ANXIETY

SCORING MANUAL

A brief guide to scoring the PROMIS® Anxiety instruments:

ADULT	ADULT CANCER	PEDIATRIC	EARLY CHILDHOOD PARENT-REPORT	PARENT PROXY
PROMIS Bank v1.0 – Anxiety PROMIS Short Form v1.0 – Anxiety 4a PROMIS Short Form v1.0 – Anxiety 6a PROMIS Short Form v1.0 – Anxiety 7a PROMIS Short Form v1.0 – Anxiety 8a	PROMIS-Ca Bank v1.0 – Anxiety	PROMIS Pediatric Bank v2.0 – Anxiety PROMIS Pediatric Bank v1.1 – Anxiety* PROMIS Pediatric Bank v1.0 – Anxiety* PROMIS Pediatric Short Form v2.0 – Anxiety 8a PROMIS Pediatric Short Form v1.1 – Anxiety 8b* PROMIS Pediatric Short Form v1.0 – Anxiety 8a*	PROMIS Early Childhood Parent-Report Bank v1.0 – Anxiety PROMIS Early Childhood Parent-Report Short Form v1.0 – Anxiety 4a PROMIS Early Childhood Parent-Report Short Form v1.0 – Anxiety 8a	PROMIS Parent Proxy Bank v2.0 – Anxiety PROMIS Parent Proxy Bank v1.1 – Anxiety* PROMIS Parent Proxy Bank v1.0 – Anxiety* PROMIS Parent Proxy Short Form v2.0 – Anxiety 8a PROMIS Parent Proxy Short Form v1.0 – Anxiety 8a* PROMIS Parent Proxy Short Form v1.1 – Anxiety 8b*

*Retired measure

COMPARING SCORES ACROSS VERSIONS

Some PROMIS domains have multiple versions of instruments (i.e. v1.0, v1.1, v2.0). Generally, **it is recommended that you use the most recent version available which can be identified as the instrument with the highest version number.** In most cases, an instrument that has a decimal increase (v1.0 to v1.1) retains the same item-level parameters as well as instrument reliability and validity. In cases where a version number increases by a whole number (e.g., v1.0 to v2.0), the changes to the instrument are more substantial.

For anxiety, v2.0 pediatric and parent proxy measures replaced v1.0/v1.1. The v2.0 measures 1) changed from using response scores of 0-4 to use 1-5 (item IDs amended with an "r") and 2) added new items (item IDs start with 7000). The calibrations between v1.0, v1.1, and v2.0 are identical. Consequently, T-scores from v1.0, v1.1, and v2.0 are comparable. The pediatric and parent proxy v1.1 item banks and short form existed briefly – they eliminated two items from the original v1.0 banks. This affected the 8-item short forms as well; the v1.0 and v1.1 short forms have slightly different items included. The v1.1 short form 8b and v2.0 short form 8a include the same items but have different response scores.

WHICH CALIBRATION SAMPLE SHOULD I USE?

Some PROMIS Parent Proxy instruments (Anxiety, Depressive Symptoms, Fatigue, Mobility, Pain Interference, Peer Relationships) have two calibration samples – "Parent Proxy" and "Parent Proxy Without Local Dependence." The former (Parent Proxy) includes calibrations for all items. This is the default calibration sample. If you aren't sure which calibration sample to use, utilize this one. The Parent Proxy Without Local Dependence does not include calibrations for some items. The items without calibrations are enemy items. That is, a dyad or triad of items was identified in which there are psychometric reasons to only administer one of those items to a given respondent. For example, item Pf2anxiety5 and Pf2anxiety4 are enemy items. A participant should only see one of these items in a CAT.

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_scoringservice) or a data collection tool that automatically calculates scores (e.g., REDCap auto-score). This method of scoring uses responses to each item for each participant. We refer to this as "response pattern scoring." Response pattern scoring is preferred because it is more accurate than the use of raw score/scale score look up tables included in this manual. 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.

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 the adult 8-item form, the lowest possible raw score is 8; the highest possible raw score is 40 (see all short form scoring tables in Appendix 1). **All questions must be answered in order 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_scoringservice) to generate a final score.

