

## BRIEF COMMUNICATION

# Comorbid addictive behaviors in disordered gamblers with psychosis

Hyoun S. Kim,<sup>1</sup> Briana D. Cassetta,<sup>1</sup> David C. Hodgins,<sup>1</sup> Daniel S. McGrath,<sup>1</sup> Lianne M. Tomfohr-Madsen,<sup>1</sup> Hermano Tavares<sup>2</sup>

<sup>1</sup>Department of Psychology, University of Calgary, Calgary, AB, Canada. <sup>2</sup>Programa Ambulatorial do Jogo (PRO-AMJO), Instituto de Psiquiatria, Universidade de São Paulo (USP), São Paulo, SP, Brazil.

**Objective:** While it has been shown that disordered gamblers with psychosis are at increased risk for comorbid psychopathology, it is unclear whether this dual-diagnosis population is also at greater risk of problematic engagement with comorbid addictive behaviors.

**Methods:** We tested for association between disordered gambling with psychosis and comorbid addictive behaviors in a sample of 349 treatment-seeking disordered gamblers.

**Results:** Twenty-five (7.2%) disordered gamblers met criteria for psychosis. Disordered gamblers with psychosis were no more likely to meet diagnostic criteria for current alcohol/substance use disorder than disordered gamblers without psychosis. However, this dual-disorder population reported greater misuse of shopping, food bingeing, caffeine, and prescription drugs. When controlling for multiple comparisons, binge eating was the only addictive behavior to remain significant.

**Conclusion:** Given these findings, a comprehensive assessment of addictive behaviors – specifically food bingeing – in this population may be warranted.

**Keywords:** Disordered gambling; psychosis; addictive behaviors; comorbidity

## Introduction

Disordered gamblers are at an elevated risk for experiencing psychosis compared to the general population.<sup>1</sup> Two studies which examined the prevalence of disordered gambling among individuals with psychosis found rates of comorbidity between 12.2% and 19.2%.<sup>2–4</sup> Further, a study examining the rates of psychosis among disordered gamblers found that this population was 3.5 times more likely to present with comorbid psychosis.<sup>5</sup> These rates are significantly higher than those found in the general population (1.5-3%)<sup>6</sup> and suggest that disordered gamblers are at an increased risk of psychosis. Moreover, disordered gamblers with psychosis experience elevated rates of other psychiatric disorders and increased gambling severity,<sup>1</sup> as well as greater cognitive distortions around gambling.<sup>7</sup> While previous research has found that disordered gamblers with psychosis are at an increased risk of comorbid psychiatric disorders, it remains unknown whether comorbid addictive behaviors are also more prevalent in this dual-disorder population. The present study addressed this empirical gap.

## Methods

Participants were 349 disordered gamblers seeking treatment at Instituto de Psiquiatria (IPq), Universidade de

São Paulo, between the years 2006-2015. At intake, disordered gamblers were asked whether they were willing to participate in ongoing research studies at IPq. They were clearly informed that treatment, which would consist of 12-15 sessions of individual therapy (motivational interviewing and cognitive behavioral therapy), was not contingent on research participation. Informed consent was then obtained from patients who indicated their willingness to participate. For the present study, only participants who completed the Portuguese version of the MINI International Neuropsychiatric Interview (MINI)<sup>8</sup> were included in the analyses, resulting in a 43.8% non-response rate. The MINI was administered by registered psychiatrists to diagnose the presence of psychosis using DSM-IV-TR criteria. Current alcohol and non-alcohol substance use disorders were also assessed using the MINI. The Portuguese version of the Shorter PROMIS Questionnaire (SPQ)<sup>9</sup> was administered to comprehensively assess a wide array of addictive behaviors. The SPQ contains 160 items assessing problematic engagement in 16 potentially addictive behaviors. For the purposes of this study, submissive and dominant helping/relationships were removed from the instrument due to a lack of empirical support for these behaviors as addictions. The SPQ measures seven common characteristics of addictions: pre-occupation, use alone, use for effect, use as a medicine, protection of supply, loss of control, and tolerance. As such, the SPQ assesses misuse rather than frequency and use of addictive behaviors and substances. The SPQ is anchored from 0 (not like me) to 5 (like me), with higher scores indicating greater severity.

The total sample consisted of 58.5% males and 41.5% females, with a mean age of 47.34 years (standard deviation

Correspondence: Hyoun S. (Andrew) Kim, MA 240, Administration Building, Department of Psychology, 2500 University Drive NW, University of Calgary, Calgary, AB, Canada T2N 1N4.  
E-mail: hyoun.kim@ucalgary.ca

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[SD] = 12.15). Most of the sample identified as white (71.6%), and 51.5% reported being in a relationship. In regards to psychosis, 25 (7.2%) of disordered gamblers (9 males, 16 females) met diagnostic criteria, with a 95% confidence interval between 17 and 36 cases. To assess for differences in problematic engagement with addictive behaviors among disordered gamblers with and without psychosis, chi-square analyses were used for categorical variables (current alcohol and substance use disorder). Mann-Whitney *U* non-parametric tests were used for the SPQ, as the variables violated assumptions of normality.

