

SOCIAL RELATIONSHIPS (PEER, FAMILY)

MEASURE DIFFERENCES

A brief guide to differences between the PROMIS® Social Relationships instruments:

PEDIATRIC	EARLY CHILDHOOD PARENT-REPORT	PARENT PROXY
PROMIS Pediatric Item Bank v1.0 Family Relationships PROMIS Pediatric Short Form v1.0 Family Relationships 4a PROMIS Pediatric Short Form v1.0 Family Relationships 8a PROMIS Pediatric Bank GenPop v3.0 – Peer Relationships PROMIS Pediatric Bank GenPop v3.0 – Peer Relationships (screen-to-CAT) PROMIS Pediatric Short Form GenPop v3.0 – 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 Pediatric Item Bank v1.0 – Peer Relationships* PROMIS Pediatric Short Form v1.0 – 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 Parent Proxy Item Bank v1.0 – Family Relationships PROMIS Parent Proxy Short Form v1.0 – Family Relationships 4a PROMIS Parent Proxy Short Form v1.0 – Family Relationships 8a PROMIS Parent Proxy Bank GenPop v3.0 – Peer Relationships PROMIS Parent Proxy Bank GenPop v3.0 – Peer Relationships (screen-to-CAT) PROMIS Parent Proxy Short Form GenPop v3.0 – Peer Relationships 7a 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* PROMIS Parent Proxy Item Bank v1.0 – Peer Relationships* PROMIS Parent Proxy Short Form v1.0 – Peer Relationships 7a*

*Retired measure

ABOUT SOCIAL RELATIONSHIPS

The PROMIS Pediatric and Parent Proxy **Family Relationships** item banks assess the subjective (affective, emotional, cognitive) experience of being involved with one's family, feeling like an important person in the family, of feeling accepted and cared for, and feeling that family members, especially parents, can be trusted and depended on for help and understanding. The PROMIS Pediatric and Parent Proxy Family Relationships item banks both use a 4-week reporting period.

The PROMIS Pediatric and Parent Proxy **Peer Relationships** item banks assess self-reported quality of relationships with friends and other acquaintances. The peer relationships short forms are universal rather than disease-specific. All assess peer relationships over the past seven days.

The PROMIS Early Childhood Parent-Report **Social Relationships** instruments assess young children's positive interactions, experiences, and connectedness with the primary caregiver and broader family unit as well as positive interactions, sociability, and empathic behaviors with peers. These instruments are universal rather than disease-specific and assess social relationships over the past seven days.

Social Relationships instruments are available for pediatric self-report (ages 8-17) and for parents serving as proxy reporters for their child (youth ages 5-17) or very young child (ages 1-5).

INTRODUCTION TO ASSESSMENT OPTIONS

There are two administration options for assessing social relationships: short forms and computer adaptive tests (CATs). When administering a short form, instruct participants to answer all of 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 bank. 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 CAT. This guide provides information on all Social Relationships short form and CAT instruments.

CAT: A minimum number of items (e.g., 4) must be answered in order to receive a score for 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. 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 the PROMIS Pediatric Bank v1.0 – Family Relationships and PROMIS Parent Proxy Bank v1.0 – Family Relationships CATs, the minimum number of items administered is 4. For details on the exact stopping rules for Peer Relationships CATs, see below.

CAT versus Short Form: Whether one uses a short form or 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 social relationships represented by all items in the item bank. When choosing between a CAT and 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.

Figure 1 and Figure 2 illustrate the correlations (strength of relationship) of the Family Relationships full pediatric bank and parent proxy bank, respectively, with CATs and with short forms of varying length. The correlation of CAT scores with the full bank score is greater than a short form 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 CAT to choose more informative questions offers more precision.

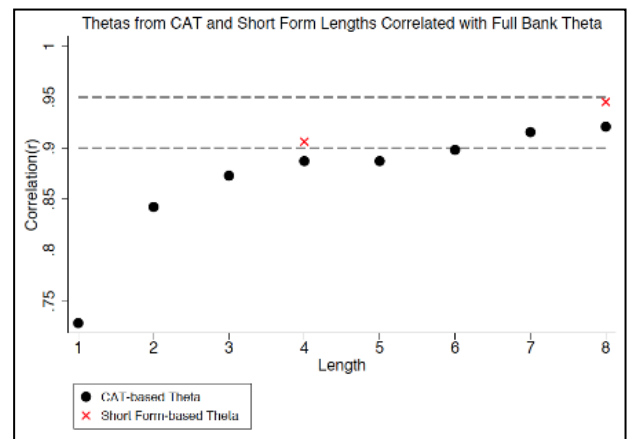


Figure 1

VERSION DIFFERENCES

Some PROMIS domains have multiple versions of instruments (i.e., v1.0, v1.1, v2.0, v3.0). 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.

