ASSESSING SUBSTANCE ABUSE PATIENTS' SYMPTOMS AND FUNCTIONING:

Self-Report Procedures Show Promise but Further Development is Needed

Craig S. Rosen, Rudolf H. Moos, John W. Finney, and Brandy R. Henson

Center for Health Care Evaluation
and Program Evaluation and Resource Center
VA Palo Alto Health Care System

A Report From the Substance Abuse Module, Quality Enhancement Research Initiative (QUERI)

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Executive Summary

Background. Because the VA strongly endorses monitoring patients' treatment outcomes, we need efficient ways to assess patients' symptoms and functioning at intake and follow-up. Information on patients with substance use disorders is currently collected by clinical interview. The two projects reported here examine the feasibility of using a self-administered questionnaire as a more efficient alternative to a widely used but time-consuming interview assessment procedure.

Objective. To assess the viability of using a self-administered version of the Addiction Severity Index (ASI) to monitor substance abuse patients' symptoms and functioning.

Method. One group of 316 VA patients entering substance abuse treatment completed the ASI interview and a self-administered questionnaire containing ASI composite items an average of 4 days apart. A second group of 5,796 patients completed the ASI interview at one follow-up and the self-administered questionnaire at a second follow-up conducted about nine months later. In both groups, composite scores and item responses from interview and self-report formats were compared.

Results. Alcohol, drug, psychiatric, family/social, legal, and employment problem composite scores correlated strongly across interview and self-report administrations. Initial scores from one format predicted later outcomes assessed with the other format. However, patients endorsed more psychiatric symptoms, family problems, and in one group, drug use, by self-report questionnaire than by face-to-face interview.

Conclusions. Self-administered ASI questions on alcohol, drug, psychiatric, family, legal, and employment problems tap similar content domains as those assessed by the ASI interview. Mean alcohol, legal, and employment problem composite scores appear similar across interview and questionnaire formats. Self-report and interview-based ASI composite scores can be compared at different time points for risk adjustment. Modifications of the self-report instrument and/or statistical adjustment are needed before questionnaire-based scores for drug, psychiatric, and family problems can be directly compared with interview-based scores.

Recommendations. Use of a self-administered measure is warranted in QUERI Substance Abuse Module projects. Self-administered and interview-based scores can be compared directly for alcohol, legal, and employment problem composites, but further research is needed to make drug, psychiatric, and family problem composites scores more directly comparable across formats. Substance abuse program coordinators should consider the use of a self-administered measure to replace part of the ASI interview currently mandated for use with patients with substance use disorder diagnoses.

Introduction

The Substance Abuse Module of the Quality Enhancement Research Initiative (QUERI) has been tasked with developing a system to monitor VA substance abuse patients' treatment outcomes. Because the VA strongly endorses monitoring treatment outcomes to improve quality of care, we need efficient ways to assess patients' symptoms and functioning at baseline (typically treatment intake) and at follow-up. Information on VA patients with substance use disorders is currently collected by clinical interview. We examined the feasibility of using a questionnaire as a more efficient alternative to a widely used, but time-consuming interview assessment procedure.

Clinical Interview versus Self-Administered Measures

Previous reviews have concluded that patients' reports of alcohol and drug use are reasonably reliable and valid when events are recent and patients do not face negative consequences for their answers (Babor, Stephens, & Marlatt, 1987; Darke, 1998, Midanik, 1988). Studies comparing self-administered questionnaires with interviews have found either similar responses with both formats or a tendency to endorse more drug use on questionnaires (Aquilino, 1994; Bongers & Van Oers, 1998; Heithoff & Wiseman, 1996; Sobell & Sobell, 1981). This research suggests that it may be possible to use a self-administered questionnaire to obtain data comparable to that obtained in a clinical interview.

The purpose of this project is to gauge the feasibility of using a self-administered instrument to assess patients with substance use disorders at baseline and subsequent follow-up. Accordingly, we examined the correspondence between patients' reports of substance use, symptoms, and role functioning in a self-administered questionnaire and in a clinical interview.

The Addiction Severity Index

The Addiction Severity Index (ASI: McLellan, et al., 1992) is extensively used in the VA to assess the functioning of patients with substance abuse disorders. The ASI taps seven domains: alcohol problems, drug problems, psychiatric problems, medical problems, family and social problems, legal problems, and employment problems. Data supporting the reliability and validity of most of the ASI indices have been obtained in prior studies with VA patients and other populations (Argeriou, et al., 1994; McLellan, et al., 1985; Stoffelmayr, Mavis, & Kasim, 1994; Zanis, et al., 1994).

