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Trusting Problem Gamblers: Reliability and Validity of Self-reported Gambling Behavior

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Abstract

The retest reliability and validity of self-reported gambling behavior was assessed in two samples of problem gamblers. Days gambled and money spent gambling over a six-month timeframe were reliable over a two-to-three week retest period using the Timeline Follow-Back interview procedure (N= 35, ICCs from .61 to .98). Gamblers did, however, report significantly more gambling at the second interview. Agreement with collaterals was fair to good overall (ICCs from .46 to .65) with no clear pattern of either over- or under-reporting by gamblers. Spouses did not show greater agreement with gamblers compared with non-spouses and greater agreement was not found for collaterals who were more versus less confident in their reports. The results are generally supportive of the use of self-reported gambling in studies of problem gamblers, assessed face-to-face and by telephone, although suggestions for further research are provided.

Trusting the Self-Reports of Problem Gamblers: Reliability and Validity

Effective treatment of problem gambling is becoming increasingly important as the prevalence of problem gambling rises (Shaffer, Hall, & Vander Bilt, 1999).

Consequently, reliable and valid information is needed to evaluate gambling outcomes.

The goal of the present report is to provide preliminary data on the retest reliability of the Timeline Follow-Back interview for gambling behavior and on the validity of self-reported gambling behaviour compared with collateral reports.

To date, there has been limited outcome research in the area of problem gambling and a comparison of randomized trials shows little consistency among the primary outcomes measured. Some studies report behavioral outcomes such as days of gambling (e.g., Hodgins, Currie, & el-Guebaly, 2001) and others used participant-rated measures of cravings and self-control (Sylvain, Ladouceur, & Boisuert, 1997) or clinician-rated improvement scores (Kim, Grant, Adson, & Shin, 2001). Establishing the validity of self-reported behavioral outcomes is a necessary step in promoting consistency among researchers in outcome evaluation methods.

In the area of substance abuse, self-reported use is the primary outcome measure. The Timeline Follow-Back (TLFB, Sobell & Sobell, 1996) interview is a popular method used to assess self-reports of substance abuse. Calendars are utilized along with memory aids to identify specific days and quantity of substance use over a specified time interval. The TLFB has well-established reliability and validity for assessing drug and alcohol use for periods of up to six months (Fals-Stewart, O'Farrell, Freitas, McFarlin, & Rutigliano, 2000). However, the reliability of this method has not been examined in assessing

gambling outcomes. The first major objective of the present study was to evaluate the test-retest reliability of gamblers' self-reports using the TLFB procedure.

Methods used to validate alcohol and drug use self-reports typically include collateral reports, and blood, breath and urine testing (Fals-Stewart et al., 2000). However, unlike substance abuse, verification of gambling is difficult due to the absence of physiological markers. Corroboration with financial records is one potential method of validation but this source provides incomplete information. Therefore, self-reported gambling behaviors are most easily validated with collateral reports.

Unfortunately, few published studies have examined gambler and collateral agreement as evidence of the validity of self-reports. While investigating recovery in problem gambling, Hodgins and el-Guebaly (2000) found substantial collateral agreement on a number of variables (e.g., length and type of problem, treatment history). Collaterals who were more certain of the accuracy of their report about the subjects' gambling histories showed higher agreement with the gambler than less certain collaterals. Taber, McCormick, Russo, Adkins, and Ramirez (1987) conducted a six-month treatment follow-up of a group of pathological gamblers and were able to contact 80% of collaterals. Agreement of reports of days gambled and abstinence were high.

These studies provide promising results but further validation of self-report gambling data is warranted. Therefore, the second major objective of the present study was to examine the validity of gamblers' self-reports through collateral interviews. A secondary aim was to assess the role of collateral confidence in their responses and the nature of the relationship between the collateral and the gambler as mediators of agreement.

