A Quick Drinking Screen for identifying women at risk for an alcohol-exposed pregnancy

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ABSTRACT

Two previous studies comparing the Quick Drinking Screen (QDS) with the Timeline Followback (TLFB) found that these two instruments yielded similar reports of alcohol use for clinical and nonclinical populations of problem drinkers. The current study evaluated the correspondence between these two drinking measures with women at risk of an Alcohol-Exposed Pregnancy (AEP). Participants were 355 women who voluntarily participated in a research study during 2005 through 2007 designed to prevent AEPs. All women were screened by phone for eligibility using the QDS and approximately 2 weeks later completed a 3-month TLFB by mail. Results of this study, analyzed in 2008, paralleled previous studies showing that the QDS and the TLFB, two very different drinking measures, collected similar aggregate drinking data for women who drink heavily and are at risk of an AEP. Correspondence between the two drinking measures met acceptable levels of reliability. The present study found that the QDS has demonstrated efficacy for screening women whose level of alcohol use puts them at risk for an AEP. Although the QDS does not yield detailed drinking information, it could be used when it is not possible or necessary to gather daily drinking data.

1. Introduction

Prenatal exposure to alcohol during pregnancy is associated with a wide spectrum of adverse effects on the developing fetus. Although different nomenclatures have been used, the most accepted term, Fetal Alcohol Spectrum Disorders (U.S. Department of Health and Human Services, 2005 February 21), includes the full spectrum of birth defects and disabilities caused by the prenatal effects of alcohol consumption. In terms of physical effects, in its most severe form FASD is expressed as Fetal Alcohol Syndrome (FAS) and includes characteristic facial dysmorphology, growth restriction, and central nervous system and neurodevelopmental abnormalities (Sokol, Delaney-Black, & Nordstrom, 2003). With respect to cognitive and developmental consequences, women who drink during pregnancy have children who are more likely to experience learning, attention, and impulsivity problems (Fried, Watkinson, & Gray, 1992). Psychologically, these children are at increased risk for antisocial behaviors and substance dependence as adults (Connor, Sampson, Bookstein, Barr, & Streissguth, 2000). The risk and severity of FASD increases with several factors (e. g., amount of consumption, timing of exposure, maternal

genetic factors; National Institute on Alcohol Abuse and Alcoholism, 2000).

While a safe level of alcohol consumption during pregnancy has not been clearly identified, research suggests that drinking eight or more drinks per week or five or more drinks on one occasion will put women at risk for an alcohol-exposed pregnancy (AEP) should they become pregnant (Floyd et al., 2007; Project CHOICES, 2003; Project Choices Research Group, 2002). For pregnancy-eligible women, especially those who are young and dating, drinking at or slightly above these criteria is not uncommon, and in most cases such drinking would not constitute an alcohol use disorder (Caetano, Ramisetty-Mikler, Floyd, & McGrath, 2006; Centers for Disease Control and Prevention, 2005). In addition, while drinking at levels just above these criteria would not typically result in a full blown FAS pregnancy, it can cause mild and subtle developmental changes sometimes called Fetal Alcohol Effects (e.g., learning disabilities, growth deficits, and intellectual and behavioral problems) as seen in epidemiological studies using aggregated data (Jacobson & Jacobson, 1999).

The problem of preventing AEPs is further complicated by the fact that about half of all pregnancies are unplanned, often resulting in women being unaware of being pregnant for the first 1 to 2 months (Centers for Disease Control and Prevention, 2005). These concerns suggest that prevention efforts should target women of child-bearing age who are sexually active, not using an effective form of birth control, and drinking at levels that can result in an AEP. In this regard,

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giving health care practitioners the ability to quickly and accurately assess risky levels of drinking is a vital and necessary step in the prevention of AEPs (Wedding et al., 2007).

Over the years, a number of measures have been developed to retrospectively assess alcohol consumption. Although a comprehensive review of this literature is beyond the scope of this paper, several review articles are available (Agrawal, Sobell, & Sobell, 2008; Dawson & Room, 2000; Greenfield, 2000; Room, 1990; Sobell & Sobell, 1995, 2003). The two most frequently used retrospective drinking assessment measures are the Timeline Followback (TLFB) and Quantity–Frequency (QF) summary measures.

