



SEVERE MENTAL ILLNESS AND ADDICTIONS: ASSESSMENT CONSIDERATIONS

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Abstract — This article provides a selective overview of the empirical literature on substance use assessment for persons with severe mental illness. We organize the review around key questions related to three assessment goals. With regard to screening, we address what screening tools are appropriate for use in psychiatric settings, and what methodological concerns arise regarding their use in these contexts. With regard to diagnosis, we discuss why diagnosing comorbid disorders is difficult and how clinicians can enhance the reliability and validity of their diagnoses. With regard to the related goals of treatment planning and outcome evaluation, we consider what are appropriate outcome measures, and how assessment information can assist in treatment planning. Finally, we outline three promising directions for future research: (a) evaluating the psychometric properties of established substance-related measures in persons with severe mental illness, (b) identifying the conditions under which self-report information is more or less accurate, and (c) improving the population relevance of substance assessment instruments. © 1998 Elsevier Science Ltd

Substance use disorders co-occur with severe mental disorders at elevated rates relative to the general population. According to the Epidemiological Catchment Area Study (ECA; Regier et al., 1990), the prevalence of substance abuse and dependence in the U.S. population is 16%; however, 29% of persons with a mental disorder were comorbid for substance use disorder. Persons with severe mental illness (SMI) are at the most risk—47% of persons with schizophrenia and 56% of persons with bipolar disorder have lifetime diagnoses of substance abuse or dependence. The base rates of alcohol and drug problems indicate the importance of systematic assessment for substance use disorders (SUD).

Despite the high base rates, SUD are often overlooked and underdiagnosed in mental health treatment settings (Ananth et al., 1989; Shaner et al., 1993). Several factors contribute to the underdetection of substance use problems among persons with SMI. First, abuse of alcohol and other drugs occurs in the context of multiple psychosocial dysfunction due to SMI; hence the negative consequences of substance abuse may not be as salient as they would be in persons without comorbid SMI. Second, the cognitive and emotional effects of substance abuse can include depression, anxiety, confusion, hallucinations and delusions; hence they may be misattributed to psychiatric conditions (e.g., Schuckit, 1983). Third, mental health staff may lack the training or expertise to make informed decisions regarding appropriate methods of detecting SUDs. Perhaps the most significant obstacle to the detection of SUDs remains the lack of substance-specific assessment in mental health treatment settings. Inadequate assessment is likely to lead to inappropriate treatment; failure to take SUD into account in treatment planning is likely to lead to poor outcomes, such as relapse, readmission,

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and substantial psychological and economic costs (Bartels et al., 1993; Safer, 1987; Shaner et al., 1995).

Given the prevalence of SUD among psychiatric patients, mental health professionals must attend to the assessment of alcohol and drug use and related problems. Toward that end, it is useful to keep in mind that assessment serves multiple purposes, including screening, diagnosis, and treatment planning/outcome assessment (K. B. Carey & Teitelbaum, 1996). Screening involves the identification of persons who are likely to have a SUD, and can take place in acute settings (emergency rooms and psychiatric admissions facilities) or in ongoing psychiatric treatment. Screening often involves brief assessment tools that are evaluated in terms of their sensitivity (ability to detect a SUD if it is there) and specificity (ability to accurately identify persons who do not have a SUD). Diagnosis involves obtaining a more detailed evaluation of substance use and consequences. This assessment helps to determine whether the problem behavior meets formal diagnostic criteria for a SUD, which substances are involved, and whether the SUD is current or in remission. The most common methods of diagnosing SUDs involve structured or semi-structured interviews, using criteria from the *Diagnostic and Statistical Manual for Mental Disorders (DSM-IV)*; American Psychiatric Association, 1994). Treatment planning and outcome assessment constitute a heterogeneous set of goals, related by their relevance to designing appropriate treatments and evaluating their effectiveness. Relevant assessment information includes consumption patterns, substance-related life problems, expectancies and motives for use, and situational contexts for use.