Reliability

Method

Participants. Participants were part of a larger study on relapse (Hodgins & el-Guebaly, 2003). Individuals who had recently quit gambling were interviewed face-to-face initially and at 3, 6, and 12-month follow-up assessments. Inclusion criteria included a score of 5 or greater on the South Oaks Gambling Screen (SOGS, Lesieur & Blume, 1987) and some gambling in the past four weeks. Forty-one consecutive participants (of 101) were approached to be re-interviewed after completing their 12-month assessment and all agreed. Thirty-five participants were successfully re-interviewed face-to-face within two to three weeks ($M=22$ days, $SD=8.4$) by an independent interviewer blind to the results of the 12-month follow-up interview. The other 6 participants were not interviewed because of difficulty scheduling them within the 3-week re-test window. The 35 interviewed did not differ significantly on baseline variables from the other 66 participants in the larger study. Table 1 displays descriptive information in column one.

Procedure. Participants were first presented with a printed six-month calendar. Life events during this period were assessed by interview using a structured list and were noted on the calendar. The TLFB method was used to record days gambled, money spent on each occasion (net win/loss) and treatment involvement.

Results

The retest reliability of the TLFB was evaluated by comparing days and dollars across the two interviews using intraclass correlation coefficients (ICC, formula 2.1 summarized by Shrout & Fleiss, 1979).¹ Table 2 presents the coefficients for days and

money spent gambling for the total 6 month period, the earlier 3 months, the final 3 months, and by each month separately. Agreement ranged from good to excellent for all time periods.² Table 2 also displays the mean days gambled and money spent for each of these time periods. Participants reported a greater number of days of gambling during the second interview for two of the individual months (3 and 5) and for the three summary variables (months 1-3, 4-6, and 1-6). In terms of dollars gambled, a significant difference was found for only one variable, month 3, with a significantly greater loss reported at the retest.

Validity

Method

Participants – Sample 1. Participants were part of a larger study on the use of self-help materials with problem gamblers (Hodgins et al., 2001). A total of 102 participants who wanted to quit gambling with minimal intervention were followed over a 12-month period by telephone. Collaterals were contacted by telephone shortly after the participant's 3-month follow-up.

Fifty-eight participants (57%) completed a three-month follow-up interview and were able to provide a collateral who was successfully contacted. Table 1 displays the descriptive characteristics of this sample, which did not differ from the remaining participants of the larger study. Spouses made up over half of the collaterals (55%), followed by other immediate family members (21%), friends (19%), roommates (3%), and other individuals (2%).

Participants – Sample 2. Participants were also part of the study on relapse described above (Hodgins & el-Guebaly, 2003). Sixty-six of the 101 participants

completed a 3-month follow-up interview and were able to provide the name of a collateral who was successfully contacted. Table 1 (column 2) provides the sample characteristics of these individuals, who did not differ from the remaining participants of the larger study. Again, a variety of collaterals were provided (spouse or partner -35%, other immediate family - 29%, friend – 29%, roommate - 3%, other - 5%).

Interviews. Contact with the collateral consisted of one 5-10 minute telephone interview. In sample 1, collaterals were asked to describe the participant's gambling involvement over the past month (i.e., days gambled, money spent, whether gambling had noticeably decreased, stayed the same, or increased) and to rate their confidence in these reports (i.e., not at all, somewhat, fairly, or extremely). As a comparative general measure of reliability, collaterals were asked to provide the participant's current marital status. In sample 2, collaterals were asked a number of questions pertaining to the participant's gambling history and the number of days the participant had gambled over the past three months.

Interviewers who were blind to the information provided by the gambler conducted the collateral interviews. A single interviewer conducted the assessments in sample 1 and three interviewers conducted the collateral assessments in sample 2. Interviewers received a brief training in the assessment protocol including role-playing.

Results

Sample 1. Agreement for marital status was high ($\kappa=.95$, 97% agreement).³ The overall description of gambling (i.e., decreased, stayed the same, or increased) showed fair agreement ($\kappa=.40$, 84% agreement). Half (51%) of the collaterals claimed to be extremely confident when reporting days, with 16% fairly confident, 29%

somewhat confident, and only 4% not at all confident. In terms of money spent, 44% reported being extremely confident, with 23% fairly, 28% somewhat, and 5% not at all confident.

Sample 2. Agreement was high across the following variables: length of regular gambling (ICC=.73), length of problem (ICC=.93), and marital status (kappa=.76, 82% agreement). Agreement was fair for treatment involvement (kappa=.43, 72% agreement).

