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Prevalence and Correlates of Problem Gambling in People with Psychotic Disorders.

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Abstract:

Objective:

There are few published studies on the comorbidity of psychosis and problem gambling. This paper provides estimates of the prevalence and clinical correlates of problem gambling in a representative sample of people with psychotic disorders.

Method:

The second Australian national survey of psychosis was undertaken in 2010 and included adults (18-64 yrs) attending mental health services. Problem gambling was measured using the Canadian Problem Gambling Index (CPGI) at two sites of this study, with 442 participants providing data suitable for analysis.

Results:

There were 151 participants who screened positive to past-year gambling. 4.1% of the total sample was classified as low risk gamblers, 6.4% were moderate risk gamblers and 5.8% were problem gamblers. Moderate risk/problem gamblers were more likely to be male, have left school with no qualifications and have sought financial assistance in the last year. There was a significant association with substance use, including alcohol use disorders and use of cannabis and ‘other’ drugs (excluding cannabis).

Conclusions:

People with psychosis are four times more likely to have a gambling problem than the general population. The association of gambling with substance use disorders is consistent with community studies, while the increased need for financial assistance suggests that problem gambling increases the likelihood of financial harm for this population. Clinicians should screen for comorbid gambling problems in people with psychosis, while there is also a need for additional research into this area.

Keywords: problem gambling; psychotic disorders; comorbidity; schizophrenia; national survey.
1. INTRODUCTION

Pathological and problem gambling refer to a class of disorders that affect around 0.5% to 2.0% of the community across western countries \(^1\). These disorders are characterised generally by “persistent and recurrent maladaptive gambling behaviour” (DSM-IV, 1994; p. 615) that leads to significant personal and social harm (e.g., financial difficulties, relationship breakdown). Despite a lack of consistent nomenclature, the term pathological gambling has described conditions that meet criteria for a diagnosis under DSM-IV. The DSM-5 refers to this as ‘gambling disorder’ and has introduced three levels of severity: mild, moderate and severe.

The term problem gambling is also used frequently and may refer to a broader spectrum of conditions \(^2\), that range from moderate difficulties (meeting some but not all diagnostic criteria) to extreme levels of harm that could otherwise be classified as pathological gambling. Petry (2005) suggests that because lower levels of gambling problems have not received a DSM-IV diagnosis, there has been a lack of research into factors related to gambling at levels less than ‘pathological’. Community studies suggest that gambling disorders across a range of severity are associated with adverse outcomes, including mental and physical health problems \(^3,4\) and significant psychosocial difficulties such as relationship breakdown and financial or legal problems \(^3,5\).

Gambling disorders are frequently comorbid with other psychiatric conditions, with studies of community \(^6\) and clinical \(^7\) samples of pathological and problem gamblers showing high rates of co-morbidity including substance related disorders, mood disorders and personality disorders (in particular antisocial personality disorder) \(^3,8\). Although rates of gambling disorders in samples of people suffering other primary psychiatric conditions are generally
lower \(^{(9)}\), there are data suggesting that there are particularly vulnerable clinical populations, such as those in treatment for substance use problems \(^{(10)}\). Little is currently known about the rates and implications of comorbid gambling problems in other psychiatric conditions.

People with psychotic disorders such as schizophrenia commonly suffer difficulties with social and occupational roles, and often experience socio-economic disadvantage including homelessness and poverty \(^{(11, 12)}\). The only published data found specifically relating to gambling problems amongst people with schizophrenia and related disorders comes from a small number of clinical case studies \(^{(13-15)}\), and one quantitative investigation \(^{(16)}\). This latter study measured problem gambling in a sample of 337 participants with schizophrenia or schizoaffective disorder, who were users of two mental health services in the U.S. Among this sample, 19.3\% were classified as problem gamblers (as defined by the National Opinion Research Center Diagnostic Screen) \(^{(17)}\), which is around four times the rate in the U.S. general population. The study also identified potential covariates of problem gambling in psychosis, including: (1) substance use problems; (2) depressive symptoms; (3) legal difficulties and violence; and (4) health service utilization. There were further trends suggesting links with severity of psychotic symptoms. Notwithstanding, the non-representative sample and lack of corroborating data means that conclusions regarding problem gambling in psychosis remain tentative. It cannot be excluded that apparent associations with covariates may be attributed to common factors, such as socio-economic disadvantage and substance use problems, which relate to both gambling and potential covariates (e.g., legal problems), and may explain the associations with these variables.

