Using Advances in Addiction Science to Understand, Assess, and Treat Gambling Problems

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Objectives

• Gain an understanding of how disordered gambling relates to other expressions of addiction
• Challenge conventional wisdoms about addiction, gambling and gambling problems
• Learn about assessing and treating gambling problems

Ideas about Addiction

Use
Society
Chemical
Desire
Continued Use Despite Negative Consequences
Mad

Loss of Control
Tolerance
Bad
Abuse
Pleasure
Disorder

Impulse
Reward
Genetic
Brain
Repetitive

Disease
Compulsion
Crazing
Dependence

Learned

Understanding Addiction

Is addiction a property of addictive objects?

“Objects” of Addiction

- Addiction is often viewed as a property of the objects themselves.
  - Cigarettes
  - Alcohol
  - Drugs
  - Fast food
  - Halloween candy
  - Oreos?

“Objects” of Addiction -- DSM

- DSM-IV did not use the term “addiction”
  - Substance Use Disorders
    - Alcohol
    - Drugs
  - Impulse Disorders NOC
    - Gambling
“Objects” of Addiction – National Institutes

• National Institute of Drug Abuse

• National Institute of Alcohol Abuse and Alcoholism

If Objects Are Addictive, Then...

• Why isn’t everyone who’s tried an “addictive” drug addicted?

Rates of Substance Use and Substance Use Disorders

- Abuse and dependence rates from National Comorbidity Survey Replication: Kessler et al., 2004, 2005
- Use rates from the 2005 National Survey on Drug Use and Health: SAMHSA, 2007
Conventional Wisdom

• Addiction requires the ingestion of chemicals, which then act on the brain.

Comparing the Neurobiology of Drug Taking with Activity Addictions

• With Drug Taking
  • Imposter molecules vie for receptor sites (i.e., proteins on which to bind) with naturally occurring neurotransmitters
• With Activities (e.g., shopping, gambling)
  • Behavior & experience stimulate the activity of naturally occurring molecules (i.e., neurotransmitters)

Potenza et al., 2003

• Method: Disordered gamblers and control subjects shown gambling and non-gambling videos while in an MRI

• Results: Disordered gamblers show activation in areas of the brain similar to activation shown by people with cocaine addiction viewing cocaine cues. Controls do not show these responses
Emerging Trends

• DSM 5 contains pertinent revisions:
  • Substance-related disorders are now “Substance-related and addictive disorders”
  • Gambling disorders now reside in this category instead of separately
  • Internet gaming disorder and caffeine use disorder did not make the cut but are listed as conditions for which more research is needed.

Emerging Trends

• NIDA and NIAAA seriously considered merging into an addiction research institute

• So if addiction isn’t a property of objects, chemicals don’t cause addiction, and genes aren’t fully responsible, what causes addiction?

• Think of addiction as involving the interaction between a person with a set of underlying vulnerabilities, and an object
Ideas about Addiction

Loss of Control


Syndrome Model of Addiction

Addiction Syndrome

- Variety of related signs & symptoms reflect an underlying disorder
  - Craving, Tolerance, Withdrawal
- Not all signs & symptoms are present at all times
- Unique & shared components co-occur
- Distinctive temporal progression
Addiction Syndrome

- Variety of related signs & symptoms reflect an underlying disorder
- Not all signs & symptoms are present at all times
  - Diagnostic criteria for substance use disorders require that patients meet a certain number of criteria, not all of them
- Unique & shared components co-occur
- Distinctive temporal progression

- Similar etiology; similar relapse rates across addictions
Relapse Rates


Addiction Syndrome

Implications of the Syndrome Model

For Our Understanding of Behavioral Addiction
Are Behavioral Addictions a Slippery Slope?

- Not if we no longer define addiction as a property of the object.
- But why are people more likely to get addicted to something like gambling than something like carrots?

Are Behavioral Addictions a Slippery Slope?

