

*Estimates of the Reliability and Criterion Validity
of the Adolescent SASSI-A2*

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This summary provides information on the reliability and validity of the second version of the Adolescent SASSI, the SASSI-A2 (*Substance Abuse Subtle Screening Inventory-A2*). The SASSI-A2 is a psychological screening measure designed to screen people who are 12 to 18 years of age for substance dependence and substance abuse. The first version of the Adolescent SASSI was designed to identify chemically dependent adolescents; it was published in 1990 and has been used many diverse types of service programs, including addictions and other types of adolescent treatment programs, as well as correctional settings. The research conducted to develop the original Adolescent SASSI is reported in the Adolescent SASSI Manual (Miller, 1990). The ongoing program of research at the SASSI Institute, in concert with expressed needs of counselors and other treatment providers, prompted the development of a research version of the Adolescent SASSI that was used to develop the SASSI-A2. The research version included all the items in the original Adolescent SASSI, along with 45 new items that were developed to improve identification of individuals with substance dependence disorders and to expand the capability of the instrument to allow identification of individuals with substance abuse disorders. The research instrument was completed by 2326 participants from 48 treatment and correctional programs and 5 school systems.

The primary findings of validation research on the newly revised SASSI-A2 are as follows:

- 1) The Adolescent SASSI-A2 was found to produce reliable results using both test-retest and internal consistency methodologies. Test-retest stability coefficients for the scales used in SASSI-A2 scoring ranged from .81 to .92. The overall alpha coefficient was .75, with alpha coefficients on the individual scales used in the rules ranging from .63 to .95.
- 2) The overall accuracy of the Adolescent SASSI-A2 in distinguishing substance-abusing and substance-dependent respondents from those without a substance use disorder was 94%.
- 3) The accuracy of the SASSI-A2 decision rule was not significantly affected by respondents' gender, age, ethnicity, education, employment status, respondents' living situation, or prior history of law violation.

Method

In this validation research, the responses of 2326 participants were used to develop and examine various aspects of the Adolescent SASSI-A2. Sixty-three percent ($n = 1470$) of these participants were from treatment and correctional settings throughout the United States and Canada, and the remaining 856 respondents constituted our normative samples obtained primarily from school settings and community youth programs. The various treatment programs provided the SASSI Institute with completed SASSIs attached to some of their standard clinical forms such as intake and discharge schedules. Thus, not all cases contained identical information. The criterion measure used to develop and evaluate the accuracy of the Adolescent SASSI-A2 was a DSM-based (APA, 1987, 1994) diagnosis concerning the presence or absence of a substance dependence or a substance abuse disorder.

The responses of 1244 respondents were used to develop and cross-validate the SASSI-A2 rules. These respondents were selected from the larger sample using three criteria: 1) the respondent had completed enough items on the Adolescent SASSI-A2 to allow a definitive classification by the decision rule; 2) the data included a DSM-based clinical diagnosis regarding the presence or absence of a substance use disorder; and, 3) the respondent's score on a scale designed to check on the validity of the SASSI-A2 classification results met an empirically established parameter. This sample of 1244 respondents was divided randomly into two sub-samples, with the provision that the sub-samples contain approximately equal numbers of cases diagnosed as having and as not having a substance use disorder. One of the sub-samples (hereafter referred to as the development sample) was used to develop the Adolescent SASSI-A2 classification rules; the other (hereafter called the cross-validation sample) was reserved and later used to assess the accuracy of the newly derived rules. Demographic characteristics of participants in these two samples are displayed in Table 1.

Overall and Scale Reliability

Two-week test-retest stability data were obtained from a sample of 70 respondents. The stability coefficients for the scales used in the rules ranged from .81 to .92. In 94% of the cases, the results of the SASSI-A2 decision rule did not change between the first and second administrations of the SASSI. The internal consistency coefficient (i.e., "coefficient alpha") for the Adolescent SASSI-A2 inventory (based on a larger sample of respondents with complete scale scores; $n = 2,145$) was found to be .75 (see Table 2).

The items on the SASSI-A2 were selected and the scales were developed to maximize accuracy in identifying individuals with substance use disorders. Since the SASSI-A2 is not based on any theory or unitary construct that may underlie the etiology of substance abuse disorders, coefficient alpha is less relevant than test-retest stability for evaluating the reliability of the SASSI-A2.