Face-to-face ASI interviews provide valuable data, but impose a substantial time commitment on clinical staff. For example, we estimate that the 34,251 ASI interviews conducted with VA patients between July and September 1997 (Moos et al., 1998) required more than 25,000 staff hours of interviewing time. Face-to-face interviews are also impractical for some applications, such as following large numbers of patients who are no longer in treatment. Accordingly, we wanted to determine the comparability of more efficiently obtained self-report information on the ASI with that obtained by clinical interview.

Method

This report describes the results of two projects that compared responses to self-administered and interview-based ASIs. One project involved a group of patents who completed both a self-administered ASI questionnaire and an ASI interview at treatment entry. A subset of these patients completed a self-administered ASI at a six-month follow-up. The second project focused on a group of patients who completed an interview-based ASI at an initial assessment, an interview-based ASI at a first follow-up, and a self-administered ASI at a second follow-up.

Measures

Patients in both projects responded to the standard clinician-administered ASI interview (McLellan, et al., 1992) and to a separate self-administered questionnaire containing items used to calculate ASI composite scores. The self-administered version of the ASI used in these projects is included in Appendix A.

Questionnaire items were based on the text and parenthetical instructions of the interview ASI items, with additional instructions for 5 items. However, the self-administered questionnaire did not include most of the extensive clarifications and instructions that supplement the ASI interview script.

Patients

Project 1: Comparison of Formats at Baseline. In the first project, the ASI interview and questionnaire were administered to 341 patients as they entered VA substance abuse treatment. Patients were eligible to participate if they were cognitively and visually capable of responding, were in treatment for at least 3 days, and had not previously been administered an ASI interview. This sample represents about 55% of potentially eligible patients. The most common reasons for nonparticipation were patient refusal or discharge before the interview was administered. A total of 25 patients were excluded because the interview and self-report questionnaire were administered more than 2 weeks apart.

Overall, 316 patients responded to both the ASI interview and self-administered questionnaire within 14-days of each other, (average = 4.0 days apart, SD = 3.0). Interviews were screened for completeness, so nearly all (n = 310) patients provided complete data for items on the alcohol and drug composites and on at least 3 of the other 5 composites. Only 74% (n = 235) of patients answered all items on the questionnaire. All 316 patients were used in our analyses, with missing data deleted pairwise.

A total of 99% of the patients were men. Over half (57%) were Caucasian, 25% were African-American, 9% were Hispanic/Latino, 2% were Native American, and 7% were from other ethnic backgrounds. Respondents' average age was 47 (SD = 8.4). On average, they had 13.3 years of education (SD = 1.8). Fourteen percent of the

patients were currently married, 45% were divorced, 15% were separated, 3% were widowed, and 22% were single.

Project 2: Comparison of Formats at Follow-Up. In this project, we conducted two follow-ups of a nationwide sample of patients who had completed an ASI interview at baseline (Moos et al., 1999). A subset of 5,796 patients completed an interview-based ASI at the first follow-up and a self-administered questionnaire ASI at the second follow-up. The second follow-up was conducted by a survey research firm under contract to the VA.

On average, these patients' demographic characteristics were comparable to those of Project 1 patients. A total of 97% were men; 61% were Caucasian, 30% were African American, 7% were Hispanic/Latino, and 2% were of other ethnic background. On average, these patients were 49 years of age (SD = 9.4), and had 12.5 years of education (SD = 2.1). A total of 26% of the patients were currently married; 51% were separated or divorced, 4% were widowed, and 19% were single.

Data Analysis

Calculation of five of the seven ASI composites followed standard procedures (McGahan et al., 1986).[1, 2] To reduce respondent burden, the self-administered questionnaire assessed use of specific drugs in the past 30 days dichotomously (yes or no), although it was assessed continuously (number of days used) on the interview ASI. Interview drug items were dummy-coded to match the self-administered questionnaire's yes/no format, and scoring of both the interview and self-administered questionnaire composites was adjusted to reflect use of dichotomously coded responses.

In interview-based ASI data obtained both in Project 1 and Project 2, drug composite scores from dummy-coded drug items and from continuous drug items correlated .96. Analyses of item-composite correlations in the Project 1 interview data indicated that dichotomization of the drug use items did not significantly alter the structure of this composite.

In both projects, we compared Cronbach's alpha coefficients of composite scores obtained by interview and questionnaire. Coefficient alpha is an indicator of internal consistency reliability, and increases as inter-item correlations are higher and/or the number of items on the scale increases. We also compared correlations between the items and overall composite scores in each format to see whether the items contributed similarly to composite scores with both formats.

In both projects, consistency of composite scores obtained by interview and self-administered questionnaire was evaluated at the individual level with Pearson correlation coefficients and at the group level with paired-t tests.

For item-level analyses in Project 1, we compared the means or proportions for responses across both forms of administration. Meaningful item-level differences were defined as 0.2 standard deviations ($p < .05$) for continuous items and 9 percentage points ($p < .05$) for dichotomous items.

