



SOCIAL RELATIONSHIPS (PEER, FAMILY)

SCORING MANUAL

A brief guide to scoring the PROMIS® Social Relationships instruments:

PEDIATRIC	EARLY CHILDHOOD PARENT-REPORT	PARENT PROXY
PROMIS Pediatric Item Bank v1.0 Family Relationships PROMIS Pediatric Item Bank v1.0 – Peer Relationships* PROMIS Pediatric Short Form v1.0 Family Relationships 4a PROMIS Pediatric Short Form v1.0 Family Relationships 8a PROMIS Pediatric Short Form v1.0 – Peer Relationships 8a* PROMIS Pediatric Item Bank v2.0 – Peer Relationships PROMIS Pediatric Item Bank v2.0 – Peer Relationships (recommended) PROMIS Pediatric Item Bank v2.0 – Peer Relationships (screen-to-CAT) PROMIS Pediatric Short Form v2.0 – Peer Relationships 8a	PROMIS Early Childhood Parent-Report Bank v1.0 – Social Relationships PROMIS Early Childhood Parent-Report Short Form v1.0 – Social Relationships – Family Relationships – Short Form 4a PROMIS Early Childhood Parent-Report Short Form v1.0 – Social Relationships – Peer Relationships – Short Form 4a PROMIS Early Childhood Parent-Report Short Form v1.0 – Social Relationships – Child-Caregiver Interactions – Short Form 5a PROMIS Early Childhood Parent-Report Short Form v1.0 – Social Relationships 6a	PROMIS Proxy Item Bank v1.0 Family Relationships PROMIS Parent Proxy Item Bank v1.0 – Peer Relationships* PROMIS Proxy Short Form v1.0 Family Relationships 4a PROMIS Parent Proxy Short Form v1.0 – Peer Relationships 7a* PROMIS Proxy Short Form v1.0 Family Relationships 8a PROMIS Parent Proxy Item Bank v2.0 – Peer Relationships PROMIS Parent Proxy Item Bank v2.0 – Peer Relationships (recommended) PROMIS Parent Proxy Item Bank v2.0 – Peer Relationships (screen-to-CAT) PROMIS Parent Proxy Short Form v2.0 – Peer Relationships 7a

*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 Peer Relationships, v2.0 pediatric and parent proxy measures replaced v1.0. The v2.0 measures changed from using response scores of 0-4 to use 1-5 (item IDs amended with an “r”). The calibrations between v1.0 and v2.0 are identical as is the item content on short forms. Therefore, scores from v1.0 and v2.0 pediatric and parent-proxy peer relationships measures are comparable.

SCORING THE INSTRUMENT

PROMIS measures use Item Response Theory (IRT), a family of statistical models that link individual questions to a presumed underlying trait or concept of social relationships represented by all items in the instrument. 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., 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.

CAT: A minimum number of items (e.g., 4) must be answered in order to receive a score for the Social Relationships 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 (e.g., on the T-score metric 3.0), or the participant has answered the maximum number of questions (e.g., 12), whichever occurs first. For some CATs, specifically "recommended" and "screen-to-CAT" there are additional stopping rules. These include stopping when the standard error isn't improving much or if a respondent is asymptomatic. For details on the exact stopping rules for Social Relationships CATs, view the Measure Differences summary.

Raw Summed Score to T-Score Conversion Tables

If the HealthMeasures Scoring Service is not an option, the conversion tables in Appendix 1 can be used to convert simple summed raw scores from PROMIS Social Relationships short forms into T-score values on an individual respondent. In all cases, these conversions only work accurately when all questions on the short form have been answered. T-Score distributions are standardized such that a 50 represents the average (mean) for the US general population, and the standard deviation around that mean is 10 points.

Using the Scoring Table

Locate the applicable score conversion table in Appendix 1 and use this table to translate the sum of raw scores into a T-score for each participant. For example, for the PROMIS Early Childhood Parent-Report v1.0 – Social Relationships – Short Form 6a, a raw score of 15 converts to a T-score of 26.8 with a standard error (SE) of 3.9. The T-score rescales the raw sum score into a standardized score with a mean of 50 and a standard deviation (SD) of 10. Therefore, a child with a T-score of 40 on a Peer Relationships instrument is one SD below the mean. That is, they have fewer positive peer interactions, poorer sociability, and fewer empathic behaviors than average.

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. Thus, a child who has a T-score of 60 for Social Relationships, Family Relationships or Peer Relationships is one standard deviation better than the general population. By comparison, a Social Relationships, Family Relationships or Peer Relationships T-score of 40 is one SD worse 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 $(T\text{-score} \pm (1.96 * SE))$. 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 (<https://www.healthmeasures.net/score-and-interpret/interpret-scores/promis>) has additional information on interpreting scores.

