Determinants of Energy Beverage Consumption Practices in College Students

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Disclaimer: I have no potential, perceived, or real conflict of interest. No honorarium, grant, or other form of payment was received to conduct this study.
Objectives

Upon completion of this presentation, the learner will be able to...

• describe current trends related to energy beverage consumption.

• list attitudes, subjective norms, and perceived behavioral control factors influencing the intent to consume energy beverages in college students.
The $15 billion energy drink market

Background

- College students consume energy drinks to fight fatigue, enhance concentration, & to mix with alcohol (Attila et al; Seifert et al, 2011)
- # energy drink—related emergency dept. visits have doubled since 2007 (SAMHSA, 2013)
- Research on issues such as social influence on consumption practices, perceptions, and attitudes regarding consumption is limited.
Purpose

• Determinants of use are poorly understood, therefore, the purpose of this study was to better understand the chain of beliefs and attitudes that drive college student intent to consume energy beverages.
Research Question

What unexamined factors predict intention to consume energy drinks in college students?
Methods

- Mixed methods design; survey of Midwestern U.S. college students (n=283)
- 1 open-ended question
- Survey instrument (102 Likert items, Cronbach’s Alpha .94):
  - General demographics
  - Brief medical history
  - Energy beverage consumption practices
  - Planned Behavior items (i.e., attitude, subjective norms, perceived behavioral control)
  - Reasons for use

- IRB approved
- SPSS 22.0 used for descriptives, correlations, regression, factor analysis
- Level of significance: p<.05
- N-Vivo 10.0 for windows

Theory of Planned Behavior (TPB) figure used with permission. Source: [http://people.umass.edu/aizen/tpb.diag.html](http://people.umass.edu/aizen/tpb.diag.html)
# TPB: Sample Survey Items

## Attitude
- Consuming energy beverages is helpful to me.
- Drinking energy beverages is enjoyable.
- It is a good to drink energy beverages on a daily basis.

## Subjective Norms
- Other people like me drink energy beverages
- People whose opinion I respect want me to drink energy beverages
- People close to me drink energy beverages

## Perceived Behavioral Control
- I am able to drink energy beverages on a daily basis if I want to
- Drinking energy beverages on a daily basis is easy for me
- It is my decision whether or not I drink energy beverages
- Drinking energy beverages is within my power.

## Intent to Consume
- It is likely that I will consume energy beverages on a daily basis.
- I intend to consume energy beverages on a daily basis.
- I am certain I will drink energy beverages on a daily basis.
Describe reasons why you do or do not drink energy beverages

More than 50% mix with alcohol because “it tastes good”
Results

**Participant Characteristics**

- n=283; mean age: 20 yrs
  - Male (n=115; 41%)
  - Female (n=166; 59%)
- Caucasian (n=192; 68%)
- Asian (21%)
- Hispanic/Latino (5%)
- African American (4%)
- Other (2%)
- Over 90% consume, with most consuming for >1 year

**Top 10 Reasons College Students Choose to Drink Energy Drinks**

- to stay awake
- to feel more alert
- to combat drowsiness
- to help me focus my attention
- to help me concentrate
- I like the taste of caffeinated...
- it puts me in a better mood
- convenience
- I like the buzz feeling caffeine...
- as a social pasttime
Results

Reasons no longer consumed:

- 27% did not like the taste
- 21% upset stomach, nausea
- 21% products did not boost energy
- 21% too expensive
- 5% discontinued use because gained too much weight

Top Side Effects Reported:

- Trouble falling asleep: 131
- Tachycardia: 102
- Headaches: 95
- Dehydration: 78
- Anxiety: 61
Product labeling

<table>
<thead>
<tr>
<th>Labels</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are hard to read</td>
<td>68 (25%)</td>
</tr>
<tr>
<td>Are hard to understand</td>
<td>27 (26%)</td>
</tr>
<tr>
<td>I don’t read labels</td>
<td>106 (38%)</td>
</tr>
<tr>
<td>I follow label instructions</td>
<td>47 (18%)</td>
</tr>
</tbody>
</table>