Results

Internal Consistency of Composites

In both Project 1 and Project 2, internal consistency reliability estimates (Cronbach's alphas) for the self-administered questionnaire composite scores were similar to those for the corresponding interview composite scores (Table 1). In both the interview and questionnaire administrations, Cronbach's alphas were highest (.74 to .91) for the alcohol, drug, psychiatric, and medical composites, and somewhat lower (.65 to .77) for the family and employment composites. The 3-item legal composite used in Project 2 had somewhat better internal consistency (alpha = .78 to .83) than the conventional 5-item composite used in Project 1 (alpha = .58 to .62). Limited internal consistency reliability for the family, legal, and employment composites has been found in other studies (Alterman, et al., 1998; Zanis et al., 1994).[3]

Table 1. Internal Consistency (Cronbach's Alpha) of Interview and Self-Report ASI Composite Scores

	Project 1		Project 2	
ASI Composites	Interview	Self-Report	Interview	Self-Report
Alcohol	.87	.91	.87	.85
Drug	.77	.81	.74	.81
Psychiatric	.83	.85	.88	.90
Medical	.86	.86	.88	.85
Family/Social	.72	.65	.69	.77
Legal	.62	.58	.83	.78
Employment	.71	.66	.67	.65

To assess whether the composite scores obtained by interview and self-administered questionnaire were measuring the same dimensions, we examined how each item correlated with the overall composite score in both formats. In both Projects 1 and 2, corrected item-composite correlations were similar in the interview and self-administered formats for the majority of items in all six of the composites.

In Project 1, however, corrected item-composite correlations on the drug composite differed somewhat across formats for 4 of the 13 items. A total of 12 of the 13 items on the self-report questionnaire correlated well (.35 to .53) with the composite score, indicating that these items were all assessing the construct reflected in the overall score. For the interview-based composite, however, only 8 of the items correlated well (.41 to .73) with the composite score. The items on use of barbiturates, hallucinogens, sedatives, and street methadone, which were rarely endorsed, correlated only weakly ($r < .16$) with the interview-based composite.

In Project 2, corrected item-composite correlations for several of the individual drug items (especially heroin, methadone, opiates, barbiturates, sedatives, amphetamines, and hallucinogens) again were somewhat higher for the self-administered than for the interview version. Item-composite correlations for the other drug composite items were comparable in the two versions.

Overall, with the possible exception of the drug composite, these findings indicate that the interview and self-administered versions of the ASI assess comparable content dimensions, and that the self-administered version is as internally reliable as the interview version.

Correspondence of Composite and Item Scores Across Formats (Project 1)

Data on the correspondence of responses across formats are derived primarily from Project 1, in which the self-administered and interview-based ASIs were obtained an average of four days apart. In Project 2, responses from the two formats are not directly comparable, because the self-administered questionnaire was completed an average of nine months after the follow-up ASI interview.

Table 2 presents correlations between (left column) and means (center and right columns) for composite scores obtained from the interview and self-administered questionnaire in Project 1. Overall, composite scores from the interview-based ASI and self-administered questionnaire correlated .47 to .87. However, mean endorsement of problems tended to be somewhat higher by self-administered questionnaire, particularly for drug, psychiatric, and family problems. Specific findings for each domain of the ASI are described below.

Table 2. Correspondence Between Interview and Self-Report ASI Composite Scores (Project 1)

ASI Composite Scores	r	Interview Mean (SD)	Self-Report Mean(SD)	Difference in SD Units
Alcohol	.87	.47* (.34)	.49* (.34)	.06
Drug	.73	.20** (.19)	.27** (.21)	.37
Psychiatric	.67	.27** (.25)	.36** (.26)	.36
Medical	.47	.36 (.37)	.35 (.35)	.03
Family/Social	.59	.25** (.23)	.29** (.22)	.17
Legal	.71	.13** (.18)	.16** (.19)	.17
Employment	.86	.71 (.29)	.70 (.30)	.03

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

Alcohol Problems. Composite scores for alcohol use correlated .87 across the two formats, with a slightly (but significantly) higher mean score by self-administered questionnaire (.49) than by interview (.47).

At the level of individual items, average days of alcohol use and days intoxicated tended to be somewhat higher on the self-administered questionnaire than in the interview (Table 3). Results were more consistent across formats when we considered only whether patients consumed any alcohol at all. The percentage of patients who reported drinking one or more days during the past month was similar in the interview (78%) and questionnaire (79%) administrations. The percentage of patients who reported drinking to intoxication on one or more days was 72% by interview and 77% by questionnaire.