The purpose of this article is to provide an overview of the empirical literature on substance use assessment for persons with SMI. For each of the three goals of assessment, key methodological questions are posed, the literature selectively reviewed, and assessment recommendations offered. We conclude with directions for future research and practice recommendations.

S C R E E N I N G

As summarized by K. B. Carey and Teitelbaum (1996), assessment modalities for screening include observational strategies, collateral information, biochemical tests, and self-report measures. Each modality has advantages and disadvantages with SMI patients (Drake, Alterman, & Rosenberg, 1993). Hence, the following questions can be posed regarding screening for SUDs. What screening tools are appropriate for use with SMI patients? What are the methodological concerns regarding their use in mental health contexts?

What are appropriate screening tools?

Observational screening methods such as physical exams tend to be relatively insensitive screening tools among persons who have not yet developed observable physical harm due to their substance abuse (Bohn, Babor, & Kranzler, 1995). On the other hand, collateral information sources have long been found to be useful in substance abuse treatment settings (Maisto & Connors, 1992). Collateral information sources include friends and family, other treatment providers, official records, and reports from legal or other agencies. The value of collateral informants increases with the extent of their direct contact with or awareness of the substance use behaviors of the client (Wilson & Grube, 1994). Collaterals' ratings of their confidence in the information

they provide correlated positively with the level of agreement between collaterals and subjects regarding substance use (Sobell, Agrawal, & Sobell, 1997). Thus, collaterals may vary in their usefulness depending on the degree of contact and confidence, two dimensions that are relatively easily assessed. However, some persons with SMI may not have reliable collateral informants, perhaps due to social isolation, estrangement from family, and/or involvement in social networks with other patients. In addition, preliminary evidence suggests that collaterals underreport substance use relative to self-reports by stable psychiatric outpatients (K. B. Carey, 1997a).

One promising source of collateral information consists of case managers or treatment personnel who know the client. Two 5-point clinician-rating scales, one for alcohol use and one for other drug use, have been developed to classify persons with SMI into categories corresponding to increasing severity of substance use. The clinician uses all available information accumulated over a period of up to 6 months to make the ratings. The Alcohol Use Scale (AUS) and Drug Use Scale (DUS; Drake, Mueser, & McHugo, 1996) can be completed reliably and correspond with more intensive interview-based methods of establishing SUD diagnoses. These rating scales can be useful for patients who have a recent history of contact with case managers or other treatment personnel.

Biochemical methods of detecting SUDs include analysis of blood, breath, or urine samples for direct metabolites of abused substances, or indirect evidence of biological changes often related to prolonged substance abuse such as elevated liver enzymes or changes in blood chemistry (Gold & Dackis, 1986). When used alone, these markers are imperfect screens for SUDs. Metabolites remain in a person's system for a limited time after substance use (often 1–3 days; Hawks & Chiang, 1986); thus, they are relatively insensitive indices of patterns of abuse, and may result in false negatives if there is substantial delay between last use and testing. Repeated positive findings on biochemical tests can help to establish abuse patterns. The value of indirect biological markers is limited if the abuse patterns have not been prolonged or intense enough to produce such changes, and they are nonspecific with regard to substance abuse.

Although biochemical tests alone are inadequate screening tools, these screening methods can play a role in a more comprehensive assessment approach. Systematic use of urine screens in acute care psychiatric settings does increase the identification of substance use. For example, Galletly, Field, and Prior (1993) reported that urinalysis detected alcohol or psychoactive drugs in 17% of a sample of persons admitted to a public psychiatric hospital. All of the patients who tested positive for alcohol had reported recent alcohol use, but none of the 14 patients testing positive for drugs had reported using them. Similarly, studies of both inpatients and outpatients with schizophrenia document substantial underreporting of cocaine use, revealed only when self-reports were compared to urine drug screens (Shaner et al., 1993; Stone, Greenstein, Gamble, & McLellan, 1993). Furthermore, the availability of urinalysis data leads to an increase in alcohol and drug use disorder diagnoses upon discharge from a psychiatric hospital (Appleby, Luchins, & Dyson, 1995). Hence, urine screens help to identify some patients who have not reported substance use and serve to sensitize mental health staff to the possibility of SUDs. The incremental effect of urine screens may be greater for identifying drug abusers than alcohol abusers.