There remains a strong need for additional studies of problem gambling in a range of psychotic disorders and representative clinical contexts, and the current study will begin to
address this need. It reports data on problem gambling in the second Australian national survey of psychosis (or Survey of High Impact Psychosis; SHIP\(^{(12)}\)). This study involved recruitment of a representative sample of individuals with psychotic disorders from seven sites across Australia. It measured a range of variables additional to diagnosis and symptomatology, including socio-demographic characteristics, substance use and related problems, social adjustment, role functioning, physical health status and health service utilisation. A measure of gambling and problem gambling was administered at two sites in the State of Victoria. This paper focuses on data from these sites and provides estimates of the prevalence of problem gambling in a representative sample of people with a range of psychotic disorders. It also evaluates the clinical and social correlates of problem gambling in psychosis, and examines the potential roles of socio-demographic and substance use problems in explaining these associations.

2. MATERIALS AND METHOD

Procedures:

The SHIP study included adults (18–64 years) attending public mental health services or non-government organisations (NGOs) providing mental health support in seven Australian sites in the year prior to 31st March 2010. A two-phase ascertainment strategy was employed. First, a screening tool was administered to all individuals attending catchment services in the month of March 2010, while electronic screening of databases of the public mental health services was conducted for the 11 months prior to March 2010. In the second phase, a random sample of those participants screening positive for psychosis (excluding those without sufficient English or cognitive capacity) was contacted and invited to attend a full interview. The study was described to participants and written informed consent was obtained. Interviews took approximately 3 hours and were completed between April and
December 2010 by experienced mental health clinicians with interview training. Full details of the methodology are provided by Morgan et. al.\textsuperscript{(12)}.

2.1. Participants:
A total of 496 participants were resident in the two Victorian sites of the SHIP study. Of these, 442 (89\%) provided data suitable for the analyses described in this paper. The remaining 54 participants did not complete the gambling survey for several reasons including lack of time (after the full SHIP interview), fatigue, non-attendance at follow up interview or administrative error. This sample represented the following DSM-IV diagnostic groups: schizophrenia (44.1\%), bipolar mania (19.2\%), depressive psychosis (14.9\%), schizoaffective disorder (12.4\%), delusional disorders and other non-organic psychosis (6.1\%) while 2.5\% had severe depression but not active delusions or hallucinations.

2.2. Measures:
Assessment of psychosis employed the Diagnostic Interview for Psychosis (DIP)\textsuperscript{(18)}. It is an interview schedule based on the items of the OPCRIT (Operational Criteria for Psychosis,\textsuperscript{(19)}) and its validity has well established\textsuperscript{(18)}. The DIP is designed for use in epidemiological surveys and involves a semi-structured clinical interview conducted by a specially trained mental health clinician. The training and calibration in use of the instrument is described by Morgan et. al. (2012)\textsuperscript{(12)}. A computerised algorithm provides a diagnosis of psychoses according to a range of operationalized criteria, including DSM-IV. The DIP includes standardised measures of use of alcohol, cannabis and other non-prescribed drugs. The DIP enabled primary diagnoses of process psychotic disorders (schizophrenia, schizoaffective disorder, bipolar disorder) to be established with confidence.
Alcohol dependence was assessed using the Alcohol Use Disorders Identification Test (AUDIT)\(^{(20)}\) which was developed by the World Health Organisation and is commonly used in epidemiological surveys. Nicotine dependence was measured using the Fagerstrom Test\(^{(21)}\).

The Multidimensional Scale of Independent Functioning (MSIF\(^{(22)}\)) was employed to ascertain levels of functioning within education, residential and work domains; it incorporates the amount of support provided in regard to duties completed. It has been noted as a good measure for scoring functional outcomes in research\(^{(23)}\).

A self-report checklist of medical conditions was completed as well as measures (including fasting blood tests, body mass index (BMI) and waist measurements) taken to establish current health status and risk of metabolic syndrome.