Table 3. Interview versus Self-Report Responses to ASI Alcohol Composite Items (Project 1)

Alcohol Composite Items	r	Interview Mean	Self-Report Mean
Days alcohol use[a]	.76	13.3*	15.2*
Days intoxicated[a]	.71	12.0*	14.2*
Dollars spent on alcohol[a]	.42	$169	$142
Days alcohol problems[a]	.69	13.0	13.0
Extent troubled by alcohol problems[b]	.74	2.13	2.03
Extent treatment needed for alcohol problems[b]	.68	2.61	2.69

[a] In past 30 days. [b] Five-point scale ranging from “not at all” (1) to “extremely” (5).

* $p < .05$

Drug Problems. Composite scores for drug use correlated .73 between interview and self-administered questionnaire. However, the mean drug composite score was higher by self-administered questionnaire (.27) than by interview (.20). Three-quarters (74%) of patients endorsed using one or more drugs during the past 30 days on the questionnaire, compared with 58% by interview.

Mean responses were higher by questionnaire than by interview for 5 of the 13 drug use composite items: opiate use, sedative use, days used multiple substances, days experienced drug problems, and desire for treatment (Table 4).[4]

Table 4. Interview versus Self-Report Responses to ASI Drug Composite Items (Project 1)

Drug Composite Items	Interview Mean	Self-Report Mean	% exact [d]	r
Heroin (%)[a]	20	24	96	--
Methadone (%)[a]	3	7	93	--
Opiate (%)[a]	10*	20*	87	--
Barbiturates (%)[a]	1	06	95	--
Sedatives (%)[a]	12*	21*	81	--
Cocaine (%)[a]	30	37	91	--
Amphetamine (%)[a]	13	18	92	--
Marijuana (%)[a]	24	31	86	--
Hallucinogen (%)[a]	1	5	94	--
Days > 1 Substance (mean) [b]	5.9*	9.1*	--	.58
Days drug problems (mean)[b]	9.9*	12.0*	--	.70
Extent troubled by drug problems (mean)[c]	1.85	2.06	--	.67
Extent treatment needed for drug problems (mean)[c]	2.14*	2.54*	--	.67

[a] Percent of patients who reported using in past 30 days. [b] In past 30 days. [c] Five-point scale ranging from “not at all” (1) to “extremely” (5). [d] Percentage of responses in agreement across formats.

$p < .05$

Psychiatric Problems. Composite scores for psychiatric problems correlated .67 between self-administered questionnaire and interview. However, the mean psychiatric composite score was higher on the self-administered questionnaire (.36) than in the interview (.27). At the item level, endorsement of depression, anxiety, hallucinations, memory/concentration problems, and difficulty controlling violent behavior were higher on the self-report questionnaire than in the interview (Table 5).[5] Two-thirds (65%) of patients reported experiencing one or more days of psychiatric problems in the past month on the questionnaire, compared to 54% by interview.

Table 5. Interview versus Self-Report Responses to ASI Psychiatric Composite Items (Project 1)

Psychiatric Composite Items	Interview Mean	Self-Report Mean	% exact [d]	r
Depression (%)[a]	.34*	62*	62	--
Anxiety (%)[a]	.46*	68*	62	--
Hallucinations (%)[a]	.08*	18*	87	--
Memory/concentration (%)[a]	.34*	45*	65	--
Difficulty controlling violent behavior (%)[a]	.13*	28*	82	--
Suicidal thoughts (%)[a]	.14	19	88	--
Suicide attempt (%)[a]	.02	5	94	--
Psychotropic medication (%)[a]	.24	25	86	--
Days psych. problems (mean)[b]	9.8	10.5	--	.42
Extent troubled by psychiatric problems (mean)[c]	1.73	1.76	--	.50
Extent treatment needed for psychiatric problems (mean)[c]	2.00	2.24	--	.51

[a] Percent of patients who reported problems in past 30 days. [b] In past 30 days. [c] Five-point scale ranging from "not at all" (1) to "extremely" (5). [d] Percentage of responses in agreement across formats.

*$p < .05$

Medical Problems. Medical composite scores correlated only modestly (r = .47) between the interview and self-administered questionnaire administrations, although mean composite scores were similar across both administrations. The percentage of patients reporting one or more days of medical problems in the past month was similar for both interview (47%) and questionnaire (49%). There was no significant mean difference across formats for any item in the medical composite (Table 6).

Table 6. Interview versus Self-Report Responses to ASI Medical Composite Items (Project 1)

Medical Composite Items	Interview Mean	Self-Report Mean	r
Days medical problems[a]	9.0	8.4	.44
Extent troubled by medical problems[b]	1.48	1.38	.40
Extent treatment needed for medical problems[b]	1.66	1.69	.36

[a]In past 30 days.

[b] Five-point scale ranging from “not at all” (1) to “extremely” (5).

