Addiction Chronicity: Are All Addictions the Same?

Nolan Gooding, Jennifer Williams, & Robert Williams - University of Lethbridge, Lethbridge, Alberta

Introduction

Many studies have been conducted to assess the chronicity of individual addictions. Superficial comparisons of these studies suggest that differences exist in the chronicity of various addictive disorders, however our ability to draw conclusions from these comparisons is limited by differences in the populations being studied and the assessment instruments used to measure addiction. No head-to-head comparison of the chronicity of different addictions has been conducted in the same population or the same data set. The present study aims to address this gap in the literature by comparing the relative chronicity of different addictions within two large scale Canadian studies. The present study is unique in that a) it assesses different types of addiction and b) it assesses them using analogous measures.

Research Question

What is the relative chronicity of different addictions, including problem gambling, substance dependence, and other behavioral addictions?

Methods

Sample

Data were derived from two large scale Canadian Studies: The Quinte Longitudinal Study (QLS; Williams et al., 2015) and the Leisure, Lifestyle, & Lifecycle Project (LLLP; el-Guebaly et al., 2015). Both the QLS and the LLLP were comprehensive, five-year studies conducted between 2006 and 2011 that included a battery of different assessments. The QLS sample consisted of 4,121 adults from the Quinte region of Ontario, Canada and had an overall retention rate of 93.9%. The LLLP included 1,808 individuals from four different municipalities in Alberta, Canada, 1,372 of whom were ages 18 or older. Amongst the adult sample, the retention rate was 76.2%.

Measures

Quinte Longitudinal Study

The QLS used criteria from the Problem and Pathological Gambling Measure (PPGM; Williams & Volberg, 2010, 2014) to assess problem gambling, substance dependence, and other behavioral addictions. The PPGM is a 14-item instrument used to classify individuals into one of five categories of past-year gambling severity and requires that three criteria be met to receive an addiction designation:
- Negative consequences resulting from the addiction.
- Impaired control
- High frequency of use or engagement.
These criteria were used in an adaptation of the The World Health Organization's Alcohol, Smoking, and Substance Involvement Screening Test (WHO ASSIST Working Group, 2002) to assessing substance dependence in the QLS. Other behavioral addictions were also assessed according to these criteria with the Behavioral Addictions Measure (BAM).

The Leisure, Lifestyle, & Lifecycle Project

DSM-IV criteria were used to assess Substance dependence and pathological gambling in the LLLP.
- Substance dependence was assessed using the alcohol dependence and illicit drug dependence modules of the Canadian Community Health Survey (CCHS). These modules were adapted from the World Mental Health version of the CIDI (WHM-CIDI) and map onto DSM-IV-TR criteria. Individuals had to have a score of 3 or higher to receive a substance dependence designation. Note that tobacco/nicotine use is not assessed by these instruments.
- Pathological gambling was assessed with the Composite International Diagnostic Interview's Gambling Module (CIDI-GM). This module contains 17 yes/no questions that map onto the DSM-IV PG criteria. A score of 5+ is required to receive a lifetime problem gambling designation, but the present analysis uses a 3+ cutoff in order to make problem gambling designations more concordant with those of substance dependence.

Analysis

The present analysis was restricted to individuals who:
- Completed each assessment in their respective studies (5 assessments in the QLS; 4 in the LLLP), and
- Received an addiction designation in at least one assessment. In the QLS, this means individuals had to endorse negative consequences and impaired control over the object of their addiction, regardless of what it was. In the LLLP, individuals had to have a score of 3+ on either assessment instrument.

Based on their addiction, individuals were placed into independent groups labelled Substance Dependence (SD), Problem Gambling (PG), Behavioral Addiction (BA), or multiple addictions (Poly). A one-way ANOVA was conducted in each dataset to compare the distribution of average time spent in an addictive state between independent groups. Because BA was not assessed in the LLLP, the corresponding ANOVA measured differences amongst the PG, SD, and Poly groups.

Results

The analyses included 808 individuals from the QLS and 280 individuals from the LLLP. Table 1 displays the group size as well as the mean and standard deviations for each group's time spent in an addictive state.

Table 1: Number of respondents and mean time (years) spent in an addictive state.

