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Comparison of the Quick Drinking Screen and the Alcohol Timeline Followback with Outpatient Alcohol Abusers*

MONICA ROY, MARIAM DUM, LINDA CARTER SOBELL,
MARK B. SOBELL, EDWARD R. SIMCO, HEATHER MANOR,
AND RAMONA PALMERIO

Center for Psychological Studies, Nova Southeastern University,
Fort Lauderdale, Florida, USA

Objective: A recent study comparing the Quick Drinking Screen (QDS) with the Timeline Followback (TLFB) found that in a nonclinical population of problem drinkers both measures produced reliable summary measures of drinking. The current study was designed to replicate these findings with a clinical population of alcohol abusers. The data were collected over three years (2004–2006). Method: Participants were 124 alcohol abusers who voluntarily enrolled for outpatient treatment. Over half (52.4%) were female with an average age of almost 40 years. About a third were married, had completed university, and a quarter were unemployed and nonwhite. Participants reported having a drinking problem for an average of 8.3 years, and reported drinking on about 5 days per week, averaging six drinks per drinking day. On two different occasions, they responded to two different sets of questions about their alcohol use. The instruments were: (a) the Quick Drinking Screen (QDS), a summary drinking measure, administered by telephone prior to the assessment; and (2) the TLFB self-administered by computer at the assessment. Results: As in a previous study, this study found that the QDS and the TLFB, two very different drinking measures, collected similar aggregate drinking data for four drinking variables in a clinical sample of alcohol abusers. Conclusions: When it is not necessary or not possible to gather detailed drinking data, the QDS produces reliable brief summary measures of drinking for problem drinkers. Generalization to nonclinical samples awaits further research.

Keywords   Timeline followback; alcohol abusers; quick drinking screen; drinking assessment

Introduction

Over the years, several retrospective drinking measures have been developed to gather information about daily drinking behavior. The most frequently used retrospective drinking measures are Quantity-Frequency (QF) summary measures and daily estimation (DE) measures. Quantity-Frequency measures require people to provide retrospective estimates of their average frequency and quantity of alcohol consumed over a specified time interval. The best known DE measure is the Timeline Followback (TLFB), a psychometrically sound measure that has been used for over 30 years in clinical and nonclinical research studies (Agrawal, Sobell, and Sobell, in press; Sobell, and Sobell, 2003; Sobell, and Sobell, 2008). Daily estimation measures such as the TLFB in most cases provide more sensitive and more accurate estimates of drinking than QF measures because they obtain data for each day of the interval opposed to asking respondents to report their average drinking. However, although the TLFB has been found to have very good psychometric characteristics with a range of problem and nonproblem drinkers, it is not always possible to obtain daily estimation data from people (e.g., refusals, limited time; Cunningham, Ansara, Wild, Toneatto, and Koski-Jännes, 1999).

In an earlier study (Sobell et al., 2003), the Quick Drinking Screen (QDS), a QF measure, provided similar aggregate data to that collected by the TLFB for several drinking variables. Participants in that study were a nonclinical sample of alcohol abusers who had never been treated for alcohol problems and had responded to advertisements for a study promoting self-change. The current study compared the QDS and TLFB measures with a sample of alcohol abusers in outpatient treatment.

Method

Participants

Participants were 124 alcohol abusers (outpatients) who voluntarily sought treatment at the Guided Self-Change (GSC) Clinic of the Nova Southeastern University Psychology Services Center in South Florida. The GSC model of treatment is an evidence based intervention that has been extensively evaluated and is described in detail (Sobell, and Sobell, 1993; Sobell, and Sobell, 2005). Guided Self-Change treatment is a brief motivational cognitive-behavioral intervention that offers a unique short-term non-12 step alternative treatment. This evidence-based program empowers people to take responsibility for their own change and works to empower people to use their own strengths and resources to change.

