Addiction and Dependence

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Professional Background

- Northwestern: MD 1981
- Boston City Hosp: Internal Medicine 1984
- Harvard: MPH 1985
- CDC: EIS 1987
- CDC: Preventive Medicine 1988
- University of Wisconsin: MBA 2009
Professional Background (cont.)

- 1) Clinician
- 2) Epidemiologist
- 3) Public Health and Public Policy Professional
Colleagues
A Historical Review

- Historically, “dependence” was a scientific term connoting physical dependence: i.e., withdrawal occurrence after prolonged drug intake.
- In contrast, the term “addiction” was an ascientific term indicating deep involvement with the pursuit and use of drug.
- Now, the two terms are often viewed as synonymous.
“The terms “drug addiction” and “drug dependence” are scientifically equivalent: both terms refer to the behavior of repetitively ingesting mood-altering substances by individuals.”
“The term “drug dependence” has been increasingly adopted in the scientific and medical literature as a more technical term, whereas the term “drug addiction” continues to be used by NIDA and other organizations when it is important to provide information at a more general level.”
“Throughout this Report, both terms are used and they are used synonymously”
PHS Guideline: Treating Tobacco Use and Dependence

- Also viewed “addiction” and “dependence” as synonymous
- Also emphasized that tobacco dependence required treatment as a chronic disease
One Perspective Today

- I tend to prefer the term dependence
- It is consistent with formal nosologies (e.g., DSM refers to “abuse” and “dependence”)
- May have less pejorative connotation
- It signals an intent to refer to a formal, scientific construct
**Dependence is a Construct**

- A construct is a hypothetical variable that is defined by the network of its postulated causal relations; i.e., relations with variables that influence it and reflect its influence.
- In a construct approach, the causes and effects of dependence depend upon your theory of what dependence is.
Dependence Construct

- Easy drug access
- Genetic risk
- Heavy use
- Withdrawal
- Relapse
- Response to Dependence Questionnaires
- Dependence causes
- Dependence effects
Thus:

• Dependent smokers should, e.g.,
  • Relapse quickly
  • Have severe withdrawal
  • Be high in genetic risk
• Answer items positively that assess hypothesized causes, processes or effects of dependence: e.g.,
  § “I smoke more than most smokers”
  § “I have severe cravings when I reduce my smoking or try to quit”
  § “I would smoke even if I knew it were killing me.”
Thus, the Dependence Construct

- Guides test of association amongst:
  - Clinically important, real world outcomes (criteria)
    - E.g., relapse
  - Motivational processes of dependence
    - E.g., smoking to reduce withdrawal
  - Causes of dependence
    - E.g., genetic risk, personality factors
  - The questionnaire items used to assess it
The Wisconsin Inventory of Smoking Dependence Motives (WISDM)

- Rather than ask about dependence outcomes (the social, clinical, and life-outcome consequences of dependence), we selected items that focus on dependence mechanisms or processes.
  - i.e., that assess “disease process” rather than “disease outcomes” (e.g., measuring blood pressure vs end-organ damage).
- My colleague, Dr. Tim Baker, put it this way, “If dependence is the heat of the flame, we want to measure it directly, not how combustible the material is that is exposed to the flame.”
WISDM Items

- Designed to assess the various motivational forces hypothesized to cause dependence tobacco use
Primary WISDM Dependence Motives

- **Automaticity**: Smoking without awareness or intention
- **Craving**: Smoking in response to craving or experiencing intense or frequent urges to smoke
- **Loss of Control**: Believing one has lost volitional control over smoking
- **Tolerance**: Needing to smoke increasing amounts over time to experience the desired effects or smoking large amounts without acute toxicity
Secondary WISDM Dependence

Motives

- **Affiliative Attachment**: Having a strong emotional attachment to smoking and cigarettes
- **Behavioral Choice**: Smoking despite constraints on smoking or negative consequences
- **Cognitive Enhancement**: Smoking to improve cognition
- **Cue Exposure/Associative Processes**: Frequently encountering nonsocial smoking cues or experiencing a strong link between cue exposure and a desire or tendency to smoke
Secondary WISDM Dependence Motives (cont.)

