PREDICTORS OF FUTURE PROBLEM GAMBLING

Dr. Robert Williams
University of Lethbridge, Alberta, Canada

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Context

- Many cross-sectional studies examining correlates of problem gambling

- 30+ small scale longitudinal studies of problem gambling

- However, only a handful with large sample sizes and multi-year assessments:
  - Quinte Longitudinal Study (Ontario) (2006 – 2011)
  - Victorian Gambling Study (2008 – 2012)
  - SVELOGS (Sweden) (2008 – 2014)
  - New Zealand National Gambling Study (2012 – 2016)
  - Massachusetts Gambling Impact Cohort (MAGIC) (2013 – 2021)

Leisure, Lifestyle, Lifecycle Project (LLLP)

- Funded by Alberta Gambling Research Institute ($2.3 million)
- 2006 – 2014
- 1327 Alberta adults from 4 regions of Alberta approximating the Alberta population
  - 29% oversampled for ‘at risk’ characteristics
- 5 comprehensive assessments 17-27 months apart
  - Very similar questionnaire to QLS
  - 2 – 3 hours per assessment
  - Telephone interview (Assessment 1) + self-administered (online &/or paper & pencil)
- Dependent variable: score of 5 or higher on Canadian Problem Gambling Index (CPGI) (Ferris & Wynne, 2001)
- 76.2% retention rate at Wave 4
Quinte Longitudinal Study (QLS)

- Funded by Ontario Problem Gambling Research Centre ($3.1 million)
- 2006 – 2011
- 4123 Ontario adults from Quinte Region in southeastern Ontario, Canada
  - 26% oversampled for ‘at risk’ characteristics
- 5 comprehensive annual assessments
  - Demographics, gambling, physical health, mental health, substance use, stressors, personal values, social functioning, personality, leisure activity, intelligence (135 variables)
  - 0.5 – 1.5 hrs per assessment
  - self-administered online or via paper & pencil
- Dependent variable: problem or pathological gambler on Problem and Pathological Gambling Measure (PPGM) (Williams & Volberg, 2014)
- 93.9% retention rate
Univariate Prediction of Future Problem Gambling

- Examined strength and consistency of variables as predictors of future problem gambling across:
  - **Time Periods**
    - 1 time period: A1 → A2; A2 → A3; A3 → A4; A4 → A5
    - 2 time periods: A1 → A3; A2 → A4; A3 → A5
    - 3 time periods: A1 → A4; A2 → A5
    - 4 time periods: A1 → A5
  - **and Data Sets**
    - QLS and LLLP
Univariate Prediction of Future Problem Gambling

- No single variable overwhelmingly present in future problem gamblers and absent in future non-problem gamblers.

- Rather, *many different* variables involved, each increasing risk to some extent and present to differing degrees in future problem gamblers.

- However, certain *categories* of variables more predictive and stronger variables within categories.
Univariate Prediction of Future Problem Gambling

- **Gambling-Related Variables** is category most robustly predictive of future problem gambling
  - Being **At Risk or Problem Gambler** single best predictor of future problem gambling
  - **Intensity of gambling involvement** 2\(^{nd}\) best predictor (i.e., total gambling expenditure, overall frequency, total time spent, number of formats played)
  - Higher frequency of **involvement in continuous forms** (i.e., EGMs, casino table games, instant lotteries) 3\(^{rd}\) best predictor
  - Other strong predictors: **big win in past year; gambling a top leisure pursuit; family or friends regular or problem gamblers; gambling ‘to escape’ or ‘to win money’; more gambling fallacies; Internet gambling; proximity to EGM venues**
Univariate Prediction of Future Problem Gambling

- **Personality** next most important category predictive of future problem gambling
  - **Impulsivity** strongest personality predictor, and one of the strongest predictors across all categories
  - Other fairly strong personality predictors:
    - Vulnerability (to stress)
    - Lower agreeableness
    - Lower conscientiousness
Univariate Prediction of Future Problem Gambling

- **Mental Health** next most important category predictive of future problem gambling
  - **Depression** strongest predictor in this category
  - Other fairly strong mental health predictors:
    - Anxiety-related disorders
    - Substance abuse
    - Having a behavioural addiction
    - Lifetime history of mental health problems or addiction to drugs/alcohol
Univariate Prediction of Future Problem Gambling

- Other fairly strong and/or consistent predictors:
  - More stressful events in past year
  - Lower IQ
  - Lower educational attainment
  - Lower happiness
  - Higher stress
  - History of child abuse
  - Antisocial traits
  - Physical disability and/or poorer physical health
Multivariate Prediction of Future Problem Gambling

• Many univariate predictors not significant in multivariate prediction due to overlapping predictive power

• Almost all multivariate predictors were gambling-related:
  ◦ Being **At Risk or Problem Gambler** (strongest predictor)
  ◦ Big win in past year
  ◦ Frequency of EGM and/or casino table game participation
  ◦ Family members being regular gamblers
  ◦ Close friends/family with gambling problems
  ◦ Gambling to escape or win money
  ◦ More gambling fallacies
  ◦ Gambling a top leisure pursuit
  ◦ Engaging in larger number of gambling formats
Multivariate Prediction of Future Problem Gambling

- Only *non-gambling* related variables robustly adding multivariate predictive power were:
  - Impulsivity
  - Having a behavioural addiction (e.g., shopping, sex, video games, exercise)
  - Lifetime history of addiction to drugs or alcohol
  - Family history of mental health problems
Almost all gambling-related variables predictive of first onset problem gambling. Exceptions being proximity to EGM venues and being At Risk or Problem Gambler, which were more predictive of continuation and relapse.