Self-report methods of screening for SUDs remain a flexible and noninvasive option. Although patients tend to underrepresent their substance use in acute crisis, such as in the emergency room and upon admission to a psychiatric hospital, a different picture has emerged from studies evaluating self-report screens in outpatient samples.

Weiss et al. (1998) found self-reported use to be consistent with urine screen results 95% of the time in a sample of dually diagnosed patients in treatment. When the two sources of information did not agree, 89% of the time it was because subjects reported more substance use than was detected by the urine screens. Evidence supports the internal consistency and test-retest reliability of the DAST (Cocco & Carey, in press), MAST, and CAGE (Teitelbaum, 1998) with psychiatric outpatients; these instruments have also shown adequate criterion validity when used to predict relevant SUD diagnoses. Teitelbaum and Carey (1996) summarized additional information on the criterion validity of alcohol screening tools.

Recently a new screening tool has been developed specifically for the identification of SUDs in persons with SMI (Rosenberg et al., 1998). The Dartmouth Assessment of Lifestyle Instrument (DALI) consists of 18 interviewer-administered items derived from several existing screening tools; items were selected to maximize prediction of SUD diagnoses. Eight items predict drug use disorders and nine items (with two overlapping items) predict alcohol use disorders. The preliminary report indicates that it is reliable over time and across interviewers, and more sensitive and specific than the MAST, TWEAK, CAGE, or DAST. To date, the DALI is the only screening instrument specifically designed to identify SUDs among patients hospitalized for psychiatric illness.

What methodological concerns arise regarding screening?

This question has been addressed in part by the preceding review. First, the utility of collateral reports for confirming self-reported substance use and problems remains understudied in this context. Although collateral information may identify unreported substance use in a few cases, the methods for obtaining reliable collateral reports from nontreatment personnel warrant further study. Second, little attention has been devoted to considerations regarding interpretation of biochemical markers for alcohol and drug abuse. For example, we do not know if the sensitivity or specificity of urine or blood tests used to identify recent substance use is altered in persons with SMI, given their frequent use of psychotropic medications. Also, biological markers may be less sensitive screens in this population, given the lower levels of use characteristic of substance abusing SMI patients (Drake & Wallach, 1989).

Third, the use of self-report information continues to raise methodological concerns. For example, although reliable and valid in some contexts, self-reports cannot be trusted in other contexts. Existing data suggest that stable outpatients can give quite reliable, and apparently valid, self-reports of their drinking behavior. On the other hand, patients admitted to acute psychiatric settings often underreport their recent drug use. If these assessment situations represent the two ends of the continuum, much remains to be learned about self-report accuracy in a variety of psychiatric treatment settings and with a wide range of patients. Furthermore, when self-report screening tools are used, such as the DALI or MAST, they are usually interviewer-administered rather than self-administered. Thus, several investigators have changed the mode of administration to account for literacy and/or attentional difficulties characteristic of persons with SMI. We do not know whether these procedural changes affect the ability of these tools to identify persons with SUDs.

We recommend combining self-report screening tools with other sources of available information. This convergent validity approach (Sobell & Sobell, 1980) promises to improve detection over single assessment methods especially for suspected drug (vs. alcohol) abusers, and also in settings where patients are experiencing acute psy-

chiatric distress. Screening tools are not designed to provide sufficient information for diagnosing SUDs; thus they should be considered the first step to a more comprehensive assessment. With this in mind, treatment sites can decide whether they prefer maximizing the sensitivity versus the specificity of screening procedures.