## Results

Disordered gamblers with psychosis were not significantly more likely to be diagnosed with current alcohol (8.0% vs. 9.6%) or substance use disorder (8.0% vs. 4.6%) than disordered gamblers without psychosis, *p*-values > 0.348. On the SPQ, disordered gamblers with psychosis reported greater misuse of four addictive behaviors: shopping, binge eating, prescription drugs, and caffeine (Table 1). The effect sizes found would be considered small. No other addictive behavior reached statistical significance, *p*-values > 0.105. To provide a more conservative estimate, we re-ran the analyses to control for multiple comparisons using the false discovery rate<sup>10</sup> method, with the rate set at 0.10. The results indicated that food bingeing was the only addictive behavior to remain significant. We also assessed whether gender differences exist in addictive behaviors in this dual-diagnosis population, and found no significant differences in the diagnosis of alcohol and substance use disorder (*p*-values > 0.120) or in any of the addictive behaviors on the SPQ (*p*-values > 0.069).

## Discussion

The results of the present research suggest that disordered gamblers with psychosis are not more likely to be diagnosed with alcohol or substance use disorder. However,

several differences emerged when a variety of addictive behaviors were comprehensively assessed. Interestingly, disordered gamblers with psychosis reported greater misuse of addictive behaviors that would be considered “lesser known,” such as shopping, food bingeing, prescription drug use, and caffeine use. These findings may be explained by the increased impulsivity that has been found among disordered gamblers with psychosis.<sup>11</sup> Further, the higher rates of binge eating among disordered gamblers with psychosis may be related, at least in part, to metabolic syndromes that have been associated with antipsychotic medication use.

Current best-practice guidelines suggest monitoring and assessing patients with psychosis for substance use disorders, as they can lead to adverse interaction effects with medications.<sup>12</sup> However, individuals with psychosis may be less likely to be cautioned about behavioral addictions, specifically food bingeing, which may also potentially lead to harm.<sup>13</sup> The results of our research suggest that practice guidelines should be extended to include a comprehensive assessment of both substance and behavioral addictions in this dual-disorder population.

One limitation of the present research was the relatively small sample of disordered gamblers with psychosis. Indeed, replication of our results with a larger sample is needed to increase confidence in our findings.

In sum, the results of our research should be viewed as preliminary evidence for the increased risk of comorbid addictive behaviors in individuals with a dual diagnosis of disordered gambling and psychosis, and suggest that practitioners would do well to monitor and caution against a wide array of addictive disorders in this population.

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**Table 1** Comparison of misuse of addictive behaviors as measured by the Shorter PROMIS Questionnaire (SPQ) between disordered gamblers with and without psychosis

Addictive behaviors	Disordered gamblers without psychosis (n=324) Mean (SD)	Disordered gamblers with psychosis (n=25) Mean (SD)	Mann-Whitney <i>U</i>	Cohen’s <i>d</i>	<i>p</i> -value
Alcohol abuse	9.73 (12.74)	10.28 (12.56)	2,305.5	0.036	0.765
Shopping abuse	12.74 (11.10)	18.00 (12.01)	3,301.0	0.262	0.031*
Food bingeing	13.89 (11.91)	22.65 (14.72)	3,334.0	0.346	0.006*†
Food starving	8.50 (7.42)	12.16 (10.71)	2,888.5	0.179	0.141
Tobacco abuse	16.34 (17.13)	21.25 (18.06)	2,948.0	0.149	0.208
Pathological gambling	31.04 (13.55)	35.45 (11.97)	2,971.5	0.190	0.122
Drug abuse	4.08 (9.00)	2.30 (4.81)	2,358.0	0.061	0.554
Sex addiction	7.23 (9.19)	7.53 (13.04)	1,739.5	0.130	0.289
Work addiction	16.50 (9.74)	19.89 (12.77)	2,519.5	0.116	0.345
Caffeine abuse	6.94 (8.66)	14.50 (14.23)	2,819.5	0.235	0.050*
Prescription drug abuse	7.13 (9.60)	13.74 (12.27)	3,197.0	0.284	0.017*
Exercise abuse	10.29 (9.52)	9.83 (7.43)	2,312.0	0.027	0.822

SD = standard deviation.

\* *p* < 0.05.

† Denotes significance with false discovery rate correction.

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## Disclosure

The authors report no conflicts of interest.

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