The gambling survey used a simple screen: “Have you, over the last year participated in any of the following forms of gambling?” followed by a list of common gambling activities (including casino games, scratch tickets, electronic gaming machines) and items asking about preferred gambling activities as well as typical frequency and amount spent. Participants who reported past year gambling then completed the 9-item Problem Gambling Severity Index (PGSI) of the Canadian Problem Gambling Index (CPGI\(^{(24)}\)). Although there are no measures of problem gambling that have established validity in samples of people with psychotic disorders, it is the “preferred screen for problem gambling in Australia”\(^{(25)}\), p5.5 and is also the source of relevant comparative data from community surveys. Scores on the PGSI reflect no risk gambling (0), low risk (1-2), moderate risk (3-7) and problem gambling (8+)\(^{(24)}\).
2.3. Data analysis:
Data preparation and exploratory analyses were conducted using SPSS version 20, while the primary analyses were conducted using the R software. These analyses comprised tests of differences across levels of problem gambling severity which were summarised in terms of proportions for categorical variables, means and standard deviations (SDs) for normally distributed continuous variables, and medians and median absolute deviations (MADs) for continuous (or multinomial) variables that were not symmetrically distributed. A series of binary logistic regression analyses were used to test for differences in socio-demographic variables and other clinical covariates across levels of problem gambling severity. These included bivariate analyses, as well as adjusted analyses that specified control variables reflecting socio-demographic characteristics and substance use disorders. For all analyses, the combined group of non-gamblers and no-risk gamblers provided the reference category. An alpha level of $p < .05$ was used as the criterion for statistical significance, although trends significant at more liberal levels ($p < .10$) were identified.

3. RESULTS
3.1. Descriptive analyses:
A total of 151 participants (34.2%) screened positive to past-year gambling. They engaged in activities including electronic gaming machines (EGMs; 60.9%), horse racing (25.8%), lottery (25.2%), scratch tickets (19.2%) and casino table games (18.5%). Other types of gambling (e.g., sports betting) were reported by less than 10% of the sample. EGMs were the preferred form of gambling for 51.7% of the sample, while 38.5% of gamblers (8.4% of the total sample) reported gambling weekly or more often.
The PGSI was administered to 435 participants (as seven participants were excluded due to data administration errors and removed from the analysis listwise). A minority of other cases \((n = 25)\) were missing partial data on the PGSI (typically on one or two items only), and the expectation-maximisation (EM) algorithm \(^{(26)}\) was used to estimate missing values for these cases. Using the CPGI criteria for classifying severity of problem gambling \(^{(24)}\), the sample comprised 83.7\% \((n = 364)\) of participants with no gambling problems; including participants who had not gambled and participants who had gambled and scored zero on the PGSI. Another 4.1\% \((n = 18)\) were classified as low risk gamblers, while 6.4\% \((n = 28)\) were moderate risk gamblers and 5.8\% \((n = 25)\) were problem gamblers. The combined prevalence of moderate risk and problem gambling was 12.2\% \((n = 53)\), and was slightly higher in the older age strata (14.8\%; 35-64 years) than the younger strata (9.1\%; 18 – 34 years). When analyses were limited to past year gamblers (i.e., the ‘at risk’ sample), rates of moderate risk and problem gambling were 19.4\% and 17.4\%, respectively, with a combined prevalence of 36.8\%. There was no evidence of systematic differences in problem gambling severity according to specific diagnosis.

3.2. Covariate Analysis:

A series of binary logistic regression analyses provided tests of differences across levels of problem gambling severity. Small amounts of missing data on covariates were managed using pairwise deletion. Given the small number of participants reporting low-risk gambling \((n = 18)\), this group was excluded from comparison, while moderate risk and problem gamblers were combined (consistent with the Productivity Commission report \(^{(25)}\)). Table 1 shows the distribution of socio-demographic variables and results from the initial regression analyses (ORs and 95\% CIs).

------------------------------------------------------------------INSERT TABLE 1 HERE------------------------------------------------------------------
Relative to participants with no gambling problems, moderate risk/problem gamblers were more likely to be male and have left school with no qualifications. There was a trend ($p=.058$) suggesting that moderate risk/problem gamblers were also more likely to have been on Government pensions for more than 12 months. No other trends approached significance. All socio-demographic characteristics were included as control variables in subsequent regression analyses of additional covariates of problem gambling severity (see Table 2 and Table 3).