Clients requesting services of the GSC clinic were first screened by telephone and then scheduled for an assessment appointment, if appropriate. Part of the telephone screening asked potential clients a few questions about their alcohol use over the past year using the QDS (Sobell et al., 2003). During the clinical assessment, more detailed drinking data were gathered using the TLFB. Data for the current study were collected from clients who had a primary diagnosis of alcohol abuse or alcohol dependence as determined by the DSM-IV-TR (American Psychiatric Association, 2000). At the assessment interview, participants indicated their agreement to participate in the study by signing an informed consent for treatment that also allowed clients to check whether they would allow the information they reported during treatment to be used in archival research studies. As is obvious, data were not available for those who did not sign the consent for research. The reason we suspect that most clients provided consent for their information to be used in archival research studies is that all the information is confidential and for altruistic purposes (i.e., they may

be able to help others). The consent was administered by graduate students in the doctoral clinical psychology training program at Nova Southeastern University. These students were doing a 12-month practicum rotation in the GSC program. The study was approved by the Institutional Review Board of the University.

The mean (SD) age of the 124 participants was 38.78 (11.71) years, 52.42% were female, 83.06% were white, and 32.26% were married. Generally, participants were socially stable as reflected by the fact that 33.06% had completed university, and only 20.16% were unemployed. Participants reported having had a drinking problem for a mean (SD) of 8.29 (8.82) years. Participants' mean (SD) Alcohol Use Disorders Identification Test (Allen, Litten, Fertig, and Babor, 1997; Conigrave, Hall, and Saunders, 1995) score was 18.77 (7.24). In terms of drinking in the 90-days before entering treatment, the clients reported on the TLFB having drank on a mean (SD) of 4.81 (2.35) days per week, consuming a mean (SD) of 5.85 (3.27) drinks on days when they drank, and averaging (SD) 29.37 (24.63) drinks per week.

Assessment

To ensure that clients were alcohol-free at their assessment, they were administered a breath test for alcohol using an ALERT$^{®}$ J4X portable tester. The assessment included collecting background information (e.g., gender, age, education) and substance abuse history information (e.g., years drinking problem, consequences, alcohol and drug use) and retrospective reports of daily alcohol use over the 90 days before treatment using the Alcohol TLFB (Sobell, and Sobell, 2003; Sobell, and Sobell, 2008).

Instruments

Only the two assessment instruments relevant to this study will be described. The Alcohol TLFB is a calendar based assessment measure where people provide retrospective estimates of their daily drinking, including abstinent days, over a specified time period before the interview. Memory aids are used to enhance recall. The TLFB has very good psychometric characteristics (Agrawal et al., in press; Sobell, and Sobell, 2003; Sobell, and Sobell, in press) and can generate a variety of variables that provide more precise and varied information (e.g., pattern, variability, drinking levels) about a person's drinking than produced by QF methods. In the current study, clients completed a 90-day TLFB at their assessment session, using the self-administered computerized format. Completion of a 90-day TLFB typically takes about 10–15 minutes.

As described earlier, the questions from the second measure, the QDS (Sobell et al., 2003), were embedded in a brief telephone-screening interview (i.e., to determine eligibility for the GSC clinic). These questions were asked by a clinic coordinator from all potential clients. The mean (SD) number of days between when the clients were screened by telephone and answered the QDS questions and when they completed the assessment interview, including the Alcohol TLFB, was 9.77 (14.16). This retest interval is fairly typical for reliability studies evaluating the TLFB (Levin, Sobell, and Sobell, 2004).

Four summary drinking measures were derived from the following three QDS questions: "The next few questions relate to your alcohol use" (one standard drink = 13.6 gm absolute ethanol): (1) "On average in the last year, how many days per week did you drink?" (2) "When you did drink, on average, how many standard drinks would you have had in a day in the last year?" and (3) "How many times in the last year have you had five or more

drinks on one occasion?" A fourth summary drinking variable, drinks per week in the past year, was created by multiplying participants' responses to Questions 1 and 2.

