

# ADULT SOCIAL ISOLATION

## COMPUTERIZED ADAPTIVE TESTING (CAT)

A brief guide to the PROMIS Bank v2.0 – Social Isolation

### ABOUT SOCIAL ISOLATION

Quality of social support refers to functional aspects of supportive relationships, i.e., interpersonal relationships that serve particular functions. This includes the interactive process by which emotional, instrumental or informational support is obtained from one's social network. It also includes companionship, feeling cared for and valued as a person, communication with others, and feelings of belonging and trust. Measures of social support generally seek information about a person's perception of the availability or adequacy of resources provided by others. The social isolation CAT is generic rather than disease-specific.

The PROMIS Social Isolation item bank assesses perceptions of being avoided, excluded, detached, disconnected from, or unknown by, others. The item bank does not use a time frame (e.g. over the past seven days) when assessing social isolation.

### PREVIEW OF SAMPLE ITEMS

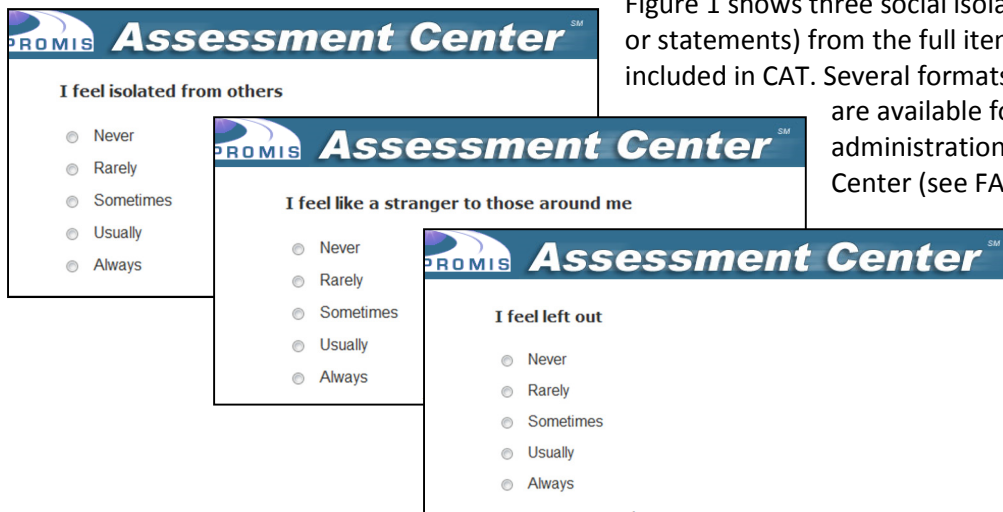


Figure 1 shows three social isolation items (i.e., questions or statements) from the full item bank that can be included in CAT. Several formats for presenting the items are available for computer-based administration through Assessment Center (see FAQ on page 3). CAT is not available for paper administration.

### SCORING THE INSTRUMENT

A minimum number of items (4) must be answered in order to receive a score for the social isolation CAT. The first item is selected because it provides the most information about the U.S. general population. The response to this item will guide the computer's choice of the next item for the participant. The participant's response to this 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, or the participant has answered the maximum number of questions (12), whichever occurs first.

After finishing CAT, the participant's pattern of responses is converted into a standardized T-score, with a mean of 50 based on the U.S. general population, and a standard deviation (SD) of 10. Thus, a person who

has a T-score of 40 is one SD below the U.S. mean. The standardized T-score is reported as the final score for each participant.

**Important:** A higher T-score always represents more of the concept being measured. For negatively-worded concepts like social isolation, a T-score of 60 is one SD worse than average. By comparison, a social isolation T-score of 40 is one SD better than average.

There is a numeric score associated with each response option. These scores can be found on the investigator versions of instrument PDFs and within Assessment Center. When entering items in a data collection application or when preparing to analyze data collected outside of Assessment Center, it is important to make sure you have reviewed item scoring as some items may need to be reverse coded. Note that items administered within Assessment Center have already been reverse coded if needed. The social isolation bank does not require reverse coding.

