



SUBSTANCE USE

A brief guide to the PROMIS® Substance Use instruments:

ADULT
PROMIS Item Bank v1.0 – Appeal of Substance Use (Past 3 Months)
PROMIS Item Bank v1.0 – Appeal of Substance Use (Past 30 days)
PROMIS Item Bank v1.0 – Prescription Pain Medication Misuse
PROMIS Bank v1.0 – Severity of Substance Use (Past 3 Months)
PROMIS Bank v1.0 – Severity of Substance Use (Past 30 days)
PROMIS Short Form v1.0 – Appeal of Substance Use (Past 3 Months) 7a
PROMIS Short Form v1.0 – Appeal of Substance Use (Past 30 days) 7a
PROMIS Short Form v1.0 – Prescription Pain Medication Misuse 7a
PROMIS Short Form v1.0 – Severity of Substance Use (Past 3 Months) 7a
PROMIS Short Form v1.0 – Severity of Substance Use (Past 30 days) 7a

ABOUT SUBSTANCE USE

The PROMIS Appeal of Substance Use item banks assess perceived positive aspects of substance use, including both increasing positive emotions (e.g., feeling happy and social) and alleviating negative emotions (e.g., reducing depression and anxiety). The Appeal of Substance Use item banks are generic rather than disease-specific. They assess appeal of substance use over the past 3 months or past 30 days, depending on the form used. Each bank contains 18 items and requires a screening question to document the presence of some use: “In the past <<time-frame selected>>, have you used drugs other than alcohol or your prescribed medications?” The short forms are also generic rather than disease-specific. They assess appeal of substance use over the past 3 months or past 30 days, depending on the form used.

The PROMIS Prescription Pain Medication Misuse item bank is generic rather than disease-specific. It assesses the abuse of prescription pain medication over a three-month period. It includes 22 items and requires a screening question to document the presence of a prescription for use: “In the past 3 months, did you have a prescription for pain medication?” The 7-item short form is also generic rather than disease-specific.

The PROMIS Severity of Substance Use item banks assess severity of substance use. The Severity of Substance Use item banks are generic rather than disease-specific. They assess severity of substance use over the past 3 months or past 30 days, depending on the form used. Each bank contains 37 items and requires a screening question to document the presence of some use: “In the past <<time-frame selected>>, have you used drugs other than alcohol or your prescribed medications?” The short forms are also generic rather than disease-specific. They assess severity of substance use over the past 3 months or past 30 days, depending on the form used.

All Substance Use instruments are available for adults only (ages 18+).

INTRODUCTION TO ASSESSMENT OPTIONS

There are two administration options for Substance Use: short forms and computerized adaptive tests (CATs). When administering a short form, instruct participants to answer all the items (i.e., questions or statements) presented. With a CAT, participant responses guide the system’s choice of subsequent items from the full item banks (18 items for Appeal of Substance Use, 22 items for Prescription Pain Medication Misuse and 37 for

Severity of Substance Use). Although items differ across respondents taking a CAT, scores are comparable across participants. Some administrators may prefer to ask the same question of all respondents or of the same respondent over time, to enable a more direct comparability across people or time. In these cases, or when paper administration is preferred, a short form would be more desirable than a CAT. This guide provides information on all Substance Use short forms and CAT instruments.

Whether one uses a short form or a CAT, the score metric is Item Response Theory (IRT), a family of statistical models that link individual questions to a presumed underlying trait or concept of appeal of substance use represented by all items in the item bank. When choosing between a CAT and a short form, it is useful to consider the demands of computer-based assessment, and the psychological, physical, and cognitive burden placed on respondents as a result of the number of questions asked.

Figures 1, Figure 2 and Figure 3 illustrate the correlations (strength of relationships) of the Appeal of Substance Use, Prescription Pain Medication Misuse and Severity of Substance Use, respectively, full banks with CATs and with short forms of varying length. The correlations of CAT scores with the full bank scores are greater than short forms of any length. A longer CAT or longer short form offers greater correlation, as well as greater precision. When evaluating precision, not all questions are equally informative. The flexibility of a CAT to choose more informative questions offers more precision.

SHORT FORM DIFFERENCES

Selecting a Short Form

There are 5 Substance Use short forms. Items were selected based on content and psychometric characteristics. Short form items overlap (i.e., only the item context [time-frame of reference] differs between the two forms).