Family/Social Problems. Self-reported family/social scores correlated moderately well (r = .59) with interview composite scores. Reports of family problems were slightly (although significantly) higher by self-administered questionnaire (mean = .29) than by interview (mean = .25).

At the item level, patients acknowledged having conflicts with more people on the self-administered questionnaire, but did not report more days of conflict or greater subjective distress or desire for treatment (Table 7). The percentage of patients reporting one or more days of conflict with other family members was similar by interview (29%) and by questionnaire (32%).

Table 7. Interview versus Self-Report Responses to ASI Family/Social Composite Items (Project 1)

Family/Social Composite Items	Interview Mean	Self-Report Mean	r
Dissatisfaction w/marital status[a]	.73	.87	.50
People with whom had conflicts[b]	.10*	.18*	.31
Days conflict with family[c]	2.41	2.89	.41
Extent troubled by family problems[d]	1.35	1.45	.48
Extent treatment needed for family problems[d]	1.43	1.49	.42

[a] Three-point scale of “satisfied” (0), “indifferent” (1), and “dissatisfied” (2). [b]Average proportion of people with whom patient reported having serious conflicts in past 30 days (includes conflicts with father, mother, siblings, partner, neighbors, and coworkers). [c]In past 30 days. [d]Five-point scale ranging from “not at all” (1) to “extremely” (5).

*$p < .05$

Legal Problems. Self-administered questionnaire and interview-based legal problem composite scores correlated .71. The mean score on the self-administered questionnaire (.16) was only slightly higher than in the interview (.13), but this difference was statistically significant. At the item level, there were no differences across formats that were large enough to be meaningful (Table 8).[6] The proportion of patients reporting one or more days of illegal activity in the past month was similar by both interview (11%) and questionnaire (10%).

Table 8. Interview versus Self-Report Responses to ASI Legal Composite Items (Project 1)

Legal Composite Items	Interview Mean	Self-Report Mean	% exact [c]	r
Awaiting trial/sentence (%)	12	16	94	--
Days of illegal activity (mean)[a]	1.29	1.75	--	.61
$ from illegal activities (mean)[a]	$36	$52	--	.05
Extent troubled by legal problems (mean)[b]	0.88	1.04	--	.63
Extent counsel needed for legal problems (mean)[b]	0.94	1.09	--	.50

[a] In past 30 days.

[b] Five-point scale ranging from “not at all” (1) to “extremely” (5).

[c] Percentage of responses in agreement across formats.

Employment Problems. Composite scores for employment-related items correlated .86 across the two formats. There was no statistically significant difference between formats in the mean composite score and no meaningful differences at the item level (Table 9).[7] The percentage of patients reporting no days of paid work in the past month was similar by interview (64%) and by self-administered questionnaire (68%).

Table 9. Interview versus Self-Report Responses to ASI Employment Composite Items (Project 1)

Employment Composite Items	Interview Mean	Self-Report Mean	% exact[b]	r
Driver's license (%)	49	53	94	.87
Car available (%)	30	32	94	.85
Number of days worked (mean)[a]	4.53	5.03	--	.71
Dollars from employment (mean)[a]	$258	$422	--	.34

[a]In past 30 days.

[b]Percentage of responses in agreement across formats.

Potential Explanations For Differences In Composite Scores Across Formats (Project 1)

We conducted four analyses to examine potential explanations for the differences in the mean composite scores obtained by self-administered questionnaire and by interview.

We examined interviewers' confidence ratings to identify cases where interview results might have been distorted by patient misrepresentation or inability to understand the questions. Only 12 such cases were identified, and their exclusion did not significantly alter any of the findings.

Second, we deleted patients whose ASI questionnaires were only partially complete (n = 78); this did not significantly change any findings.

In a third analysis, we determined that the length of time between interview and questionnaire administrations did not significantly affect the consistency of composite scores across formats.

In a fourth analysis, we considered whether mean differences between the interview and self-administered questionnaire depended on which measure was given first. Roughly equal numbers of patients first completed the interview (n =164) or self-administered questionnaire (n =152). Order of administration was unrelated to symptom severity on the ASI interview.

Drug composite scores were generally higher by questionnaire than by interview, but the difference was greater among patients who completed the self-administered measure first ($F_{1, 311} = 4.2$, $p < .04$). Mean endorsement of psychiatric problems was consistently higher on the questionnaire irrespective of which format was completed first. Self-report family composite scores were significantly higher than interview-based scores when patients completed the questionnaire first, but not when the interview was completed first ($F_{1, 311} = 6.0$, $p < .02$). Thus, differences in responses between self-report and interview formats were somewhat reduced, but not eliminated entirely when patients participated in an interview prior to completing the questionnaire.