Locate the applicable score conversion table in Appendix 1 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 T-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 Anxiety 7a short form, a raw score of 10 converts to a T-score of 46.7 with a standard error (SE) of 2.6 (see scoring table for the 7a short form in Appendix 1). Thus, the 95% confidence interval around the observed score ranges from 40.6 to 51.7 (T-score $\pm$ (1.96*SE) or 46.7 $\pm$ (1.96*2.6).

CAT: A minimum number of items (4 for adult and adult cancer CATs and 5 for peds and parent proxy CATs) must be answered in order to receive a score for the anxiety CAT. 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 for adult and adult cancer CATs and 4.0 for peds and parent proxy CATs), or the participant has answered the maximum number of questions (12), whichever occurs first.

SCORES

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 negatively-worded concepts like anxiety, a T-score of 60 is one SD worse than average. By comparison, an anxiety T-score of 40 is one SD better than average.

Standard Error (SE): A PROMIS score includes a T-score and a standard error (SE). The standard error is a measure of the variability for a given T-score across hypothetical repeated measurements. The standard error can be used to construct confidence intervals around a T-score. A 95% confidence interval is common. A 95% confidence interval means there is a 95% probability that the true T-score is within this range. The formula for a 95% confidence interval is (T-score $\pm$ (1.96*SE). For example, if T=52 and SE=2, the lower boundary of the confidence interval is (52 – (1.96*2) = 48 and the upper boundary is (52 + (1.96*2) = 56.

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: 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 1 - SCORING TABLES

Anxiety 4a - Adult v1.0		
Short Form Conversion Table		
Raw Score	T-score	SE*
4	40.3	6.1
5	48	3.6
6	51.2	3.1
7	53.7	2.8
8	55.8	2.7
9	57.7	2.6
10	59.5	2.6
11	61.4	2.6
12	63.4	2.6
13	65.3	2.7
14	67.3	2.7
15	69.3	2.7
16	71.2	2.7
17	73.3	2.7
18	75.4	2.7
19	77.9	2.9
20	81.6	3.7

SE* = Standard Error on T-Score

Anxiety 6a - Adult v1.0		
Short Form Conversion Table		
Raw Score	T-score	SE*
6	39.1	5.9
7	45.9	3.4
8	48.8	2.9
9	50.9	2.6
10	52.7	2.4
11	54.2	2.3
12	55.6	2.2
13	56.9	2.2
14	58.2	2.2
15	59.4	2.2
16	60.7	2.2
17	62.0	2.2
18	63.3	2.2
19	64.6	2.2
20	66.0	2.2
21	67.3	2.2
22	68.6	2.2
23	70.0	2.2
24	71.3	2.2
25	72.7	2.2
26	74.1	2.2
27	75.6	2.3
28	77.4	2.4
29	79.4	2.7
30	82.7	3.5

SE* = Standard Error on T-Score

Anxiety 7a - Adult v1.0		
Short Form Conversion Table		
Raw Score	T-score	SE*
7	36.3	5.4
8	42.1	3.4
9	44.7	2.9
10	46.7	2.6
11	48.4	2.4
12	49.9	2.3
13	51.3	2.3
14	52.6	2.2
15	53.8	2.2
16	55.1	2.2
17	56.3	2.2
18	57.6	2.2
19	58.8	2.2
20	60.0	2.2
21	61.3	2.2
22	62.6	2.2
23	63.8	2.2
24	65.1	2.2
25	66.4	2.2
26	67.7	2.2
27	68.9	2.2
28	70.2	2.2
29	71.5	2.2
30	72.9	2.2
31	74.3	2.2
32	75.8	2.3
33	77.4	2.4
34	79.5	2.7
35	82.7	3.5

