Don’t Gamble Away Our Future™—A Preliminary Analysis

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Conflict of Interest

- Dr. Moberg has no conflicts of interest to disclose.
Give credit where credit is due

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Professor of Behavioural Addiction
Nottingham Trent University
Agenda

- Process/Behavioral Addictions
- Gambling Disorder
- Adolescent Gambling
- Don’t Gamble Away Our Future™
Agenda

• Process/Behavioral Addictions
• Gambling Disorder
• Adolescent Gambling
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Addiction

Process Addictions

Gambling Disorder
Do we trivialize the term “addiction”?

Gambling disorder

- Nicotine—60.1%
- Any substance use disorder—57.5%
- Any mood disorder—37.9%
- Any anxiety disorder—37.4%
- Anti-social personality disorder—28.8%

Risk for compulsive buying

Internet addiction/problematic internet use

- Depression—77.8%
- Substance use disorders—55%
- Anxiety disorders—50%
- Social anxiety disorder—45%
- Sleep disturbance—38.6%
- ADHD—32.2%

Internet Gaming Disorder

- ADHD—39.1%
- Depression, Anxiety, Social Anxiety

Hypersexual Disorder/Sexual Addiction/Compulsive Sexual Behavior Disorder*

- Any anxiety disorder—96%
- Any mood disorder—71%
- Any sexual dysfunction—46%
- Any personality disorder—46%
- Any impulse control disorder—38%
- Obsessive compulsive disorder—14%

*not in DSM-5; proposed as a diagnosis in ICD-11

Compulsive buying/shopping addiction

- Any mood disorder—95%
- Any anxiety disorder—80%
- Major depressive disorder—62.6%
- Any personality disorder—59%
- Any impulse control disorder—40%
- Any eating disorder—35%
- Any substance use disorder—30%
- Obsessive compulsive disorder—18.7%
- PTSD—13.5%
- Social anxiety disorder—9.1%
- Bipolar disorder—4.7%

Exercise addiction—research limited

- Eating disorders especially bulimia nervosa
- Anxiety
- Depression

Agenda

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• Adolescent Gambling
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Gambling
Perception

I have a lot of friends in politics, but they wouldn't be friendly if they knew that my business was drugs instead of gambling which they regard as a harmless vice.

Don Corleone from The Godfather
DSM-5 Diagnostic Criteria

- Requires four or more criteria from criteria A
- Criteria A.
  - Needs to gamble with increasing amounts of money in order to achieve desired excitement *(TOLERANCE)*
  - Is restless or irritable when attempting to cut down or stop *(WITHDRAWAL)*
  - Has made repeated unsuccessful efforts to control, cut back or stop
  - Is often preoccupied with gambling
  - Often gambles when feeling distressed
  - After losing money, often returns another day to get even
  - Lies to conceal the extent of involvement with gambling
  - Has jeopardized or lost a significant relationship, job, or educational or career opportunity because of gambling
  - Relies on others to provide money to relieve desperate financial situations caused by gambling
- Criteria B.
  - Gambling is not better explained by mania

Clinical Similarities

- Early age of onset
- Chronic relapsing patterns
- Tolerance and withdrawal
- Inability to abstain or “cut down”
- Persistent use despite negative consequences
- Tension or arousal before (anxiety vs. excitement)
- Relief during (“high”)
- Many resolve on their own
- Probability discounting (going for larger, less probable reward)
- Altered delay discounting (going for immediate, smaller rewards)
- Telescoping

Grant et al., 2010; Kor et al., 2013
Agenda

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Epidemiology

- 68% gambled in past year.
- 11% gambled > twice/week
- 2.1% problem gambling

% Who Gambled Twice/Week or More

Age
- 14-15
- 16-17
- 18-19
- 20-21

Gender
- Female
- Male

Welte et al. 2008.
Trends

• Prevalence—0.2-12.3%
• North America—2.1-2.6%
• Preferred games
  – Lotteries
  – Scratch cards
  – Card games
  – Slot machines
• Substance Use
• Adolescent rates higher than adults

Preferred games for problem gamblers

Calado et al. 2016.
The role of social media
Canadian University students

- Opportunity to build gambling **skills** without risk.
- **Disagreement** with regards to social casino gambling is a step towards gambling.
- More agreement that it is for **younger adolescents** (12-14 year olds).

I know some friends of mine who started playing Texas Hold’em on Facebook and then they win and then they are on top on the leader board and they want to try in real life so they go to a real casino. So I think this is where it sends a bad message.

I would think that when you are playing just for fun, and you want maybe a bit more of a challenge, you start playing against other people for the competition, and if you’re doing quite well, you think ‘maybe I could actually win something.’

