The Relationship between ADHD and Problem Gambling

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What do we mean by “Problem Gambling”? 

- **Problem Gambling**
  - Characterised by “difficulties in limiting time and/or money spent gambling, which leads to undesirable consequences for the individual, others, and/or the community”
  - Includes but is not limited to DSM-5 Pathological Gambling
What do we mean by “Problem Gambling”? 

- 500,000 Australians have a problem with gambling.
- 1,600 families destroyed each year due to problem gambling.
- Only 1 in 6 people seek help for their gambling.
- $19 billion gambled by Australians each year.
- $4.7 billion social cost to address problem gambling.

- Prevalence rates range from 0.5% to 7.6%, with the average rate across all countries reported at 2.3%.
What do we mean by ADHD?

- **Attention Deficit-Hyperactivity Disorder (ADHD)**
  - Characterised by significant problems with attention, hyperactivity, and/or acting impulsively that are deemed not appropriate for the persons age
  - Symptoms must occur before the age of 12 years according to DSM-5 criteria
  - Prevalence of ADHD in the community has been shown to be as high as 14% (Kessler et al., 2007)
  - ADHD occurs between 3 to 7% of school-aged children in the US and between 5.3% to 7.1% of children and adolescents worldwide
  - Young boys are more likely to be diagnosed with the disorder than girls.
They say I have A.D.H.D. but I don't really feel...

-Oh look, a bunny!
Why study ADHD and Problem Gambling?

- Both ADHD and problem gambling place considerable social, psychological, and financial burdens on patients and their families.

- Problem gambling is related to:
  - Higher amount of legal problems, bankruptcy, incarceration, divorce, and an overall reduced quality of life.

- Patients with ADHD often:
  - Underachieve in educational settings, experience a large amount of parental and peer rejection, are under-employed or unemployed, retain a higher risk for accidental injury, and are more often arrested and convicted of criminal offences.
Complicating the clinical profile: Comorbidities

- Both problem gambling and ADHD have been found to be comorbid with other disorders.
  - This complicates the clinical profile of patients with implications for screening, assessment, management and overall treatment.

- Problem gamblers have high rates comorbidity for any type of anxiety disorder (37.4%), substance use disorders (57.5%), any type of mood disorder (37.9%), and nicotine dependence (60.1%)

- 70-75% of clinic-referred adults with ADHD have at least one co-occurring psychiatric condition

- ADHD is often comorbid with depression (16-31%), anxiety (24-60%), obsessive-compulsive disorder (4-14%), and substance abuse (32-53% alcohol abuse, 8-32% other).
Previous Studies: Relationship of ADHD and Problem Gambling

- Adolescents and young adults who screen positively for ADHD are:
  - more likely to engage in gambling
  - develop gambling problems
  - experience a greater severity in gambling problems

- Conversely, adolescents who report problem gambling behaviours are more likely to possess a larger proportion of ADHD symptoms.
Previous Studies: Relationship of ADHD and Problem Gambling

- There is evidence to suggest that between 1.3% and 20.0% of problem gamblers seeking treatment for their gambling problems have a comorbid psychiatric diagnosis of ADHD.

- Problem gamblers with a history of ADHD have more severe:
  - gambling related cognitions
  - a higher frequency of psychiatric comorbidities
  - and an elevated risk of suicide

- ADHD impulsivity symptoms in childhood, may predate the onset of future problem gambling behaviour.

- ADHD problem gamblers may comprise a “special at-risk group”
Previous Studies: Pathways to Gambling

  - ADHD is implicated in the Third pathway, known as the “antisocial impulsivist”, along with impulsivity, antisocial personality disorder, and substance use.

- Neurobiological studies support the existence of ADHD as a risk factor of problem gambling and the significant relationships between substance abuse, impulsivity and problem gambling.

- Subtypes that most closely resemble the “antisocial impulsivist” pathway are most likely comprised of young, male problem gamblers.
Past studies are often limited to predominantly adolescent or young adult samples.