- Prevalence of addiction to various objects is not just the result of inherent characteristics associated with the specific object or the individual.
- Incidence & prevalence rates reflect
  - The extent to which objects or activities can shift subjective states reliably and robustly in a desirable direction
  - Access, availability, and personal interest
  - Culture, social setting & psycho-economics
Implications of the Syndrome Model

For Prevention and Treatment

Syndrome Model Implications for Recovery

- Addiction is recursive
  - Treating underlying vulnerabilities can alter people’s risk for continued and new addictions
  - However, the consequences of addiction are often risk factors for new or different expressions of addiction
- Some people can and do recover from addiction without treatment.
- Some risk factors for addiction are static (they can’t be changed) but others are dynamic. People can change some of their risks for addiction.
Assessing Gambling Disorders: When Is Disordered Gambling Disordered Gambling?


Gambling Problem Comorbidity: NESARC Lifetime (Petry, 2005)

Kessler et al., 2009

- Disordered gamblers had significantly elevated prevalence of mood disorders, anxiety disorders, conduct disorder, and substance use disorders
- 96% of respondents who qualified for disordered gambling also met criteria for at least one other mental health disorder in their lifetime

<table>
<thead>
<tr>
<th>Disorder class</th>
<th>Prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Substance use disorders (e.g., alcohol dependence)</td>
<td>76.3%</td>
</tr>
<tr>
<td>Anxiety disorders (e.g., panic disorder, PTSD)</td>
<td>60.3%</td>
</tr>
<tr>
<td>Mood disorders (e.g., depression, bipolar disorder)</td>
<td>55.6%</td>
</tr>
<tr>
<td>Impulse-control disorders (e.g., ADHD)</td>
<td>42.3%</td>
</tr>
</tbody>
</table>
Kessler et al., 2009

- For most of these disorders, the psychiatric disorders preceded the occurrence of disordered gambling
  - 74% experienced psychiatric disorder first
  - 24% experienced disordered gambling first
  - 2% experienced the two in the same year

Comorbidity and Assessment

- Though we can reliably measure pathological gambling, a range of factors reveals that it is uncertain what we are measuring
- Most of the time, we infer pathological gambling retrospectively from its adverse consequences
- Without an independent “gold standard” scientists have not been able to predict the development of addictive patterns
Assessing Gambling Disorders: Criteria


Gambling Defined

- Gambling is betting something valuable on an event that is determined by chance. The gambler hopes that he or she will ‘win,’ and gain something of value. Once placed, a bet cannot be taken back.
- Gambling Disorder defined?

Identifying Problem Gambling

- Over 30 instruments designed to measure disordered gambling
- Screening instruments often do not agree whether someone has a gambling disorder
DSM-IV criteria for disordered gambling

1. Pre-occupied with gambling
2. Unable to cut back or control
3. Irritable or restless when attempts to cut back
4. Risks more money to reach desired level of excitement
5. Gambles to escape problems or depressed mood
6. Chases losses
7. Commits illegal acts to fund gambling
8. Lies about gambling to family, etc.
9. Risks or loses relationships or jobs because of gambling
10. Relies on others for financial needs

Five out of ten criteria = diagnosis of disordered gambling

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DSM-5 criteria for disordered gambling

1. Pre-occupied with gambling
2. Unable to cut back or control
3. Irritable or restless when attempts to cut back
4. Risks more money to reach desired level of excitement
5. Gambles to escape problems or depressed mood
6. Chases losses
7. Commits illegal acts to fund gambling
8. Lies about gambling to family, etc.
9. Risks or loses relationships or jobs because of gambling
10. Relies on others for financial needs

Four out of nine criteria = diagnosis of disordered gambling

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Identifying Disordered Gambling

- DSM-IV based instruments
  - NODS – 17 items measuring 10 DSM criteria
  - NCS-R Gambling Module
  - AUDADIS – 15 items measuring 10 DSM criteria
- SOGS
- CPGI
- Youth-specific instruments
  - MAGS
  - SOGS-RA
  - DSM-IV-MR-J
Implications of DSM V

- Proposed DSM V changes
  - Eliminate illegal acts criterion
  - Move from 5+ to 4+ criteria needed for PG diagnosis