Agreement of days and dollars. Table 3 displays correlations between the gamblers' and collaterals' reports on the number of days gambled and money spent (sample 1 only) for all collaterals, by relationship to the gambler (spouse vs. non-spouse), and by confidence level (sample 1 only). Not all collaterals were able to provide information around number of days gambled and, in particular, money spent (see Table 3 for sample sizes). Overall, agreement was fair to good for days gambled and money spent. There was no significant difference between spouses and non-spouses for days and dollars in sample 1. In sample 2, non-spouses showed fair agreement compared with spouses who showed poor agreement.

When reporting money spent (sample 1), collaterals who were extremely confident in their responses had lower agreement than those who were less confident (ICC, Fisher's $Z=2.39$, $p<.05$). For days, there was no significant difference in agreement for those collaterals who were extremely confident compared to those who were less confident. Partial correlation coefficients were computed separately for spouses versus non-spouses (controlling for confidence level) but were very similar to zero-order coefficients.

Table 4 presents the breakdown of the collaterals' estimation of days and dollars (i.e., under-report, over-report, or no difference) as compared to the gambler's report. No difference was defined as exact agreement in terms of days or dollars. Due to this strict definition, almost all of the collaterals who correctly estimated the gambler's behavior reported no gambling (83% - sample 1 days, 100% - sample 1 dollars, 80% - sample 2 days). No clear pattern of under or over reporting emerged.

Discussion

The present investigation examined the reliability and validity of gamblers' self-reports in two samples. Reliability was evaluated using the TLFB method across two interviews separated by two to three weeks and conducted by two different interviewers. With this conservative test of reliability, these results indicate that the TLFB procedure is a reliable method of assessing gamblers' self-reports. This finding can provide researchers with greater confidence in utilizing this method for assessing gambling outcomes in intervention trials.

Agreement was high for days and dollars for all time periods, although there was a tendency for participants to report more days gambling at the second interview. The reason for this difference is unclear and may reflect interviewer differences. However, a similar finding has been reported for self-reported days of drinking alcohol (Tonigan, Miller & Brown, 1997). Perhaps two interviewers probing memories for specific events allow more detailed accurate memories to emerge by the second interview. Unfortunately a gold standard (the true number of days) is not available.

In terms of validity, agreement between collaterals' and gamblers reports' was generally good. Results were inconsistent with regard to the hypotheses that collaterals

under-reported gambling compared with gamblers. In sample 2, over half of collaterals under-reported gambling (55%) while approximately one third of collaterals in sample 1 under-reported gambling (35% days and 28% dollars). One possible explanation for the higher rate of under-reporting in sample 1 is that participants had quit gambling at the beginning of the study. Collaterals may have assumed this status continued despite the extremely high relapse rates reported by the participants.

Results were also inconsistent for the hypothesis that higher collateral confidence would be associated with higher the level of agreement. Certainly there were some collaterals who were unable to provide any estimation of days or money gambled. Of those providing reports in sample 1, there was no difference in agreement between those who were extremely confident of the days gambled and those who were less confident. However, in the same sample, when examining dollars spent, those collaterals who were more confident actually had lower agreement. Further study is necessary with larger sample sizes before conclusions can be made.

Surprisingly, non-spouses had better agreement than spouses in sample 2 but not sample 1 (see Table 3). It is possible that participants in sample 2 went to greater lengths to hide the problem from their spouse because they were supposed to have quit gambling. The gamblers who named a non-spouse as their collateral may have been more open about their behavior. Despite this finding, no significant differences in agreement were found between spouses and non-spouses in sample 1 (days and dollars). Further investigation is required in order to make conclusions as to what type of collateral will provide the most accurate information. Comparing the dollar reports of two collaterals for

each participant would be valuable. It is also possible that agreement would be higher if collaterals were interviewed face-to-face using the TLFB procedure.

There were several limitations to this study that require acknowledgement. First, a number of gamblers in both studies did not complete their follow-up interview or had collaterals that were unreachable. Perhaps these gamblers were generally less reliable in making self-reports than gamblers who completed the initial interview and who had collaterals that were contacted. As well, sample sizes in sample 1 and 2 were too small to make any firm conclusions regarding mediators of accuracy.