I believe energy beverages are safe

- Yes: 22%
- Unsure: 35%
- No: 43%
Exploratory Factor Analysis

*Rate to what extent you agree/disagree with these statements:*

**Attitude Items: Rotated Component #1**

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drinking energy drinks helps me to lose weight</td>
<td>.798</td>
</tr>
<tr>
<td>Enhance my appearance, attractiveness</td>
<td>.785</td>
</tr>
<tr>
<td>Promote good health &amp; nutrition</td>
<td>.766</td>
</tr>
<tr>
<td>Stimulate my metabolism</td>
<td>.721</td>
</tr>
<tr>
<td>An energy drink is a sports drink</td>
<td>.712</td>
</tr>
<tr>
<td>Help me relax</td>
<td>.701</td>
</tr>
<tr>
<td>Help me stay hydrated &amp; quench thirst</td>
<td>.697</td>
</tr>
<tr>
<td>Help reduce stress</td>
<td>.656</td>
</tr>
<tr>
<td>Enhance athletic performance</td>
<td>.625</td>
</tr>
<tr>
<td>Enhance sexual performance</td>
<td>.595</td>
</tr>
<tr>
<td>An energy drink is a good hangover cure</td>
<td>.572</td>
</tr>
<tr>
<td>I get better grades if I drink energy drinks while studying</td>
<td>.562</td>
</tr>
<tr>
<td>An energy drink is a drink for any occasion</td>
<td>.557</td>
</tr>
<tr>
<td>Enhance my performance at work</td>
<td>.516</td>
</tr>
<tr>
<td>Are refreshing</td>
<td>.503</td>
</tr>
<tr>
<td>Energy drinks boost concentration and alertness</td>
<td>.302</td>
</tr>
<tr>
<td>Drinking too much (EBs) would not be good for you</td>
<td>-.379</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Component Number</th>
<th>Eigenvalue from PCA</th>
<th>Criterion Value - Parallel Analysis</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8.747</td>
<td>1.5619</td>
<td>Accept</td>
</tr>
<tr>
<td>2</td>
<td>2.547</td>
<td>1.4608</td>
<td>Accept</td>
</tr>
<tr>
<td>3</td>
<td>1.248</td>
<td>1.3958</td>
<td>Reject</td>
</tr>
</tbody>
</table>

The 2-component solution explained 55% of the variance, with Component 1 contributing 38%; and Component 2, 11%.

There was a positive correlation between the 2 components (r = .38).
Multiple Regression Results

- *Attitude* explained approximately 75% of the variance in intent to consume energy beverages.
- The beta values for each independent variable made a statistically significant unique contribution to the dependent variable, intent to consume energy beverages.

**Regression Analysis Summary for Variables Predicting Intent to Consume Energy Beverages**

\[ R^2 = .748 \text{ (n= 282, } p < .001 \text{ )} \]

<table>
<thead>
<tr>
<th>Variable</th>
<th>Unstandardized</th>
<th>Standardized</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude</td>
<td>.759</td>
<td>.790</td>
<td>21.451</td>
<td>.000</td>
</tr>
<tr>
<td>Perceived Behavioral Control</td>
<td>-.061</td>
<td>-.066</td>
<td>-2.024</td>
<td>.044</td>
</tr>
<tr>
<td>Subjective Norms</td>
<td>.145</td>
<td>.151</td>
<td>3.990</td>
<td>.000</td>
</tr>
</tbody>
</table>
Summary

• Over 90% of college students reported consuming energy beverages
• College students find energy beverage labels difficult to understand
• Health care providers discuss cigarette and alcohol use, but not energy beverage consumption
• Despite their popularity, the majority of respondents reported they believed energy beverages were unsafe, or were unsure as to their safety.
Limitations

• Self-reported data
• Convenience sample of college students; results are not necessarily generalizable to entire population
  – Replicate findings in other populations, to larger and more diverse samples, in a variety of geographic areas
Implications & Conclusions

• Clinicians: counsel college students on consumption when taking stimulant medications; assess for misunderstanding of label, product benefits.

• Attitudes, followed by subjective norms, are key factors influencing intent to consume energy beverages in these college students.

• Target interventions to mitigate underlying misconceptions (attitudes) related to risks & benefits to inform safe consumption practices.
References


Substance Abuse and Mental Health Services Administration (SAMHSA), Center for Behavioral Health Statistics and Quality (2013). The DAWN Report: Update on emergency department visits involving energy drinks: A continuing public health concern. Rockville, MD.

Questions?

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