A 90-day TLFB window was used in the GSC clinic as the treatment that clients received was a brief intervention (Sobell, and Sobell, 1993; Sobell, and Sobell, 2005). Because the data from the TLFB were for 90 days and the QDS questions covered the past year, for the mean comparison analysis, the variable and the number of days that clients consumed five or more drinks was modified to the proportion of days drinking five or more standard drinks by dividing the number of days by 90 for the TLFB and by 365 days for the QDS.

Results

Data from the four QDS variables described above were compared to the same four variables generated using TLFB data. Intraclass correlations (ICCs; ICC type = absolute agreement and single measure) and results of paired sample t-tests (2-tailed) between the TLFB and the QDS for the four drinking variables are shown in Table 1, along with means and standard deviations. A Bonferroni adjustment was made for tests on the four variables, with the type I error rate set to $\alpha = 0.0125$ (0.05/4). All ICCs were significant ($p < .001$), with moderately high values ranging between .60 and .75. Two of the four paired t tests were significant, number of drinking days per week [$t(123) = 3.12$, $p = .002$] and mean drinks per drinking day [$t(123) = -2.82$, $p = .006$]. Participants reported significantly more drinking days on the TLFB [mean (SD) = 4.81 (2.35)] than the QDS [mean (SD) = 4.31 (2.20)], but fewer drinks per drinking day on the TLFB [mean (SD) = 5.85 (3.27)] than the QDS [mean (SD) = 6.54 (3.60)].

Discussion

This study compared drinking data obtained from alcohol abusers in outpatient treatment on two occasions using two different drinking measures (QDS; Alcohol TFLB) and with two reporting formats (telephone screen by clinical staff; computer administered TLFB).

Table 1

Means (SDs), Intraclass Correlations (ICCs), and results of paired sample t-tests comparing the Timeline Followback (TLFB) and Quick Drinking Screen (QDS) on four drinking variables for 124 participants

Variable[a]	Means (SD)		ICC (p-value)[b]	t-test (p-value)[c]
	TLFB	QDS		
Number of drinking days per week	4.81 (2.35)	4.31 (2.20)	.68 (<.001)**	3.12 (.002)*
Drinks per drinking day	5.85 (3.27)	6.54 (3.60)	.68 (<.001)**	−2.82 (.006)*
Drinks per week	29.37 (24.63)	29.26 (23.37)	.75 (<.001)**	.07 (.945)
Proportion of days drinking ≥ five drinks per day[d]	0.34 (.31)	0.29 (.32)	.60 (<.001)**	2.2 (.029)

[a] one drink = 13.6 gm absolute alcohol.

[b]** $p < .001$.

[c]* $p < .0125$ with the Bonferroni adjustment to maintain the family wise error rate at a .05 level.

[d] Because the TLFB collected data for 90 days and the QDS for the past year, the mean of days was modified to the proportion of days by dividing the mean of days drinking ≥ five drinks per day by 365 for the QDS and 90 for the TLFB to get comparable results.

Although some significant differences were found, the absolute difference between the methods was small (e.g., using TLFB data as the standard, the difference between methods in reports of drinking days was 10%, and for mean drinks per drinking day it was 12%) and there was no consistent direction of differences (i.e., frequency higher but quantity lower on TLFB). In terms of statistical versus clinical significance (Meehl, 1978), the relatively large sample size of 124 participants allowed for small differences to be statistically reliable. The small differences in the current study are similar to those previously reported for a nonclinical sample of problem drinkers (Sobell, and Sobell, 1993; Sobell, and Sobell, 2005).

There were a few differences between the earlier study (Sobell et al., 2003) and the current study. In the first study, the TLFB was self-administered using the paper and pencil version, whereas the current study used a computerized version. All TLFB methods, however, have been found to be reliable (Agrawal et al., in press; Sobell, and Sobell, 2003; Sobell, and Sobell, 2008). The second difference is that in the first study the QDS was compared with a 360-day TLFB, whereas in the current study a 90-day TLFB was used. This, however, is not viewed as a limitation because a recent study using TLFB data to determine what time windows would provide a representative picture of annual drinking found that a 90-day window provided a representative sample of annual drinking (Vakili, Sobell, Sobell, Simco, and Agrawal, 2008). In fact, the current study strengthens the Vakili and his colleagues' findings as it demonstrates that a 90-day window provides comparable data to that for a full year.