The quantity of studies is quite sparse as this is a relatively new area of research.
Our Study Aims

- Our study aimed to investigate the relationship between ADHD and problem gambling in a clinical sample of adult treatment seeking problem gamblers by:
  - (a) exploring the prevalence of ADHD in a clinical sample compared to the 14% prevalence in the community (Kessler et al. 2007)
  - (b) identify any key relationships between ADHD and problem gambling severity, impulsivity, Cluster B personality disorders, alcohol use, substance use, gender, and age
  - (c) investigate the degree to which these factors moderate the relationship between ADHD and problem gambling severity.
Participants and Procedure

**Participants**
- 189 adult treatment-seeking problem gamblers (137 males, 50 females, 2 unspecified)
- Aged 21-74 years old
- Majority were Australian born (68.25%), single, and in full time employment

**Procedures**
- We used previously collected data
- Participants presented to a problem gambling treatment service in Melbourne, Australia
- Upon a first appointment participants were asked to complete the questionnaire in the waiting area.
- Data was collected from August 2009 to July 2011 (response rate 88%)
- Questionnaires were collated and responses entered into SPSS
Measures and Data Analysis

**Measures/Scales**
- ADHD = ASRS v1.1
- Problem Gambling Severity = PGSI
- Impulsivity = BIS-SF
- Cluster B disorders = IOWA
- Alcohol and Substance use = separate single question items
- Gender and Age = separate single items

**Data Analysis**
- A series of descriptive statistics
- one-sample z-test
- Spearman’s rho
- Ordinal regression
- Linear regression analyses
Results showed that:

(a) the 24.9% prevalence of ADHD in our clinical sample was significantly higher than the 14% prevalence in a community sample (Kessler et al., 2007)

(b) ADHD was significantly positively correlated with problem gambling severity (PGSI), impulsivity (BIS-SF), Cluster B personality disorders (IOWA), and substance use.

(c) none of the factors significantly moderated the relationship between ADHD and problem gambling.
Discussion: Implications

- Problem gambling treatment services must ensure they screen for ADHD whenever problem gambling is present.
- ADHD complicates the clinical profile of problem gamblers.
- Comorbid ADHD may influence the outcomes of treatment.
- Problem gamblers with ADHD may require different management strategies than those without problem gambling.
Study Limitations:

- A clinical sample of treatment-seeking problem gamblers precludes generalization of the results to the greater population.
- Self-report measures will always hold some inaccuracy or bias.
- The unknown validity of the un-standardized single items in our study
- This study did not explore the effect of comorbidity on treatment outcomes
- This study was cross-sectional, and thus unable to clarify the temporal relationship between ADHD and problem gambling.
Conclusions

- **Summary of major findings:**
  - Findings “suggest” that treatment services screen for ADHD whenever problem gambling is present.
  - The presence of comorbid ADHD complicates the clinical profile of problem gamblers and “may” influence the efficacy of any psychological and pharmacological interventions.
  - Clinicians need to collaborate together on what treatments may be most effective in treating such patients, whilst continuing to supplement and improve the literature.

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Gambling, social capital, hardship and trauma
Findings from a secondary analysis of the Victorian Gambling Study 2008-2012

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Kristal Yeung  Data Analyst
Victorian Responsible Gambling Foundation
Chris Stone Christine Stone Consulting
National Association of Gambling Studies 2014
Disclosure statement

We work in the research and evaluation unit at the Victorian Responsible Gambling Foundation, a statutory authority in the state of Victoria.

The foundation is one of the major funders of gambling research in Australia.

Kristal is also a student at the University of Melbourne.

Rosa Billi & Kristal Yeung
Presentation overview

- Victorian Gambling Study findings
- Definitions
- Research questions
- Methods
- Results
Victorian Gambling Study 2008-2012

Increase in gambling risk is associated with increase in the self reporting of stressful life events as a trigger to increase gambling.

Increase in gambling risk is associated with increase in experiencing trauma and hardships in life.

Increase in gambling risk is associated with having a disability that affects daily life.

Billi, Stone, Marden & Yeung 2014
trauma (n.)

– 1690s, "physical wound," medical Latin, from Greek trauma "a wound, a hurt; a defeat," from PIE *trau-, extended form of root *tere- (1) "to rub, turn," with derivatives referring to twisting, piercing, etc. (see throw (v.)).

– Sense of "psychic wound, unpleasant experience which causes abnormal stress" is from 1894

*Online Etymology*
Definitions

Trauma

-an emotional response to a terrible event like an accident, rape or natural disaster. Immediately after the event, shock and denial are typical.