Changes from v2.0 to GenPop v3.0

- The GenPop v3.0 Pediatric and Parent Proxy measures replaced the v2.0 measures.
- The GenPop v3.0 measures were re-normed. This means that the scores produced by v3.0 measures are NOT equivalent to scores from older measures (i.e., v1.0, v1.1, v2.0).
- The v2.0 measures were developed with U.S. children sampled from a combination of the general population and those with chronic conditions. This means a v2.0 T-score of 50 is based on the mean of a sample comprised of a mix of children from the general population AND children with chronic conditions. The re-normed v3 GenPop measures are now purely based on a sample from the general pediatric population. This makes interpreting a PROMIS score easier as it is referencing just the general population. The use of “GenPop” (general population) is used to convey the difference in metrics between v3.0 and earlier versions of the measures.
- Earlier versions of the PROMIS Pediatric and Parent Proxy measures can be converted to the v3.0 GenPop metric. Instructions are included in the Social Relationships Scoring Manual.
- No items were revised between the v2.0 and GenPop v3.0 Peer Relationships measures.

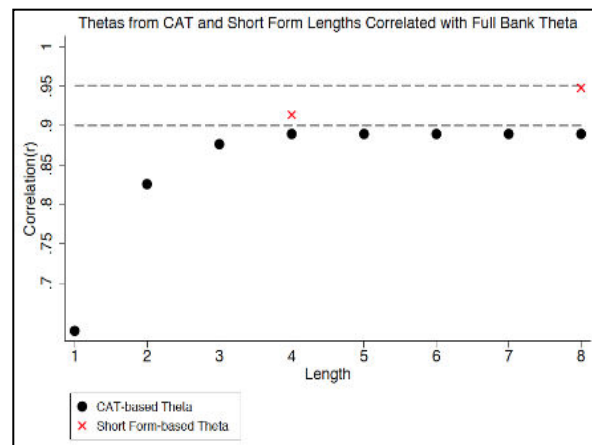


Figure 2

Changes from v1.0 to v2.0

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.

There is currently only one version for PROMIS Early Childhood Parent-Report Social Relationships (v1.0).

Pediatric and Parent Proxy CAT Stopping Rules:

- Measures named “Bank” are administered by default as computer adaptive tests.
- CATs with the same version number (e.g., v2.0 recommended, v2.0 screen-to-CAT) are based on the same item bank but use different stopping rules.

PROMIS Pediatric Bank GenPop v3.0 – Peer Relationships and PROMIS Parent Proxy Bank GenPop v3.0 – Peer Relationships stopping rules:

- Minimum number of items administered = 4
- Stop when one of these occurs:
 - 8 items are administered OR
 - Standard error is below 0.3 on the theta metric (3.0 on the T-score metric) OR
 - Standard error changes by less than 0.01 on the theta metric (0.1 on the T-score metric)

PROMIS Pediatric Bank GenPop v3.0 – Peer Relationships (screen-to-CAT) and PROMIS Parent Proxy Bank GenPop v3.0 – Peer Relationships (screen-to-CAT) stopping rules:

- If the responses to the first two items are both the “healthiest” responses, then stop.
- If the responses to the first two items are NOT the “healthiest” responses, proceed with the PROMIS Pediatric or Parent Proxy Bank GenPop v3.0 – Peer Relationships CAT stopping rules.