SCORING THE INSTRUMENT

Short Forms: PROMIS instruments are scored using item-level calibrations. This means that the most accurate way to score a PROMIS instrument is to use the HealthMeasures Scoring Service (https://www.assessmentcenter.net/ac_scoring-service) or a data collection tool that automatically calculates scores (e.g., Assessment Center, REDCap auto-score). This method of scoring uses responses to each item for each participant. We refer to this as “response pattern scoring.” Because response pattern scoring is more accurate than the use of raw score/scale score look up tables included in this manual, it is preferred. Response pattern scoring is especially useful when there is missing data (i.e., a respondent skipped an item), different groups of participants responded to different items, or you have created a new questionnaire using a subset of questions from a PROMIS item bank.

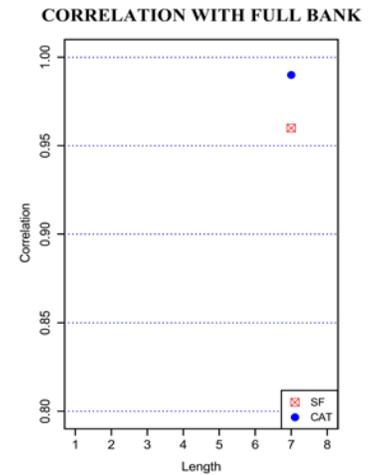


Figure 1

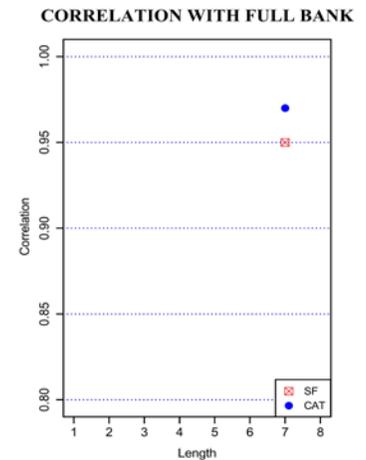


Figure 2

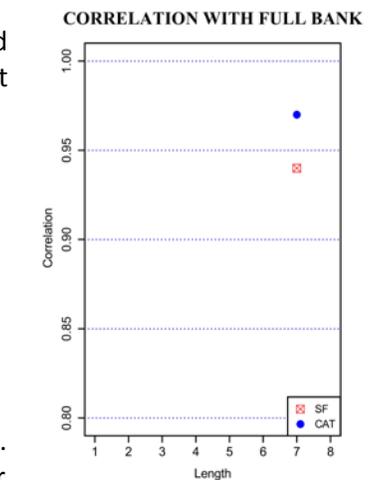


Figure 3

To use the scoring table in this manual, calculate a summed score. Each question usually has five response options ranging in value from one to five. To find the total raw score for a short form with all questions answered, sum the values of the response to each question. For example, for all the v1.0 adult 7-item forms, the lowest possible raw score is 7; the highest possible raw score is 35 (see short form scoring tables in the Appendix). **All questions must be answered to produce a valid score using the scoring tables.** If a participant has skipped a question, use the HealthMeasures Scoring Service (https://www.assessmentcenter.net/ac_scoringervice) to generate a final score.

With the total raw score for a measure, locate the applicable score conversion table in the Appendix and use this table to translate the total raw score into a T-score for each participant. The T-score rescales the raw score into a standardized score with a mean of 50 and a standard deviation (SD) of 10. Therefore a person with a T-score of 40 is one SD below the mean.

For the adult PROMIS Appeal of Substance Use 7a short forms v1.0, a raw score of 10 converts to a T-score of 47.6 with a standard error (SE) of 3.0 (see scoring table for the short forms in the Appendix). Thus, the 95% confidence interval around the observed score ranges from 41.7 to 53.5 (T-score \pm (1.96*SE) or 47.6 \pm (1.96*3.0).

CAT: A minimum number of four (4) items must be answered to receive a score for all Substance Use CATs. The response to the first item will guide the system's choice of the next item for the participant. The participant's response to the second item will dictate the selection of the following question, and so on. As additional items are administered, the potential for error is reduced and confidence in the respondent's score increases. The CAT will continue until either the standard error drops below a specified level (on the T-score metric 3.0), or the participant has answered the maximum number of questions (12), whichever occurs first.

The Appeal of Substance Use sample can only be generalized to a subset of individuals who have used a drug other than alcohol or prescribed medication. The Prescription Pain Medication Misuse sample can only be generalized to a subset of individuals who have used a prescription pain medication. The Severity of Substance Use sample can only be generalized to a subset of individuals who have used a drug other than alcohol or prescribed medication. Whereas, for most PROMIS instruments, a score of 50 is the average for the United States general population with a standard deviation of 10 because calibration testing was performed on a large sample of the general population. You can read more about the calibration and centering samples on HealthMeasures.net (<http://www.healthmeasures.net/score-and-interpret/interpret-scores/promis>). The T-score is provided with an error term (Standard Error or SE). The Standard Error is a statistical measure of variance and represents the "margin of error" for the T-score.