Correspondence of Composite Scores Across Formats (Project 2)

In Project 2, mean interview-based composite scores at the first follow–up were compared with questionnaire-based composite scores at the second follow-up conducted approximately nine months later. Results from the two formats are not as directly comparable as are those in Project 1, since they differed in time as well as in format. Nonetheless, in such a large sample, it seems reasonable to assume that the average level of actual patient functioning would be similar at both follow-up points.

As shown in Table 10, similar mean scores for the alcohol, drug, legal, and employment problem composites were obtained at first follow-up (by interview) and at second follow-up (by questionnaire). However, mean scores for the psychiatric, medical, and family problem composites obtained by questionnaire at the second follow-up tended to be higher than those obtained by interview at the first follow-up. Although we cannot rule out the possibility that patients' actual symptoms and family functioning worsened over time, these findings suggest that patients may be more likely to endorse psychiatric, medical, and family problems on the self-report version of the ASI we used than on the standard ASI interview.

Table 10. Mean ASI Composite Interview Scores at First Follow-up versus Self-Report Scores at Second Follow-up (Project 2).

ASI Composite Scores	First Follow-Up (Interview) Mean (SD)	Second Follow-Up (Self-Report) Mean (SD)	Difference in SD Units
Alcohol	.19 (.25)	.16 (.22)	.12
Drug	.09 (.13)	.08 (.13)	.08
Psychiatric	.31 (.27)	.43 (.30)	.44
Medical	.44 (.38)	.60 (.33)	.42
Family/Social	.14 (.20)	.26 (.25)	.60
Legal	.04 (.12)	.08 (.14)	.33
Employment	.63 (.30)	.64 (.29)	.03

Prediction of Outcomes Over Time

In Project 1, to assess the predictive utility of interview-based and self-report ASI composite scores, we followed patients an average of 7.4 (SD = 1.6) months after they completed the intake measures. Patients were contacted by mail and telephone and asked to complete a mailed self-administered questionnaire containing ASI composite items. We obtained responses from 198 patients.

We then correlated interview-based and self-administered composite scores at intake with the self-administered composite scores at follow-up. For each of the seven ASI composites, there was no significant difference between the correlations of interview-based and questionnaire-based intake composite scores with questionnaire-based composite scores at follow-up (Table 11).

Table 11. Correlation of Interview and Self-Report Composite Scores at Intake with Self-Report Composite Scores At Follow-Up (Project 1)

	Correlation Of Intake Scores With Questionnaire-Based Follow-Up Scores	
ASI Composites	Interview-Based Intake Scores	Self-Report Intake Scores
Alcohol	.33	.34
Drug	.42	.42
Psychiatric	.52	.46
Medical	.37	.35
Family/Social	.29	.39
Legal	.24	.29
Employment	.46	.45

In Project 2, we examined the predictive value of composite scores for two modes of administration over time. The correlations between the interview-based (first follow-up) and self-report (second follow-up) composite scores (average r = .43, range from .25 to .65) were comparable to those between interview-based scores at baseline and the first follow-up (average r = .50, range from .31 to .69).

Comment

Our comparison of interview and self-administered formats of the ASI sought to answer three questions: (1) Do interview-based and self-administered measures tap similar content domains? (2) Do initial scores obtained by interview or by questionnaire predict clinical outcomes obtained later using the other format? (3) Can scores obtained by interview be directly compared with those obtained by questionnaire?

Do Interview and Self-Report Assess Similar Content Domains?

In both Projects 1 and 2, psychometric characteristics of the ASI composites were closely comparable across interview and self-report administrations. In addition, there were consistently high correlations between interview and self-administered questionnaire composite scores. Overall, these findings indicate that the interview and self-administered versions of the ASI are assessing comparable content dimensions, and that the self-administered version is as internally reliable as the interview version.

In Project 1, with the exception of the medical composite, we obtained correlations of .59 to .87 between interview-based and self-administered composite scores given an average of four days apart. Measures of substance use (alcohol and drug composites) were highly correlated across formats. Psychiatric composite scores correlated well across formats, but medical composite scores did not. Regarding role functioning, family composite scores correlated moderately well across formats, and legal and employment composite scores were highly correlated across formats. These findings are consistent with results reported by Cacciola et al. (1998) among VA methadone maintenance and alcohol rehabilitation outpatients.

The correlations of composite scores across formats are limited by the test-rested reliability of the ASI interview itself. Test-retest reliability of the interview ASI can be high under optimal conditions (Stoffelmayr et al., 1994), but the reliability of ASI composite scores under clinical “field” conditions is not known. Although interviewers in the present study received two days of training in administering the ASI, frequency of interviewing and interviewer monitoring were highly variable. Given these conditions, it is notable that correlations between the self-administered questionnaire and interview for the alcohol, family, and legal problem composites were comparable to the test-retest reliability of ASI interviews conducted 3-4 days apart under research conditions with a homeless veteran sample (Zanis et al., 1994).