Table 2 shows associations among moderate risk/problem gambling and covariates relating to substance use and substance use disorders. As shown, moderate risk/problem gambling was significantly associated with substance use, including use of cannabis and ‘other’ drugs (excluding cannabis). Adjusted ORs indicated that the odds of drug use (excluding cannabis) were 2.6 times higher among moderate risk/problem gamblers, relative to participants with no gambling problems. The odds of cannabis use were 2.3 times higher. There were also significant associations with quantity (although not frequency) of alcohol consumption, while moderate risk/problem gamblers were more likely to suffer alcohol use disorders and cannabis use disorders (although this latter effect was not significant at conventional levels when controlling for socio-demographics). In contrast, there was no evidence of differences in other drug use disorders (excluding cannabis) or nicotine dependence. Measures of alcohol use, cannabis use disorders and other drug use disorders were included as additional control variables in subsequent adjusted analyses.
Table 3 shows results from analyses of psychotic and mood symptoms, physical health, and social and functional covariates. Unadjusted analyses indicated that hallucinations were more common among moderate risk/problem gamblers, although this effect was significant only at the trend level ($p = .095$) in the adjusted analyses. Moderate risk/problem gambling was also associated with medical conditions in the unadjusted analyses only. There were no associations with other indicators of psychosis or poor health, mood or suicide-related behaviours, disability, arrests and homelessness, or healthcare utilization. Rather, the main differences were observed in terms of financial difficulties. Moderate risk/problem gamblers were more likely to have pawned or sold belongings, and reported financial assistance. These effects were independent of substance-related disorders; although the adjusted association with financial assistance was significant at liberal levels ($p = .077$). Differences in difficulties paying bills or going without meals were in the expected direction, but were smaller in magnitude and not significant.

4. DISCUSSION

As far as we are aware this is the largest published study of problem gambling in psychosis, and the first systematic investigation of a representative sample of individuals with a broad range of psychotic disorders. We found that 5.8% of participants were problem gamblers, and another 6.4% were moderate risk gamblers. In Australia, the 12 month prevalence of problem gambling in the general population is between 0.5% and 1.0% (25). In our sample there was no evidence of variability in prevalence across diagnostic groups (e.g., schizophrenia, bipolar disorder). Although these estimates were lower than those reported by Desai and Potenza (16) in a U.S. sample (19.3%), the differences are difficult to interpret because of varying methodologies. Notwithstanding, both studies are consistent in suggesting rates of problem gambling in psychosis that are substantially elevated relative to the general community.
There are a number of potential reasons for high rates of problem gambling in psychosis. The role of neurotransmitter (including serotonergic and dopaminergic) systems has been highlighted as a factor related to pathological gambling (1) and is noted by Borras and Hugeulet (2007) as being a factor common to both psychosis and gambling disorders that may influence their mutual relationship. Poor impulse control and cognitive deficits are salient features of psychotic disorders and may increase risk taking behaviours and the likelihood of financial losses and gambling related harm (15, 16).

Gambling activity may also function as a form of distraction from high levels of distress which commonly occur with psychosis. This is consistent with the emotionally vulnerable pathway to problem gambling (27), and circumstances where “participation in gambling is motivated by a desire to modulate affective states and/or meet specific psychological needs” (p. 492).

The current study found specific socio-demographic correlates of moderate risk and problem gambling, including being male, low levels of education and long-term dependence on Government financial support. These findings are consistent with results from studies of community samples (28) which show similar associations between gambling, problem gambling, and indicators of socio-economic disadvantage. This is despite the fact that the current sample was characterised by high levels of disadvantage overall, including low levels of education and employment, and long-term dependence on financial support services (12).

In our study, the main implications of moderate risk and problem gambling in psychosis were observed in terms of substance-related outcomes. Relative to participants with no problems,
the moderate risk / problem gamblers reported greater quantity of alcohol consumption and were more likely to report an alcohol use disorder. They were more likely to use cannabis and other drugs, with a trend suggesting increased risk of cannabis use disorders. There are several potential explanations for these findings, which are consonant with non-clinical studies (5, 8, 9, 29). Both gambling and substance-related problems may be explained by common factors, including shared genetic vulnerabilities (30) and personality traits like impulsivity (31) and novelty seeking (32) that may predispose individuals to risk taking behaviour. Association with deviant peer networks may provide exposure to both gambling and substance use. There may also be inter-relations between disorders (e.g., whereby addictive substances can impair judgment and promote excessive gambling (33)). These explanations suggest complex interactions between disorders that originate from underlying proclivities towards multiple addictions, and are maintained by ongoing and reciprocal influences among gambling and substance use behaviours and between the individual and their social context.