Important: *A higher PROMIS T-score represents more of the concept being measured.* For Appeal of Substance Use, a T-score of 60 is one SD higher than average. These individuals find substance use to be more appealing. By comparison, an Appeal of Substance Use T-score of 40 is one SD below the average. These individuals find substance use to be less appealing.

For Prescription Pain Medication Misuse, a T-score of 60 is one SD higher than average. These individuals may be more likely to misuse their prescription pain medication. By comparison, a Prescription Pain Medication Misuse T-score of 40 is one SD below the average. These individuals may be less likely to misuse their prescription pain medication.

For Severity of Substance Use, a T-score of 60 is one SD higher than average. These individuals use a substance(s) with a greater severity. By comparison, a Severity of Substance Use T-score of 40 is one SD below the average. These individuals use a substance(s) with less severity of use.

STATISTICAL CHARACTERISTICS

There are four key features of the score for Substance Use:

- **Reliability:** The degree to which a measure is free of error. It can be estimated by the internal consistency of the responses to the measure, or by correlating total scores on the measure from two time points when there has been no true change in what is being measured (for z-scores, reliability = $1 - SE^2$).
- **Precision:** The consistency of the estimated score (reciprocal of error variance).
- **Information:** The precision of an item or multiple items at different levels of the underlying continuum (for z-scores, information = $1/SE^2$).
- **Standard Error (SE):** The possible range of the actual final score based upon the scaled T-score. For example, with a T-score of 52 and a SE of 2, the 95% confidence interval around the actual final score ranges from 48.1 to 55.9 (T-score $\pm (1.96*SE) = 52 \pm 3.9 = 48.1$ to 55.9).

The final score is represented by the T-score, a standardized score with a mean of 50 and a standard deviation (SD) of 10.

In Figure 4 (Appeal of Substance Use 7-item short form) , Figure 5 (Prescription Pain Medication Misuse 7-item short form) and Figure 6 (Severity of Substance Use 7-item short form), the dotted horizontal lines each represent a degree of internal consistency reliability (i.e., .90 or .95) typically regarded as sufficient for accurate individual scores. The shaded blue regions mark the range of the scales where measurement precision is comparable to the reliability of .90 for the seven-item forms. These figures also tell us where on the scales the forms are most informative based upon the T-scores. These forms would typically be more informative than Substance Use short forms with fewer items.

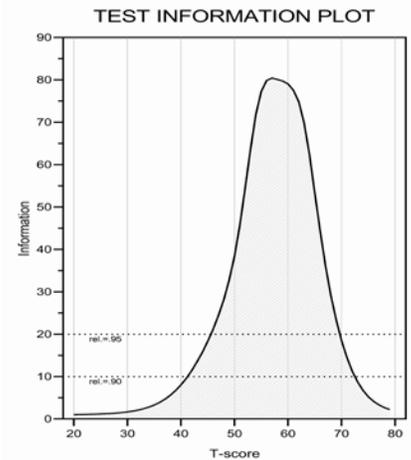


Figure 4

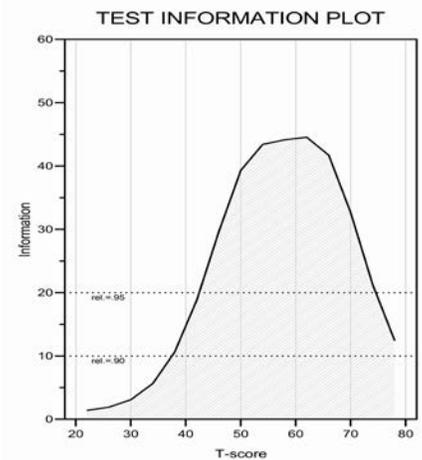


Figure 5

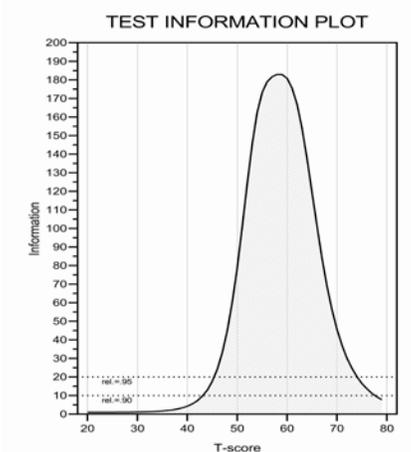


Figure 6

Figure 7 (Appeal of Substance Use), Figure 8 (Prescription Pain Medication Misuse) and Figure 9 (Severity of Substance Use) are samples of the statistical information available in Assessment Center for the CATs.