PROMIS Pediatric Bank v2.0 – Peer Relationships and PROMIS Parent Proxy Bank v2.0 – Peer Relationships stopping rules:

- Minimum number of items administered = 5
- Stop when one of these occurs:
 - 12 items are administered OR
 - Standard error is below 0.4 on the theta metric (4.0 on the T-score metric)

PROMIS Pediatric Bank v2.0 – Peer Relationships (recommended) and PROMIS Parent Proxy Bank v2.0 – Peer Relationships (recommended) stopping rules:

- Minimum number of items administered = 5
- Stop when one of these occurs:
 - 12 items are administered OR
 - Standard error is below 0.4 on the theta metric (4.0 on the T-score metric) OR
 - Standard error changes by less than 0.01 on the theta metric (0.1 on the T-score metric)

PROMIS Pediatric Bank v2.0 – Peer Relationships (screen-to-CAT) and PROMIS Parent Proxy Bank v2.0 – Peer Relationships (screen-to-CAT) stopping rules:

- If the responses to the first two items are both the “healthiest” responses, then stop.
- If the responses to the first two items are NOT the “healthiest” responses, proceed with the “recommended” CAT stopping rules.

SHORT FORM DIFFERENCES

Pediatric and Parent Proxy Family Relationships and Peer Relationships Short Forms

There are 2 pediatric and 2 parent proxy Family Relationship short forms. There is 1 pediatric and 1 parent proxy short form for Peer Relationships. Items were selected based on content and psychometric characteristics.

Selecting a Short Form

In selecting between short forms, the difference is instrument length. The reliability and precision of the short forms within a domain is highly similar. If you are working with a sample in which you want the most precise measure, select the longest short form. If you have little room for additional measures but really wanted to capture something as a secondary outcome, select one of the shorter instruments (e.g., 4-item short form).

SELECTING A PEDIATRIC OR PARENT PROXY FAMILY RELATIONSHIPS AND PEER RELATIONSHIPS INSTRUMENT

In selecting whether to use the pediatric or parent proxy instrument for this domain, it is important to consider both the population and the domain that you are studying. Pediatric self-report should be considered the standard for measuring patient-reported outcomes among children. However, circumstances exist when the child is too young, cognitively impaired, or too ill to complete a patient-reported outcome instrument. Since information derived from self-report and proxy-report is not equivalent, it is optimal to assess both the child and

the parent since their perspectives may be independently related to healthcare utilization, risk factors, and quality of care.

SELECTING A SOCIAL RELATIONSHIPS INSTRUMENT

In selecting a Social Relationships instrument, it is important to consider the specific content you wish to assess. For Pediatric and Parent Proxy, if you are interested in children's relationships within a family, use a Family Relationships instrument. If you are interested in children's relationships with friends and others their age, use a Peer Relationships instrument. You can also administer both Family and Peer measures. For young children, the PROMIS Early Childhood Parent-Report Social Relationships item bank (via CAT administration) and Social Relationships short form 6a cover the entire domain and will therefore assess child-caregiver, family, and peer relationships. These are the most comprehensive options. If you are only interested in evaluating one facet of social relationships, select one of the sub-domain short forms (i.e., Child-Caregiver Interactions 5a, Family Relationships 4a, Peer Relationships 4a).

Early Childhood Parent-Report Versus Parent Proxy Report Measures

The PROMIS Early Childhood Parent-Report measures are for parents to report on their children ages 1 to 5. The PROMIS Parent Proxy measures are for parents to report on their children ages 5-17. In both cases, the parent provides his or her perspective about the child's social relationships. Scores from PROMIS Parent Proxy Family Relationships and Peer Relationships instruments and the PROMIS Early Childhood Parent-Report measures are calibrated and normed with different, age-appropriate reference populations and therefore are on different metrics. Scores from one should not be compared to scores on the other. For parents of 5-year-old children, either the PROMIS Parent Proxy instruments or the PROMIS Early Childhood Parent-Report measure can be used. In general, for longitudinal research and/or on-going clinical follow-up, using the measure that aligns with the majority of the time frame with which the child will be studied is recommended. For example, if the measure is administered at child age 1 year through child age 5, using the PROMIS Early Childhood Parent-Report is recommended. If the child will be studied across in both early childhood and beyond age 5, switching to the PROMIS Parent Proxy measure is necessary.

WHICH CALIBRATION SAMPLE SHOULD I USE?

Some PROMIS Parent Proxy v1.0, v1.1, and v2.0 measures (Anxiety, Depressive Symptoms, Fatigue, Mobility, Pain Interference, Peer Relationships) had two calibration samples – "Parent Proxy" and "Parent Proxy Without Local Dependence." The former (Parent Proxy) included calibrations for all items. This was the default calibration sample. The Parent Proxy Without Local Dependence did 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 Pf1sociabil2r and Pf2sociabil9r are enemy items. A participant should only see one of these items in a CAT. The v3.0 GenPop measure have a single calibration sample and no enemy items.