SE* = Standard Error on T-Score

Anxiety 8a - Adult v1.0		
Short Form Conversion Table		
Raw Score	T-score	SE*
8	37. 1	5.5
9	43.2	3.3
10	45.9	2.8
11	47.8	2.5
12	49.4	2.3
13	50.8	2.2
14	52.1	2.1
15	53.2	2.0
16	54.3	2.0
17	55.4	2.0
18	56.4	2.0
19	57.4	2.0
20	58.4	2.0
21	59.4	2.0
22	60.4	2.0
23	61.4	2.0
24	62.5	2.0
25	63.5	2.0
26	64.5	2.0
27	65.6	2.0
28	66.6	2.0
29	67.7	2.0
30	68.7	2.0
31	69.8	2.0
32	70.8	2.0
33	71.9	2.0
34	73.0	2.0
35	74.1	2.0
36	75.4	2.0
37	76.7	2.1
38	78.2	2.3
39	80.0	2.6
40	83.1	3.4

SE* = Standard Error on T-Score

Anxiety 8a - Pediatric v2.0		
Short Form Conversion Table		
Raw Score	T-Score	SE*
8	33.5	5.9
9	38.0	4.9
10	40.6	4.7
11	43.0	4.4
12	44.9	4.2
13	46.7	4.0
14	48.3	3.9
15	49.8	3.8
16	51.2	3.8
17	52.5	3.7
18	53.8	3.7
19	55.1	3.7
20	56.3	3.7
21	57.5	3.7
22	58.7	3.7
23	59.9	3.7
24	61.0	3.7
25	62.2	3.7
26	63.4	3.7
27	64.5	3.7
28	65.7	3.6
29	66.9	3.6
30	68.1	3.6
31	69.3	3.7
32	70.6	3.7
33	71.8	3.7
34	73.2	3.7
35	74.6	3.8
36	76.0	3.8
37	77.6	3.9
38	79.3	4.0
39	81.1	3.9
40	83.3	3.8

SE* = Standard Error on T-Score

Anxiety 4a – Early Childhood Parent-Report v1.0		
Short Form Conversion Table		
Raw Score	T-score	SE *
4	40.9	6.5
5	47.8	4.9
6	51.6	4.6
7	54.9	4.1
8	57.5	4.0
9	60.0	3.9
10	62.5	4.0
11	65.0	3.9
12	67.4	3.9
13	69.6	4.0
14	71.9	4.0
15	74.3	3.9
16	76.6	3.8
17	78.8	3.7
18	81.1	3.7
19	83.2	3.5
20	85.2	3.1

SE* = Standard Error on T-Score

Anxiety 8a – Early Childhood Parent-Report v1.0		
Short Form Conversion Table		
Raw Score	T-score	SE *
8	39.6	6.2
9	45.6	4.4
10	48.6	3.9
11	51.0	3.3
12	52.9	3.0
13	54.5	2.8
14	56.0	2.7
15	57.4	2.7
16	58.8	2.7
17	60.1	2.7
18	61.4	2.7
19	62.7	2.7
20	64.0	2.7
21	65.3	2.7
22	66.5	2.7
23	67.8	2.7
24	69.0	2.7
25	70.3	2.7
26	71.6	2.7
27	72.8	2.7
28	74.1	2.6
29	75.3	2.6
30	76.4	2.5
31	77.6	2.5
32	78.7	2.5
33	79.9	2.5
34	81.1	2.6
35	82.3	2.6
36	83.6	2.6
37	84.9	2.6
38	86.0	2.4
39	87.0	2.2
40	87.9	1.9

SE* = Standard Error on T-Score

	Anxiety 8a - Parent Proxy v2.0				
	Short Form Conversion Table				
Raw Score	T-Score	SE*	Raw Score	T-Score	SE*
8	34.6	5.6	25	65.6	3.0
9	39.7	4.4	26	66.9	3.0
10	42.7	3.9	27	68.3	3.0
11	45.1	3.5	28	69.6	2.9
12	47.1	3.3	29	71.0	2.9
13	48.8	3.1	30	72.3	2.9
14	50.4	3.0	31	73.6	2.8
15	51.9	2.9	32	74.9	2.8
16	53.3	2.9	33	76.1	2.8
17	54.7	2.9	34	77.4	2.8
18	56.0	2.8	35	78.8	2.8
19	57.4	2.9	36	80.2	2.9
20	58.7	2.9	37	81.6	2.9
21	60.1	2.9	38	83.2	2.9
22	61.4	2.9	39	84.8	2.8
23	62.8	2.9	40	86.4	2.6
24	64.2	3.0			

SE* = Standard Error on T-Score
All scoring tables are based on default Parent Proxy calibrations.