A potential limitation of the study is that different criteria for inclusion of participants were used in the two samples. In both, participants self-identified themselves as having gambling-related problems and all participants scored above the cut-off for pathological gambling on the SOGS. However, only participants in sample 2 were formally diagnosed using the DSM-IV criteria for pathological gambling. We are, nonetheless, confident that these results generalize well to treatment-seeking problem gambling populations. Despite these limitations, the study provided some preliminary evidence of the reliability and validity of gamblers' self-reports obtained face-to-face and by telephone.

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Footnotes

¹Interpretation guidelines for ICC provided by Cicchetti (1994; below .4 =poor, .40 to .59=fair, .60 to .74=good, and .75 to 1.00=excellent).

²We also calculated adjusted correlations, excluding scores of 0 for both reports, to guard against artificial inflation of the reliability coefficients. The adjusted correlations (not presented) did not differ appreciably from those in Table 2.

³The same interpretation guidelines apply for kappa as for intraclass correlation coefficients (Cicchetti, 1994).

Table 1

Demographic Characteristics and Gambling Involvement

		Reliability (N=35)	Sample 1 (N=58)	Sample 2 (N=66)
Age	Mean	40	47	40
	SD	8.3	9.1	9.3
% Female		40	53	38
% Married or Common-law		31	67	32
% Never Married		40	10	36
% Full-time Employment		57	69	55
% Unemployed		20	5	18
Grade Completed	Mean	11.4	11.3	11.7
	SD	1.0	1.2	.88
SOGS ^a	Mean	12.5	11.9	12.3
	SD	3.4	3.6	3.5
Type of Gambling	%VLTs ^b	77	88	82

^aSOGS = South Oaks Gambling Screen. ^bVLTs = Video Lottery Terminals.

Table 2

Test-retest Means (SD) and Reliability Coefficients for Days Gambled and Dollars Spent (N=35)

	Days						Dollars					
	Test		Retest		Z	ICC	Test		Retest		Z	ICC
	M	SD	M	SD			M	SD	M	SD		
Month 1	3.6	5.0	5.0	5.7	1.5	.70	604	1344	740	2016	0.3	.88
Month 2	4.3	5.3	5.6	7.6	1.3	.78	804	1495	697	1897	1.2	.89
Month 3	3.3	4.7	5.1	6.7	3.0*	.75	581	1421	747	1680	2.3*	.97
Month 4	3.9	5.9	5.0	6.6	1.7	.72	514	1100	724	1819	1.4	.82
Month 5	3.1	4.5	4.6	6.1	2.6*	.61	628	2127	777	1820	1.8	.91
Month 6	3.8	4.4	4.3	4.5	0.8	.63	794	2562	615	1550	0.6	.86
Total month 1-3	10.7	13.7	14.6	16.7	2.0*	.80	1934	4152	2136	5613	0.4	.94
Total month 4-6	10.8	13.2	13.9	16.8	2.0*	.72	1935	5663	2115	5119	1.1	.96
Total month 1-6	22.1	25.2	27.7	28.6	2.7*	.91	4005	10036	4252	10999	1.1	.98

Note. Z = Wilcoxon Signed Ranks test; ICC= Intraclass Correlation Coefficient; Mean re-test interval=22 days (range 11-38).

All ICC are significant $p < .01$. * $p < .05$.

Table 3

Relationship Between Gambler and Collateral Reports of Days Gambled and Dollars Spent by Type of Collateral and Confidence Level

Type of Collateral	Sample 1 (days)			Sample 1 (dollars)			Sample 2 (days)		
	<i>r</i>	ICC	n	<i>r</i>	ICC	n	<i>r</i>	ICC	n
All collaterals	.66**	.65**	46	.61**	.58**	39	.67**	.46**	31
Spouses only	.61**	.61**	28	.57**	.54**	26	.14	.14	14
^a All but spouses	.78**	.68**	18	.65*	.43*	13	.74**	.49*	17
Not at all, somewhat or fairly confident	.58**	.56**	23	.78**	.77**	23	-	-	-
Extremely confident	.70**	.68**	23	.45	.26	23	-	-	-

^aIncludes immediate family, roommate, friend, and other.

* $p < .05$. ** $p < .01$.

Table 4

Collateral Estimation of Days Gambled and Dollars Spent

Estimation	Sample 1 (days)	Sample 1 (dollars)	Sample 2 (days)
Under-report	35%	28%	55%
Over-report	26%	31%	29%
No difference	39%	41%	16%