Addiction group	Quinte Longitudinal Study		Leisure, Lifestyle, and Lifecycle Project	
	n	Mean(SD)	n	Mean(SD)
PG	138	1.89(1.22)	65	1.94(1.01)
SD	283	1.64(0.99)	176	1.37(0.70)
BA	223	1.51(0.96)	N/A	N/A
Poly	164	3.02(1.35)	39	2.51(1.10)

The Quinte Longitudinal Study

A one-way ANOVA on data from the QLS was conducted and the Brown-Forsythe F-statistic was used due to unequal variance between groups. The ANOVA was significant, $F(3,579.29) = 64.65$, $p < 0.001$, indicating that groups differed significantly in terms of chronicity.

Dunnett's C was used to evaluate post-hoc pairwise comparisons due to unequal variance between groups. These post-hoc comparisons revealed that the multiple addictions group spent a significantly longer time in an addictive state, on average, than any of the other three groups. In addition, the problem gambling group spend significantly more time on average in an addictive state than did the other behavioral addictions group. Table 2 provides further description of different aspects of chronicity.

Table 2: Stability of different addictions within the QLS

	PG (N = 138)	BA (N = 223)	SD (N= 283)	Poly (N = 164)
	n/N (%)	n/N (%)	n/N (%)	n/N (%)
Met Criteria in 1 Time Period	75/138 (54.4%)	157/223 (70.4%)	177/283 (62.5%)	20/164 (12.2%)
Met Criteria in 2 Time Periods	31/138 (22.5%)	39/223 (17.5%)	57/283 (20.1%)	51/164 (31.1%)
Met Criteria in 3 Time Periods	12/138 (8.7%)	12/223 (5.4%)	30/283 (10.6%)	34/164 (20.7%)
Met Criteria in 4 Time Periods	12/138 (8.7%)	9/223 (4.0%)	13/283 (4.6%)	24/164 (14.6%)
Met Criteria in 2 or more Consecutive years	43/138 (31.2%)	42/223 (18.8%)	75/283 (26.5%)	120/164 (73.2%)
Met criteria in exactly 2 consecutive years	18/138 13.04%	24/223 (10.8%)	42/283 (14.8%)	53/164 (32.3%)
Met criteria in exactly 3 consecutive years	9/138 (6.5%)	5/223 (2.2%)	18/283 (6.4%)	17/164 (10.4%)
Met criteria in exactly 4 consecutive years	8/138 (5.8%)	7/223 (3.1%)	9/283 (3.2%)	15/164 (9.2%)
Met criteria in all 5 years	8/138 (5.8%)	6/223 (2.7%)	6/283 (2.1%)	35/164 (21.3%)
At least 1 year of recovery	113/130 (86.9%)	196/208 (94.2%)	232/283 (82.0%)	112/161 (69.6%)
Recovery after exactly 2 consecutive years of problem behavior	11/36 (30.6%)	19/37 (51.4%)	35/68 (51.5%)	42/109 (38.5%)
Recovery after exactly 3 consecutive years of problem behavior	5/21 (23.8%)	5/18 (27.8%)	11/26 (42.3%)	10/60 (16.7%)
Recover after exactly 4 consecutive years of problem behavior	6/14 (42.9%)	4/10 (40.0%)	2/8 (25.0%)	7/42 (16.7%)
Relapse in year following recovery	18/91 (19.8%)	16/163 (9.8%)	28/197 (14.2%)	38/95 (40.0%)
Relapse within 2 years of recovery	27/66 (40.9%)	26/134 (19.4%)	40/156 (25.6%)	49/78 (62.8%)
Relapse within 3 years of recovery	28/48 (58.3%)	33/97 (34.0%)	45/103 (43.7%)	41/50 (82.0%)
4 alternating problem/non-problem status within 4 years	14/138 (10.1%)	13/223 (5.8%)	20/283 (7.1%)	25/164 (15.2%)
4 alternating problem/non-problem status within 5 years	20/138 (14.5%)	19/223 (8.5%)	34/283 (12.0%)	35/164 (21.3%)