APPENDIX 2 - SCORING TABLES FOR RETIRED MEASURES

Anxiety 8a - Pediatric v1.0		
Short Form Conversion Table		
Raw Score	T-Score	SE*
0	32.3	5.7
1	36.7	4.9
2	39.2	4.7
3	41.4	4.3
4	43.3	4.2
5	45.1	4.0
6	46.7	3.9
7	48.2	3.8
8	49.6	3.8
9	50.9	3.7
10	52.3	3.7
11	53.5	3.7
12	54.8	3.7
13	56.0	3.7
14	57.3	3.7
15	58.5	3.7
16	59.7	3.7
17	60.9	3.7
18	62.1	3.7
19	63.3	3.7
20	64.5	3.7
21	65.8	3.7
22	67.0	3.7
23	68.3	3.7
24	69.6	3.7
25	70.9	3.7
26	72.3	3.7
27	73.7	3.7
28	75.2	3.8
29	76.8	3.9
30	78.6	4.0
31	80.5	4.0
32	82.8	3.9

*SE = Standard Error on T-score

Anxiety 8b - Pediatric v1.1		
Short Form Conversion Table		
Raw score	T-score	SE*
0	33.5	5.9
1	38.0	4.9
2	40.6	4.7
3	43.0	4.4
4	44.9	4.2
5	46.7	4.0
6	48.3	3.9
7	49.8	3.8
8	51.2	3.8
9	52.5	3.7
10	53.8	3.7
11	55.1	3.7
12	56.3	3.7
13	57.5	3.7
14	58.7	3.7
15	59.9	3.7
16	61.0	3.7
17	62.2	3.7
18	63.4	3.7
19	64.5	3.7
20	65.7	3.6
21	66.9	3.6
22	68.1	3.6
23	69.3	3.7
24	70.6	3.7
25	71.8	3.7
26	73.2	3.7
27	74.6	3.8
28	76.0	3.8
29	77.6	3.0
30	79.3	4.0
31	81.1	3.9
32	83.3	3.8

*SE = Standard Error on T-score

Anxiety 8a – Parent Proxy v1.0		
Short Form Conversion Table		
Raw score	T-score	SE*
0	34.0	6.0
1	38.0	5.0
2	41.0	4.0
3	44.0	4.0
4	46.0	4.0
5	48.0	3.0
6	49.0	3.0
7	51.0	3.0
8	52.0	3.0
9	54.0	3.0
10	55.0	3.0
11	56.0	3.0
12	58.0	3.0
13	59.0	3.0
14	61.0	3.0
15	62.0	3.0
16	64.0	3.0
17	65.0	3.0
18	66.0	3.0
19	68.0	3.0
20	69.0	3.0
21	71.0	3.0
22	72.0	3.0
23	73.0	3.0
24	75.0	3.0
25	76.0	3.0
26	77.0	3.0
27	79.0	3.0
28	80.0	3.0
29	82.0	3.0
30	84.0	3.0
31	86.0	4.0
32	88.0	4.0

*SE = Standard Error on T-score

Anxiety 8b – Parent Proxy v1.1		
Short Form Conversion Table		
Raw Score	T-score	SE*
0	34.6	5.6
1	39.7	4.4
2	42.7	3.9
3	45.1	3.5
4	47.1	3.3
5	48.8	3.1
6	50.4	3.0
7	51.9	2.9
8	53.3	2.9
9	54.7	2.9
10	56.0	2.9
11	57.4	2.9
12	58.7	2.9
13	60.1	2.9
14	61.4	2.9
15	62.8	2.9
16	64.2	3.0
17	65.6	3.0
18	66.9	3.0
19	68.3	3.0
20	69.3	2.9
21	71.0	2.9
22	72.3	2.9
23	73.6	2.8
24	74.9	2.8
25	76.1	2.8
26	77.4	2.8
27	78.8	2.8
28	80.2	2.9
29	81.6	2.9
30	83.2	2.9
31	84.8	2.8
32	86.4	2.6

*SE = Standard Error on T-score