

An examination of compensatory puffing and variation in mood during naturalistic e-cigarette usage



Kyle Brown (PhD), Ian Perry-Griffiths (BSc Hons)
Birmingham City University, Birmingham, UK

Background

Smoking topography¹, refers to the manner in which individuals inhale e-cigarette vapour

Laboratory examinations of “vaping” topography evidences the occurrence of compensatory puffing², where users increase their rate and duration of inhalation to compensate for e-liquids with low levels of nicotine

Increased puff topography is potentially harmful due to decomposition of carbonyl compounds³



Aims

Pilot study (N = 20) observing compensatory puffing during naturalistic ad libitum vaping outside of the laboratory in experienced users

Establish whether nicotine strength and/or puff count are associated with self-reported dependence, withdrawal symptoms and craving

Method

Design: Quasi experimental design based on “normal” e-liquid usage of varying strengths (<8mg, 9–16mg and >17mg)

Inclusion criteria: Exclusive (3+ months) and experienced (12+ months) ex-smokers aged between 18-60.

Self-report: Dependence (Fagerstrom test for Nicotine Dependence⁴); Craving/Withdrawal (Mood and Physical Symptoms scale⁵)

Outcomes: Puff count (during ad libitum e-cigarette usage for 7 days). Recorded using a third generation Bluetooth enabled Joyetech device

Results

No differences in puff count, e-liquid usage and self-reported dependence, craving & withdrawal over 7 days (e.g. Figure 1)

Relationship between self-reported variables and overall puff count, $F [4, 17] = 3.73, p = .031$ (Table 1), but no individual effects

- High amount of shared variance
- Partial correlations reveal nicotine strength as strongest predictor

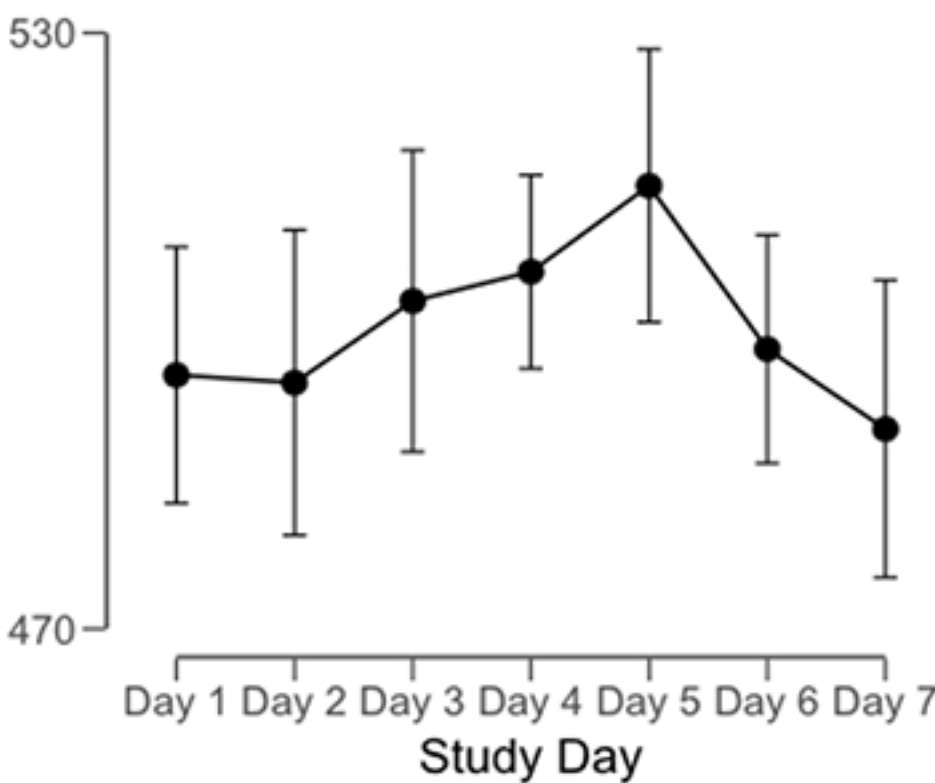


Figure 1: Average puff count (error bars represent 95% CI) for each of the study days

		B	SE(B)	β	r	p	$r_{adj.c}$
Step 1	MPSS (Mood)	14.13	7.40	0.43	1.91	.08	.47
	MPSS (Craving)	18.12	14.39	0.46	1.26	.23	.33
	Nicotine Dependence	-28.73	16.97	-0.36	-1.69	.11	-.43
	Daily e-liquid consumption (ml)	-10.16	30.24	-0.11	-0.34	.74	-.09
	R ²	.53					
	Adjusted R ²	.39					
Step 2	MPSS (Mood)	0.88	9.64	0.03	0.09	.93	.03
	MPSS (Craving)	14.72	13.21	0.37	1.11	.29	.31
	Nicotine Dependence	-6.48	19.30	-0.08	-0.34	.74	-.06
	Daily e-liquid consumption (ml)	-0.69	27.95	-0.01	-0.02	.98	<-.01
	Nicotine Strength	-66.66	34.67	-0.58	-1.92	.08	-.49
	R ²	.64					
	Adjusted R ²	.50					

Outcome variable = Average puff count.

Table 1: Regression coefficients, inferential statistics and partial correlations for the predictor variables.

Discussion

Tentative evidence for compensatory puffing (potentially via subjective craving & withdrawal)

Switch to lower nicotine strength (for cessation) may not reduce amount smoked over long term

Limitations

Randomisation or within naturalistic design preferable

Unfamiliar e-cigarette device for users

Lacks information on wattage

Lacks objective test of nicotine volume

References

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