D I A G N O S I S

A positive screen is generally followed by a diagnostic assessment. A SUD diagnosis signifies that a client has developed maladaptive patterns of substance use that result in clinically significant physical, psychological, or social impairment (American Psychiatric Association, 1994). Accurate diagnosis requires a more extensive evaluation of substance use and related problems over time, and differentiation between substance abuse and substance dependence. As noted by Shaner et al. (in press), misdiagnosis can be costly. Identifying a primary psychotic disorder in a client who actually has substance induced psychosis could lead to inappropriately prolonged use of antipsychotic medications. Furthermore, diagnostic inaccuracy can exclude a person from appropriate treatment programs. With regard to establishing a SUD diagnosis in a person with SMI, two questions emerge: Why is diagnosing comorbid disorders so difficult? How can diagnosticians ensure that they arrive at reliable and accurate diagnoses?

Why is diagnosing comorbid disorders so difficult?

Ample evidence points to the conclusion that diagnoses are less reliable when comorbid disorders are present. With regard to test-retest reliability, current substance abusers give less reliable reports of past or current psychiatric disorders than non-drug-abusing individuals (Bryant, Rounsaville, Spitzer, & Williams, 1992; Corty, Lehman, & Myers, 1993). Symptoms that are caused by substance use can mimic symptoms of other disorders. Common examples include depressive episodes caused by cocaine withdrawal, and amphetamine-induced psychosis. Thus, interactions between abused substances and psychiatric syndromes make it difficult to determine reliably the primary cause for presenting symptoms.

Drake et al. (1990) suggested that relying on a single interview to assess alcohol use could misclassify a significant proportion of individuals with schizophrenia and drinking problems as nonproblematic drinkers. Denial or minimization of substance use can result from psychological defenses, neuropsychological impairments, lack of insight into connections between drinking and symptoms, and/or tendency to provide socially desirable responses. The timing of a diagnostic interview may affect the reliability and validity of the results, and diagnoses made early in treatment may need to be revised as more information becomes available over time (Ananth et al., 1989).

A recent study directly addressed the possible causes of unreliability in diagnosing comorbid disorders. Shaner et al. (in press) documented sources of diagnostic uncertainty in a sample of 160 inpatients with chronic psychosis and active cocaine abuse. The diagnostic assessment consisted of the Structured Clinical Interview for *DSM-III-R* (SCID; Spitzer, Williams, Gibbon, & First, 1990), urine screens, review of hospital records, and collateral interviews. Modifications to the SCID allowed interviewers to rate diagnostic criteria as either met or uncertain, and any sources of uncertainty were recorded. Initial assessment produced a definitive diagnosis in only 18% of the cases. In the remaining cases, a definitive diagnosis could not be reached because of one or

more sources of uncertainty, including insufficient abstinence to rule out substance-induced symptoms (78%), poor memory (24%), or inconsistent reporting (20%). Uncertainty remained in 75% of the cases after a reassessment at 18 months. These results highlight the potential problems of basing diagnostic decisions on a single interview. The persistence or remission of psychotic symptoms during periods of abstinence may clarify the diagnosis. Thus, the ability to observe patients under conditions of prolonged abstinence facilitates determination of diagnoses. However, consensus has yet to be achieved regarding the length of abstinence required.

How can diagnosticians make reliable and accurate diagnoses?

Diagnosing comorbid disorders presents a unique set of challenges. Diagnoses tend to be less reliable when comorbid disorders are present, and a single interview may misattribute the cause of symptoms and/or underestimate the prevalence of comorbid disorders. These challenges notwithstanding, we offer several suggestions.

The recommended procedure for diagnosing SUDs consists of structured and semi-structured interviews, designed to enhance the reliability of the diagnostic process (e.g., the Structured Clinical Interview for *DSM-IV* [SCID-IV]; First, Spitzer, Gibbon, & Williams, 1995). Both types of interviews provide data on the severity of substance use problems and information relevant to differential diagnosis. However, research suggests that they may need to be supplemented with other sources of information.