Results of Project 1 indicate that interview and self-report ASI medical composite scores were not highly correlated, a finding consistent with prior research by Cacciola et al. (1998). In a reanalysis of ASI composites, Alterman and his colleagues (1998) concluded that interview-based ASI medical items are unreliable. We agree with Alterman et al.'s suggestion that alternative measures of physical health, such as the SF-36 or SF-12, should be used instead of the ASI medical composite.

Can Baseline Scores Obtained with One Format Predict Outcomes Assessed with the Other Format?

In both Projects 1 and 2, initial composite scores obtained using one format (either interview or questionnaire) were predictive of later outcomes assessed with the other format. In Project 1, intake scores obtained by interview and self-administered questionnaire were equally predictive of 7-month follow-up scores obtained by questionnaire. In Project 2, the correlations between interview-based composite scores at first follow-up and questionnaire-based scores at second follow-up were similar to the correlations between interview-based baseline and first follow-up composite scores. These findings indicate that initial scores obtained with one format (e.g., interview) can appropriately be used to risk-adjust later outcomes assessed with the other format (e.g., self-administered questionnaire).

Can Self-Report and Interview-Based Scores Be Directly Compared?

In the present study, patients endorsed more drug, psychiatric, and family problems on the self-report questionnaire than in the interview. Patients also endorsed more alcohol use and legal problems by self-administered questionnaire than by interview, but these differences were quite small. Cacciola and his colleagues (1998) did not observe similar mean differences across formats. Nevertheless, these results suggest some modification of the self-report instrument and/or statistical adjustment may be needed before directly comparing interview and self-administered reports of drug, psychiatric, and family problems.

Substance use. Mean alcohol composite scores were fairly similar across interview and self-administered formats in both Projects 1 and 2. This indicates that interview-based and self-report alcohol composite scores can be compared with no adjustment.

However, mean drug use composite scores in Project 1 were higher by self-report than by interview. The difference was smaller when the interview preceded the self-administered questionnaire, suggesting that a clinical interview may provide parameters for responding to a subsequent self-report. Consistent with this idea, mean drug use composite scores were essentially the same across formats at follow-up (Project 2).

Differences in reported drug use between interview and self-report may reflect social desirability concerns. Prior studies suggest that patients endorse more drug use on a pencil and paper questionnaire than directly to an interviewer (Aquilino, 1994).

In any case, our results indicate that patients do not minimize their substance use and related problems when responding to a self-administered instrument. Without objective measures for comparison, we cannot determine whether responses to a self-administered questionnaire or interview format are more accurate. Most important, the differences across formats indicate that statistical adjustments (see below) should be made before directly comparing interview-based and questionnaire-based measures of drug problems.

Psychiatric and medical symptoms. Although psychiatric composite scores obtained by interview and by questionnaire were highly correlated, patients in both Projects 1 and 2 endorsed more psychiatric problems on the questionnaire than in the interview. Some patients may have acknowledged having "severe" psychiatric symptoms on the self-administered questionnaire even if they were not as severe as the question intended. Modifying the self-administered questionnaire with additional instructions might reduce this discrepancy. Social desirability may also be a factor; patients may be more reticent to endorse psychiatric problems in an interview.

Mean medical composite scores were similar between interview and self-report in Project 1, but not in Project 2. As noted above, we recommend not using the ASI medical composite because of its unreliability.

Role functioning. Mean family composite scores tended to be higher on the questionnaire than in the interview (particularly in Project 2). During the interview administration, interviewers should have been trained to clarify that items dealing with family "conflicts" refer only to events that jeopardize the relationship (Fureman et al., 1990). Patients responding to the questionnaire may have reported less severe conflicts than the measure was intended to assess. Differences in family composite scores across formats were minimized when the interview came first, perhaps because respondents heard the definition of severity before responding to the questionnaire. It is therefore possible that modifying the questionnaire with additional instructions may reduce the discrepancy between formats in family problem composite scores.

Mean legal and employment problem composite scores were consistent across formats in both Projects 1 and 2. This suggests that legal and employment problem scores obtained by interview and by questionnaire can be compared directly without statistical adjustment.

Directions for Future Research

Further investigation is needed to understand the reasons for discrepancies in mean drug, psychiatric, and family composite scores between the self-administered and interview formats of the ASI. One issue is whether amending the self-administered instrument can improve concordance between measures. For example, concordance of scores might be improved by adding instructions on the questionnaire to clarify that questions about psychological distress and family conflict refer only to severe problems. However, it seems unlikely that modifying the instrument can reduce discrepancies across formats in reported drug use.

