The Association Between Problem Gambling and Attention Deficit/Hyperactivity Disorder: A Meta-Analysis

Kylee Hurl, Jennifer Theule, Michelle Ward, Kristene Cheung, & Brenna Henrikson

Department of Psychology, University of Manitoba, Canada

**Problem Gambling (PG)**
- Pathological Gambling or Gambling Disorder involves both regular and incessant maladaptive gambling behaviour that causes disruption to one's social, academic, occupational, or personal life (APA, 2013)
- Prevalence rates (Stassen, Kraus, & Buhinger, 2011)
  - 0.02% to 2% for adults
  - 0.4% to 26% for adolescents

**Attention Deficit Hyperactivity Disorder (ADHD)**
- A neurodevelopmental disorder that is characterized by three main diagnostic features (APA, 2013)
  - Inattentiveness
  - Hyperactivity
  - Impulsivity
- Prevalence rates
  - 5% for children (Polanczyk, de Lima, Horta, Biederman, & Rohde, 2007)
  - 4.4% for adults (Kessler et al., 2006)

**PG and ADHD**
- Large degree of overlap between symptoms of PG and ADHD
- Impulsivity is a key vulnerability for PG and a core symptom of ADHD
- Inconsistent findings on the relationship between PG and ADHD

**Objective**
To clarify a possible association between ADHD and PG

**Research Questions**
1) What are the odds of individuals with ADHD having PG as compared to individuals without ADHD?
2) What are the odds of individuals with PG having ADHD as compared to individuals without problem gambling?
3) What is the rate of ADHD in individuals with PG?
4) What is the rate of PG in individuals with ADHD?
5) How large is the association between symptoms of ADHD and symptoms of PG?

**Methods**
A meta-analysis was conducted

- Records identified through database searching (n = 1604)
- Databases searched: PsycINFO, PubMed, ERIC, ProQuest Dissertations and Theses, and Google Scholar
- Number of articles identified through other sources (n = 1)
- Limits: English studies only and published or prepared before July 2014
- Records after duplicates removed (n = 1170)
- Articles screened on basis of title and abstract
- Full-text articles assessed for eligibility (n = 278)
- Full-text articles excluded, with reasons (n = 252)
  - No quantitative data (n = 4)
  - No eligible measure of ADHD (n = 223)
  - No eligible measure of problem gambling (n = 8)
  - No eligible comparison (n = 9)
  - Non-independent data (n = 5)
  - Data in format not amenable to meta-analysis (n = 3)
- Included (n = 26)

26 studies met eligibility criteria
- 23 published and 3 unpublished studies
- Year of publication ranged from 1992 to 2014
- 17 studies published in North America, 6 in Europe, and 3 in Australia/New Zealand

Each study was coded following a coding manual
- Inter-coder reliability for all variables was 100%
- Data was entered and analyzed using Comprehensive Meta Analysis (CMA) software (Borenstein, Hedges, Higgins, & Rothstein, 2014)

**Results**
1. Based on four effect sizes, individuals with ADHD have 2.85 times the odds of having PG compared to individual without ADHD
2. Based on five effect sizes, individuals with PG have 4.18 times the odds of having ADHD compared to individuals without PG (p < .001)
3. Based on five effect sizes, the overall mean prevalence rate of PG in individuals with ADHD is 11.17%
4. Based on twelve effect sizes, the overall mean prevalence rate of ADHD in individual with PG is 18.75%
5. Based on eight effect sizes, the overall correlation between PG and ADHD was .20, p < .001

**Discussion**
- The evidence supports a connection between PG and ADHD
- Based on Cohen’s (1977, 1988) definition, the overall effect sizes ranged from small to medium across the different metrics used
- Clinicians should be aware of ADHD as a risk factor for PG
- Future research should explore:
  - Possible links between PG and ADHD subtypes
  - How to apply this information to preventative efforts
- If treatment of ADHD leads to reductions in PG

**References**

**Acknowledgments**
Funding for this study was provided by the Manitoba Gambling Research Program

**Correspondence**
Kylee.Hurl@umanitoba.ca or Jen.Theule@umanitoba.ca

**Presented at the Canadian Psychological Association 2015 Annual Convention, Ottawa, Ontario, June 4 to 6, 2015**