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THE DRUG ABUSE SCREENING TEST

HARVEY A. SKINNER
Addiction Research Foundation and University of Toronto

Abstract—The Drug Abuse Screening Test (DAST) was designed to provide a brief instrument for clinical screening and treatment evaluation research. The 28 self-report items tap various consequences that are combined in a total DAST score to yield a *quantitative* index of problems related to drug misuse. Measurement properties of the DAST were evaluated using a clinical sample of 256 drug/alcohol abuse clients. The internal consistency reliability estimate was substantial at .92, and a factor analysis of item intercorrelations suggested an unidimensional scale. With respect to response style biases, the DAST was only moderately correlated with social desirability and denial. Concurrent validity was examined by correlating the DAST with background variables, frequency of drug use during the past 12 months, and indices of psychopathology. Although these findings support the usefulness of the DAST for quantifying the extent of drug involvement within a help-seeking population, further validation work is needed in other populations and settings.

Much of our information about the nonmedical use of drugs has been collected by surveys, especially of high school and college students. These surveys have been criticized, however, since they are often based on nonstandardized questionnaires with unknown measurement properties (Hochhauser, 1979; Stanton, 1977). A need has been voiced for standardized instruments that have been carefully evaluated in both clinical and nonclinical populations.

Several recent studies have provided evidence on the reliability and validity of drug use scales. For instance, Single et al. (1975) examined the consistency of self-reporting among high school students in a longitudinal survey. Self-reports of illicit drug use were fairly consistent at one point in time but less consistent over time (5-6 month interval). However, Single et al. (1975) concluded that inconsistencies were more the result of poor recall than an active attempt by respondents to conceal drug use. Smart and Blair (1978) found good test-retest reliability ($r = .88$) with a drug use scale administered to high school students on two occasions separated by 8 weeks. Furthermore, a nine-item lie scale administered on the two occasions suggested little defensiveness in self-reported drug use. From the perspective of attitudes toward drug use, Goodstadt et al. (1978) found a median internal consistency reliability of .85 for 10 brief six-item scales. These scales achieved a median correlation of .39 with reported use of specific drugs and a median correlation of .48 with the intention to use certain drugs in the next year. In clinical populations, investigators have reported favorable measurement properties for drug use assessment techniques (e.g., Cohen et al., 1977; Joe, 1974).

Overall, research to date suggests that drug use and related problems in student populations can be reliably assessed by self-report methods. Nonetheless, since the majority of studies have been conducted with students in nonclinical contexts, whether or not the results generalize to clinical settings remains an open question. In clinical

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Reprint requests should be directed to Dr. Harvey Skinner, Addiction Research Foundation, 33 Russell Street, Toronto, Canada M5S 2S1. Copies of a revised version of the DAST and scoring instructions may be obtained by writing the author.

populations a poor correlation has been found between self-report and objective evidence (urinalysis) of drug use (Chambers & Taylor, 1973; Orrego et al., 1979). Certainly, one must be cautious about the reliability of drug use information with patients who are presently using drugs or are experiencing a drug withdrawal reaction. In addition, the validity of self-reports should be questioned in situations where the individual has incentives to conceal drug use behavior (e.g., criminal justice or employment contexts).

The present study describes an empirical evaluation of the Drug Abuse Screening Test (DAST) in a clinical sample of persons who voluntarily sought help for problems related to drug/alcohol abuse. The 28-item DAST is a self-report scale that yields a *quantitative* index of the range of problems associated with drug abuse. The specific aims of this study are fourfold: (1) to determine item characteristics and scale reliability; (2) to examine the multidimensionality of DAST items using factor analysis; (3) to evaluate the degree to which the DAST is influenced by social desirability, denial and carelessness response styles; and (4) to examine correlations of the DAST with demographic characteristics, frequency of illicit drug use, and indices of psychopathology.