Implications of DSM V

- Petry et al., 2013 – Analyzed data from five samples
  - N = 3710; 600 DSM-IV DGs
  - NOT a general population sample – these SHOULD NOT be considered population prevalence rates

<table>
<thead>
<tr>
<th></th>
<th>5 of 10 criteria</th>
<th>6 of 10 criteria</th>
<th>5 of 9 criteria</th>
<th>4 of 9 criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of sample classified as DGs</td>
<td>16.2%</td>
<td>18.1%</td>
<td>15.9%</td>
<td>17.9%</td>
</tr>
<tr>
<td>% of the sample classified the same way under both schemes</td>
<td>--</td>
<td>98.1%</td>
<td>99.8%</td>
<td>98.3%</td>
</tr>
<tr>
<td>Sensitivity (% DGs classified as DGs)</td>
<td>--</td>
<td>100.0%</td>
<td>98.5%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Specificity (% non-DGs classified as non-PGs)</td>
<td>--</td>
<td>97.8%</td>
<td>100.0%</td>
<td>97.9%</td>
</tr>
</tbody>
</table>

Screening for Disordered Gambling: Why Screen?

- Gambling Disorder leads to financial, emotional, social, occupational, and physical harms.
- ~50% of people with gambling problems are in treatment for "something;" very few in treatment specifically for gambling-related problems.
- Many cases of gambling disorder go undetected.
Screening for Disordered Gambling: Why Screen?
- Can refer at-risk people to treatment services
- Can target public health interventions to at-risk subpopulations (i.e., secondary prevention)
- Less cumbersome, particularly for vulnerable populations

Screening for Disordered Gambling: Who Should Screen?
- Addiction service providers
- Mental health service providers
- Social Workers
- Physicians
- Educators
- Youth community leaders
- Employee Assistance Plan service providers
- Veterans groups

Screening for Gambling Problems
- Lie-Bet (Lying, Tolerance)
  - Items most predictive of pathological gambling (Johnson et al., 1988)
- NODS-Clip (Control, Lying, Preoccupation)
  - Items most associated with 3+ and 5+ criteria endorsements (Toce-Gerstein et al., 2009)
- Brief Biosocial Gambling Screen (BBGS) (Withdrawal, Lying, Borrowing)
  - Items most predictive of pathological gambling (Gebauer et al., 2010)
BBGS

• During the past 12 months, have you become restless irritable or anxious when trying to stop/cut down on gambling?
• During the past 12 months, have you tried to keep your family or friends from knowing how much you gambled?
• During the past 12 months did you have such financial trouble as a result of your gambling that you had to get help with living expenses from family, friends or welfare?

BBGS Overview

• Scoring
  • Any "yes" response indicates potential gambling-related problems and the need for additional evaluation.
• Psychometric Properties
  • The Positive Predictive Value of the BBGS is 0.37. This suggests that one of three individuals who screen positive on the BBGS will be identified as having gambling disorder after full follow-up.

Challenging Conventional Wisdoms
Gambling Expansion: Exposure and Adaptation


Conventional Wisdom

• Exposure to objects of addiction will lead to increases in use and addiction.
• The relationship between exposure and problems is direct and linear
  • more exposure = more problems

Population Prevalence

<table>
<thead>
<tr>
<th>Year</th>
<th>Past Year Gambling</th>
<th>Lifetime Gambling</th>
<th>Past Year Disordered Gambling</th>
<th>Lifetime Disordered Gambling</th>
</tr>
</thead>
<tbody>
<tr>
<td>1975</td>
<td>68%</td>
<td>61%</td>
<td>0.7%</td>
<td>0.0%</td>
</tr>
<tr>
<td>1998</td>
<td>86%</td>
<td>63%</td>
<td>0.8%</td>
<td>0.5%</td>
</tr>
<tr>
<td>2000</td>
<td>62%</td>
<td>0.1%</td>
<td>1.4%</td>
<td>0.0%</td>
</tr>
<tr>
<td>2002</td>
<td>4.4%</td>
<td>0.6%</td>
<td>0.0%</td>
<td>0.3%</td>
</tr>
<tr>
<td>2008</td>
<td>78%</td>
<td>0.1%</td>
<td>0.4%</td>
<td>0.6%</td>
</tr>
<tr>
<td>2010</td>
<td>1.4%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>2015</td>
<td>1.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