The TLFB, a psychometrically sound assessment tool, has been used for over three decades with both clinical and nonclinical populations (Agrawal et al., 2008; Dawson & Room, 2000; Greenfield, 2000; Sobell & Sobell, 1995, 2003). The TLFB uses a retrospective self-report calendar format and memory aids to help respondents recall their daily alcohol consumption over a specific time period (e.g., weeks, months). It is used when sensitive and detailed assessments of daily alcohol use are needed. However, despite the TLFB's good psychometric properties, it is not always possible or necessary to obtain daily drinking estimation data (e.g., time constraints, respondent noncompliance, resource limitations). Compared to the TLFB, QF measures assess overall alcohol consumption by prompting individuals to retrospectively report their average quantity and frequency of drinking over a specified time period. One such measure, the Quick Drinking Screen (QDS), has been found in two studies to yield comparable drinking data to that captured by the TLFB (Roy et al., 2008; Sobell et al., 2003). The first study compared the QDS and TLFB with a nonclinical sample of 825 alcohol abusers who responded to an advertisement for a study promoting self-change (Sobell et al., 2002). Results showed that both drinking measures yielded similar aggregate data for several drinking variables over 12 months (Sobell et al., 2003; Sobell & Sobell, 2004). The second study compared QDS and TLFB data from a clinical sample of 124 alcohol abusers in outpatient treatment and found similar results (Roy et al., 2008). The present study compares the QDS and TLFB measures over a 3-month time window with a nonclinical sample of heavy drinking women who are at risk of an AEP. The 3-month window was used because research has shown that when using aggregated data such a window provides a good estimate of annualized drinking behavior (Vakili, Sobell, Sobell, Simco, & Agrawal, 2008).

2. Methods

2.1. Participants

Participants were part of a larger community-based mail-in study designed to prevent AEPs. Women who responded to advertisements throughout Florida in 2005 through 2007 were screened by phone to determine their eligibility for the study based on the following criteria: child-bearing age (18–44 years old), and in the 90 days prior to screening (a) had heterosexual vaginal intercourse, (b) used no or ineffective contraceptive methods, and (c) either consumed an average of eight or more standard drinks per week or had engaged in binge drinking (i.e., five or more standard drinks in one day). Participants were paid $20 after completing the assessment interview and another $20 after the 6-month follow-up interview. The Nova Southeastern University's (FL) Institutional Review Board approved the study.

The mean (SD) age of the 355 participants was 26.33 (6.36) years, with 55.77%, 25.07%, 10.70%, 3.38%, and 5.07% of the sample being White, Hispanic, Black, Asians, and others, respectively. Over one third (38.59%) were college students. Among nonstudents, 81.19% were employed full- or part-time, with 26.3% working in white-collar jobs (Hollingshead & Redlich, 1958). Based on the TLFB, participants reported drinking a mean (SD) of 2.95 (1.59) days per week and

consuming a mean (SD) of 3.81 (1.83) drinks on drinking days in the 90 days preceding the intervention.

2.2. Procedures

Similar to the two previous studies comparing the QDS and TLFB (Roy et al., 2008; Sobell et al., 2003), the QDS was administered to participants at an initial phone screen, and later they completed a self-administered version of the TLFB. In the present study a 3-month TLFB, part of a larger study (Sobell et al., 2002), was mailed to participants along with other assessment instruments. They were asked to complete the measures and return them in a prepaid, addressed envelope. Completion of a 90-day TLFB is estimated to take approximately 10 min. The mean (SD) number of days between the time when the participants were screened using the QDS by phone and when they completed the TLFB as part of the assessment interview was 14.97 (8.01) days. This retest interval is typical for reliability studies evaluating the TLFB (Dum, Voluse, Buerman, Sobell, & Sobell, 2007).