METHOD

Subjects

The sample consisted of 223 individuals (72% males, 28% females) who had voluntarily sought help at the Clinical Institute of the Addiction Research Foundation. All subjects were tested as part of a comprehensive assessment program. Of the total sample, 58.6% were referred for alcohol problems, 25.4% for drug abuse, and 16.0% for both alcohol and drug problems. The mean age for the sample was 32.47 with a standard deviation of 11.17. Of the subjects, 39.5% were single, 18.4% married while 28.5% were either divorced or separated. With regard to education level, 46.5% had some high school while 17.2% had completed high school. Of the sample, 47.6% were unemployed at the time of assessment. The most heavily represented occupational categories were labourers (35.7%), clerical workers (18.8%) and skilled workers (16.9%). Of the subjects referred for either drug use or both alcohol and drug related problems, the mean age at first steady use of drugs was 20.75 (Range of 11–59). Finally, of the 193 individuals who reported having tried drugs, cannabis was the most frequent drug first used (43.5%) followed by barbiturates, sedatives, and tranquillizers (20.2%), hallucinogens (13.5%), and amphetamines (11.9%).

Instrument

The 28 items in the self-administered DAST (Table 1) parallel items on the Michigan Alcoholism Screening Test (MAST), which is a widely used assessment device for alcoholism (Selzer, 1971). The MAST has proven to be a reliable and valid screening instrument for clinical and non-clinical settings (Jacobson, 1976; Skinner, 1979). The frequently noted similarities among alcohol and drug abusers (Freed, 1975) suggest that a variation of the MAST might be useful for the assessment of problems related to the non-medical use of drugs. Recently, Cannell and Farazza (1978) administered a modified version of the MAST to screen for drug-related problems among college students. However, no attempt was made to evaluate the psychometric properties of their scale. The DAST was administered by trained assessment workers as part of a comprehensive assessment program. Specific instructions were:

> The following questions concern information about your involvement and abuse of drugs. Drug abuse refers to (1) the use of prescribed or "over the counter" drugs in

excess of the directions and (2) any non-medical use of drugs. Carefully read each statement and decide whether your answer is yes or no. Then circle the appropriate response on the separate answer sheet.

The DAST total score is computed by summing all items that are endorsed in the direction of increased drug use problems. Thus, the total score can range from 0 to 28.

The age and sex of each client was recorded during a structured interview. As well, a composite index of social stability was computed from information on present accommodation, family contact, employment and legal status (Skinner, 1981). Also, a three item social class index was derived from education level, occupational status and living accommodation (Skinner, 1981). Also, clients completed the 25-item Michigan Alcoholism Screening Test (Selzer, 1971; Skinner, 1979), as well as a measure of stressful life event changes during the past 12 months (Holmes & Rahe, 1967). Frequency of drug use during the previous 12 months was assessed by a structured interview using a 6-point scale (1 = none, 2 = less than weekly, 3 = weekly, 4 = twice weekly, 5 = daily, 6 = several times per day). Psychopathology was assessed by the Basic Personality Inventory (Jackson, 1976). This 240-item instrument contains 12 scales that were developed using a construct validation framework (Jackson, 1971). Finally, three response style measures were given including: (1) denial which taps an individual's tendency to be defensive and minimize problems (Jackson, 1976); (2) social desirability which assesses the extent to which one presents an overly favourable picture of oneself (Jackson, 1974); and (3) infrequency which identifies individuals who either did not understand the items or were responding carelessly (Jackson, 1974).

RESULTS

Item analysis

The results of an item analysis are summarized in Table 1. The item mean is the proportion of subjects who answered the question "yes." The item-scale correlation (cor-

Table 1. Item Analysis Summary

DAST Item	Item Mean	Standard Deviation	Item-Total Correlation
1. Have you used drugs other than those required for medical reasons?	.33	.47	.55
2. Have you abused prescription drugs?	.48	.50	.61
3. Do you abuse more than one drug at a time?	.59	.49	.76
4.*Can you get through the week without using drugs (other than those required for medical reasons)?	.21	.41	.53
5.*Are you always able to stop using drugs when you want to?	.34	.47	.69
6. Do you abuse drugs on a continuous basis?	.66	.47	.59
7.*Do you try to limit your drug use to certain situations?	.29	.46	.24
8. Have you had "blackouts" or "flashbacks" as a result of drug use?	.64	.48	.74
9. Do you ever feel bad about your drug abuse?	.47	.50	.67
10. Does your spouse (or parents) ever complain about your involvement with drugs?	.58	.49	.72
11. Do your friends or relatives know or suspect you abuse drugs?	.50	.50	.76
12. Has drug abuse ever created problems between you and your spouse?	.65	.48	.62

Table 1 (continued)