Because uncertainty can remain after a single diagnostic interview, a number of authors (e.g., Drake & Wallach, 1989; Safer, 1987) have advocated the use of longitudinal behavioral observations and collateral information to assess SUDs in psychiatric patients. For example, Drake et al. (1990) suggest that clinicians who work closely with psychotic patients over time can identify problematic drinking that is denied by patients themselves. Longitudinal observations would also increase the possibility of observing the client under conditions of abstinence. Continuing psychiatric symptoms during periods of abstinence help to establish the *DSM-IV* criterion of "not due to substance use." Alternatively, resolution of some (or all) of the psychiatric symptoms during periods of little or no use is consistent with a substance-induced disorder.

An example of an integrative approach to diagnosing comorbid disorders is the Longitudinal Expert All Data Procedure (LEAD; Kranzler, Kadden, Babor, & Rounsaville, 1994). The LEAD procedure consists of repeated assessments conducted by clinicians experienced with both psychiatric and SUDs. Diagnosticians integrate patient observations over time with information from family members, significant others, ward personnel, therapists, laboratory tests, and case records. The length of the assessment period may be brief or may be years, depending on the complexity of the case and the opportunity to observe sufficient periods of abstinence. When compared to a single interview, the LEAD procedure increases the likelihood of detecting SUDs. The advantage of the LEAD approach appears to be specific to certain types of disorders, as it did not increase the reliability of comorbid mood or anxiety disorder diagnoses.

A similar approach has been described for diagnosing SUDs in persons with schizophrenia (Drake et al., 1990). The consensus approach combines self-report and interview data with longitudinal and collateral information provided by case managers. The consensus diagnoses proved to be more sensitive and specific than single methods of diagnosing SUDs. Given the shortcomings of the single interview, more studies uti-

lizing variants of the LEAD approach are warranted. Improvements to the quality of the diagnostic process may ultimately lead to more informed treatment decisions.

T R E A T M E N T P L A N N I N G A N D O U T C O M E E V A L U A T I O N

These two assessment goals are considered together because much of the information needed for developing individualized treatment plans is also suitable for monitoring treatment outcomes, such as an assessment of substance use patterns and related life problems. Additional variables that can inform the treatment planning process include substance-related expectancies, motives for use, antecedents and consequences of use, adaptive skills, and motivations for change. Because very little has been published about treatment planning for dual disorders, the empirical literature provides little guidance on the treatment validity of any assessment procedure. Thus, relevant questions include the following. What constitute minimum, appropriate outcome measures for substance use problems? How can assessment information assist in treatment planning? To answer these questions, we highlight assessment tools that have undergone psychometric evaluation with SMI patients.

What are appropriate outcome measures?

Documentation of use patterns is used to evaluate the scope and severity of current behaviors and to monitor changes over time. Common markers of improvement include reduction in use frequency and/or average quantity, reductions in heavy or high-risk use patterns, and increases in the number of abstinent days over a given outcome interval. The Timeline Followback is one instrument that allows for flexibility in calculating these outcome variables (Sobell & Sobell, 1996). The TLFB records daily drinking patterns over periods ranging from 30–365 days, using a calendar as a visual recall prompt; specified interview strategies help to identify salient events and patterns of use that facilitate recall. The TLFB has sound psychometric properties among patients in alcohol treatment, community residents, and college students (Sobell & Sobell, 1996). Among the SMI, frequency and quantity measures from the 30-day TLFB were temporally stable (K. B. Carey, 1997b; Teitelbaum, 1998) and significantly associated with independent measures of drinking frequency and problems (K. B. Carey, 1997b; K. B. Carey, Cocco, & Simons, 1996). Experience with SMI participants suggests that drug use days can be effectively integrated into the TLFB procedure (M. P. Carey, Weinhardt, Carey, Maisto, & Gordon, 1998). With patients who are less reliable historians, repeated assessments with relatively short time frames (e.g., 1–4 weeks) can be used to establish a representative baseline of use patterns.