Kim et al. 2016.
Alternatively

Personally I don’t gamble and I don’t have any intention to gamble but if I were to try to something like a gambling game I would not do it through Facebook, I would do it through an actual site to do it. So personally Facebook would not be a gateway for me.

I would probably not try it for real money because I just don’t want to. I tend to separate having fun and earning money as two different concepts but to some people who are willing to take chances and risks it is definitely something they will try at some point.

Kim et al. 2016.
Back in Time

Study design

- Ages 9-14 (104 children)
- Two groups
  - High frequency
    - ≥ 5 days/week; ≥ 1.5 hours/session
  - Low frequency
    - ≤ 2 days/week; ≤ 1 hour/session

Gupta and Derevensky. 1996.
Results

• 70% had gambled previously
• 53% gambled minimum 1x/week

• Reasons
  – Enjoyment (74%)
  – Excitement (49%)
  – Pass the time (25%)
  – Win money (22%)
  – Win peer approval (1%)

Gupta and Derevensky. 1996.
Results

• Wagers
  – High frequency—$493
    • Males--$607.07*
    • Females--$355.86*
  – Low frequency—$381.20
    • Males--$387.54
    • Females--$377.13

• Gross Winnings (all groups had negative net balances)
  – High frequency males > Low frequency males
  – High frequency males > High frequency females

Gupta and Derevensky. 1996.
Findings

• Gambling begins at an early age.
• High frequency video-gaming associated with more frequent gambling behavior.
• High frequency females gamble more often than low frequency males.
• High frequency gamers wager more on black jack experience.
Non-medical use of prescription stimulants


Amphetamine Use—College Campuses

- 5.7% in 2008
- 10.1% in 2014

1.92% adults
10.23% college students
Past Year Use of Adderall and Perceived Risk of Occasional Use among 12th Graders

Use by Grade

Use vs. Perceived Risk—12th Grade

*Significant increase from 2009
^Significant decrease from previous year

Source: University of Michigan, 2013 Monitoring the Future Study
Stimulants and Gambling

- Recent stimulant use (<3 months)—11% problem gambling vs. 4%.
- Cannabis and alcohol use (heavy drinking*) did not eliminate association.
- Baseline stimulant use predicted increase in gambling frequency 12 months later.

*Heavy drinking—USDA and NIAAA definitions

Nowak and Aloe. 2014
Interactions—survey data
Connecticut high school students

- At risk problematic Internet use associated with problem gambling.
- Extracurricular activities
- Carrying a weapon
- Serious fight
- Lifetime tobacco smoking
- Lifetime cannabis use
- Lifetime other drug use
- Caffeine use

Drugs and Alcohol

• A Qualitative Review of Ten Studies

• Gambling/Tobacco (4/7 articles)
• Gambling/Alcohol (7/8 articles)
• Gambling/Illicit Drugs (7/8 articles)

Gambling Attitudes

• Norwegian Cohort Study
• Gambling legal at age 18
• Cohort surveyed at age 17.5 and 18.5 (wave 1 and wave 2)
• Sample size = 1239

Definitions—personality traits

- **Extraversion**
  - “Am the life of the party”
- **Agreeableness**
  - “Feels others emotions”
- **Conscientiousness**
  - “Like order”
- **Neuroticism**
  - “Have frequent mood swings”
- **Intellect/Imagination**
  - “Have a vivid imagination”

Pallesen et al. 2016.
Other variables

- Gender
- Impulsivity
- Sensation seeking
- Parental monitoring
- Family/peer approval of gambling
- Knowledge of gambling
- Gambling participation by close persons
- Participation in gambling in last 12 months

Pallesen et al. 2016.
Results

• Slight increase in acceptability of gambling in wave 2 compared to wave 1.
• Factors related to increase in acceptability
  – Male
  – Approval of gambling by close others
  – Continuous or increased participation in gambling
• Factors related to decrease in acceptability
  – Neuroticism

Pallesen et al. 2016.
Other traits

Risk Taking
Delay Discounting
Time Perspective
Definitions

- **Risk Taking**—ignore or minimize future consequences of behavior
- **Delay discounting**—the de-evaluation of awards delayed in time
- **Time perspective**—the extent to which focus on future consequences of current behavior

Participants

- 104 Italian males
  - 52 problem gamblers (≥4)
  - 52 non-problem gamblers (0-1)
- Ages 16-19
- SOGS-RA

Cosenza et al. 2016.
Conclusions

• More risk prone
• Greater delay discounting
• More oriented to the present

Cosenza et al. 2016.
Not known

Consequence of prolonged gambling

Cause of prolonged gambling

Cosenza et al. 2016.
Agenda

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Data collection
Participants

• Adolescents and pre-adolescents
  – Ages 8-18
  – Primary, jr. high, high school and detention center
Two parts

- Educational
- Risk

Table 1 - Affirmative answers to the questions of the SOGS by social gamblers, population of non-clinical pathological gamblers and clinical population of gamblers.