-longer term reactions include unpredictable emotions, flashbacks, strained relationships and even physical symptoms like headaches or nausea. While these feelings are normal, some people have difficulty moving on with their lives.

taken from American Psychological Association
Definitions

Trauma

-differs among individuals by their subjective experiences, not the objective facts

-people will react to similar events differently

-difference in response could be attributed to individual protective factors

-caused by a wide variety of life events
Trauma – VGS wave one

Thinking of your personal background, would you say that you are someone who has had:

1. No really major problems, hardships or trauma in their life or upbringing
2. A lot of trauma, hardship and problems in their life or upbringing
Definitions

Social capital

Definitions of social capital vary, but the OECD (2001 p4) defined social capital as “networks together with shared norms, values and understandings that facilitate cooperation within or among groups”.

Scrivens and Smith (2013) further argue that there are four interpretations of social capital:

- personal relationships
- social network support
- civic engagement
- trust and cooperative norms

However, most studies of social capital consider one or more of these interpretations. Social capital is sometimes measured at an individual level, but may also be considered a property of a community.
Social capital questions

A range of social capital questions were asked in all waves.

Ability to get help

Can you get help from friends, family or neighbours when you need it?
(Yes, definitely, sometimes, no, not at all, don’t know, refused)

Source: Vic Population Health Survey (as used by the Vic Communities Survey)
Background literature

Low socio economic status correlated with increased probability of experiencing adverse life events
Hatch and Dohrenwend 2007

Resilience and social support were important when coping with adversity as protective factors against problem gambling.
Holdsworth, Nuske and Hing 2014

Association between direct experience of violent event and increased gambling frequency
Lee, Storr, Derevensky, Ialongo and Martins 2012
Research questions - Trauma

How is trauma related to problem gambling?

Hypothesis: Trauma is correlated with increased problem gambling risk

How is trauma related to problem gambling when adjusted for social capital?

Hypothesis: Social capital reduces the effect of trauma
Method

Sample
Past year gamblers in wave one
-Data unweighted
-Outcome variable
  - PGSI score (as count variable)
-Exposure variables
  - Trauma and hardship questions
Method - Trauma

Pathway

Research question

How is trauma related to problem gambling?

Hypothesis: Trauma is correlated with increased problem gambling risk

Outcome: PGSI score
Exposure: trauma
Potential confounders: age and gender
Method - Trauma

Pathway

Research question

How is trauma related to problem gambling when adjusted for social capital?

Hypothesis: social capital reduces the effect of trauma

Outcome: PGSI score

Exposure: trauma

Potential confounders: age and gender

Moderator: social capital
Method - Trauma

Sample

Past year gamblers in wave one
- Data unweighted
- Negative binomial regression model
Method - Trauma

For continuous, normally distributed data

Normal distribution
Method - Trauma

More about negative binomial regression

Skewed
Over dispersed
Method – Analysing PGSI score as count data

1. Binary data,
   whether the respondent is classified as problem gambler or not (8+ cut off point)
   Logistic regression

2. Categorical data,
   Non problem gambling (0), low risk (1-2), moderate risk (3-7) and problem gamblers (8+)
   Multinomial logistic regression

3. Count data, non-parametric, problem gambling risk as continuum
   Poisson
   Negative binomial
   Inflated zero

   Debate about whether problem gambling is categorical or count or continuous
Method – Analysing PGSI score as count data

1. Binary data

Logistic regression model

<table>
<thead>
<tr>
<th>Problem gamblers</th>
<th>VS.</th>
<th>Moderate risk</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Low risk</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Non problem</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not gambler</td>
</tr>
</tbody>
</table>
Method – Analysing PGSI score as count data

2. Categorical data

Multinomial regression model

Problem gamblers
Moderate risk gambler
Low risk gambler

VS. Non problem gambler
Non gambler
Method – Analysing PGSI score as count data

3. Count data

- Poisson
- Negative binomial
- Inflated zero

PGSI score
Range: 0 - 27
Method - Trauma

How age and gender were picked as potential confounders

- age, gender, education level, employment status, personal income, household income and household type (e.g. couple with children, single with children etc)