Table 3: Stability of different addictions in the LLLP

	PG (N=65)	SA (N=176)	POLY (N=39)
	n/N (%)	n/N (%)	n/N (%)
Met Criteria in 1 Time Period	28/65 (43.1%)	131/176 (74.4%)	8/39 (20.5%)
Met Criteria in 2 Time Periods	20/65 (30.8%)	27/176 (15.3%)	13/39 (33.3%)
Met Criteria in 3 Time Periods	10/65 (15.4%)	16/176 (9.09%)	8/39 (20.5%)
Met Criteria in 2 or more Consecutive years	32/65 (49.2%)	43/176 (24.4%)	22/39 (56.4%)
Met criteria in exactly 2 consecutive years	17/65 (26.2%)	27/176 (15.3%)	6/39 (15.4%)
Met criteria in exactly 3 consecutive years	8/65 (12.3%)	14/176 (7.9%)	6/39 (15.4%)
Met criteria in all 4 years	7/65 (10.8%)	2/176 (1.1%)	10/39 (25.6%)
At least 1 year of recovery	36/58 (62.1%)	151/169 (89.3%)	21/38 (55.3%)
Recovery after exactly 2 consecutive years of problem behavior	7/22 (31.8%)	24/40 (60.0%)	3/19 (15.8%)
Recovery after exactly 3 consecutive years of problem behavior	2/9 (22.2%)	1/3 (33.3%)	0/10 (0%)
Relapse in year following recovery	7/16 (43.8%)	4/124 (3.2%)	9/16 (56.3%)
Relapse within 2 years of recovery	7/12 (58.3%)	4/90 (4.4%)	11/16 (68.8%)
3 alternating problem/non-problem status within 3 years	23/65 (35.4%)	42/176 (23.9%)	11/39 (28.2%)
3 Alternating problem/nonproblem status within 4 years	28/65 (43.1%)	58/176 (33.0%)	16/39 (41.0%)

The Leisure, Lifestyle, and Lifecycle Project

A one-way ANOVA on data from the LLLP was conducted and the Brown-Forsythe F-statistic was utilized due to unequal variance between groups. The ANOVA was significant, $F(2,105.39) = 24.07$, $p < 0.001$, indicating that there were significant differences in chronicity between groups in the LLLP as well.

Dunnett's C was again used to evaluate post-hoc pairwise comparisons due to unequal variance between groups. These post-hoc comparisons revealed that individuals in the multiple addictions group spent significantly more time, on average, in an addictive state than did either of the other groups. In addition, problem gambling was found to be significantly more chronic on average than substance dependence. It is worth noting, however, that if standard DSM-IV criteria had been utilized (i.e., a 5+ cutoff for PG), this result would be non-significant, though it trends in the same direction ($p = 0.081$). Table 3 provides further description of different aspects of chronicity.

Conclusions

The present study is the first to compare the chronicity of different addictions according to the same criteria. Our main findings include:
1. Multiple addictions were more chronic, on average, than any single addiction according to both the LLLP and the QLS.
2. In the QLS, problem gambling was more chronic than other behavioral addictions, but not significantly different than substance dependence.
3. In the LLLP, problem gambling was significantly more chronic than substance dependence, although this outcome became non-significant when standard DSM-IV criteria were used for problem gambling. No difference in chronicity was found between substance dependence and problem gambling in the QLS. These findings suggest that some addictions do differ in terms of chronicity, but that problem gambling is just as chronic as substance dependence.

Literature Cited

el-Guebaly, N., Casey, D. M., Currie, S. R., Hodgins, D. C., Schopflocher, D. P., Smith, G. J., & Williams, R. J. (2015). *The Leisure, Lifestyle, & Lifecycle Project (LLLP): A Longitudinal Study of Gambling in Alberta*. Final Report for the Alberta Gambling Research Institute. February 2015.

WHO ASSIST Working Group (2002). The alcohol, smoking and substance involvement screening test (ASSIST): development, reliability and feasibility. *Addiction*, 97 (9), 1183- 1194.

Williams, R. J., Hann, R., Schopflocher, D., West, B. T., McLaughlin, P., White, N., King, K., Flexhaug, T. (2015). *Quinte Longitudinal Study of Gambling and Problem Gambling*. Retrieved from Geulph Ontario: http://hdl.handle.net/1033/3641

Williams RJ & Volberg RA (2010). *Best Practices in the Population Assessment of Problem Gambling*. Report submitted to the Ontario Problem Gambling Research Centre. Guelph, Ontario. March 31, 2010.

Williams RJ & Volberg RA (2014). Classification Accuracy of Four Problem Gambling Assessment Instruments. *International Gambling Studies*, 14 (1), 15-28.

For further information

Please contact *nolan.gooding@uleth.ca*