<table>
<thead>
<tr>
<th>Question</th>
<th>Social Gamb.</th>
<th>Pathological Gamb.</th>
<th>Clinical</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>1. Came back to recover what he/she has lost</td>
<td>10</td>
<td>11.5</td>
<td>27</td>
</tr>
<tr>
<td>2. Claimed winning when losing</td>
<td>17</td>
<td>18.7</td>
<td>27</td>
</tr>
<tr>
<td>3. Feels as already had gambling problems</td>
<td>9</td>
<td>9.7</td>
<td>53</td>
</tr>
<tr>
<td>4. Gambled more than had planned</td>
<td>24</td>
<td>25.8</td>
<td>62</td>
</tr>
<tr>
<td>5. Is criticized for gambling</td>
<td>36</td>
<td>37.9</td>
<td>67</td>
</tr>
<tr>
<td>6. Felt guilty for gambling</td>
<td>12</td>
<td>13.3</td>
<td>57</td>
</tr>
<tr>
<td>7. Would like to stop gambling</td>
<td>6</td>
<td>6.3</td>
<td>39</td>
</tr>
<tr>
<td>8. Concealed gambling signals</td>
<td>5</td>
<td>5.3</td>
<td>39</td>
</tr>
<tr>
<td>9. Argued due to gambling habit</td>
<td>6</td>
<td>10.2</td>
<td>39</td>
</tr>
<tr>
<td>10. Borrowed money and did not pay it</td>
<td>0</td>
<td>0</td>
<td>24</td>
</tr>
<tr>
<td>11. Lost working time</td>
<td>11</td>
<td>12.0</td>
<td>43</td>
</tr>
<tr>
<td>12. Used money of the household expenses</td>
<td>2</td>
<td>2.9</td>
<td>27</td>
</tr>
<tr>
<td>13. Used the money of him/her/with husband</td>
<td>1</td>
<td>1.6</td>
<td>15</td>
</tr>
<tr>
<td>14. Used money of other relatives</td>
<td>2</td>
<td>3.2</td>
<td>17</td>
</tr>
<tr>
<td>15. Used money from banks, loan or credit companies</td>
<td>4</td>
<td>6.3</td>
<td>15</td>
</tr>
<tr>
<td>16. Used credit cards</td>
<td>2</td>
<td>3.2</td>
<td>15</td>
</tr>
<tr>
<td>17. Used money from usurers</td>
<td>2</td>
<td>3.2</td>
<td>13</td>
</tr>
<tr>
<td>18. Sold shares, bonds or other financial papers</td>
<td>1</td>
<td>1.6</td>
<td>9</td>
</tr>
<tr>
<td>19. Sold personal or family real estates</td>
<td>1</td>
<td>1.6</td>
<td>11</td>
</tr>
<tr>
<td>20. Issued bounced checks</td>
<td>3</td>
<td>4.8</td>
<td>22</td>
</tr>
</tbody>
</table>
Two parts

• Educational (Gambling knowledge not behavior)
  – Pre-test
  – Educational module (interactive CD-ROM)
  – Post-test

• Risk
Sample test questions

- The following are games of chance:
  - A. Chess
  - B. Lottery
  - C. Video slot machines
  - D. Pool
  - E. Both A and D
  - F. Both B and C
- A random looking number (12-5-23-7-19-34) is more likely to win than a number that has a sequence in it (1-2-3-4-5-6).
  - True
  - False
- A gambling addiction is a lot less serious than a drug or alcohol addiction.
  - True
  - False
Maximum scores

- Primary School
  - 9
- Jr. High School
  - 12
- High School
  - 14
Data points

- 19,235 took pre-test
- 19,235 took post-test
## Breakdown

<table>
<thead>
<tr>
<th></th>
<th>Pre-test</th>
<th>Post-test</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>High School</td>
<td>12,094</td>
<td>12,094</td>
<td>62.87</td>
</tr>
<tr>
<td>Jr. High School</td>
<td>4,889</td>
<td>4,889</td>
<td>25.42</td>
</tr>
<tr>
<td>Primary School</td>
<td>1,833</td>
<td>1,833</td>
<td>9.53</td>
</tr>
<tr>
<td>Detention Center</td>
<td>419</td>
<td>419</td>
<td>2.18</td>
</tr>
<tr>
<td>Total</td>
<td>19,235</td>
<td>19,235</td>
<td>100</td>
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## Test scores