(Kallick et al.) (Gerson et al.) (Wolfe et al.) (Petry et al.) (Kessler et al.)
**Typical Course of Infection**

- Exposure leads to a rapid increase of infection
- Viruses target the most vulnerable
- Rates slow
  - People who are not yet infected are more resistant
- Decline evident
  - People recover, incidence rate declines

**Rates of Disorder by Time**

**Enrollments by Time**
Take-home points

- Exposure can increase rates of gambling problems, but adaptation also plays a role.
- Exposure will likely have its greatest effect on those who are already vulnerable to gambling disorder and/or highly involved in other forms of gambling.

Game Types and Addiction


Conventional Wisdom

- Certain types of games are more addictive than others.
  - Rapid-cycling
  - 24/7 access
  - Intermittent reinforcement, near misses
  - Little social interaction
- Examples:
  - Slot machines
  - Internet Gambling
The Game Approach

• Different games lead to different gambling outcomes

• General view that electronic gambling is the most ‘addictive’ form of gambling

Evidence in Favor

• Recent studies show that people who engage in certain forms of gambling (e.g., Internet gambling) have higher rates of problems than the general population.

• Hotline and support group data: Slot machine or Internet gambling often reported as the “main cause of problems” (Gambling Help Online, 2012; Svensson & Romild, 2011)

The British Gambling Prevalence Survey

Griffiths et al., 2009

Gambling Problem Rates by Game
Reconsidering the Evidence: The British Gambling Prevalence Survey

- People who played the five games in the previous chart also had the highest involvement (i.e., they played the most different types of games).
- Involvement was a stronger predictor of problems than playing any specific game type.
- The relationship between game type and gambling problems disappeared for all games except VGM when models were controlled for involvement.

(LaPlante et al., 2011)

Summary

- These findings suggest that some games might be indicators of unhealthy involvement, rather than critical factors for gambling-related problems.
- It is tempting to speculate about what specific games do to people. It is better to consider what specific games do for specific people.

Symptom Patterns & Stability: Gambling Problem Trajectories

Symptom Patterns

• Two individuals who do not meet criteria for PG, but report 3 symptoms
  • One reports preoccupation, chasing losses, and gambling to escape problems
  • The other reports jeopardizing relationships to gamble, lying to friends and family about gambling, and borrowing from friends to cover gambling debt
• Same symptom level, both subclinical, but very different profiles

NESARC Symptom Study - Patterns
(Nelson, Gebauer, et al., 2009)

• Preoccupation was the most endorsed symptom
• Escape became less prevalent (relative to other symptoms) as symptoms increased
• Chasing remained highly prevalent across symptom levels
• Prevalence of lying and withdrawal increase as symptom levels increase
• Jeopardizing relationships/work and committing illegal acts remained the least prevalent symptoms across symptom levels

Gambling Disorder Subtypes

• Disordered Gambling Pathways
  (Blaszczynski & Nower, 2002; Nower et al., 2012)
  • Conditioned gamblers
  • Emotionally vulnerable gamblers
  • Impulsive gamblers
Symptoms and Stability: Gambling Problem Trajectories

Professional & Conventional Wisdom

- Diagnostic and Statistical Manual version IV
  - “the essential feature of Pathological Gambling is persistent and recurrent maladaptive gambling behavior…”

- National Council on Problem Gambling
  - “a progressive addiction characterized by increasing preoccupation with gambling, a need to bet more money more frequently, restlessness or irritability when attempting to stop, ‘chasing’ losses, and loss of control…”

- Gamblers Anonymous
  - “we are convinced that gamblers of our type are in the grip of a progressive illness. Over any considerable period of time we get worse, never better…”

Aggregate vs. Individual

Dishion et al., ’04
Gambling Natural Recovery: Retrospective Evidence

- Two US nationally representative studies measured criteria for gambling disorders, as well as treatment-seeking.
- About a third of the people who qualified as lifetime pathological gamblers did not report past year symptoms *and* reported receiving no treatment for their gambling problems.