DAST Item	Item Mean	Standard Deviation	Item-Total Correlation
13. Has any family member ever sought help for problems related to your drug use?	.77	.42	.55
14. Have you ever lost friends because of your use of drugs?	.70	.46	.74
15. Have you ever neglected your family or missed work because of your use of drugs?	.63	.48	.77
16. Have you ever been in trouble at work because of drug abuse?	.74	.44	.62
17. Have you ever lost a job because of drug abuse?	.77	.42	.65
18. Have you gotten into fights when under the influence of drugs?	.67	.47	.69
19. Have you ever been arrested because of unusual behaviour while under the influence of drugs?	.77	.42	.59
20. Have you ever been arrested for driving while under the influence of drugs?	.85	.36	.43
21. Have you engaged in illegal activities in order to obtain drugs?	.64	.48	.71
22. Have you ever been arrested for possession of illegal drugs?	.77	.42	.45
23. Have you ever experienced withdrawal symptoms as a result of heavy drug intake?	.58	.50	.78
24. Have you had medical problems as a result of your drug use (e.g., memory loss, hepatitis, convulsions, bleeding, etc.)?	.65	.48	.74
25. Have you ever gone to anyone for help for a drug problem?	.69	.46	.69
26. Have you ever been in hospital for medical problems related to your drug use?	.69	.46	.61
27. Have you ever been involved in a treatment programme specifically related to drug use?	.85	.36	.47
28. Have you been treated as an out-patient for problems related to drug abuse?	.84	.37	.43

* Items 4, 5 and 7 are scored in the "no" or false direction.

rected for part-whole overlap) provides an index of the discriminating power of each item. "Good" items are ones that correlate highly with the total DAST score (Nunnally, 1978). Except for item 7, all DAST items have moderate to substantial item-total scale correlations. The three best items were:

23. "Have you ever experienced withdrawal symptoms as a result of heavy drug intake?" (r = .78)

15. "Have you ever neglected your family or missed work because of your use of drugs?" (r = .77)

3. "Do you abuse more than one drug at a time?" (r = .76)

Finally, the internal consistency reliability (coefficient alpha) of .92 was substantial which indicates that subjects were quite consistent when responding to all DAST items (Nunnally, 1978).

In Figure 1, the total DAST score is depicted for subjects according to their reason for seeking help: Drug Problems (n = 51), Alcohol Problems (n = 137), or mixed Drug/Alcohol Problems (n = 35). A one-way analysis of variance (Table 2) revealed a statistically significant difference among the three group means, $F(2,220) = 112.9$, $p < .001$. The DAST total score clearly differentiated the group with primarily Alcohol-related problems from the other two groups with Drug and mixed Drug/Alcohol problems. Multiple range tests (Duncan, Student-Newman-Keuls)

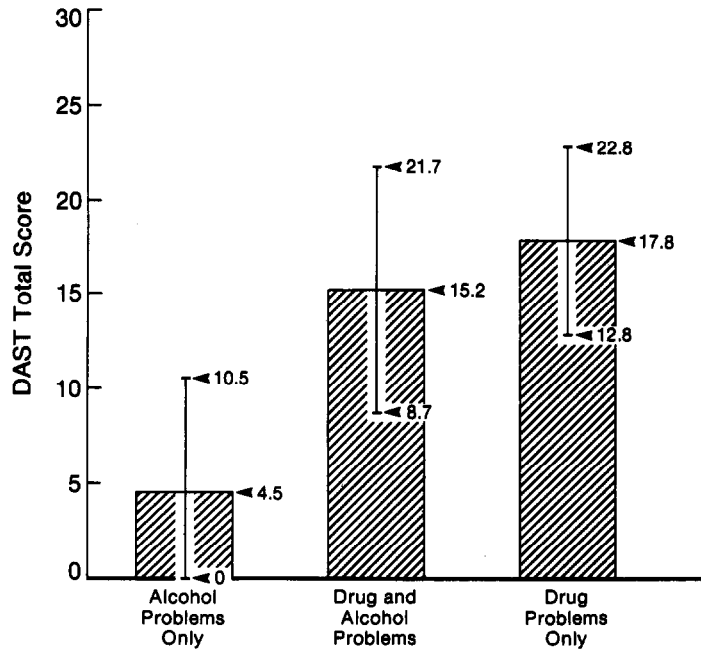

Fig. 1. DAST total score by reason for seeking treatment. The top of the box denotes the group mean, whereas the vertical line represents ± one standard deviation from the mean.

revealed statistically significant differences ($p < .05$) between pair wise comparisons for all three groups.