- **Negative Reinforcement**: Smoking to ameliorate negative internal states (e.g., withdrawal)
- **Positive Reinforcement**: Smoking to experience a “buzz” or “high” or to enhance a positive experience
- **Social/Environmental Goads**: Having social stimuli or contexts either model or invite smoking
- **Taste/Sensory Processes**: Smoking to experience the orosensory/gustatory effects of smoking
- **Weight Control**: Smoking to control body weight or appetite
What Have We Learned about Dependence Using the WISDM?

- Even amongst very heavy smokers, the “Primary Scales” pick out the most dependent smokers on the basis of numerous measures:
  a) Biochemical measures of smoking heaviness
  b) Relapse likelihood following a quit attempt
  c) Self-administration of tobacco in a laboratory lever pressing task
  d) Relation with tobacco dependence genetic variants
What Have We Learned about Dependence Using the WISDM (cont.)?

- The Primary Dependence Scales also appear to accurately reflect motives for smoking individual cigarettes in daily life:

  a) Using Dr. Shiffman’s electronic diary (EMA) methods, smokers who scored highly on primary scales were more likely to say they smoked individual cigarettes because of: craving, their smoking was automatic, they had lost control over their smoking.

- They were less like to say they smoked for secondary reasons (e.g., taste, to socialize)
What Have We Learned about Dependence Using the WISDM (cont.)?

- The Secondary Scales were more associated with:
  - Smoking for social reasons
  - Smoking to achieve a particular effect (e.g., good taste)
  - And, in some cases, these scales predict affective withdrawal symptoms better than the primary scales
Thus, the WISDM Suggests that:

- All regular smokers smoke for both Primary & Secondary motives, but stronger dependence is associated with
  - “Automatic” motives being stronger than the “Strategic” motives
    - “Automatic” motives: nonconscious, nonplanful. elicitation of the smoking response by internal and external cues
    - “Strategic” motives: smoking to attain a specific effect, to smoke for a specific reason
Major Learnings from the Assessment of Dependence

Thus, our research and that of others, suggests that:

- Dependence is multidimensional
- It can be measured well by a questionnaire - yielding meaningful predictions of theoretically and clinically important outcomes
- The process of validating a dependence questionnaire can shed light on the nature of dependence itself
- Importantly, the WSDM is not unique. Other dependence questionnaires have made similar important contributions to our understanding of dependence
Clinical Relevance

- Dependence as a construct
- Thus, dependence is really a syndrome - - a collection of signs and symptoms that tend to go together
- When I see a patient, if s/he reports smoking a pack a day or more, and having tried to quit many times before, but failed, I expect to also hear that s/he is bothered by urges when trying to quit (and even when smoking), and tends to smoke shortly after waking.
- That is, the syndrome comprises all those elements
In terms of the WISDM, I can think of two general sorts of patients seen in my practice who roughly correspond to the “Primary” and “Secondary” motives distinction

- The Smoker with predominantly “Secondary” motives” reports
  - Smoking fewer cigarettes (often 5-10/day) – and more aperiodically
  - Really liking the taste of cigarettes (‘the first one of the day tastes like a Dunkin Donut’)
  - Smoking a large proportion of cigarettes with his/her smoking buddies
  - Smoking for a “lift” - to feel better when down in the dumps
  - Missing smoking with friends and feeling blue, as reasons for failing to quit in the past
Clinical Implications (cont.)

The Smoker with predominantly “Primary” motives reports:

a) “I mostly smoke without thinking about it—I sometimes end up with two cigarettes burning because I light them automatically”
b) “I just can’t stand much time to go by without lighting up”
c) “It seems like I have lost control over it.”
d) “I used to smoke cigarettes for a reason….now I just smoke.”

Importantly, this “Primary” Smoker may also report liking the taste of cigarettes, or liking to smoke with friends, as much as the “Secondary” Smoker—but the “Primary” Smoker has moved on so that these instrumental reasons for smoking have been eclipsed somewhat by automaticity.

The Primary Smoker is also aided much more by medication.
Select References

- Piper ME, McCarthy De, and Baker TB: Assessing tobacco dependence: A guide to measure evaluation and selection. NTR 2006
- Smith SS, Piper ME, Bolt DM, Fiore MC, Wetter DW, Cinciripini PM, and Baker TB: Development of the brief Wisconsin Inventory of Smoking Dependence Motives (WISDM). NTR 2010