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.

STATISTICAL CHARACTERISTICS

There are four key features of the score for Social Relationships:

- **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 48.5 and a SE of 4.3, the 95% confidence interval around the actual final score ranges from 40.1 to 56.9 (T-score $\pm (1.96*SE) = 48.5 \pm 8.43 = 40.1$ to 56.9).

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 3, the three dotted horizontal lines each represent a degree of internal consistency reliability (i.e., 0.70, .90, or .95) typically regarded as sufficient for an accurate individual score for the Early Childhood Parent-Report Social Relationships bank. The shaded blue region marks the range of the scale where measurement precision is comparable to the reliability of .70 for the form. Figure 1 also tells us where on the scale the form is most informative based upon the T-score.

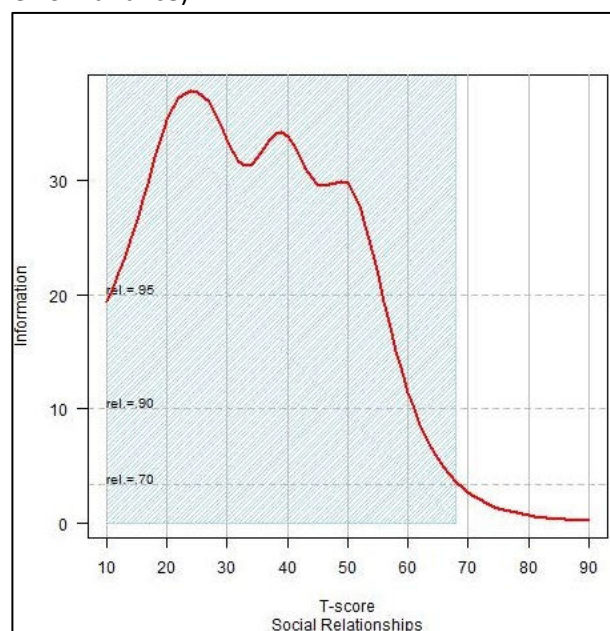


Figure 3

Figures 4 and 5 show measurement precision for the Family Relationships instruments. The two dotted horizontal lines in each graph represent a degree of internal consistency reliability (i.e., .90 or .95) typically regarded as sufficient for an accurate individual score. The shaded regions mark the ranges of the scales where measurement precision is comparable to the reliability of .90 for the full item bank.

In Figure 4, the black line represents the full Pediatric Family Relationships item bank. The red line represents the 8-item short form and red line the 4-item short form.

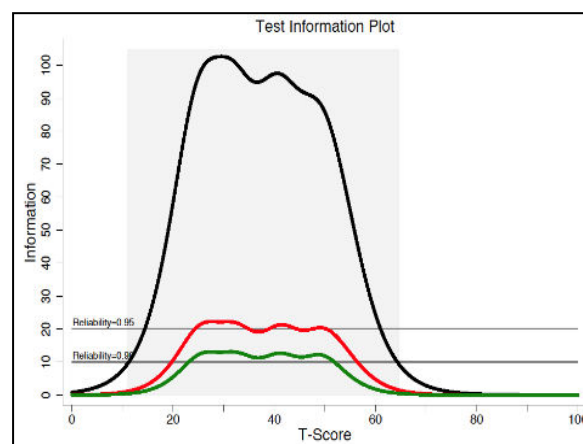


Figure 4: Pediatric Family Relationships

Similarly, in Figure 5 the black line represents the full Parent Proxy Family Relationships item bank. The red line is the 8-item short form and green line the 4-item short form.

These figures tell us where on the scales the instruments are most informative based upon the T-scores. The full item bank provides more information than the 8-item short form. The 8-item short form is more informative than the 4-item short form. The figures also tell us where on the scale the instruments are most informative based upon the T-score.

Figure 6 is a similar Test Information Function plot for the Pediatric Peer Relationships Item Bank. Again, multiple horizontal dashed lines indicate different levels of reliability. To convert the x-axis from theta to a T-score, use the formula $T\text{-score} = (\text{theta} \times 10) + 50$. Therefore, a theta of 0 equals a T-score of 50. Theta of -1 is a T-score of 40.