APPENDIX 1 - SCORING TABLES

Pediatric v1.0 Family Relationships 4a		
Short Form Conversion Table		
Raw Summed Score	T-score	SE*
4	20.4	3.7
5	23.9	3.1
6	26.3	2.9
7	28.3	2.8
8	30.2	2.8
9	32.0	2.8
10	33.9	2.9
11	35.8	2.9
12	37.8	2.8
13	39.8	2.9
14	41.9	2.9
15	44.0	2.8
16	46.1	2.9
17	48.4	3.0
18	51.0	3.2
19	54.4	3.8
20	61.1	5.9
*SE = Standard Error on T-score metric		

Pediatric v1.0 Family Relationships 8a		
Short Form Conversion Table		
Raw Summed Score	T-Score	SE*
8	17.9	3.3
9	20.5	2.9
10	22.3	2.6
11	23.7	2.4
12	25.0	2.3
13	26.2	2.2
14	27.2	2.2
15	28.3	2.2
16	29.3	2.2
17	30.3	2.2
18	31.2	2.2
19	32.3	2.2
20	33.3	2.2
21	34.3	2.3
22	35.4	2.3
23	36.5	2.3
24	37.6	2.3
25	38.7	2.3
26	39.8	2.3
27	41.0	2.3
28	42.1	2.2
29	43.3	2.2
30	44.4	2.2
31	45.6	2.2
32	46.8	2.3
33	48.0	2.3
34	49.3	2.3
35	50.6	2.4
36	52.1	2.5
37	53.7	2.7
38	55.7	3.1
39	58.4	3.7
40	63.9	5.5
*SE = Standard Error on T-score metric		

Parent Proxy v1.0 Family Relationships SF4		
Short Form Conversion Table		
Raw Summed Score	T-Score	SE
4	20.9	3.7
5	24.5	3.2
6	27.5	3.0
7	30.3	3.0
8	32.8	2.9
9	35.2	2.9
10	37.7	2.9
11	40.0	2.8
12	42.3	2.9
13	45.0	3.1
14	48.4	3.6
15	53.2	4.6
16	60.2	6.4

*SE = Standard Error on T-score metric

Parent Proxy v1.0 Family Relationships
SF8

Short Form Conversion Table

Raw Summed Score	T-Score	SE
8	17.0	3.3
9	19.3	3.2
10	21.5	2.9
11	23.5	2.6
12	25.2	2.5
13	26.8	2.5
14	28.4	2.5
15	29.9	2.5
16	31.4	2.4
17	32.8	2.4
18	34.2	2.4
19	35.6	2.4
20	37.0	2.4
21	38.4	2.4
22	39.8	2.4
23	41.2	2.4
24	42.7	2.5
25	44.2	2.5
26	45.8	2.5
27	47.6	2.6
28	49.4	2.8
29	51.5	3.1
30	54.1	3.5
31	57.4	4.3
32	63.1	5.8

*SE = Standard Error on T-score metric

Peer Relationships 8a - Pediatric v2.0		
<i>Short Form Conversion Table</i>		
Raw SummedScore	T-Score	SE*
8	17.68	3.96
9	19.97	3.90
10	21.43	3.90
11	23.04	3.74
12	24.40	3.66
13	25.72	3.55
14	26.94	3.48
15	28.11	3.42
16	29.24	3.38
17	30.35	3.35
18	31.43	3.33
19	32.50	3.32
20	33.55	3.31
21	34.60	3.31
22	35.64	3.31
23	36.68	3.31
24	37.72	3.32
25	38.76	3.32
26	39.82	3.32
27	40.90	3.33
28	41.99	3.34
29	43.12	3.36
30	44.27	3.38
31	45.47	3.41
32	46.71	3.45
33	48.03	3.52
34	49.43	3.62
35	50.94	3.74
36	52.64	3.94
37	54.48	4.09
38	56.82	4.48
39	59.52	4.81
40	64.44	5.96

*SE = Standard Error on T-score metric

Peer Relationships 7a - Parent Proxy v2.0		
<i>Short Form Conversion Table</i>		
Raw Summed Score	T-Score	SE*
7	15.0	4.0
8	18.0	3.0
9	20.0	3.0
10	22.0	3.0
11	23.0	3.0
12	24.0	3.0
13	26.0	3.0
14	27.0	3.0
15	28.0	3.0
16	29.0	3.0
17	31.0	3.0
18	32.0	3.0
19	33.0	3.0
20	34.0	3.0
21	36.0	3.0
22	37.0	3.0
23	38.0	3.0
24	39.0	3.0
25	41.0	3.0
26	42.0	3.0
27	43.0	3.0
28	45.0	3.0
29	46.0	3.0
30	48.0	3.0
31	49.0	3.0
32	51.0	3.0
33	53.0	4.0
34	56.0	4.0
35	62.0	6.0
*SE = Standard Error on T-score metric		