SUDs are defined in terms of their consequences for adaptive functioning rather than in terms of specific amounts of use (American Psychiatric Association, 1994). Hence, outcome measures should include indices of adaptive function and life problems. More intense involvement with substances tends to be associated with problems in areas such as finances, housing, employment, social relationships, medication and other treatment compliance, and legal complications (e.g., Drake, Osher, & Wallach, 1989). Few suitable measures have been systematically evaluated. The MAST and a variant on the DAST have been used to quantify alcohol- and drug-related problems among persons with schizophrenia (Mueser, Nishith, Tracy, DeGirolamo, & Molinaro, 1995). The AUS and DUS (Drake et al., 1996) can provide global indices of the severity of problems. However, because problem severity is rated on a single 5-point

scale these may be less helpful in tracking the resolution of specific psychosocial problems.

How can assessment information assist in treatment planning?

Treatment planning involves identification of the specific problem areas that need changing and the intervention strategies that are best suited to a given individual. Although little has been published about ways to link assessment to treatment for substance abuse among the SMI, several recent studies have reported relevant data.

The first set of studies addressed whether assessing motives for substance use and substance-related expectancies can be informative in the SMI. Unstructured motives assessments indicated that the reasons reported by the SMI for using alcohol and other drugs resemble those reported by other populations (e.g., Dixon, Haas, Weiden, Sweeney, & Francis, 1991); these include interpersonal (e.g., social facilitation) and intrapersonal (e.g., relief of dysphoria) motivations. Using an internally consistent motives measure, K. B. Carey and Carey (1995) found that both negative reinforcement and positive reinforcement motives differentiated current drinkers from current nondrinkers, and both motives correlated significantly with maximum quantity consumed in the last year. Participants who had been treated for alcohol or drug problems endorsed higher negative reinforcement motives than nontreated participants; the presence of a treated SUD did not result in differential scores for positive reinforcement motives. Mueser et al. (1995) provided additional evidence for the validity of motives assessments. Motives for both drug and alcohol use were associated in a nonspecific way with SUDs and substance-related problems. However, data regarding expectancies revealed a much more specific set of associations. Alcohol expectancies were higher in patients with documented alcohol use disorders, whereas drug expectancies were higher in patients with drug use disorders. These studies suggest that treatment approaches that invoke motivational and cognitive expectancy constructs could be extended to persons with both psychiatric and substance use disorders.

Stasiewicz, Carey, Bradizza, and Maisto (1996) illustrate a method of linking assessment to treatment planning and outcome evaluation. They conducted a thorough behavioral assessment (cf. Sobell, Toneatto, & Sobell, 1994) with a man with a history of major depression with psychotic features, alcohol and cannabis dependence. Antecedents were initially identified with the Inventory of Drinking Situations (Annis & Davis, 1988) and the Inventory of Drug-Taking Situations (Annis & Martin, 1985). These instruments produce a profile of situations associated with heavy drinking or drug use. After identifying specific examples of common high-risk situations, behavior chains were constructed to include the following components: situational context, thought, feeling, behavior (substance use), and consequences. Consideration of both positive and negative as well as immediate and delayed consequences of drug and alcohol use helps to establish the functional role of substance use in different contexts. This analysis of antecedents and consequences helps to organize the initial treatment plan. Consistent with social learning and relapse prevention models of substance abuse treatment (Marlatt & Gordon, 1985), identification of situational, emotional, and cognitive triggers can suggest strategies for avoiding or changing high-risk situations. These strategies may include stimulus control, mood management skills, or cognitive restructuring. In addition, better appreciation of the functional role of substance use can suggest more adaptive behavioral alternatives to substance use; appropriate responses may involve skills training, or involvement in alternate pleasurable activi-

ties. The idiographic nature of behavioral assessment lends itself to demonstrating functional relationships between psychiatric symptoms and substance use (Stasiewicz et al., 1996).