It is unclear whether discrepancies between interview and self-report scores are similar across all patient populations. Cacciola et al (1998) did not find differences in mean scores across formats, but we did find such differences among VA Palo Alto Health Care System patients (Project 1) and follow-up scores collected at different time points (Project 2) in a national sample of VA substance abuse patients.

If differences between questionnaire and interview composite scores are relatively consistent across different types of patients, then additional research may yield an adjustment factor that can be used to directly compare composite scores from the two formats. One approach would be to collect self-report ASI data at intake for a nationally representative sample of VA patients (perhaps from QUERI outcomes monitoring research). The resulting mean scores could then be compared to mean composite scores in the national census of intake ASI interviews collected in FY97 and FY98 to calculate adjustment factors for the self-administered drug, psychiatric, and family composite scores.

A final issue to consider is how responses to a telephone-administered version of the ASI compare with responses to a personal interview or questionnaire. Because telephone administration is a potentially viable alternative, it is important to find out whether it would produce responses comparable to those obtained in an ASI interview.

Recommendations

Use of a self-administered measure is warranted. Data from both Projects 1 and 2 indicate that a self-administered measure can assess aspects of substance abuse patients' symptoms and functioning similar to those assessed by interview. These results support the idea of using a self-administered measure of patients' symptoms and functioning in QUERI Substance Abuse Module projects to save staff time without compromising data quality. Substance abuse program coordinators also may wish to consider whether a self-administered measure can replace part of the ASI interview currently mandated for use with patients with substance use disorder diagnoses.

ASI composite scores obtained at baseline in one format (interview-based or self-administered) can be used to risk adjust composite scores obtained at follow-up in the other format. When possible, the same type of format (self-administered or interview) should be used to obtain information from patients at both intake and follow-up, since this allows computation of pre-post difference scores. When this is not feasible, intake scores from one format (e.g., from interview) can be used as a risk adjustment factor in analyzing reports of follow-up functioning obtained from the other format (e.g., by questionnaire).

Self-administered and interview-based scores can be compared directly for some composites, but not for others. Alcohol, legal, and employment composite scores appear to be similar across interview and self-administered formats. However, drug, psychiatric, and family composite scores obtained by questionnaire cannot be directly compared with interview results without first making a statistical adjustment. At the present time, we do not have sufficient data to calculate accurate adjustment weights for these composites.

Further research is needed to make self-reported ASI data more directly comparable with interview results. Further research can determine whether refinements to the wording and instructions of a self-administered measure can increase the correspondence between interview-based and questionnaire-based reports of drug, psychiatric and family problems. However, even with such modifications, some statistical adjustment may still be needed. Such adjustments can only be calculated after we have findings from a nationally representative questionnaire-based sample that can be compared to findings from existing interview data, which are available from a subset of approximately 100,000 VA substance abuse patients.

The ASI medical composite should not be used. We recommend that the ASI medical composite be replaced with a more reliable measure of physical functioning. The SF-12V has been widely used with VA patients and is a suitable alternative self-administered measure.

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Footnotes

[1]In Project 1, scoring of the self-administered version of the family composite was adjusted because two items (conflicts with one's children and conflicts with close friends) were inadvertently omitted. Analyses of item-composite correlations in the interview data indicated deletion of the two items did not significantly alter the structure of the family composite. Mean family composite scores in the interview data were not altered by our item changes.

[2]Respondents in Project 2 were asked to return the self-administered version by mail, and, because of a concern that the questionnaire could be inadvertently mislaid, we decided not to include items about illegal activities. The interview-based version was rescored to reflect these changes. For the interview-based version, we obtained an r = .97 between the original 5-item composite and the modified 3-item legal composite.

[3]Differences in internal consistency among the different ASI composites were not significantly related to the number of items in each composite. The rank-order correlations between Cronbach's alpha and the number of items in each composite ranged from -.01 to .34 (median rho = .16) in self-administered and interview-based ASI data from Projects 1 and 2.

[4]Kappas between interview-based and questionnaire-based reports of use of specific drugs in the past 30 days were.88 for heroin, .24 for street methadone, .49 for opiates, .17 for barbiturates, .30 for sedatives, .80 for cocaine, .70 for amphetamines, .65 for marijuana, and -.01 for hallucinogens.

[5]Kappas between interview-based and questionnaire-based reports of psychiatric problems in the past 30 days were .30 for depression, .27 for anxiety, .45 for hallucinations, .29 for memory/concentration problems, .47 for violent tendencies, .55 for suicidal thoughts, .07 for suicide attempts, and .61 for taking psychotropic medications.

[6]The kappa between interview-based and questionnaire-based reports of awaiting trial or sentencing was .76.

[7]The kappa between interview and questionnaire for reporting having a driver's license was .87. The kappa between formats for reporting having access to a car was .85.

Appendix A

Self-Administered Version of the ASI