Accuracy of SASSI-A2 Identifications of those with a Substance Dependence or Substance Abuse Disorder

The results of the Adolescent SASSI-A2 were compared to diagnoses obtained from clinicians. Table 3 displays the results obtained with the overall sample. The levels of accuracy obtained using the development and cross-validation samples were 94% and 95% respectively, for an overall accuracy of 94%. The sensitivity of the Adolescent SASSI-A2 (i.e., the percentage of respondents diagnosed as having a substance use disorder who were test positive on the SASSI-A2) was 94% in the development sample and 96% in the cross-validation sample, for an overall sensitivity of 95%. The sensitivity in identifying individuals with substance abuse disorders was 91%, and the sensitivity in identifying individuals with substance dependence disorders was 98%. The specificity (i.e., the percentage of respondents diagnosed as not having a substance use disorder who were test negative on the SASSI-A2) was 92% in the development sample and 87% in the cross-validation sample, for an overall specificity of 89%.

Accuracy of the SASSI-A2 Decision Rule Across Different Types of Assessment Settings

Data concerning the accuracy of the Adolescent SASSI-A2 were obtained from four different types of settings. Three percent of these respondents were from addiction treatment centers, 22% from inpatient programs in general psychiatric hospitals, 12% from outpatient behavioral health programs, and 64% were from juvenile corrections programs. Accuracy was not appreciably affected by type of setting (addiction treatment centers - 98%, general psychiatric hospitals - 97%, outpatient behavioral health programs - 94%, juvenile corrections programs - 93%).

The Influence of Demographic Factors on Accuracy

The influence of demographic factors on the accuracy of the Adolescent SASSI-A2 was also explored. Findings indicated that the accuracy of the SASSI-A2 was not significantly affected by gender, age, ethnic group membership, education, employment status, with whom respondents resided, and prior history of law violation. Accuracy rates for males and females were 94% and 95% respectively. Accuracy rates ranged by age group from 86% to 97% (see Table 4); by racial or ethnic group from 90% to 100% (see Table 5); by educational level from 83% to 100%; by employment status from 94% to 96%; and by respondents' living situation from 93% to 100%. The SASSI-A2 had a 95% accuracy rate for adolescents who did not have a prior history of trouble with the law and 94% for those who did.

The Influence of Functioning Level on Accuracy

Screening tools should be examined to determine the extent to which they identify the specific disorder for which they are developed rather than general maladjustment. This is particularly important for a substance abuse screening tool because substance misuse is often a common correlate of other behavioral and psychiatric disorders. Therefore, analyses were conducted to determine if the SASSI-A2 is accurate in identifying individuals with substance use disorders regardless of their level of adjustment and functioning (i.e., DSM-IV Axis V, "global assessment of functioning," or "GAF"). Classification accuracy was found to be unaffected by clients' GAF scores. This finding indicates that the SASSI-A2 can produce accurate screening results regardless of a client's level of functioning and also provides evidence that the SASSI-A2 does not measure maladjustment per se.

Conclusion

These results indicate that the SASSI-A2 is a reliable and valid screening instrument and support its use as part of a process of clinical assessment. The SASSI-A2 demonstrated high test-retest reliability and was found to correspond closely with clinical diagnoses of substance use disorders. Further, classifications on the SASSI-A2 were found to be highly accurate in four diverse types of settings, and the influence of a number of demographic classifications on the accuracy of the SASSI-A2 was found to be negligible. Finally, the level of respondent functioning was not found to have any significant effect on the accuracy of the SASSI-A2.

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Table 1

Participant Characteristics of the SASSI-A2 Development and Cross-validation Samples

Characteristic	Development (n = 621)		Cross-validation (n = 623)	
	n	%	n	%
Data Source				
Addictions Treatment Centers	23	4	17	3
Inpatient General Psychiatric Hospitals	133	21	136	22
Outpatient Behavioral Health Facilities	67	11	77	12
Juvenile Corrections Programs	398	64	393	63
Clinical Diagnosis				
Substance Abuse Disorder	220	35	211	34
Substance Dependence Disorder	318	51	321	51
No Substance Use Disorder	83	13	91	15
Gender				
Male	449	72	471	76
Female	164	26	143	23
Missing	8	1	9	1
Ethnicity				
African American	66	11	57	9
Asian American	12	2	12	2
Caucasian	346	56	347	56
Hispanic	66	11	79	13
Native American	54	9	56	9
Other/Unknown	77	12	72	11
Employment Status				
Employed Full Time	22	4	24	4
Employed Part Time	102	16	103	17
Not Employed	457	74	445	72
Missing	40	6	51	8
Reside With				
Parent(s)	424	68	427	69
Other Relatives	42	7	46	7
Friends	10	2	7	1
Foster Parent(s)	8	1	20	3
Group Home	30	5	35	6
Other/Missing	107	17	88	14
Trouble with the law				
Yes	525	85	515	83
No	71	11	82	13
Missing	25	4	26	4
Age (years)				
M		15.7		15.6
SD		1.3		1.3
Education (years)				
M		8.7		8.6
SD		1.4		1.4