## STATISTICAL CHARACTERISTICS

Figure 2 is a sample of the statistical information available in Assessment Center. Two key features are:

1) **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 =  $1 - SE^2$ ).

2) **Standard Error (SE):** The possible range of the actual final score based upon the scaled T-score. 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).

Scaling Model Used For Calibration	Graded Response Model
Total Number of Items	14

Sample	N	Alpha Reliability
PROMIS Supplement Full-Bank	801	0.96

Score Distributions									
	Mean	SD	P5	P10	P25	P50	P75	P90	P95
Raw	28.09	11.85	14.00	14.00	18.00	26.00	36.00	44.00	51.00
Scale	47.87	9.53	31.71	31.71	41.23	48.07	54.24	59.59	63.98

										Min	Max
Scale Score	10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	31.7	80.2
SE	8.26	2.68	.78	.22	.16	.16	.16	.43	1.31		
Reliability	.00	.00	.39	.95	.98	.97	.97	.81	.00		

Figure 2

Note: SEs in Figure 2 are on the theta metric; multiply values by 10 to get SEs on the T-score metric

More information is available online via Assessment Center ([assessmentcenter.net](http://assessmentcenter.net)).

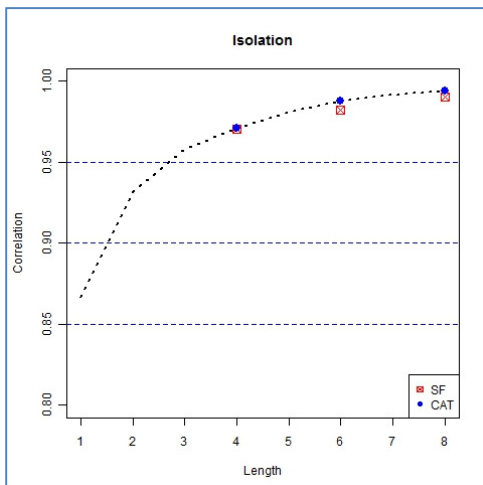


Figure 3

## COMPARING COMPUTERIZED ADAPTIVE TESTING TO SHORT FORMS

There are two administration options for assessing social isolation: short forms and CAT. With a short form, participants will be administered all of items within the instrument. With CAT, participant responses guide the computer's choice of subsequent items from the full item bank (14 items in total). Although items differ across respondents taking 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.

Figure 3 illustrates the correlations (strength of relationship) of the full bank with CAT and with short forms of varying length (4, 6 and 8 items). 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.

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 (social isolation) represented by all items in the item bank. When choosing between 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.

## **FREQUENTLY ASKED QUESTIONS**

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

The full version of this item bank is available on the PROMIS website through Assessment Center, which houses all PROMIS instruments for each domain.

Assessment Center is a free, online research management tool. It enables researchers to create study-specific data collection websites for capturing participant data securely. Studies can include measures within the Assessment Center library, as well as custom instruments created or entered by the researcher. PROMIS instruments (short forms, CAT, profiles) are a central feature of the instrument library within Assessment Center. Any PROMIS measure can be included in an online study or downloaded for non-adaptive administration on paper.

Detailed statistical information and development history about PROMIS items and instruments are available for review at [nihpromis.org](http://nihpromis.org) or [assessmentcenter.net](http://assessmentcenter.net). To learn more, contact [help@assessmentcenter.net](mailto:help@assessmentcenter.net).

### ***Q: Do I need to register with PROMIS to use this CAT?***

Yes, to gain access to this CAT, we ask that you register with Assessment Center and endorse the terms and conditions of use, so that we are better able to track who has accessed instruments for research. Assessment Center is available at [assessmentcenter.net](http://assessmentcenter.net).

### ***Q: Is this CAT available in other languages?***

This CAT is not currently available in other languages. The PROMIS group is working to translate this CAT into Spanish and other languages. Information on available translations is updated periodically at [nihpromis.org](http://nihpromis.org).