What Would You Do If...?:
Analysis of Young Adult Dual User’s Anticipated Responses to Hypothetical E-cigarette Market Restrictions

Lauren R. Pacek, Ph.D.
Assistant Professor, Center for Addiction Science and Technology,
Department of Psychiatry and Behavioral Sciences,
Duke University School of Medicine
Funding and Disclosures

Financial Support:
K01 DA043413
K23 DA042898

The authors have no conflicts of interest to declare.
Background

- Dual and multiple tobacco product use is prevalent in U.S.

- 37.8% of adult tobacco product users use two or more products (Kasza et al., 2017)
  - Most common two-product combination was e-cigarettes and combusted cigarettes (23%)

From Kasza et al., 2017 in NEJM
Background

• Dual and multiple tobacco product use is prevalent in U.S.

• 37.8% of adult tobacco product users use two or more products (Kasza et al., 2017)
  • The most common two-product combination was e-cigarettes and combusted cigarettes (23%)

From Kasza et al., 2017 in NEJM
Background

• Under FSPTCA (2009) and 2016 deeming rule, FDA has regulatory authority over the manufacture, marketing, and distribution of tobacco products

• Many potential regulations are very likely to be broadly beneficial
  • Standards for batteries and child-resistant packaging

• Some potential regulations may have unintended consequences for certain segments of the population
Background

• Regulation of one tobacco product will likely have impact on use of other products
  • Hatsukami et al., 2017: Participants using VLNC cigarettes had greater uptake of non-combusted alternative nicotine/tobacco products vs. those using NNC

• Need to consider the potential impact that regulations on e-cigarettes may have on the use of other tobacco products, particularly combusted cigarette use
Aims of the study

1. Assess young adult dual e-cigarette/combusted cigarette users’ anticipated responses to hypothetical regulation on e-cigarettes

2. Assess responses to hypothetical regulations, stratified by e-cigarette use characteristics
Methods

• Amazon Mechanical Turk
• Survey description: “Tell us about your e-cigarette use”
• Screener survey
  • Combusted cigarette use
  • E-cigarette use

• Eligibility
  • 18-29 years old; U.S. residents; English speakers
  • Smoking combusted cigarettes \( \geq 3 \) months AND \( \geq \) one day in the past week
  • Using e-cigarettes \( \geq 3 \) months AND \( \geq \) one day in the past week
Methods

• Data collected June 20-22, 2017

• N=240

• Compensation: $2; ~30 minutes
Methods – E-cigarette use characteristics

• E-liquid flavor

• E-liquid nicotine content

• Device type
Methods – Hypothetical regulations

• Imagine that e-cigarettes available in the U.S. are like they are today BUT ...
Methods – Hypothetical regulations

• Imagine that e-cigarettes available in the U.S. are like they are today BUT ...

They are only available in nicotine-free (0 nicotine) e-liquid
Methods – Hypothetical regulations

• Imagine that e-cigarettes available in the U.S. are like they are today BUT ...

They are only available in nicotine-free (0 nicotine) e-liquid

They are only available in tobacco/menthol flavors
Methods – Hypothetical regulations

• Imagine that e-cigarettes available in the U.S. are like they are today BUT ... 

- They are only available in nicotine-free (0 nicotine) e-liquid
- They are only available in tobacco/menthol flavors
- They do not allow the user to modify or customize the device (e.g., wattage, air flow)
Methods – Analyses

• Descriptive statistics to describe sample characteristics

• McNemar’s tests to compare anticipated e-cigarette use versus anticipated combusted cigarette use

• Chi-square tests to assess differences between groups based on e-cigarette use characteristics
## Results – Sociodemographic characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male sex</td>
<td>49.2</td>
</tr>
<tr>
<td>Age – mean (SD)</td>
<td>24.3 (2.8)</td>
</tr>
<tr>
<td>White race</td>
<td>72.5</td>
</tr>
<tr>
<td>Non-Hispanic</td>
<td>90.0</td>
</tr>
<tr>
<td>&gt;High school/GED education</td>
<td>87.5</td>
</tr>
<tr>
<td>Not married</td>
<td>76.3</td>
</tr>
</tbody>
</table>
## Results – E-cigarette and cigarette use characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>E-cigarette Mean (SD)</th>
<th>Combusted cigarette Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Years used</td>
<td>1.7 (1.9)</td>
<td>5.8 (3.8)</td>
</tr>
<tr>
<td>Bouts per day/CPD</td>
<td>16.9 (29.5)</td>
<td>5.9 (5.4)</td>
</tr>
<tr>
<td>Daily use - %</td>
<td>38.3</td>
<td>46.7</td>
</tr>
<tr>
<td>Days used per week</td>
<td>4.8 (2.1)</td>
<td>5.3 (2.1)</td>
</tr>
<tr>
<td>E-liquid flavor - %</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flavored</td>
<td>58.4</td>
<td>--</td>
</tr>
<tr>
<td>Tobacco/menthol</td>
<td>41.6</td>
<td>--</td>
</tr>
<tr>
<td>Nicotine concentration - %</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low (≤6 mg/mL)</td>
<td>36.2</td>
<td>--</td>
</tr>
<tr>
<td>High (&gt;6 mg/mL)</td>
<td>63.8</td>
<td>--</td>
</tr>
<tr>
<td>Device type - %</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st/2nd Generation</td>
<td>65.9</td>
<td>--</td>
</tr>
<tr>
<td>3rd Generation</td>
<td>34.1</td>
<td>--</td>
</tr>
</tbody>
</table>
Imagine that e-cigarettes available in the U.S. have no nicotine.
Imagine that e-cigarettes available in the U.S. only come in tobacco/menthol flavors.
Imagine that e-cigarettes available in the U.S. cannot be modified/customized.
Moderation analyses – Can’t modify/customize devices, stratified by device type

Anticipated Combusted Cigarette Use

- Quit
- Reduce
- Maintain
- Increase

Percentage

1G/2G
3/G

*
Conclusions – Summary of findings

• Many regulations are likely to have definitive benefits to public health and safety

• Implications of other regulations may be less clear

• Restricting the availability of flavors and nicotine content in e-liquid, and customizable e-cigarette devices may lead to reductions in e-cigarette use and simultaneous increases in combusted cigarette use among young adult dual users

• Efforts to regulate the e-cigarette market need to be mindful of the impact that such regulations would have on the use of other tobacco products
Conclusions - Limitations

• Self-report

• Generalizability
  • Restricted age range
  • Amazon Mechanical Turk

• Hypothetical

• Nature of hypothetical regulations was negative in tone (i.e., would result in reductions in product diversity)

• Zero nicotine is not a feasible product standard
Conclusions – Strengths

• One of the first studies to explore anticipated responses to potential regulations of the e-cigarette market

• Conducted among an at-risk population
Acknowledgements

• Collaborators
  • Maggie Sweitzer
  • Jason Oliver
  • Joe McClernon

• Contact info:
  • lauren.pacek@duke.edu
  • @laurenrpacek