Conceptual and Methodological Clarity in Abuse Liability Studies

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Terms

- Abuse
- Abuse/Dependence Potential/Liability
- Addiction
- Chemical Dependency
- Drug/Substance Dependence
- Harmful Use
- Misuse
- Physical Dependence
- Psychological Dependence
- Substance Use Disorder
Misuse

- Harm from use
- Most alcohol related traffic fatalities do not involve drivers who have alcohol abuse or dependence
Abuse

- Persistent harm from repeated use
- Common areas:
  - Interpersonal relationship
  - Job
  - Legal problems
  - Finances
  - Health
Physical Dependence

Tolerance: Less effect of drug over time

Withdrawal: Time-limited symptoms upon cessation
Psychological Dependence

Impaired control of drug use
Substance Use

Hughes, 2014
DSM 5 Tobacco Use Disorder

- Tolerance
- Withdrawal
- Inability to quit
- Use more than intend
- Use despite physical/psych harm
- Craving
- Time spent with drug
- Use causes role failure
- Give up activities to use
- Use despite social harm
- Hazardous use

Physical Dependence
Psychological Dependence
Abuse
Using Addiction Terms with Medications

- Physical dependence often occurs without psychological dependence
- Addictive-like outcomes (e.g. work for drug, use drug for long time) can occur based on solely on strong therapeutic efficacy
Continued Use and Dependence (Hughes 2004)

• Among those using gum for more than 90 days, 20% stated they were addicted
• Of those who said they were addicted, 66% met DSM criteria for dependence
• Thus, 13% of long term users were dependent – and 87% were not.
Measurement of Abuse/Dependence Liability in Lab And Clinical Tobacco Studies

- Subjective effects may be less useful
- Almost no clinical studies use DSM criteria
- Most use Fagerstrom Test (FTND) or time-to-first cigarette (TFC)
- DSM appears less valid than FTND or TFC
## Concordance of FTND and DSM

<table>
<thead>
<tr>
<th></th>
<th>DSM</th>
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<tbody>
<tr>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>102</td>
<td>56</td>
</tr>
<tr>
<td>No</td>
<td></td>
</tr>
<tr>
<td>34</td>
<td>46</td>
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</tbody>
</table>

- FTND: Forced Titration to Nicotine and DSM: Diagnostic and Statistical Manual of Mental Disorders.
DSM vs FTND
(Breslau 2000; Hughes 2004)

- DSM and FTND poorly related ($K = 0.20$ and $0.29$)
- Number of DSM items vs FTND score ($r = .32$)
- DSM better predictor of cessation than DSM
- But how score FTND with smokeless or e-cigs?
<table>
<thead>
<tr>
<th></th>
<th>High</th>
<th>Low</th>
<th>OR</th>
</tr>
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<tbody>
<tr>
<td>FTND</td>
<td>8%</td>
<td>27%</td>
<td>4.2</td>
</tr>
<tr>
<td>DSM</td>
<td>13%</td>
<td>21%</td>
<td>1.7</td>
</tr>
<tr>
<td>Substance</td>
<td>Drug</td>
<td>Toxin</td>
<td></td>
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<tr>
<td>--------------</td>
<td>--------</td>
<td>---------</td>
<td></td>
</tr>
<tr>
<td>Beer / Wine</td>
<td>Alcohol</td>
<td>Alcohol</td>
<td></td>
</tr>
<tr>
<td>Heroin</td>
<td>Heroin</td>
<td>HIV</td>
<td></td>
</tr>
<tr>
<td>Tobacco</td>
<td>Nicotine</td>
<td>CO, tar</td>
<td></td>
</tr>
<tr>
<td>Coffee</td>
<td>Caffeine</td>
<td>?</td>
<td></td>
</tr>
<tr>
<td>E-cigs</td>
<td>Nicotine</td>
<td>?</td>
<td></td>
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</table>
Types of Harm from Drug Use (Nutt 2014)

- Product-specific mortality
- Product-related mortality
- Product-specific morbidity
- Product-related morbidity
  - Dependence
  - Loss of tangibles
  - Loss of relationship
- Injury
- Crime
- Environmental damage
- Family adversities
- International damage
- Economic cost
- Community
Harm from Nicotine Products (Nutt, 2014)
Validity of Existing Dependence Scales (Piper, 2006)

<table>
<thead>
<tr>
<th></th>
<th>Tobacco Cigarettes</th>
<th>Other Products</th>
<th>Change Over Time?</th>
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</thead>
<tbody>
<tr>
<td>DSM-5</td>
<td>+</td>
<td>snus, ecigs (?)</td>
<td>?</td>
</tr>
<tr>
<td>FTND</td>
<td>+++</td>
<td>++ (snus)</td>
<td>+</td>
</tr>
<tr>
<td>HIS</td>
<td>+++</td>
<td>?</td>
<td>+</td>
</tr>
<tr>
<td>NDSS</td>
<td>++</td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td>WISDM</td>
<td>++</td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td>CDS</td>
<td>+</td>
<td>+ (ecigs)</td>
<td>?</td>
</tr>
<tr>
<td>PSCDI</td>
<td>+</td>
<td>+ (ecigs)</td>
<td>?</td>
</tr>
</tbody>
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Summary

• Conceptual distinction of abuse, physical dependence and psychological dependence may be helpful
• Since term definitions unclear, examine actual measure of a study
• Strong reinforcement or long duration of use can be due to therapeutic efficacy
• Empirical studies distressingly unclear that DSM concepts apply easily to cigarettes
• Most would say behavior must be associated with significant harm to be of interest
Suggested Research Questions

Can we develop a measure
• of psychological dependence that does not include a measure of amount of use?
• that discriminates continued use due to dependence vs therapeutic efficacy?
• that quantifies diverse harms from product use
Suggested Readings