Table 2

*Internal Consistency and Stability Coefficients
for the Adolescent SASSI-A2 and its Scales*

Scale	Alpha Coefficient	Test-Retest Coefficient
SASSI-A2 overall ^a	.75	.89
Face Valid Alcohol	.91	.91
Face Valid Other Drug	.95	.92
Family-Friends Risk Attitudes	.67	.90
Symptoms	.76	.92
Obvious Attributes	.82	.87
Subtle Attributes	.72	.85
Defensiveness	.63	.81
Supplemental Addiction Measure	.64	.83
Correctional ^b	.66	.81
	.61	.71

Note. $n = 2,145$ for the internal consistency sample; $n = 70$ for the test-retest sample.

^aOnly items that are used in the decision rule were included in this analysis.

^bScale is not used to classify respondents.

Table 3

*SASSI-A2 Correspondence with Clinical Diagnoses of
Substance Use Disorders in the Combined Sample*

Clinical Diagnosis	SASSI-A2 Classification		Total
	High Probability of Substance Use Disorder	Low Probability of Substance Use Disorder	
Substance Abuse	391	40	431
Substance Dependence	626	13	639
No Substance Use Disorder	19	155	174
Total	1036	208	1244

Note. 1172/1244 cases correctly classified = 94% Overall Accuracy.

Sensitivity = 95%; Specificity = 89%; Positive Predictive Power = 98%;

Negative Predictive Power = 75%.

Table 4

*Adolescent SASSI-A2 Accuracy in Identifying Substance Use Disorders
as a Function of Respondent Age*

SASSI-A2 Classification	Respondent Age							Total
	12	13	14	15	16	17	18	
Accurate	12 (85.7%)	55 (94.8%)	148 (94.3%)	278 (92.1%)	320 (96.1%)	262 (93.6%)	55 (96.5%)	1130 (94.1%)
Inaccurate	2 (14.3%)	3 (5.2%)	9 (5.7%)	24 (7.9%)	13 (3.9%)	18 (6.4%)	2 (3.5%)	71 (5.9%)
Total	14 (1.2%)	58 (4.8%)	157 (13.1%)	302 (25.1%)	333 (27.8%)	280 (23.3%)	57 (4.7%)	1201 (100%)

Note. Accurate classifications include both test positive and test negative cases that were consistent with clinical diagnoses regarding presence or absence of a substance use disorder, i.e., substance dependence or substance abuse disorder. Inaccurate classifications are test positive and test negative cases that were inconsistent with clinical diagnoses. Statistical analyses indicated no significant differences in accurate versus inaccurate SASSI-A2 classifications as a function of respondent age, $\phi = .08$, $p = .30$.

Table 5

Adolescent SASSI-A2 Classification Accuracy as a Function of Respondent Ethnic Group Membership

SASSI-A2 Classification	Respondent Ethnic Group Membership						Total
	African American	Asian American	Caucasian	Hispanic American	Native American	Other/ Unknown	
Accurate	111 (90.2%)	24 (100%)	655 (94.5%)	136 (93.8%)	108 (98.2%)	43 (93.5%)	1077 (94.4%)
Inaccurate	12 (9.8%)	0 (0%)	38 (5.5%)	9 (6.2%)	2 (1.8%)	3 (6.5%)	64 (5.6%)
Total	123 (10.8%)	24 (2.1%)	693 (60.7%)	145 (12.7%)	110 (9.6%)	46 (4.0%)	1141 (100%)

Note: Accurate classifications include both test positive and test negative cases that were consistent with clinical diagnoses regarding presence or absence of a substance use disorder, i.e., substance dependence or substance abuse disorder. Inaccurate classifications are test positive and test negative cases that were inconsistent with clinical diagnoses. Statistical analyses indicated no significant differences in accurate versus inaccurate SASSI-A2 classifications as a function of respondent ethnic group membership, $\phi = .09$, $p = .13$.

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