More information is available at HealthMeasures.net.

Scaling Model Used For Calibration	Graded Response Model (GRM)
Total Number of Items	18

Sample	N	Alpha Reliability
Substance Use	1337	0.956

Score Distributions									
	Mean	SD	P5	P10	P25	P50	P75	P90	P95
Raw	38.21	23.24	18.00	18.00	21.00	39.00	52.00	65.00	73.00
Scale	50.10	9.46	34.56	34.56	43.19	53.07	56.85	59.90	62.52

										Min	Max
Scale Score	10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	0.0	0.0
SE		0.97	0.77	0.35	0.16	0.11	0.23	0.67			
Reliability		0.06	0.40	0.88	0.97	0.99	0.95	0.56			

Figure 7

Scaling Model Used For Calibration	Graded Response Model (GRM)
Total Number of Items	22

Sample	N	Alpha Reliability
Substance Use	448	0.938

Score Distributions									
	Mean	SD	P5	P10	P25	P50	P75	P90	P95
Raw	44.31	23.36	22.00	23.00	29.25	40.00	57.00	78.10	87.55
Scale	50.06	9.57	30.92	38.38	44.30	49.65	56.32	63.35	66.51

										Min	Max
Scale Score	10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	0.0	0.0
SE		0.89	0.57	0.26	0.16	0.15	0.18	0.30			
Reliability		0.22	0.68	0.93	0.97	0.98	0.97	0.91			

Figure 8

Scaling Model Used For Calibration	Graded Response Model (GRM)
Total Number of Items	37

Sample	N	Alpha Reliability
Substance Use	1337	0.980

Score Distributions									
	Mean	SD	P5	P10	P25	P50	P75	P90	P95
Raw	68.19	47.43	37.00	37.00	37.00	48.00	103.00	137.00	151.00
Scale	47.69	8.87	35.56	35.56	40.52	47.62	55.04	59.41	60.69

										Min	Max
Scale Score	10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	0.0	0.0
SE		0.99	0.87	0.35	0.08	0.08	0.21	0.51			
Reliability		0.02	0.24	0.88	0.99	0.99	0.96	0.74			

Figure 9

PREVIEWS OF SAMPLE ITEMS

The figures below are excerpts from the paper versions of the Appeal of Substance Use, Prescription Pain Medication Misuse and Severity of Substance Use, respectively, adult seven-item short forms. These are the paper version formats used for all Substance Use instruments. It is important to note, CAT is not available for paper administration.

In the past 3 months...		Never	Rarely	Sometimes	Often	Almost always
SUDSAP01m	I used drugs to feel more confident....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
SUDSAP02m	I used drugs to feel good about myself.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

Figure 10

In the past 3 months...		Never	Rarely	Sometimes	Often	Almost always
SUDSRX01	I abused prescription pain medication.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
SUDSRX02	I ran out of my prescription pain medication early.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

Figure 11

In the past 3 months...		Never	Rarely	Sometimes	Often	Almost always
SUDSSV02m	My desire to use drugs seemed overpowering.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
SUDSSV03m	Drugs were the only thing I could think about.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

Figure 12

FREQUENTLY ASKED QUESTIONS (FAQs)

Q: I am interested in learning more. Where can I do that?

Review the HealthMeasures website at www.healthmeasures.net.

Q: Do I need to register with PROMIS to use these instruments?

No.

Q: Are these instruments available in other languages?

These instruments are currently not available in other languages. The HealthMeasures website (www.healthmeasures.net) has current information on PROMIS translations.

Q: Can I make my own short form?

Yes, custom short forms can be made by selecting any items from an item bank. This can be scored using the Scoring Service (https://www.assessmentcenter.net/ac_scoring-service).

Q: How do I handle multiple responses when administering a short form on paper?

Guidelines on how to deal with multiple responses have been established. Resolution depends on the responses noted by the research participant.

- If two or more responses are marked by the respondent, and they are next to one another, then a data entry specialist will be responsible for randomly selecting one of them to be entered and will write down on the form which answer was selected. Note: To randomly select one of two responses, the data entry specialist will flip a coin (heads - higher number will be entered; tails – lower number will be entered). To randomly select one of three (or more) responses, a table of random numbers should be used with a statistician's assistance.
- If two or more responses are marked, and they are NOT all next to one another, the response will be considered missing.

Q: What is the minimum change on a PROMIS instrument that represents a clinically meaningful difference?

To learn more about research on the meaning of a change in scores, we suggest conducting a literature review to identify the most current information. The HealthMeasures website (<http://www.healthmeasures.net/score-and-interpret/interpret-scores/promis>) has additional information on interpreting scores.