As in the previous study comparing the QDS and TLFB (Sobell et al., 2003), while the presentation order of the QDS and TLFB was not counterbalanced, it is highly unlikely that this influenced the results because: (1) the nature and format of the way the drinking information was obtained was very different for the two measures (i.e., three questions embedded in a 10 minute telephone screening, versus an interviewer asking a range of questions about past health, substance use, and psychiatric problems during an assessment), and (2) on average, there was about 1.5 weeks between when the QDS and the TLFB data were obtained.

Although the QDS does not provide detailed drinking information (e.g., patterns, day by day), the current study demonstrates that the QDS could be a useful alternative measure in particular situations such as telephone screenings, medical settings, or when clients are unwilling to provide lengthy post-treatment follow-up (Miller, and Cooney, 1994; Miller, and Del Boca, 1994) or survey data (Cunningham et al., 1999). Extension of these findings to drinkers who do not have an alcohol use disorder awaits further research.

RÉSUMÉ

Objectives: Dans le cadre d' une étude récente des tests des instruments *Quick Drinking Screen* (QDS) et *Timeline Followback* (TLFB) parmi une population non-clinique ont démontré que les deux approches donnent des mesures sommaires fiables de la consommation d alcool. L'étude présentée ici entreprend une réplication de ces résultats auprès d'une population clinique avec une problématique d'abus d alcool. La collecte des données était réalisée sur trois ans (2004–2006). *Méthode:* 124 clients volontaires d'un programme ambulatoire avec une problématique d'abus d'alcool participaient à l'étude. Plus que la moitié (52.4%) étaient des femmes âgées à peu près 40 ans. D'environ un tiers des participants était marié, avait une formation universitaire et un quart était au chômage et d'origine ethnique de couleur. Les participants indiquaient d'avoir un problème d'alcool en moyens pendant dix ans et de consommer en moyens six boissons d'alcool par jour de consommation à voir cinques jours par semaine. À deux occasions, ils répondaient à deux différentes

séries de questions portant sur leur consommation d'alcool. Les instruments en questions étaient: (a) le *Quick Drinking Screening* (QDS), une mesure sommaire de la consommation d'alcool, appliquée par interview téléphonique avant l'interview d'admission; et (b) le *Timeline Followback* (TLFB) rempli par les clients eux-mêmes à l'ordinateur pendant l'interview d'admission. *Résultats:* Comme démontrés dans le cadre des études précédentes l'analyse présenté ici également montre que le QDS et le TLFB – des instruments pour mesurer le comportement de consommation d'alcool tout à fait – mènent à des résultats et donnés de consommation agrégée sur quatre variables très semblables dans un échantillon clinique. *Conclusions:* Si la collecte de données sur le comportement de consommation d'alcool très détaillé n'est pas possible, le QDS fournit des mesures brèves et fiables pour des consommateurs d'alcool de risque. Pour la généralisation de ces résultats aussi pour des échantillons non cliniques, des études supplémentaires sont nécessaires.