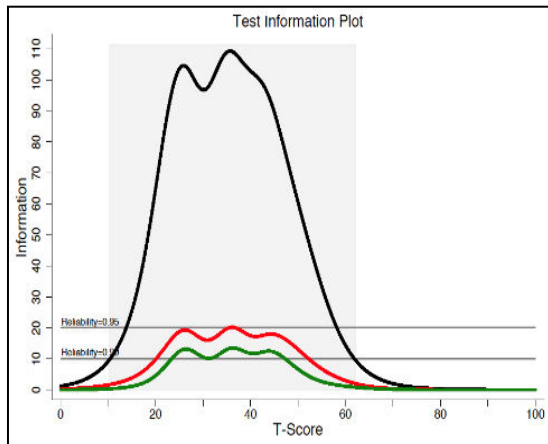


Figure 5: Parent Proxy Family Relationships

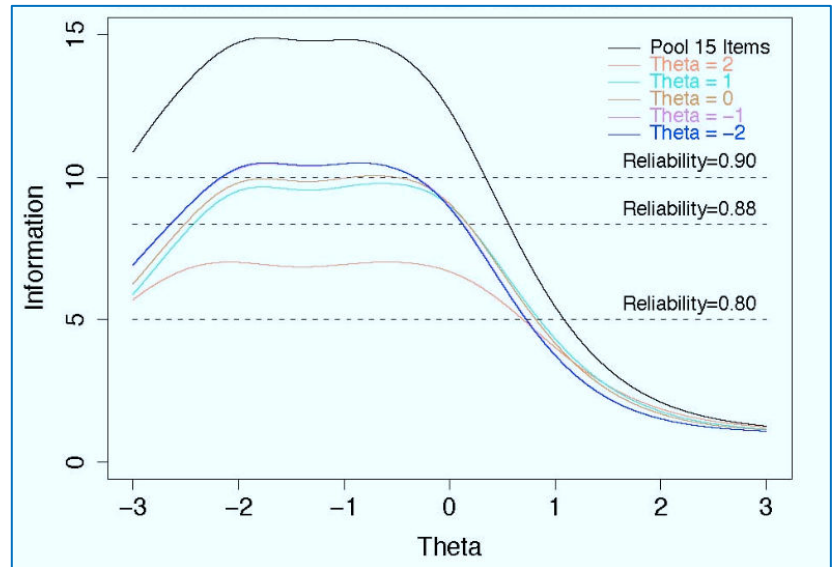


Figure 6

Figure 7 and Figure 8 are samples of the statistical information available for Pediatric and Parent Proxy Family Relationships CATs.

More information is available at HealthMeasures.net.

Scaling Model Used For Calibration		Graded Response Model (GRM)	
Total Number of Items		28	

Sample	N	Alpha Reliability
PROMIS Wave 1 Full Bank	782	0.98

Score Distributions									
	Mean	SD	P5	P10	P25	P50	P75	P90	P95
Raw	49.16	22.58	28.00	29.00	31.00	41.00	60.00	83.00	96.95
Scale	49.31	9.63	33.49	37.66	42.42	48.62	55.25	62.01	66.00

	Min	Max
Scale Score	10.0	0.0
SE	13.90	0.0
Reliability	.00	.75

Figure 7

Scaling Model Used For Calibration		Graded Response Model (GRM)	
Total Number of Items		28	

Sample	N	Alpha Reliability
PROMIS Wave 1 Full Bank	782	0.98

Score Distributions									
	Mean	SD	P5	P10	P25	P50	P75	P90	P95
Raw	49.16	22.58	28.00	29.00	31.00	41.00	60.00	83.00	96.95
Scale	49.31	9.63	33.49	37.66	42.42	48.62	55.25	62.01	66.00

	Min	Max
Scale Score	10.0	0.0
SE	13.90	0.0
Reliability	.00	.75

Figure 8

PREVIEW OF SAMPLE ITEM

Figure 9 is an excerpt from the paper version of the PROMIS Early Childhood Parent-Report Bank v1.0 – Social Relationships form.

In the past 7 days		Never	Rarely	Sometimes	Often	Always
FAM_FI_03_6_PXR1r_ec	Our family helped my child do his/her best.....	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
FAM_FB_0_50_PXR1r_ec	My child was loved by our family.....	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

Figure 9

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: Are these instruments available in other languages?

Yes! Look at the HealthMeasures website (<http://www.healthmeasures.net/explore-measurement-systems/promis/intro-to-promis/available-translations/117-available-translations>) for 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).