The role of occupational deprivation may also be a factor in the choice by people with psychosis to engage in gambling, as well as substance use. The low level of participation in employment by sample participants reflects the life situation of many people with psychosis. As demonstrated within a detailed study of how a representative sample of people with psychoses spend their time, they often experience high levels of unstructured time, limited engagement in meaningful occupations and accompanying social isolation and boredom (34). Thus, unstructured time and lack of meaningful activity may predispose to pursuit of stimulation and engagement through gambling, substance use and other problem behaviours (35).
The results indicated associations between moderate risk and problem gambling and financial difficulties, including reports of seeking financial assistance. Although these associations were smaller in magnitude than might be expected based on non-clinical studies, they still suggest an increased likelihood of financial harm from gambling in psychosis. These harms are independent of substance use disorders and socio-demographic variables, and may compound the effects of generally high levels of financial deprivation and low socio-economic status that characterise psychotic disorders overall.

The current results did not provide support for unique associations with other outcomes, including depression, self-harm, physical health problems, functional disability, arrests, diminished contact with friends and families, or health care utilization. These findings contrast with studies of community samples that have reported consistent links between gambling problems and mood disorders (29) and poor physical health (4, 36). Some of these findings may be explained, in part, by co-occurring substance use problems which were controlled in this analysis. Discrepancies with prior research may also be explained in terms of range restriction and the high levels of distress and functional impairment that define psychoses (and our sample, in general). Indeed, overall our sample reflects these high levels of psychiatric symptoms (12), physical health problems (37) and social problems (e.g. homelessness (38)).

Whilst this study has many strengths, including the large clinical sample and rigorous sampling strategy, the results should be interpreted cautiously in light of methodological limitations. The SHIP study provides cross-sectional data and does not illuminate temporal sequencing regarding the onset of psychotic disorders, substance-related conditions and gambling problems. It should also be noted that the PGSI is a screening and not a diagnostic
tool, and does not confirm the presence of a gambling disorder. It was necessary to combine groups of moderate risk and problem gamblers for the purposes of statistical comparison. Although there is precedent for considering this singular group, our sample was defined by a small number of low risk gamblers and thus was unable to examine the implications of low risk gambling. A larger sample size may be required to provide sufficient power to detect further predictive relationships related to different levels of gambling.

This study makes a significant contribution to a small body of evidence suggesting that problem gambling is an important clinical consideration in psychosis. Results indicated that people with psychotic disorders are at an elevated risk of comorbid gambling problems, and that like the general population, this is associated with substance-related problems and socio-economic disadvantage (in particular financial difficulties). This suggests that clinicians should be alert to gambling problems in people with psychosis, and particularly those with a history of gambling or substance-related or financial problems.

Strategies for identification of gambling disorders in psychosis could initially involve use of brief tools administered to people during treatment intake and regularly during ongoing clinical contact. The ‘NODS-CLiP’ (39) is one such tool, comprising three items and having demonstrated psychometric properties in clinical samples (40). Further evaluation may involve a general clinical interview based on DSM criteria. Several psychological therapies have demonstrated short-term efficacy in the treatment of pathological and problem gambling (41), though none have been tested in the population with psychosis and additional research is indicated for this purpose. There is a strong need to provide empirically supported service guidelines and treatment recommendations for people with comorbid psychosis and problem gambling.
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DECLARATION OF CONFLICTING INTERESTS:

None declared.
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38. Harvey C, Killackey E, Groves A, Herrman H. A place to live: housing needs for people with psychotic disorders identified in the second Australian National Survey of