Summary: Individual Trajectories

- Historically, gambling and other addictions have been considered intractable and progressive
  - Longitudinal studies do not support this contention:
    - Higher than anticipated rates of improvement
    - Lower than anticipated rates of worsening
    - Weaker than anticipated tendency for progression

Diagnosis and Time

- Stability
  - Two individuals who qualify for PG at time one (T1) and time two (T2)
    - Both report preoccupation, chasing, escape, failed attempts, and tolerance at T1
    - At T2, one individual no longer reports failed attempts, but reports jeopardizing relationships
    - At T2, the other individual no longer reports chasing, but reports irritability
  - Both stable according to diagnostic criteria, but different progressions

NESARC Symptom Study - Stability
(Nelson, Gebauer, et al., 2009)

- Less than 40% of the sample endorsed 100% same symptoms from PPY to PY
- 40-60% of participants who endorse at least 1 PPY symptom do not endorse any of the same symptoms from PPY to PY
- Escape and preoccupation were the most stable symptoms; escape was less prevalent overall than preoccupation
- PPY Escape was the strongest predictor of having a gambling disorder w/in the past year
Summary: Symptom Stability

- Gambling problem symptoms fluctuate across time
- In all studies, less than half of PGs qualify for PG at another time point
- Certain symptoms increase (i.e., lying, withdrawal) as severity increases
- Escape appears to be a symptom that is both stable, predictive, and variable across severity levels

Implications for Treatment

- Repeated assessments (symptoms not stable across time)
- Focus on progression of symptoms and types of symptoms
- Symptoms relating to emotional reasons for gambling deserve further research attention in terms of their stability and importance

Caveats

- Improvement is not a certainty
  - Stability & worsening rates not negligible
- White knuckled recovery
  - Symptom suppression
- Addiction hopping
  - Addiction as syndrome
- Individual differences
  - Cumulative findings might not represent individual experiences
**Diagnosis & Treatment**


- “Treatment depends upon diagnosis, and even the matter of timing is often misunderstood. One does not complete a diagnosis and then begin treatment; the diagnostic process is also the start of treatment. Diagnostic assessment is treatment; it also enables further and more specific treatment.”

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**Gambling Problem Resources**

- e-Brief Biosocial Gambling Screen (available in 22 languages)
  - The Division on Addiction’s brief (3-item) gambling disorder screener and intervention system derived from analyses of the National Epidemiology Survey on Alcohol & Related Conditions (Gebauer, LaBrie, & Shaffer, 2010).
  - [http://www.divisiononaddiction.org/bbgss_new/](http://www.divisiononaddiction.org/bbgss_new/)

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**Gambling Resources**

- Your First Step to Change: Gambling (available in 22 languages)
  - The Division’s gambling self-help toolkit, developed in collaboration with the Massachusetts Council on Compulsive Gambling, with support from the Massachusetts Department of Public Health and the National Center for Responsible Gaming.
  - [http://www.gamblingselfchange.org/?step=welcome](http://www.gamblingselfchange.org/?step=welcome)
Gambling Resources

- The Worldwide Addiction Gambling Education Report (WAGER)
  - The Division’s free monthly online research review of the latest gambling science.
  - http://www.basisonline.org/the_wager/

Additional Resources

- www.divisiononaddiction.org
  - Division on Addiction’s main website
  - Current projects and publications
- www.basisonline.org
  - Brief science reviews and editorials on current issues in the field of addictions (gambling, alcohol, tobacco, illicit drugs, addictions & the humanities)
  - Addiction resources available, including self-help tools
- www.thetransparencyproject.org
  - Public repository of privately-funded addiction datasets
- snelson@hms.harvard.edu
  - Email me if you have any questions
- On twitter: @div_addiction
- On facebook: divisiononaddiction

Division References – Syndrome Model


Division References


Other References


Other References

