	.181	
Dabs	2139	.155	.187	
Edibles	1782	.166	.199	
CUDIT-R	N	R^2	R^2	
Flower	1392	.384	.432	MUG Freq, Number of forms used, MUG Quant, General use frequency (1-8 scale)
Concentrate	1912	.352	.393	
Dabs	2137	.367	.404	
Edibles	1781	.371	.409	

DISCUSSION

- Past 30-day use frequency was the strongest predictor of negative consequences and cannabis use disorder symptoms in our sample with subsequent predictors explaining trivial increases in explained variance
- 30-day use frequency and potentially the MUG may be all one needs to assess general cannabis use patterns in this population
- Our broader indicators of cannabis use may be less predictive of outcomes due to the inaccuracy of self-report (e.g., estimating grams of cannabis; Prince et al., 2018)
- Future research should determine if more accurate, non-self-report methods assessing use could provide greater insight
- Although 30-day frequency was the strongest predictor when predicting negative consequences, different aspects of use may still be important to assess for identifying, explaining, and/or treating cannabis misuse

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