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Validation of a Short Version of the Revised Drug Use Screening Inventory (DUSI-R) in a Brazilian Sample of Adolescents

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Abstract

The revised Drug Use Screening Inventory (DUSI-R) is a self-report questionnaire designed to quantify the severity of problems that are commonly associated with consumption of alcohol and other drugs. This study extends research conducted on the U.S. population to determine whether the DUSI-R's substance abuse scale discriminates Brazilian youths in treatment (N=41) from a general population sample (N=43). A Portuguese translation of the substance abuse scale was administered in paper and pencil format at the time of intake into treatment and to randomly selected youths in school. The mean score on the 15-item substance abuse scale in the treatment group was 6.7 compared to 1.9 in the comparison group ($t=6.78$; $p<0.001$). The optimal cut-off score of two positive endorsements has 85% sensitivity and 70% specificity. This study demonstrates that the DUSI-R's substance abuse scale is valid for screening Brazilian youths who require treatment.

Introduction

An increase of substances abuse prevalence in Brazilian youths has been observed in the last few years. Results obtained in the First Household Survey on Psychotropic Substances Use, 1 conducted by the Center for Psychotropic Substances Information (CEBRID) indicate that 19.4% of the population between 12–65 years of age have lifetime use of a psychoactive drug other than alcohol or tobacco. Prior surveys of adolescents conducted in the ten most populous cities in Brazil in 1987, 1989, 1993, and 1997 reveal an increasing prevalence of substance abuse.² Accordingly, an instrument that can accurately and efficiently detect youths who are at high risk for substance abuse, or already have a substance abuse problem, has practical utility for prevention and treatment.³

Although screening does not substitute for comprehensive diagnostic evaluation performed by a trained professional, it is a cost-effective method of identifying youths who require a

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The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

thorough evaluation. In addition to low cost, the hallmarks of a good screening instrument are brevity and high sensitivity. However, because of differences in cultural mores, an instrument developed in one country may not be a valid tool in another country, especially where language and customs are markedly different. Item content and item phrasing as well as the specific problems evaluated need to align with cultural traditions, attitudes and folkways of the population. Notably, the revised Drug Use Screening Inventory (DUSI-R)⁴ developed in the U.S has strong psychometric properties.^{5–8} Moreover, this self-report questionnaire has been shown to accurately quantify severity of substance abuse problems of youths living in Argentina,⁹ Turkey,¹⁰ and Canada.¹¹ Preliminary findings also indicate that the DUSI-R is valid for use in Brazilian youths.³

Continuing this line of investigation, the present study evaluated the accuracy of the DUSI-R's substance abuse scale for discriminating Brazilian youths in treatment from youths domiciling in the community. Demonstrating that the DUSI-R has discriminative validity in a Brazilian sample adds impetus for its use in international epidemiological investigations and documents its practical usefulness for detecting high risk youths.

Method

Participants

Two groups of adolescents were studied. A clinical sample of 41 youths was drawn from the Addiction Unit of the Department of Psychiatry at the Federal University of São Paulo, Brazil. These youths were beginning treatment at the time of data collection. A diagnosis of psychosis was an exclusion criterion. The comparison group consisted of 43 youths randomly selected by ballot from a school in Sao Paulo, Brazil. The two groups had the same age (16.6 years); however, more boys were in the treatment group (75% vs. 53%) in keeping with findings from many studies documenting a higher prevalence of substance abuse in boys. As expected, a lower proportion of participants in the treatment sample were living with their parents (57% vs. 97%).

The research objectives were explained to the participants and informed consent was obtained prior to administering the questionnaire. This project was approved by the Federal University of São Paulo Ethics Committee.

Instrumentation—The paper and period format of the self-report revised Drug Use Screening Inventory (DUSI-R)⁴ was translated into Portuguese. The translation was conducted using a two-step procedure. A bilingual psychiatrist first translated the items from English to Portuguese followed by back translation into English conducted by a linguist. Discrepancies between the two versions were resolved during discussion by modifying word selection.

The 15 items comprising the substance abuse scale are shown in Table 1.

Statistical analysis—The t-test for independent samples was employed to compare the treatment and comparison groups. Internal consistency was evaluated using Cronbach alpha. Lastly, receiver operating curve (ROC) analysis was conducted to evaluate the sensitivity and specificity of the scale for detecting youths whose substance abuse requires treatment.

Results

Internal consistency of the substance abuse scale is excellent as indicated by Chronbach alpha of .88. Moreover, the treatment group scored higher than the comparison group. On

average, the treatment group endorsed 6.7 ($s = 2.8$) items compared to 1.9 ($s = 2.5$) items in the comparison group ($t = 6.87$; $p < 0.001$).

Table 2 summarizes the results of the ROC analysis. As can be seen, the optimum cut-off score is two positive item endorsements. Using this threshold, the substance abuse scale detected true positives (sensitivity) with 85% accuracy and true negatives (specificity) with 70% accuracy. Overall, as shown in Figure 1, the area under the curve was 0.857. Lastly, logistic regression analysis indicated that the score on the substance abuse scale significantly predicted group assignment (treatment vs. community) ($OR = 1.58$, $p < .001$, 95% CI: 1.30–1.93).