- Stepwise method
Results - Trauma

Pathway

Outcome: PGSI score  
Exposure: trauma  
Potential confounders: age and gender

Results

PGSI scores are 1.8 times (95% CI 1.5, 2.1 \( p<0.001 \)) higher for gamblers who had experienced trauma and hardship in life than those who had not, adjusting for age and gender.
Method - Trauma

Pathway

- Outcome: PGSI score
- Exposure: trauma
- Potential confounders: age and gender
- Moderator: social capital

Results

PGSI scores are 1.6 times (95% CI 1.3, 1.8 p<0.001) higher for gamblers who had experienced trauma and hardship in life than those who had not, adjusting for age, gender and social capital.
• Our results are consistent with Holdsworth, L., Nuske, E., & Hing, N. (2014)

• Social capital acts as a protective factor

Social capital seems to reduce the impact of traumatic experience by around 10%

Ability to get help

<table>
<thead>
<tr>
<th>Option</th>
<th>Odds Ratio</th>
<th>95% CI</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes, definitely</td>
<td>Ref</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sometimes</td>
<td>IRR= 1.5</td>
<td>1.2, 2.0</td>
<td>0.001</td>
</tr>
<tr>
<td>No, not at all</td>
<td>IRR= 2.9</td>
<td>2.0, 4.2</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>
Limitations

Cross sectional study

Self report data

Potential bias- problem gamblers more likely to report or attribute trauma to problem gambling

Social capital (ability to get help) only question analysed
Conclusion

Negative binomial regression model may offer another way of analysing PGSI as measurement of problem gambling

Trauma associated with increased problem gambling risk

Effect of trauma may be moderated by social capital
References

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• Holmes TH & Rahe RH. The social readjustment rating scale. *Journal of Psychometric Research* 1967 11, 213-218
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Problem gambling and family violence: findings from a population representative community study

Supervisor: A/Prof Nicki Dowling, Dr Aino Suomi
Carrie Ewin
Why does it matter?

Problem gambling in one individual has a series of negative effects on many others.

- Adversely affects emotional and physical and financial health
- Are these problems co-occurring?
- Screening
- Treatment
Overview

1. What did this study aim to achieve?

✓ Does relationships exist?  PG > Victim & Perp > PG
✓ What could explain this relationship?
✓ What additional factors could affect the relationship?

2. What has made this study unique?

✓ Broader investigation of family violence
✓ Population representative data
✓ Additional familial relationships
✓ Investigate additional variables
Background

• Problem gambling, high risk gambling behaviour leading to adverse harm
  • 0.7% to 1.7% of community problem gamblers OR moderate risk

• Family violence, acts of abuse including physical, sexual, emotional and psychological in a domestic setting
  • 15% of women and 5% men have experienced physical family violence (Mitchell, 2011)
What is currently known about this relationship?

• Dowling and colleagues (2014) systematic review

• Focus on intimate partner violence & treatment seeking PG’s

• Clear, consistent association between:
  - problem gambling and intimate partner violence victimisation &
  - intimate partner violence perpetration & problem gambling
  - 14 studies

• Meta analysis based on systematic review:
  - 38% PG’s reported IPV perpetration
  - 37% PG’s reported IPV victimisation
Background

What about the relationship in wider settings?

Community Representative Samples: (Affifi et al., 2010)

• PG was associated with increased likelihood of becoming a victim of and perpetrating severe marital violence (OR = 10.8, OR= 20.4)

Wider Family Members

• 64% of family members reported histories of abuse (Kaush et al., 2006)
Background

What causes this association?

• Cause unknown

• Dysfunctional coping mechanism

• Family violence victimisation > distress > problem gambling

• Problem gambling > distress > family violence perpetration
Background

What other variables may impact on the association?

**Gender**

- Studies are inconclusive
- Many failed to find differences – Quantitative
- Recent study identified differences – Qualitative
  - (Suomi and colleagues., 2013)

**Alcohol & Drug Use**

- With one exception, alcohol and drugs strong influence in the association
Limitations

Findings suggest a relationship between problem gambling and family violence exists, but

• Limited examination of broader context
• Little understanding of what causes the relationship
• Little understanding of role played by gender & alcohol use and substance use
Hypothesis

1. there will be a significant relationship between problem gambling and family violence victimisation and perpetration prior to and after controlling for socio-demographic variables psychological distress, alcohol and substance use;

2. psychological distress will significantly mediate the relationship between family violence victimisation and problem gambling & relationship between problem gambling and family violence perpetration

3. the relationships between problem gambling and family violence victimisation and problem gambling and family violence perpetration will not be stronger for men or women but will be stronger for participants who report alcohol and substance use.
Hypotheses and Methods

Measures

Problem Gambling.