An additional consideration for treatment planning consists of a motivational assessment. According to the transtheoretical model of change (Prochaska, DiClemente, & Norcross, 1992), the person in the action stage of change will be more receptive to behavioral change strategies. Intervention strategies such as consciousness raising via assessment feedback may be better suited for persons with lower readiness to change. Using a stage-based classification strategy, Ziedonis and Trudeau (1997) demonstrated that dually diagnosed outpatients endorsed a wide range of readiness to change. Fully 51% of the marijuana abusers and 48% of the alcohol abusers were determined to be in precontemplation or contemplation stages of change. However, stage of change was not related to involvement in substance abuse or dual diagnosis treatment. Readiness to change warrants further attention in this population.

The Substance Abuse Treatment Scale (SATS; McHugo, Drake, Burton, & Ackerson, 1995) represents a different motivational assessment approach. The SATS was developed to describe psychiatric patients in terms of their involvement in substance abuse treatment and recovery. Consistent with the Osher and Kofoed (1989) four-stage model of dual diagnosis treatment, the SATS specifies eight treatment stages: pre-engagement, engagement, early persuasion, late persuasion, early active treatment, late active treatment, relapse prevention, remission or recovery. Clinicians select a stage reflecting patients' treatment involvement during the last 6 months. The SATS is reliable across raters and reflects change over time, as fewer participants in dual diagnosis treatment remained in early stages of change and greater numbers of participants moved to later stages of change.

Self-report measures of readiness to change are available (e.g., the SOCRATES, Miller & Tonigan, 1996; or the URICA, McConaughy, Prochaska, & Velicer, 1983), but these instruments have not yet been evaluated for their application to substance abusers with SMI. Motivational assessments have also included decisional balance exercises (e.g., Miller & Rollnick, 1991), consisting of a systematic consideration of the pros and cons of continuing to use substances and of quitting. Preliminary qualitative evidence suggests that participants with schizophrenia can engage in decisional balance activities (K. B. Carey, Purnine, Maisto, Carey, & Barnes, 1998).

We recommend that substance abuse be integrated with other problem areas addressed in psychiatric treatment. This strategy requires recognition of the relationships among substance use, psychiatric functioning, and other psychosocial problems. Behavioral assessment strategies that explore the functional role of substance use may lead to ideas for helpful interventions. Enhancement of motivation for treatment constitutes an appropriate treatment goal. A rudimentary outcome evaluation would require first the identification of key markers of psychiatric status and adaptive function, and then a plan for tracking these markers and substance use patterns over time.

FUTURE DIRECTIONS

Despite the substantial progress made in the last decade regarding the assessment of substance use and related problems in the SMI, many promising directions for future research remain. These include: (a) investigating the adequacy of existing assessment options; (b) identifying the conditions under which self-reports are more or less accurate; and (c) enhancing the population appropriateness of assessment tools.

First, we need additional psychometric evaluation of established assessment instruments. Even instruments with well-established psychometric properties may not be effectively used in populations other than those for which they were developed. For example, the Addiction Severity Index (ASI; McLellan et al., 1992) is commonly used in substance abuse treatment settings to quantify problem severity on multiple dimensions. However, recent research raises questions about the psychometric qualities of the ASI when used with the SMI, because reliability and validity coefficients for many of the summary variables produced by the ASI do not meet acceptable thresholds (K. B. Carey, Cocco, & Correia, 1997). Similarly, a recent review concluded that other well-established scales could not identify persons with alcohol problems at rates exceeding chance, given the presence of an SMI (Teitelbaum & Carey, 1996). On the other hand, some measures developed in other contexts have proven to be psychometrically sound, such as the DAST (Cocco & Carey, in press) and the alcohol, marijuana, and cocaine expectancy measures used by Mueser et al. (1995). When instruments are exported for use with the SMI, psychometric evaluation is indicated. In addition, the generalizability of measures newly developed for this population (e.g., the DALI and the SATS) also needs to be established.

