Background

- Concentrated cannabis (hash, resins, wax, etc.) sales are increasing at unprecedented levels and are 3-5x more potent than cannabis flower with 60-90% tetrahydrocannabinol (THC). Concentrates are understudied and the increase in potency may alter cannabis’ reinforcing efficacy.
- The Marijuana Purchase Task (MPT) measures cannabis’ reinforcing properties from a behavioral economics perspective gauging hypothetical use at increasing prices.
- Our goal was to examine whether MPT demand indices differ in users of high potency concentrations with frequent flower users and non-concentrate users.

Research Question: Do concentrate users display greater demand for cannabis compared to frequent flower users and non-concentrate users as measured by the MPT demand indices?

Methods

- Parent studies: 4 ongoing studies focused on cannabis. Ages 21-70 (mean = 30.78; SD = 12.2).
  - Must have used marijuana at least once recreationally.
  - Cannot be using other drugs (cocaine, amphetamines, opiates).
  - Must not have a current or past psychotic or bipolar disorder.
- Experienced cannabis users (N=340, 55% male, mean concentrate use: 8.91 days/month, SD = 11.3) from Baseline data of parent studies.
- Frequent Concentrate users (FC, n=100): Concentrate use >4 days/week.
- Frequent Flower users (FF, n=182): Flower use >4 days/week, concentrate use 1-3 days/week.
- Non-concentrate users (NC, n=58): Flower use < 4 days/week, concentrate use <1 day/month.
- Timeline Follow Back (TLFB) survey asks about recreational drug use in past two weeks.
- MPT
  - How much cannabis someone consumes for 1 week at each increasing prices.
  - Five demand indices (created with R) for cannabis: $Q_d$ (consumption when free), $O_{max}$ (maximum expenditure), $P_{max}$ (price where consumption decreases), breakpoint (price where consumption ceases), $\alpha$ (rate of change in consumption).
  - Larger $Q_d$, $O_{max}$, $P_{max}$, breakpoint means greater demand.
  - Smaller $\alpha$ means greater demand.
- ANOVA (done with SPSS) compared MPT outcomes ($Q_d$, $O_{max}$, $P_{max}$, breakpoint, $\alpha$) by group (NC, FF < FC). T-tests (done with Excel compared significance among groups).

Results

<table>
<thead>
<tr>
<th>T1</th>
<th>Overall</th>
<th>FC</th>
<th>NC</th>
<th>p-Val</th>
<th>FF</th>
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<tr>
<td>N</td>
<td>340</td>
<td>100</td>
<td>58</td>
<td>182</td>
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</tbody>
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Table 1. Comparison of FC, NC, and FF users. p-Val meant to show difference between FC vs. NC & FC vs. FF

Discussion

- Intensity of demand ($Q_d$), maximum expenditure ($O_{max}$), and demand elasticity ($\alpha$) differed by cannabis user group (ps < 0.001), with higher $Q_d$, $O_{max}$, and lower $\alpha$ in FC users compared to NC (ps < 0.001) and FF users (at trend-levels). The number of overall cannabis use days modestly correlated to all demand indices (rs: 0.11-0.42, ps < 0.031).
- Frequent concentrate users indicated significantly greater demand for cannabis flower on the MPT compared to non-concentrate users and frequent flower users and at trend level (as indicated by higher $Q_d$, higher $O_{max}$, and lower $\alpha$) (Fig. 1.2.3).
- This indicates a relatively higher demand for cannabis among concentrate users and suggests the reinforcing properties of cannabis may vary as a function of frequent concentrate use and THC potency.
- Future analyses will determine if dependence symptoms interact with concentrate group on MPT indices.

References


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