3. Results

Three QDS variables (drinking days per week, drinks per drinking day, and days drinking ≥5 drinks) were compared to the same variables generated from the TLFB. Table 1 shows the intraclass correlations (ICCs; ICC type = absolute agreement and single measure) and results of 2-tailed paired sample t-tests between the QDS and the TLFB. Bonferroni adjustments were made for multiple tests, with a Type I error rate set at $\alpha = 0.016$ (0.05/3). All ICCs were significant ($p < .001$), with moderately high values ranging between .62 and .74 indicating good agreement between the two measures. One of the three paired t-tests was significant (number of days drinking per week $[t(354) = 5.58, p < .01]$). Participants reported significantly more drinking days on the TLFB (mean [SD] = 2.95 [1.59]) than the QDS (mean [SD] = 2.61 [1.61]). Although this difference was statistically significant, given the large sample size, the absolute difference between the two measures (about half a day) represents a difference likely to be of little importance from a clinical perspective.

4. Discussion

The present study examined the reliability of the self-reports of alcohol use using two very different drinking measures (QDS; TLFB) administered on two different occasions with two reporting formats (phone screen by interviewers; paper and pencil self-administered daily drinking calendar) with a nonclinical sample of heavy drinking women who were at risk of an AEP. These findings demonstrated that reliable drinking data could be obtained from heavy drinking women who were at risk of an AEP and who, for the most part, were unaware of the possible consequences of their alcohol use. The current findings

Table 1
Means (SDs), intraclass correlations (ICCs), and paired sample t-tests comparing the Quick Drinking Screen (QDS) and Timeline Followback (TLFB) measures for three variables.

QDS Questions	M (SD)		t	ICC (p-value)[a]
	TLFB	QDS		
How many days per week out of the past 90 did you drink any alcohol?	2.95 (1.59)	2.61 (1.61)	5.58[b]	.74
On average, on days when you did drink, how many standard drinks did you drink in a day?	3.81 (1.83)	3.98 (2.33)	−1.78	.62
In the past 90 days, how many days did you drink 5 or more standard drinks in one day?	12.29 (14.73)	11.69 (16.52)	.96	.72

[a] All values significant at the .001 alpha level.
[b] Significant at the $p < .01$ level with Bonferroni adjustment to maintain the family-wise error rate at a .05 level.

parallel those of two previous studies comparing the QDS and TLFB in clinical and nonclinical samples of drinkers (Roy et al., 2008; Sobell et al., 2003). There were two major differences between this study and the two previous studies that add relevant findings for the validity of the QDS. First, the present study extended the findings to a nonclinical sample of women who, while heavy drinkers, were not participating in treatment. Second, this sample involved many women who did not perceive their alcohol use to be problematic although they were at risk of an AEP and would be considered at risk drinkers by some standards (U. S. Department of Agriculture and U. S. Department of Health and Human Services, 1990).

Although the difference between measures for the variable number of days drinking per week was statistically significant, in absolute terms the difference was unlikely to be clinically meaningful (Meehl, 1978). However, similar results were found in the two previous studies (Roy et al., 2008; Sobell et al., 2003) evaluating the validity of the QDS. This suggests that respondents retrospectively estimate a slightly greater number of drinking occasions when using the TLFB than the QDS. This may be an artifact of the QDS requiring respondents to subjectively estimate their "average" pattern rather than recalling specific drinking instances. This has been observed in a previous study comparing the TLFB with quantity–frequency estimation methods (Sobell, Cellucci, Nirenberg, & Sobell, 1982). Thus, while one disadvantage of using a brief measure, such as the QDS, is that it results in a small underestimate of drinking, this must weighed against the disadvantage of using the TLFB which requires a much more intensive investment of effort and time.

In summary, if a drinking measure like the TLFB cannot be used because of time or other constraints, the QDS has demonstrated efficacy for screening women whose level of alcohol use puts them at risk for an AEP. Although the QDS does not yield drinking information as detailed as the TLFB (e.g., patterns, day-to-day variability), it might be a preferred measure for (a) telephone screenings, (b) medical settings, and (c) when clients are unwilling to participate in lengthy interviews (Cunningham, Ansara, Wild, Toneatto, & Koski-Jännes, 1999; Miller & Cooney, 1994; Miller & Del Boca, 1994). To increase the generalizability of the present findings, a 90-day QDS measure needs to be evaluated in other settings (e.g., medical) and with other drinking populations (e.g., normal drinkers, adolescents, severely dependent alcohol abusers).

Acknowledgements

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