Factor analysis

Point-biserial correlations were computed among the 28 DAST items, and a principal components model of factor analysis (Gorsuch, 1974) was used to explore important dimensions that underlie the correlation matrix. The first principal component ac-

Table 2. Distribution of DAST Total Scores

	Reason for seeking treatment		
DAST Score	1. Alcohol Abuse n = 137	2. Drug/Alcohol Abuse n = 35	3. Drug Abuse n = 51
0	25%	0%	0%
1-5	49%	9%	0%
6-10	7%	14%	8%
11-15	11%	26%	19%
16-20	6%	25%	42%
21-25	1%	23%	29%
26-28	1%	3%	2%
Median	1.5	15.7	18.0
Mean	4.5	15.2	17.8
Standard Deviation	6.1	6.5	5.0

ANOVA $F(2,220) = 112.9$, $p < .001$
Multiple Range Tests (Duncan, Student-Newman-Keuls)
Group 1 significantly different from Group 2 ($p < .05$)
Group 1 significantly different from Group 3 ($p < .05$)
Group 2 significantly different from Group 3 ($p < .05$)

counted for 45.4% of the total variance, which suggests an unidimensional scale among the DAST items. Indeed, the weights on this first factor are proportional to the item-scale correlations of Table 1 (Henrysson, 1962). The distribution of eigenvalues for the first seven factors was 12.7, 1.5, 1.3, 1.2, 1.1, 1.0, 0.8. The substantial difference between the first (45.4% total variance) and second factors (5.4% total variance) indicates that the DAST measures a dominant single dimension of problems related to drug abuse. The remaining factors largely reflect variation that is specific to each item. Although a varimax rotation was conducted using 4, 5 and 6 factors, the single drug abuse dimension predominated each solution.

Response styles

A common clinical impression of individuals who abuse drugs and alcohol is their tendency to minimize or deny problems. Accordingly, the DAST was correlated with three measures of response bias (Table 3) including: Denial, Social Desirability, and Infrequency (carelessness). Correlations were computed for the total sample (n = 223), as well as for a subsample (n = 86) that excluded individuals referred only for alcohol related problems. The total sample allows one to generalize results to a clinical setting that deals with alcohol, drug or combined alcohol/drug abuse, whereas the subsample results are relevant to a more restrictive population of drug abusers. Because the total

Table 3. Correlations with the DAST Total Score

	Total Sample	Sample exluding Ss with only alcohol problems
Response Styles		
Denial	−.28**	−.13
Social Desirability	−.38**	−.31*
Infrequency (carelessness)	.15*	.08
Background Variables		
Age	−.42**	−.19*
Sex (1 = M, 2 = F)	−.14*	−.23*
Social Stability	−.27**	−.33*
Social Class	−.31**	−.30**
Stressful Life Events	.28**	.35**
MAST	−.21*	.13
Frequency of drug use in past 12 months		
Heroin	.19*	.17
Other Opiates	.35**	.26*
Amphetamines	.36**	.10
Barbiturates	.47**	.30*
Hallucinogens	.27**	.08
Cannabis	.55**	.10
Glue, Solvents	.21*	.10
Psychopathology		
Hypochondriasis	.28**	.26*
Depression	.31**	.24*
Anxiety	.12*	.13
Interpersonal Problems	.36**	.25*
Social Deviation	.54**	.51**
Impulse Expression	.42**	.50**
Persecutory Ideas	.35**	.24*
Thinking Disorder	.31**	.06

* $p < .05$
** $p < .001$

sample is more heterogeneous, one would expect these correlations to be greater in magnitude.

The largest correlation was with Social Desirability, which suggests that individuals who present an overly favorable or socially desirable picture of themselves also tend to score lower on the DAST. However, the magnitude of this relationship was relatively small: 14% common variance in the total sample, 9% common variance in the subsample. Similarly, there was a modest relationship between Denial and the DAST, which suggests that individuals who are higher on Denial tend to report fewer drug related problems. In the total sample, there was a slight tendency for high scorers on the DAST to be less careful when completing the assessment instruments. However, since the internal consistency reliability estimate for the DAST was quite high (.92 in total sample, .86 in subsample), the carelessness tendency had a negligible influence on the DAST total score.