APPENDIX- SCORING TABLES

Appeal of Substance Use (Past 3 months) 7a		
<i>Short Form Conversion Table</i>		
Raw Score	T-score	SE*
7	40.1	4.9
8	44.7	3.4
9	46.1	3.3
10	47.6	3.0
11	48.7	2.8
12	50.0	2.4
13	50.9	2.3
14	51.8	2.1
15	52.6	2.0
16	53.4	1.8
17	54.1	1.7
18	54.7	1.6
19	55.3	1.6
20	55.8	1.6
21	56.4	1.6
22	57.0	1.5
23	57.5	1.5
24	58.0	1.5
25	58.5	1.5
26	59.1	1.6
27	59.7	1.5
28	60.3	1.5
29	60.9	1.6
30	61.6	1.7
31	62.4	1.8
32	63.2	1.8
33	64.2	2.0
34	65.5	2.2
35	68.9	3.6

*SE=Standard Error on T-score metric

Appeal of Substance Use (Past 30 days) 7a		
<i>Short Form Conversion Table</i>		
Raw Score	T-score	SE*
7	40.1	4.9
8	44.7	3.4
9	46.1	3.3
10	47.6	3.0
11	48.7	2.8
12	50.0	2.4
13	50.9	2.3
14	51.8	2.1
15	52.6	2.0
16	53.4	1.8
17	54.1	1.7
18	54.7	1.6
19	55.3	1.6
20	55.8	1.6
21	56.4	1.6
22	57.0	1.5
23	57.5	1.5
24	58.0	1.5
25	58.5	1.5
26	59.1	1.6
27	59.7	1.5
28	60.3	1.5
29	60.9	1.6
30	61.6	1.7
31	62.4	1.8
32	63.2	1.8
33	64.2	2.0
34	65.5	2.2
35	68.9	3.6

*SE=Standard Error on T-score metric



Prescription Pain Medication Misuse 7a		
<i>Short Form Conversion Table</i>		
Raw Score	T-score	SE*
7	36.3	5.4
8	41.6	3.6
9	43.7	3.4
10	45.5	3.0
11	47.0	2.8
12	48.2	2.6
13	49.4	2.5
14	50.4	2.4
15	51.4	2.3
16	52.3	2.3
17	53.2	2.3
18	54.1	2.3
19	55.0	2.3
20	55.8	2.3
21	56.7	2.3
22	57.6	2.3
23	58.4	2.3
24	59.3	2.3
25	60.2	2.3
26	61.2	2.3
27	62.1	2.3
28	63.1	2.3
29	64.1	2.3
30	65.2	2.4
31	66.4	2.5
32	67.7	2.6
33	69.3	2.8
34	71.4	3.1
35	75.1	4.2

*SE=Standard Error on T-score metric



Severity of Substance Use (Past 3 months) 7a		
<i>Short Form Conversion Table</i>		
Raw Score	T-score	SE*
7	41.2	5.8
8	48.1	2.7
9	49.5	2.5
10	50.7	2.1
11	51.6	1.9
12	52.4	1.7
13	53.1	1.6
14	53.8	1.5
15	54.3	1.4
16	54.8	1.3
17	55.3	1.3
18	55.8	1.4
19	56.3	1.4
20	56.8	1.4
21	57.2	1.3
22	57.6	1.3
23	58.0	1.3
24	58.5	1.4
25	59.1	1.4
26	59.6	1.3
27	60.0	1.3
28	60.5	1.4
29	61.1	1.5
30	61.8	1.5
31	62.5	1.6
32	63.3	1.7
33	64.3	2.0
34	65.6	2.2
35	69.9	4.1

*SE=Standard Error on T-score metric

Severity of Substance Use (Past 30 days) 7a		
<i>Short Form Conversion Table</i>		
Raw Score	T-score	SE*
7	41.2	5.8
8	48.1	2.7
9	49.5	2.5
10	50.7	2.1
11	51.6	1.9
12	52.4	1.7
13	53.1	1.6
14	53.8	1.5
15	54.3	1.4
16	54.8	1.3
17	55.3	1.3
18	55.8	1.4
19	56.3	1.4
20	56.8	1.4
21	57.2	1.3
22	57.6	1.3
23	58.0	1.3
24	58.5	1.4
25	59.1	1.4
26	59.6	1.3
27	60.0	1.3
28	60.5	1.4
29	61.1	1.5
30	61.8	1.5
31	62.5	1.6
32	63.3	1.7
33	64.3	2.0
34	65.6	2.2
35	69.9	4.1

*SE=Standard Error on T-score metric