Second, conditions that maximize the accuracy of self-report information deserve greater attention. Self-report remains an essential tool, and the best way to gain access to private information. Despite the historical suspicion of substance abusers' self-reports, empirical evidence now supports their reliability and validity in community and substance abuse treatment populations, when certain procedures are followed (e.g., Skinner, 1984). Concerns about the accuracy of self-reports from substance abusers with SMI might best be addressed by considering the respondent and situational variables that influence the accuracy of self-report information (see Babor, Brown, & DelBoca, 1990, for a more complete discussion). However, few investigations of substance assessment with the SMI have incorporated these methodological suggestions. These include (but are not limited to) the following.

1. *Sobriety*: Intoxication at the time of assessment is associated with unreliable and invalid self-reports (e.g., Brown, Kranzler, & DelBoca, 1992). Thus, ensuring sobriety through the use of breath or urine screening can enhance the accuracy of assessment data (Skinner, 1984).
2. *Acute distress*: Assessment should take place at a point when the individual is not in acute psychiatric crisis, as underreporting of recent substance use is likely in acute admissions settings (e.g., Shaner et al., 1993). In contrast, high reliability and validity coefficients are found when stable outpatients give self-report data on standard measures (e.g., Cocco & Carey, in press; Teitelbaum, 1998).
3. *Cognitive impairment*: It is likely that some persons with SMI experience cognitive deficits sufficient to impair their ability to provide accurate self-reports. There is evidence that cognitive impairment correlates with underreporting of recent drinking by patients relative to collaterals (Miller & Barasch, 1985). With the exception of the findings regarding acute psychiatric distress, direct evidence for this hypothesis has not yet been reported with the SMI. In fact, a recently completed study found that neither memory performance nor psychological symptoms were related to the reliability of the MAST (Teitelbaum, 1998). Additional study is needed to determine the role of cognitive dysfunction in self-report accuracy.
4. *Motivated deception*: Concerns about confidentiality can reduce self-report accuracy, especially when negative consequences (e.g., legal or housing) are contingent

upon admitting to using substances. In general, research interviews that are able to provide assurances of confidentiality elicit more information about substance use and related life events in psychiatric settings (e.g., Ananth et al., 1989). Persons responsible for alcohol assessment should carefully consider patients' confidentiality concerns and program requirements regarding confidentiality. Additional motivational factors include obvious contingencies for overreporting (e.g., access to treatment, self-handicapping) or underreporting (e.g., access to job training, maintaining privileges). Patients have articulated concerns regarding potentially judgmental attitudes or other threats to self-esteem. In sum, clinicians and researchers working with dually diagnosed individuals are best served by considering the kinds of respondent and situational variables that may influence their confidence in self-report data.

Third, attention to the population appropriateness of assessments is needed. Both the structure and content of assessment tools must be considered. Persons in acute care settings find extensive interviews difficult to complete (Barbee, Clark, Crapanzano, Heintz, & Kehoe, 1989), raising the issue of respondent burden among severely disabled persons. Instruments that are often self-administered in other populations may need to be administered by trained interviewers with the SMI. Also, simplification of sentence structure, vocabulary, and response options can help persons with SMI to participate more meaningfully in the assessment process.

Some investigators have suggested that the content of assessment measures may need to be tailored to the SMI. Drake et al. (1990) observed that "typical alcohol-related problems for schizophrenic patients include increased symptoms, disruptive behavior, housing instability, and treatment non-compliance . . . rather than the familial and vocational problems typical of nonschizophrenic alcoholics" (p. 64). Corse, Hirschinger, and Zanis (1995) also noted that interviews developed for nonpsychiatric substance abusers are likely to be insensitive to the severity of psychiatric, employment, and financial problems experienced by persons with SMI. Furthermore, evaluations of social functioning that emphasize conflicts within established relationships do not capture social problems associated with isolation or estrangement (Corse et al., 1995). Thus, measures of negative consequences commonly experienced by persons with SMI would be helpful, as would markers of adaptive function that are sensitive both to a wide range of social competencies and to the effects of substance use on a baseline of impaired function. New measures may supplement established measures to ensure that substance abuse assessment is sensitive to the psychosocial context of substance use by the SMI.

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