• 9 item Problem Gambling Severity Index (PGSI) and

• sorted into non gamblers, (0) low risk gambler (1 and 2), moderate risk gambler / problem gambler (8+)

Family violence.

• Hurt-Insult-Threaten-Screamed Scale modified into 1 item victimisation and 1 item perpetration screening tool

• In the last 12 months, how often has a family member …
Hypotheses and Methods

Measures

*Psychological distress.*

- 10 item Kessler Psychological Distress scale
- Measures distress experienced by individuals with mental illness
- Over 1 month
Hypotheses and Methods

Measures

*Alcohol Use Problems:*

- 3 item Alcohol Use Disorder Identification Test – C
- Measure amount and frequency of alcohol intake.
- Identifies hazardous drinkers

*Substance Use:*

- The Alcohol, Smoking, and Substance Involvement Screening Test.
- Second item
- Assessed on using / not using drugs in past 3 months
Participants & Procedures

- 95,157 adults across the community were telephoned
- Australia
- Random digit dialling
- 3628 adult participants
- 100 PG’s
- 21 victimisation
- 19 perpetrators
Results & Discussion

H1: Did a significant relationship exist?

- Spearman’s correlation tested for two relationships, (1) between family violence victimisation and problem gambling, (2) between family violence perpetration and problem gambling
  
- Community sample, not normally distributed
  
- Significant, positive correlations were detected
  
- FV Victimisation > PG = .09, $p < .001$
  
- PG > FV Perpetration = .09, $p < .001$.
Results & Discussion

After controlling for socio-demographic variables, alcohol & drug use

- Logistic and ordinal regression analyses
- Both relationships remained significant
- Problem gambling was associated with increased odds of becoming a victim of family violence (OR = 1.37).
- Family violence perpetration was associated with increased odds of problem gambling (OR = 1.18).
- Weaker relationship than expected?
  - Family violence not intimate partner violence?
H2: Did psychological distress mediate the relationships between family violence victimisation and PG & PG and family violence perpetration?

- Ordinal and logistic regression
- Yes. Lends support to the concept of problem gambling & family violence as dysfunctional coping mechanisms
H3: Does gender, alcohol use and drug use MODERATE the relationship between family violence victimisation and PG and family violence perpetration

- No significant interactions were present
- The relationships between family violence victimisation and problem gambling and family violence perpetration and gambling were NOT stronger or weaker due to gender, alcohol use or substance use.

- Not all results consistent with previous findings
Results and Discussion

Gender

Some studies, including this study, found no difference on the basis of gender but differences have been found. Inconsistencies?

• Different types of family violence measurement?
• Acts-based studies measure prevalence without further details
• Such studies have found no relationship (Afifi et al., 2010; Korman et al. 2008)
• Context based studies measure types, motivations, severity etc. – differences have been found (Sumoi et al., 2013)
Results and Discussion

Alcohol & Drugs

The majority of previous studies have identified alcohol and drugs as influencing factors yet this study has NOT. Why?

- Low levels of alcohol abusers in the sample? Mean AUDIT score for problem gamblers BELOW hazardous drinking levels
- Prior studies had 60% of problem gamblers = hazardous drinkers (Brasfield et al., 2012)
- Small number of studies have also failed an association (Korman et al., 2008)
- Further research needed
Limitations

• Cross sectional data not longitudinal
  • Prevents inferences of causality
  • Psychological distress, causal?

• Modified HITS scale – 1 item
  • Reliability and validity not confirmed
  • Brief measure not available but required
General Summary & Conclusions

Confirmation that family violence and problem gambling are related in the community and amongst wider variety of family members.

- Patient screening for both conditions
- Education & awareness

Evidence that problem gambling and family violence may be dysfunctional coping strategies in response to distress

- Intense and specialised treatment

Challenges belief that gender, alcohol and drugs influence the relationship

- Different family violence measurements relating to gender?
Thank you