Table 1. Socio-demographic characteristics of people with psychosis according to problem gambling status.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Total Sample n = 435</th>
<th>No gambling problems n = 364</th>
<th>Low Risk n = 18</th>
<th>Moderate-risk / Problem n = 53</th>
<th>Logistic Regression</th>
<th>O.R.</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Country of birth</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>LB</td>
</tr>
<tr>
<td>Born in Australia</td>
<td>348</td>
<td>80%</td>
<td>288</td>
<td>79.12</td>
<td></td>
<td>1.48</td>
<td>0.71</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>UP</td>
</tr>
<tr>
<td>Male</td>
<td>272</td>
<td>62.53%</td>
<td>218</td>
<td>59.89</td>
<td></td>
<td>2.06</td>
<td>1.09</td>
</tr>
<tr>
<td>Age (years), mean, SD</td>
<td>38.04</td>
<td>11.88%</td>
<td>37.61</td>
<td>12.00</td>
<td></td>
<td>1.02</td>
<td>0.99</td>
</tr>
<tr>
<td>Relationship status</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single, never married</td>
<td>324</td>
<td>74.48%</td>
<td>271</td>
<td>74.45</td>
<td></td>
<td>0.87</td>
<td>0.47</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Left school, no qual.</td>
<td>164</td>
<td>38.23%</td>
<td>128</td>
<td>35.65</td>
<td></td>
<td>1.80</td>
<td>1.00</td>
</tr>
<tr>
<td>Living situation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lives alone</td>
<td>137</td>
<td>31.86%</td>
<td>112</td>
<td>31.2</td>
<td></td>
<td>1.04</td>
<td>0.55</td>
</tr>
<tr>
<td>Employment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any employment (past year)</td>
<td>153</td>
<td>35.17%</td>
<td>127</td>
<td>34.89</td>
<td></td>
<td>0.96</td>
<td>0.51</td>
</tr>
<tr>
<td>Income</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pension ≥ 12 months</td>
<td>345</td>
<td>80.42%</td>
<td>283</td>
<td>78.83</td>
<td></td>
<td>2.52</td>
<td>1.06</td>
</tr>
<tr>
<td>Fortnight. income &lt; $800</td>
<td>315</td>
<td>77.02%</td>
<td>267</td>
<td>78.07</td>
<td></td>
<td>0.72</td>
<td>0.38</td>
</tr>
</tbody>
</table>

** p < .01, * p < .05, † p < .10

n varies slightly across analyses due to missing data

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Table 2. Substance use characteristics and related problems of people with psychosis according to problem gambling status.

<table>
<thead>
<tr>
<th>Variable</th>
<th>No gambling problems n = 364</th>
<th>Low Risk n = 18</th>
<th>Moderate-risk / Problem n = 53</th>
<th>Logistic Regression Model 1(a)</th>
<th>Logistic Regression Model 2(b)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Substance use</td>
<td>n = 364</td>
<td>n = 18</td>
<td>n = 53</td>
<td>O.R. 95% CI</td>
<td>aO.R. 95% CI</td>
</tr>
<tr>
<td>Alcohol (frequency)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; 4 times per week</td>
<td>47</td>
<td>14.16%</td>
<td>18</td>
<td>18.18%</td>
<td>1.36 0.35 2.18</td>
</tr>
<tr>
<td>Alcohol (quantity)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Prevalence and Correlates of Problem Gambling in People with Psychotic Disorders.
Table 3. Clinical, physical health, social and functional characteristic of people with psychosis according to problem gambling status.

<table>
<thead>
<tr>
<th>Variable</th>
<th>No gambling problems</th>
<th>Low Risk</th>
<th>Moderate-risk / Problem Gambling</th>
<th>Logistic Regression</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n = 364</td>
<td>n = 18</td>
<td>n = 53</td>
<td>Model 1 (a)</td>
</tr>
<tr>
<td></td>
<td>n %</td>
<td>n %</td>
<td>n %</td>
<td>95% CI</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>O.R.</td>
</tr>
<tr>
<td>Negative syndrome, mean, SD</td>
<td>8.0</td>
<td>4.3</td>
<td>5.2</td>
<td>4.2</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>9</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>Positive syndrome</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hallucinations</td>
<td>27</td>
<td>76</td>
<td>32</td>
<td>32</td>
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<tr>
<td></td>
<td>7</td>
<td>10</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Delusions</td>
<td>39</td>
<td>90</td>
<td>32</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>38</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>STD</td>
<td>32</td>
<td>90</td>
<td>32</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>42</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Major Depression (lifetime)</td>
<td>29</td>
<td>81</td>
<td>29</td>
<td>29</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>32</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Mania (lifetime)</td>
<td>18</td>
<td>49</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>73</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Suicide related outcomes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Prevalence and Correlates of Problem Gambling in People with Psychotic Disorders.