Several personality, mental health, stress-related, cognitive, and physical health variables also implicated in first onset problem gambling. However, in general, personality, mental health, stress-related, cognitive, and physical health variables more strongly implicated in problem gambling continuation and relapse.
Most predictors create risk for all future time periods, rather than some creating imminent risk and others creating distant risk.

However, a few variables almost always precede problem gambling and are stronger predictors of imminent problem gambling than others:

- Intensive gambling involvement the strongest and most consistent predictor

Other strong and consistent predictors of imminent problem gambling:

- Having big win in past year
- Gambling being a favourite leisure pursuit
- Impulsivity
- Depression
All problem gamblers asked “What do you think caused your gambling problems?”

Only limited overlap between these open-ended reports and objective predictors.

Most problem gamblers identified singular cause, whereas empirical results indicate many variables.

Self-reported causes focused on psychological, motivational, and social influences (e.g., gambling to escape or to win money, boredom, stress/depression, social pressure to gamble).

Although self-reported causes validated by empirical results, problem gamblers less aware of broader contextual determinants: past history of gambling problems, family history of gambling, engagement in continuous forms, big wins, gambling fallacies, personality, substance abuse, mental health problems.
Predictors of Future Problem Gambling or Higher Levels of Problem Gambling Symptomatology from all Existing Longitudinal Studies
Predictors of Future Problem Gambling or Higher Problem Gambling Symptomatology from All Longitudinal Studies

- Depression (8 studies)
- Impulsivity (7 studies)
- Alcohol problems (6 studies)
- Less education and/or poor school performance (6 studies)
- Antisociality and/or conduct disorder (6 studies)
- Prior problem gambling and/or subclinical problem gambling (5 studies)
- Illicit drug use or abuse (5 studies)
- Tobacco use (5 studies)
- Stress and/or emotional distress (5 studies)
- Poor health and/or physical disability (5 studies)
Predictors of Future Problem Gambling or Higher Problem Gambling Symptomatology from All Longitudinal Studies

- Intensity of gambling involvement (4 studies)
- Continuous forms of gambling (EGMs, casino table games, instant lotteries) (4 studies)
- Anxiety Related Disorders (4 studies)
- Family or friends regular or problem gamblers (3 studies)
- Financial or employment concerns (3 studies)
- Significant life events (3 studies)
- Male gender (3 studies)
- Early onset of gambling (3 studies)
Predictors of Future Problem Gambling or Higher Problem Gambling Symptomatology from All Longitudinal Studies

- Vulnerability to Stress (2 studies)
- Lower Agreeableness (2 studies)
- Lower Conscientiousness (2 studies)
- History of child abuse (2 studies)
- Internet gambling (2 studies)
- Gambling to ‘escape’ or ‘win money’ (2 studies)
- Gambling fallacies (2 studies)
- Lower IQ (2 studies)
- Immigrant (2 studies)
Predictors of Future Problem Gambling or Higher Problem Gambling Symptomatology from All Longitudinal Studies

- Big win in past year (1 study)
- EGM venue proximity (1 study)
- Gambling a top leisure pursuit (1 study)
- Behavioural addiction (1 study)
- Lifetime history of mental health problems or substance abuse (1 study)
- Non-Caucasian (1 study)
- Reward-card membership (1 study)
- Gambling alone (1 study)
- Lower happiness (1 study)
- ATM use in venue risk-taking (1 study)
- Race track gambling (1 study)
- Family history of antisociality (1 study)
- Lower family functioning (1 study)
- Values (wealth indicates success) (1 study)
- Antisocial peers (1 study)
- Rebelliousness (1 study)
- Alienation (1 study)
- One parent families (1 study)
- Family conflict (1 study)
- Greater social networking (1 study)
- Aggression (1 study)
- Novelty seeking (1 study)
- Obesity (1 study)
- Thoughts about winning (1 study)
Summary

- High degree of consensus on etiological role of:
  - **Gambling Involvement**
    - Intensive gambling involvement
    - Prior history of problem gambling
    - Subclinical problem gambling
    - Continuous forms of gambling
    - Family/friends being regular and/or problem gamblers
  - **Mental Health Problems**
    - Depression
    - Anxiety-Related Disorders
    - Level of Stress
    - Stressful Events
Summary