RESUMEN

Objetivo: Un estudio realizado recientemente, que comparaba el Quick Drinking Screen (QDS) con el Timeline Followback (TLFB), encontró que ambos instrumentos proporcionan resultados fiables del consumo de alcohol en una población no clínica de bebedores problemáticos. El presente estudio fue diseñado para replicar estos resultados en una población clínica de abusadores de alcohol. Los datos fueron recolectados durante tres años (2004–2006). *Metodología:* Los participantes eran 124 abusadores de alcohol que voluntariamente asistieron a tratamiento ambulatorio. Mas de la mitad (52.4%) de los participantes eran mujeres, con una edad media de casi 40 años. Una tercera parte de ellos eran casados y completaron estudios universitarios, y un cuarto de los participantes eran desempleados y no eran blancos. Los participantes refirieron una media de 10 años de problemas con el alcohol, y reportaron consumir una media de 5 días por semana aproximadamente, con una media de 6 bebidas por día de consumo. Los participantes respondieron a dos clases de preguntas distintas sobre su uso de alcohol, en dos ocasiones distintas. Los dos instrumentos usados fueron: (1) The Quick Drinking Screening (QDS), el cual se administró por teléfono previamente a la evaluación inicial, y que consiste en una medida que resumen el consumo de alcohol; y (2) The Timeline Followback (TLFB), el cual consiste en una evaluación realizada mediante computadora por el propio participante. *Resultados:* Como en el estudio realizado anteriormente, el presente estudio encontró que tanto el QDS como el TLFB, dos medidas muy distintas que evalúan el consumo de alcohol, recogen similares datos en cuatro variables que miden el uso de alcohol en una población clínica de abusadores de alcohol. *Conclusiones:* Cuando no es necesario o no es posible recoger datos específicos del uso de alcohol, el QDS proporciona medidas fiables del consumo en abusadores de alcohol. Futuras investigaciones son necesarias para generalizar estos resultados a poblaciones no clínicas.

THE AUTHORS

Monica Roy, Ph.D., received her Ph.D. in Clinical Psychology from Nova Southeastern University and currently doing a postdoctoral fellowship in substance use treatment at the Jamaica Plain VA Medical Center. Her current interests are brief motivational interventions for substance users and treatments for veterans with post-traumatic stress disorder and co-occurring substance abuse problems.

Mariam Dum, M.S., received her M.S. in Clinical Psychology from Nova Southeastern University and is currently a graduate student in the doctoral program. Her current interests are interventions for the treatment of addictions and dual diagnoses, assessment of the frequency and quantity of substance use, and the use of a person-centered approach for the analysis of longitudinal data.

Linda Carter Sobell, Ph.D., ABPP, received her Ph.D. in Psychology from the University of California at Irvine and is currently Professor at the Center for Psychological Studies, Nova Southeastern University in Florida. She is nationally and internationally known for her clinical research in the addiction field. She has received several awards, given over 220 invited presentations/workshops, and published over 250 articles, book chapters, and 6 books, and serves on several editorial boards. She is a Fellow in the American Psychological Association, is a Motivational Interviewing Trainer (MINT) and holds a Diplomate in Behavioral Psychology from the American Board of Professional Psychology. She is past President of the Association for Advancement of Behavior Therapy and the Society of Clinical Psychology of the American Psychological Association. Her current research interests include processes of self-change (natural recovery), preventing alcohol exposed pregnancies, and brief motivational interventions for substance users.

Dr. Mark B. Sobell, Ph.D., ABPP, received his Ph.D. in Psychology from the University of California at Riverside and is currently Professor at the Center for Psychological Studies at Nova Southeastern University in Florida. He is nationally and internationally known for his clinical research in the addiction field. He has received several awards, including the *Jellinek Memorial Award* and has given over 170 invited presentations/workshops, and published over 250 articles, book chapters, and 6 books. Currently, he is Associate Editor of *Behavior Therapy*, and is on the editorial board of five professional journals. He is a Fellow in the American Psychological Association (APA), and holds a Diplomate in Behavioral Psychology from the American Board of Professional Psychology. His current research interests include processes of self-change (natural recovery), public health approaches to addictive behaviors, and brief motivational interventions for substance users.

Edward R. Simco, Ph.D., received his Ph.D. in Science Education from Nova Southeastern University and is currently Professor at the Center for Psychological Studies, Nova Southeastern University in Florida. His current interests are applied and computational statistics, research design and evaluation, cluster analysis, and psychometrics.