<table>
<thead>
<tr>
<th>Self-harm (past year)</th>
<th>52</th>
<th>14.</th>
<th>5</th>
<th>27.</th>
<th>11</th>
<th>20.</th>
<th>1.57</th>
<th>0.7</th>
<th>3.1</th>
<th>1.60</th>
<th>0.6</th>
<th>3.8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suicide attempt (lifetime)</td>
<td>16</td>
<td>45.</td>
<td>12</td>
<td>70.</td>
<td>30</td>
<td>56.</td>
<td>1.56</td>
<td>0.8</td>
<td>2.8</td>
<td>1.47</td>
<td>0.7</td>
<td>2.9</td>
</tr>
<tr>
<td>Physical Health</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Obese</td>
<td>13</td>
<td>38.</td>
<td>7</td>
<td>38.</td>
<td>22</td>
<td>41.</td>
<td>1.11</td>
<td>0.6</td>
<td>1.9</td>
<td>0.93</td>
<td>0.4</td>
<td>1.7</td>
</tr>
<tr>
<td>No. conditions, med. (mad)</td>
<td>2</td>
<td>1.4</td>
<td>8</td>
<td>1.4</td>
<td>8</td>
<td>1.4</td>
<td>1.16</td>
<td>1.0</td>
<td>1.3</td>
<td>1.01</td>
<td>0.8</td>
<td>1.2</td>
</tr>
<tr>
<td>Mild or no disability (MSIF)(c)</td>
<td>84</td>
<td>23.</td>
<td>3</td>
<td>16.</td>
<td>9</td>
<td>16.</td>
<td>0.68</td>
<td>0.3</td>
<td>1.3</td>
<td>1.11</td>
<td>0.4</td>
<td>2.6</td>
</tr>
</tbody>
</table>

** p < .01, * p < .05, † p < .10

n varies slightly across analyses due to missing data

(a) Unadjusted (no control variables) binary regression for 'no gambling problem' and 'moderate-risk / problem gambling groups.

(b) Binary regression for 'no gambling problem' and 'moderate-risk / problem gambling groups, with socio-demographic characteristics and substance use disorders as control variables.

(c) MSIF: Multidimensional Scale of Independent Functioning (Jaeger et al., 2003).

Table 3 (cont.)

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<thead>
<tr>
<th>Variable</th>
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<td>n %</td>
<td>O.R. 95% CI</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>LB</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>R. 95% CI</td>
</tr>
<tr>
<td>Financial Difficulties</td>
<td></td>
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<tr>
<td>Difficulty paying bills</td>
<td>98</td>
<td>27.</td>
<td>4</td>
<td>22.</td>
</tr>
<tr>
<td>Pawned or sold something</td>
<td>79</td>
<td>22.</td>
<td>3</td>
<td>16.</td>
</tr>
<tr>
<td>Went without meals</td>
<td>96</td>
<td>26.</td>
<td>6</td>
<td>33.</td>
</tr>
<tr>
<td>Sought financial assistance</td>
<td>21</td>
<td>58.</td>
<td>1</td>
<td>66.</td>
</tr>
<tr>
<td>Any homelessness (past year)</td>
<td>3</td>
<td>52.</td>
<td>2</td>
<td>67</td>
</tr>
<tr>
<td>Any arrests (past year)</td>
<td>22</td>
<td>6.1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Social functioning</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contact with family &lt; weekly</td>
<td>12</td>
<td>35.</td>
<td>9</td>
<td>50.</td>
</tr>
<tr>
<td>Contact with friends &lt; weekly</td>
<td>78</td>
<td>25.</td>
<td>2</td>
<td>11.</td>
</tr>
<tr>
<td>Used emergency (past year)</td>
<td>12</td>
<td>34.</td>
<td>4</td>
<td>22.</td>
</tr>
</tbody>
</table>

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