<table>
<thead>
<tr>
<th></th>
<th>Pre-Test $\mu$</th>
<th>Standard Deviation</th>
<th>Post-Test $\mu$</th>
<th>Standard Deviation</th>
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</thead>
<tbody>
<tr>
<td>High School</td>
<td>6.7</td>
<td>1.9</td>
<td>7.9</td>
<td>1.7</td>
</tr>
<tr>
<td>Jr. High School</td>
<td>5.5</td>
<td>2.2</td>
<td>7.0</td>
<td>2.3</td>
</tr>
<tr>
<td>Primary School</td>
<td>4.1</td>
<td>1.7</td>
<td>5.9</td>
<td>2.2</td>
</tr>
<tr>
<td>Detention Center</td>
<td>5.4</td>
<td>2.0</td>
<td>6.3</td>
<td>2.1</td>
</tr>
<tr>
<td>Total</td>
<td>6.1</td>
<td>2.1</td>
<td>7.4</td>
<td>2.0</td>
</tr>
</tbody>
</table>

$p < 0.0001$
## Breakdown

<table>
<thead>
<tr>
<th></th>
<th>Pre-test</th>
<th>%</th>
<th>Post-test</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>9849</td>
<td>51.67</td>
<td>9853</td>
<td>51.68</td>
</tr>
<tr>
<td>Female</td>
<td>9216</td>
<td>48.34</td>
<td>9213</td>
<td>48.32</td>
</tr>
<tr>
<td>Total</td>
<td>19,065</td>
<td>100</td>
<td>19,066</td>
<td>100</td>
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# Test scores

<table>
<thead>
<tr>
<th></th>
<th>Pre-test $\mu$</th>
<th>Standard deviation</th>
<th>Post-test $\mu$</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>6.0</td>
<td>2.2</td>
<td>7.2</td>
<td>2.1</td>
</tr>
<tr>
<td>Female</td>
<td>6.3</td>
<td>2.0</td>
<td>7.7</td>
<td>1.8</td>
</tr>
<tr>
<td>Total</td>
<td>6.1</td>
<td>2.1</td>
<td>7.4</td>
<td>2.0</td>
</tr>
</tbody>
</table>

$p < 0.0001$
Two parts

- Educational
- Risk
  - Modified South Oaks Gambling Screen for Teens (MSOGST)
Adolescents and Pathological Gambling

PLUS:
Recovery Walks! 2007
Fibromyalgia Syndrome
Teen Sex and Romance
Dating in Recovery
MSOGST

- Modified version of South Oaks Gambling Screen
- 37 items
- Score 0-20
  - 0 no problem gambling
  - 1-4 some problem gambling
  - > 5 problem gambling

## Risk assessment (site)

<table>
<thead>
<tr>
<th></th>
<th>No problem gambling</th>
<th>%</th>
<th>Some problem gambling</th>
<th>%</th>
<th>Probable pathological gambler</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>High School</td>
<td>6853</td>
<td>60.9</td>
<td>3325</td>
<td>29.5</td>
<td>1084</td>
<td>9.6</td>
</tr>
<tr>
<td>Jr. High School</td>
<td>3076</td>
<td>32.8</td>
<td>1366</td>
<td>27.9</td>
<td>455</td>
<td>9.3</td>
</tr>
<tr>
<td>Detention Center</td>
<td>193</td>
<td>41.2</td>
<td>138</td>
<td>31.6</td>
<td>127</td>
<td>27.1</td>
</tr>
<tr>
<td>Total</td>
<td>10,122</td>
<td>60.9</td>
<td>4839</td>
<td>29.1</td>
<td>1666</td>
<td>10.0</td>
</tr>
</tbody>
</table>

$p < 0.0001$
## Risk assessment (gender)

<table>
<thead>
<tr>
<th></th>
<th>No problem gambling</th>
<th>%</th>
<th>Some problem gambling</th>
<th>%</th>
<th>Probable pathological gambler</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>3967</td>
<td>50.3</td>
<td>2788</td>
<td>35.4</td>
<td>1128</td>
<td>14.3</td>
</tr>
<tr>
<td>Female</td>
<td>5991</td>
<td>71.0</td>
<td>1959</td>
<td>23.2</td>
<td>483</td>
<td>5.7</td>
</tr>
<tr>
<td>Total</td>
<td>10,122</td>
<td>60.9</td>
<td>4839</td>
<td>29.1</td>
<td>1666</td>
<td>10.0</td>
</tr>
</tbody>
</table>

\( p < 0.0001 \)
Conclusions

• Large N urges caution when interpreting “significance.”
• All groups exhibited improvement in test scores.
• Behavior not tested.
• At risk groups: males and those in detention centers.
The Team

• Jinma Ren, PhD
• Carl Asche, PhD
• Angie Moore, MS, MSHA, LCPC
• Heidi Scuffham