Heather Manor, Psy.D., received her Psy.D. in Clinical Psychology from Nova Southeastern University and is currently on a clinical internship for a year at the Louis Stokes Cleveland VA after which she will receive her Psy.D. in Clinical Psychology from Nova Southeastern University. Her current interests include brief motivational interventions for substance users and working with older adults.

Ramona Palmerio-Roberts, Psy.D., received her Psy.D. in Clinical Psychology from Nova Southeastern University and is currently Co-ordinator of the Adolescent Partners Program of Reading Hospital in Pennsylvania. She is also an adjunct faculty member at Alvernia College. Her current interests include brief motivational interventions for substance abusers as well as in inpatient programs, and treating trauma victims and sexual offenders.

References

Agrawal, S., Sobell, L. C., Sobell, M. B. (in press). The Timeline Followback: a scientifically and clinically useful tool for assessing substance use. In R. F. Belli, F. P. Stafford & D. F. Alwin (Eds.), *Using calendar and diary methodologies in life events research*. New York: Springer.

Allen, J. P., Litten, R. Z., Fertig, J. B., Babor, T. (1997). A review of research on the Alcohol Use Disorders Identification Test (AUDIT). *Alcoholism: Clinical and Experimental Research,* 21:613–619.

American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed. revised). Washington, D.C: American Psychiatric Association.

Conigrave, K. M., Hall, W. D., Saunders, J. B. (1995). The AUDIT questionnaire: choosing a cut-off score. *Addiction,* 90(10):1349–1356.

Cunningham, J. A., Ansara, D., Wild, T. C., Toneatto, T., Koski-Jännes, A. (1999). What is the price of perfection? The hidden costs of using detailed assessment instruments to measure alcohol consumption. *Journal of Studies on Alcohol,* 60(6):756–758.

Levin, C. C., Sobell, L.C., Sobell, M.B. (2004, November). Timeline Followback: a review of its clinical and research findings. Poster presented at the Annual Meeting of the American Psychological Association, Honolulu, Hawaii.

Meehl, P. E. (1978). Theoretical risks and tabular asterisks: Sir Karl, Sir Ronald, and the slow progress of soft psychology. *Journal of Consulting and Clinical Psychology,* 46(4):806–834.

Miller, W. R., Cooney, N. L. (1994). Designing studies to investigate client treatment matching. *Journal of Studies on Alcohol*, 65(Suppl. 12):38–45.

Miller, W. R., Del Boca, F. K. (1994). Measurement of drinking behavior using the form 90 family of instruments. *Journal of Studies on Alcohol*, 65(Suppl. 12):112–118.

Sobell, L. C., Agrawal, S., Sobell, M. B., Leo, G. I., Johnson-Young, L., Cunningham, J. A., et al. (2003). Comparison of a Quick Drinking Screen and Timeline Followback with alcohol abusers. *Journal of Studies on Alcohol,* 64:858–861.

Sobell, L. C., Sobell, M. B. (2003). Alcohol consumption measures. In J. P. Allen & V. Wilson (Eds.), *Assessing alcohol problems* (2nd ed.) (pp. 75–99). Rockville, MD: National Institute on Alcohol Abuse and Alcoholism.

Sobell, L. C., Sobell, M. B. (2008). Alcohol Timeline Followback (TLFB). In American Psychiatric Association (Ed.), *Textbook of psychiatric measures* (pp. 477–479). Washington, DC: American Psychiatric Association.

Sobell, M. B., Sobell, L. C. (1993). *Problem drinkers: Guided self-change treatment*. New York: Guilford Press.

Sobell, M. B., Sobell, L. C. (2005). Guided Self-Change treatment for substance abusers. *Journal of Cognitive Psychotherapy,* 19:199–210.

Vakili, S., Sobell, L. C., Sobell, M. B., Simco, E. R., Agrawal, S. (2008). Using the Timeline Followback to determine time windows representative of annual alcohol consumption with alcohol abusers. *Addictive Behaviors*, 33:1123–1130.