Discussion

This study demonstrated that the DUSI-R's substance abuse scale has high internal consistency and differentiates Brazilian adolescents in treatment from the general population. Two positive endorsements on this scale have optimal sensitivity (85%) and specificity (70%). Considering that it takes less than 5 minutes to complete, the 15-item scale can be concluded to be a practical screening tool for detecting adolescents who require treatment for psychoactive substance abuse.

The results of this study add to accumulating findings documenting the applicability of the DUSI-R in different ethnic and national groups.^{8–10} Accordingly, the DUSI-R may be a useful epidemiological instrument to characterize problem severity concomitant to substance abuse within a multivariate framework.¹² Notably, a Web-based administration format of the DUSI-R is available in 12 languages (www.eenter.com).

Whereas the findings reported herein demonstrate that the DUSI-R differentiates youths in treatment from community dwelling youths, it is noteworthy that a recently completed study demonstrated that the DUSI-R scales discriminates Canadian youths in substance abuse treatment who have conjoint legal problems compared to youths who do not have legal problems.¹¹ Moreover, evidence has been accrued indicating that the DUSI-R may be useful for detecting youths prone to violence.¹³ Since drug use and legal violations typically occurs in a peer context, it is thus important to extend this research to elucidate pattern of peer interactions in conjunction with types and availability of abusable compounds within the particular legal and regulatory policies of different countries.

Lastly, it should be noted that recent advances with the DUSI-R point to its potential utility to accurately screen youths who are at high risk for developing a substance use disorder and commonly co-occurring psychiatric disorders.¹¹ The usefulness of the DUSI-R for these purposes remains to be determined in future cross-national studies. Toward these goals, prevention intervention strategies may be developed that span youths across different nations and cultures.

Several limitations of this study are noteworthy. First, the relatively small sample size may have diminished the accuracy of the sensitivity/specificity analyses. Second, the youths receiving treatment had varying severity and type of substance abuse. And third, it is possible that the comparison group of youths selected from school were not representative of the general population. Relative to this issue, it is noteworthy that the number of participants in the treatment and comparison groups was very similar. Because sensitivity and specificity are influenced by base rate, this equality of group size may have yielded biased estimates. Clearly, future research on the DUSI-R needs to study a large sample that includes affected individuals in proportion to their prevalence in the population. These latter factors notwithstanding, the results are nevertheless encouraging by demonstrating the discriminative accuracy of the DUSI-R's substance abuse scale.

In summary, this study demonstrated the DUSI-R's substance abuse scale has discriminative validity in a sample of Brazilian youths. Receiver operating curve analyses point to the utility of the substance abuse scale for screening youths who need treatment. Taking less than 5 minutes to complete, it is a cost-efficient tool for identifying youths having substance abuse problems.

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Figure 1.
ROC curve evaluating the Brazilian version of the DUSI-R's substance abuse scale

Table 1

Items comprising the DUSI-R's Substance Abuse Scales

1	Have you had a craving or very strong desire for alcohol or drugs?
2	Have you had to use more and more drugs or alcohol to get the effect you want?
3	Have you felt that you could not control your alcohol or drug use?
4	Have you felt that you were "hooked" on alcohol or drugs?
5	Have you missed out on activities because you spent too much money on drugs or alcohol?
6	Did you break rules, miss curfew, or break the law because you were high on alcohol or drugs?
7	Did you change rapidly from very happy to very sad or from very sad to very happy because of drugs?
8	Did you have a car accident after using alcohol or drugs?
9	Have you accidentally hurt yourself or someone else after using alcohol or drugs?
10	Have you had a serious argument or fight with a friend or a family member because of your drinking or drug use?
11	Have you had trouble getting along with any of your friends because of alcohol or drug use?
12	Have you experienced any <i>withdrawal symptoms</i> following use of alcohol or drugs (e.g., headaches, nausea, vomiting, shaking)?
13	Have you had a problem remembering what you had done while you were under the effects of drugs of alcohol?
14	Did you like to play drinking games when you went to parties?
15	Did you have trouble resisting using alcohol or drugs?

Table 2

Sensitivity and specificity corresponding to scores on the DUSI-R's substance abuse scale.

Cut-off score	Sensitivity	Specificity
1. Positive Response	0.90	0.62
2. Positive Responses	0.85	.70
3. Positive Responses	0.81	.77
4. Positive Responses	0.76	.84
5. Positive Responses	0.56	0.91
6. Positive Responses	0.44	0.91
7. Positive Responses	0.37	0.95
8. Positive Responses	0.32	0.98
9. Positive Responses	0.24	1
10. Positive Responses	0.22	1
11. Positive Responses	0.17	1
12. Positive Responses	0.07	1
13. Positive Responses	0.02	1
14. Positive Responses	0	1