Early Childhood Parent Report Bank v1.0 – Social Relationships – Short Form 6a		
Short Form Conversion Table		
Raw Summed Score	T-Score	SE*
6	11.3	4.1
7	13.1	4.3
8	15.0	4.3
9	16.8	4.2
10	18.5	4.1
11	20.2	4.0
12	21.8	3.9
13	23.5	3.9
14	25.1	3.9
15	26.8	3.9
16	28.5	3.9
17	30.3	4.0
18	32.0	4.0
19	33.7	4.0
20	35.5	4.0
21	37.4	4.1
22	39.4	4.1
23	41.5	4.1
24	43.7	4.2
25	46.0	4.2
26	48.5	4.3
27	51.3	4.5
28	54.6	4.9
29	58.5	5.3
30	63.5	6.2
*SE = Standard Error on T-score metric		

Early Childhood Parent Report Bank v1.0 – Social Relationships – Child-Caregiver Interactions – Short Form 5a		
Short Form Conversion Table		
Raw Summed Score	T-Score	SE*
5	12.0	4.9
6	13.9	5.3
7	15.9	5.6
8	18.0	5.7
9	20.2	5.8
10	22.4	5.8
11	24.5	5.8
12	26.7	5.8
13	28.9	5.8
14	31.0	5.8
15	33.2	5.8
16	35.5	5.8
17	37.7	5.8
18	40.1	5.8
19	42.6	5.9
20	45.3	6.0
21	48.2	6.1
22	51.3	6.2
23	54.6	6.4
24	58.3	6.6
25	63.0	7.1
*SE = Standard Error on T-score metric		

Early Childhood Parent Report Bank v1.0 – Social Relationships – Family Relationships – Short Form 4a

Short Form Conversion Table

Raw Summed Score	T-Score	SE*
4	11.3	4.4
5	13.5	4.7
6	15.9	5.0
7	18.3	5.0
8	20.6	5.1
9	22.9	5.1
10	25.1	5.1
11	27.3	5.1
12	29.5	5.1
13	31.8	5.1
14	34.2	5.2
15	36.9	5.4
16	39.8	5.6
17	43.0	5.7
18	46.9	5.9
19	51.9	6.4
20	58.7	7.4
*SE = Standard Error on T-score metric		

Early Childhood Parent Report Bank v1.0 – Social Relationships – Peer Relationships – Short Form 4a		
Short Form Conversion Table		
Raw Summed Score	T-Score	SE*
4	17.4	4.1
5	20.4	3.7
6	22.6	3.6
7	24.8	3.5
8	27.0	3.5
9	29.0	3.6
10	31.3	3.7
11	33.5	3.7
12	35.7	3.7
13	38.3	3.7
14	41.2	3.7
15	44.0	3.7
16	46.7	3.7
17	49.7	3.9
18	53.3	4.3
19	57.4	4.9
20	62.9	6.1
*SE = Standard Error on T-score metric		

APPENDIX 2 - SCORING TABLES FOR RETIRED MEASURES

Peer Relationships 8a - Pediatric v1.0		
<i>Short Form Conversion Table</i>		
Raw Summed Score	T-Score	SE*
0	17.68	3.96
1	19.97	3.90
2	21.43	3.90
3	23.04	3.74
4	24.40	3.66
5	25.72	3.55
6	26.94	3.48
7	28.11	3.42
8	29.24	3.38
9	30.35	3.35
10	31.43	3.33
11	32.50	3.32
12	33.55	3.31
13	34.60	3.31
14	35.64	3.31
15	36.68	3.31
16	37.72	3.32
17	38.76	3.32
18	39.82	3.32
19	40.90	3.33
20	41.99	3.34
21	43.12	3.36
22	44.27	3.38
23	45.47	3.41
24	46.71	3.45
25	48.03	3.52
26	49.43	3.62
27	50.94	3.74
28	52.64	3.94
29	54.48	4.09
30	56.82	4.48
31	59.52	4.81
32	64.44	5.96
*SE = Standard Error on T-score metric		

Peer Relationships 7a - Parent Proxy v1.0		
<i>Short Form Conversion Table</i>		
Raw Summed Score	T- Score	SE*
0	15.0	4.0
1	18.0	3.0
2	20.0	3.0
3	22.0	3.0
4	23.0	3.0
5	24.0	3.0
6	26.0	3.0
7	27.0	3.0
8	28.0	3.0
9	29.0	3.0
10	31.0	3.0
11	32.0	3.0
12	33.0	3.0
13	34.0	3.0
14	36.0	3.0
15	37.0	3.0
16	38.0	3.0
17	39.0	3.0
18	41.0	3.0
19	42.0	3.0
20	43.0	3.0
21	45.0	3.0
22	46.0	3.0
23	48.0	3.0
24	49.0	3.0
25	51.0	3.0
26	53.0	4.0
27	56.0	4.0
28	62.0	6.0
*SE = Standard Error on T- score metric		