Correlations with background, drug use and psychopathology

Table 3 also contains correlations between the DAST and various background and drug use measures. Again, correlations are given for both the total sample and the subsample which excludes individuals with only alcohol problems. In general, the pattern of correlations is similar for both samples, although the magnitude of relationships is greater in the more heterogeneous total sample.

With respect to demographic characteristics, younger individuals, especially males, tended to score higher on the DAST. This suggests age cohort differences in the clinical population since older individuals tended to misuse alcohol more than drugs. High scorers on the DAST were inversely related to indices of social stability and social class. As one would expect, drug abuse tended to produce problems in maintaining stable accommodation, work record and family contact. A lack of social stability was further reflected by a higher prevalence of recent life event changes among high scorers on the DAST. For comparison purposes, the DAST was correlated with the original Michigan Alcoholism Screening Test. There was a slight inverse relationship ($r = -.21$) between the DAST and MAST in the total sample. Next, the DAST was correlated with the frequency of drug use (6 point scale ranging from none to daily) over the past 12 months. A greater range of problems associated with drug abuse (DAST) was related to the more frequent use of cannabis, barbiturates and opiates other than heroin. These findings support the concurrent validity of the DAST. Finally, relationships were explored between the DAST and measures of psychopathology. The largest correlations were with the sociopathic scales of Impulse Expression and Social Deviation. High scorers on the DAST tended to engage in reckless actions and express attitudes that are markedly different from common social codes. Furthermore, the DAST was positively related to interpersonal problems, suspiciousness, depressive symptoms and a preoccupation with bodily dysfunctions. Thus, drug abuse tended to be manifest in, or covary with, other psychopathological characteristics.

DISCUSSION

The Drug Abuse Screening Test was developed to provide a convenient instrument for assessing the extent of problems related to drug misuse. The total DAST score yields a *quantitative* index of problem severity. In this clinical population, the DAST score was highly reliable and only minimally influenced by the response style biases of denial and social desirability. However, caution must be exercised when generalizing the results to other contexts. For instance, one could expect more defensiveness about admitting to drug related problems in an employment or criminal justice setting.

The finding that a dominant factor underlies the DAST items indicates that individuals in this clinical population tend to be ordered along a single dimension or axis. Since this dimension provides quantitative information about the degree of problems related to drug abuse, emphasis on a diagnostic cut-off point would be somewhat arbitrary. As the DAST total score increases, one may interpret that a given individual has accrued an increasingly diverse range of consequences. Similarly, Skinner (1979) has argued that the Michigan Alcoholism Test is most appropriately interpreted as classifying individuals along a continuum according to the degree of alcohol misuse. On the other hand, it is interesting to note in Table 2 that 75% of individuals seeking treatment for alcohol problems scored in the 0–5 range, whereas only 9% of clients with both drug/alcohol problems and none of the clients seeking treatment for drug problems scored less than 6 on the DAST. Hence, one could evaluate the usefulness for case finding purposes of a DAST score exceeding 5.

With respect to further research, a shortened version of the 28-item DAST was explored. The following 20 items had consistently high item-total scale correlations in both the total sample and the subsample excluding clients with only alcohol problems (items 1, 2, 3, 4, 5, 8, 9, 10, 12, 14, 15, 16, 17, 18, 21, 22, 23, 24, 25, 27). The 20-item DAST correlated almost perfectly (r = .99) with the original 28-item version. Moreover, the internal consistency reliability of the 20-item DAST was extremely high (.95 for the total sample, .86 for the subsample excluding clients with only alcohol problems). Thus, the briefer 20-item version has excellent psychometric properties comparable to the original DAST. Another research line would be to differentiate among various drug classes and their specific consequences. At present, the DAST considers drugs as a generic group. In certain contexts one might profitably assess the consequences related to each particular class of drug used. Further validation work is also needed using objective criteria of drug use (e.g., urinalysis) and using populations other than clients who already acknowledge having a drug problem. Hopefully, this research will demonstrate that the DAST has diagnostic value for screening and assessment programs in a variety of clinical and nonclinical settings.

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