- High degree of consensus on etiological role of:
  - **Substance Use & Abuse**
    - Alcohol problems
    - Illicit drug use or abuse
    - Tobacco use
  - **Personality**
    - Impulsivity
  - **Antisociality**
  - Lower educational attainment
  - Poor Health and/or Physical Disability
Etiological Model

- Biopsychosocial etiology with multiple risk and protective factors

- Particular pattern of risk and protective factors different between problem gamblers, but many of the strongest risk factors tend to be fairly prevalent
Etiological Model: Heavy Gambling
Final Common Pathway

- High levels of gambling expenditure, frequency, time, number of formats, and/or involvement in continuous forms creates greatest direct risk for problem gambling, as it immediately precedes problem gambling in large majority of cases.

- Heavy gambling also increases likelihood of big win, which is an important independent risk factor for problem gambling.
Etiological Model: Recovery & Relapse Common

- Recovery from problem gambling common, as modal problem gambling episode duration is only one year.

- Relapse back to problem gambling also common, with past history of problem gambling being strongest predictor of relapse and problem gambling continuation as well as mental health problems, substance use/abuse, stress, impulsivity, and physical health problems.
Etiological Model

Color denotes level of risk the behaviour/attribute has for future problem gambling:
- low
- moderate
- high

Arrow width indicates strength of the relationship. Some arrows unidirectional and some bidirectional.
Implications for Prevention of Problem Gambling and Problem Gambling Symptomatology

1. No ‘silver bullet’. Rather, wide array of initiatives needed to address its multi-faceted biopsychosocial etiology. Effectiveness of any single initiative will be modest, but coordinated efforts can have synergistic effects.

2. Generic school-based prevention programs targeting wide range of risk-behaviours are needed.

3. Treatment of substance abuse and mood disorders will reduce both the incidence of new cases of problem gambling and rates of problem gambling relapse.
Implications for Prevention of Problem Gambling and Problem Gambling Symptomatology

4. Policy interventions needed to limit progression to intensive gambling:

◦ Continuous forms of gambling (slots, table games) should be eliminated, reduced in number or constrained in how they operate.

◦ Eliminate gambling reward programs or use them to reward responsible gambling.

◦ Automated intervention to alert players to risky behaviour.

◦ Mandatory player pre-commitment.

◦ Limit availability of ATMs and smoking.

◦ Reduce general availability of gambling (modest impact on incidence, but important role in reducing relapse).
6. Educational interventions needed to limit progression to intensive gambling:

- Correcting gambling fallacies and inappropriate gambling motivations (to escape or to win money) particularly important.

- Education on: signs of problem gambling, elevated risks of continuous forms, facilitative effect of associating with heavy gamblers and problem gamblers, normative levels of time and money on gambling, true odds of gambling games, gambling practices that increase risk, where to go for help, low risk guidelines for problem-free gambling.
Limitations

- Some studies have focused on predictors and etiology of problem gambling (individuals with impaired control over their gambling + significant harm deriving from this impaired control) whereas other studies have focused on predictors of higher levels of problem gambling symptomatology.

- Not obvious that the predictors are different, but has not been a rigorous comparison.
Limitations

- Predictors of PG and its symptomatology not exactly same as predictors of ‘harm’ in population:
  - All PG instruments contain items that do not necessarily entail ‘harm’, e.g., preoccupation, tolerance, going back next day, guilt, gambling more than intended
  - Most PG instruments do not comprehensively assess harm:

<table>
<thead>
<tr>
<th></th>
<th>PGSI</th>
<th>DSM-V</th>
<th>SOGS</th>
<th>PPGM</th>
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<tr>
<td>Illegal Activity</td>
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- PPGM questions also ask whether these problems occurred for the gambler or someone close to him/her in his/her immediate social network + each question is stem question for specific harms within that domain.
<table>
<thead>
<tr>
<th>Harm</th>
<th>Adult Prevalence</th>
<th>Number</th>
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<tbody>
<tr>
<td><strong>FINANCIAL PROBLEMS</strong></td>
<td>1.4%</td>
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<tr>
<td>Bankruptcy</td>
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<td>Sought Medical Help</td>
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<td>Suicidal Thoughts</td>
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<td>Suicide Attempts</td>
<td>&lt;.1%</td>
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<td><strong>RELATIONSHIP PROBLEMS</strong></td>
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<td>Domestic Violence</td>
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<td>Separation or Divorce</td>
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<td>Child Neglect</td>
<td>0.3%</td>
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<td><strong>WORK/SCHOOL PROBLEMS</strong></td>
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<td>Lost Job or Quit School</td>
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<td>RELATIONSHIP PROBLEMS</td>
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<td>Child Welfare Involvement</td>
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<td>Arrested</td>
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<tr>
<td>Convicted and/or Incarcerated</td>
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<td>PROBLEM GAMBLING PREVALENCE</td>
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### Harms of Gambling in Massachusetts 2013

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