

## Background

**COS.** In the Child Outcomes Summary (COS) process, an early intervention (EI) or early childhood special education (ECSE) team uses a 7-point scale to summarize the child's level of functioning relative to age expectations in the three functional outcomes reported on by the Office of Special Education Programs (positive social emotional skills, acquisition and use of knowledge and skills).

**COS-CC.** Child Outcomes Summary Form Competency Check (COS-CC) is an online assessment designed to identify an individual's competence in the COS process. The COS-CC is composed of two levels:

- Level 1 is a screener that estimates *basic knowledge* of the COS process. The purpose is to identify individuals who do not have sufficient knowledge to take Level 2. Individuals retake Level 1 until they pass.
- Level 2 is an applied practice example that estimates *application of knowledge* about the COS process.

The current study examines the item functioning for two forms of the Level 1 screener.

## Contents of Level 1 Screener

Content	Format	Question Example
Determine appropriate Outcome	Multiple choice	Which one of the following is PRIMARILY associated with Outcome 1 (positive social relationships)? a. Makes cooing noises when an adult talks to him or her b. Drops a ball and watches it fall c. Begins to reach for toys placed on the tray of a high chair d. Brings hands to mouth
Functionality of Skills	Choose one: • Functional • Not functional	Identify the following skills as functional or not functional a. Gestures to request more
General COS information	True/False	COS ratings are subjective by design, and should differ depending on who is doing the rating.

## Research Question

Do the items on the COS-CC Level 1 screener have sufficient item functioning to screen for basic COS knowledge?

## Sample

Form A: 45 EI and ECSE providers from 7 states and 1 territory.

Form B: 47 EI and ECSE providers from 7 states.

This sample was a highly experienced group of providers:

- 60% had completed at least 50 COS ratings.
- More than 40% had more than 9 hours of training.

Number of COS forms completed	% of respondents	
	Form A	Form B
1-10	7%	6%
11-30	11%	19%
31-50	18%	13%
> 50	64%	62%

Hours of training	% of respondents	
	Form A	Form B
No training	2%	4%
Less than an hour to 2 hours of training	16%	19%
3 to 8 hours of training	31%	36%
9 to more than 15 hours	51%	41%

## Results

1. The items have sufficient reliability. Most items met the criteria for item fit defined as an infit mean square between .6 and 1.4.<sup>1</sup>

### Infit Mean Square (reliability) Form A

- Only one of the 44 items had an infit mean square above 1.4.
- For five items, every participant answered the item correctly and we could not estimate the fit.

### Infit Mean Square (reliability) Form B

- Only one of the 44 items had an infit mean square above 1.4.

2. The item density on the low end of the ability scale is sufficient to differentiate low and moderate ability.

### Form A item map shows that:

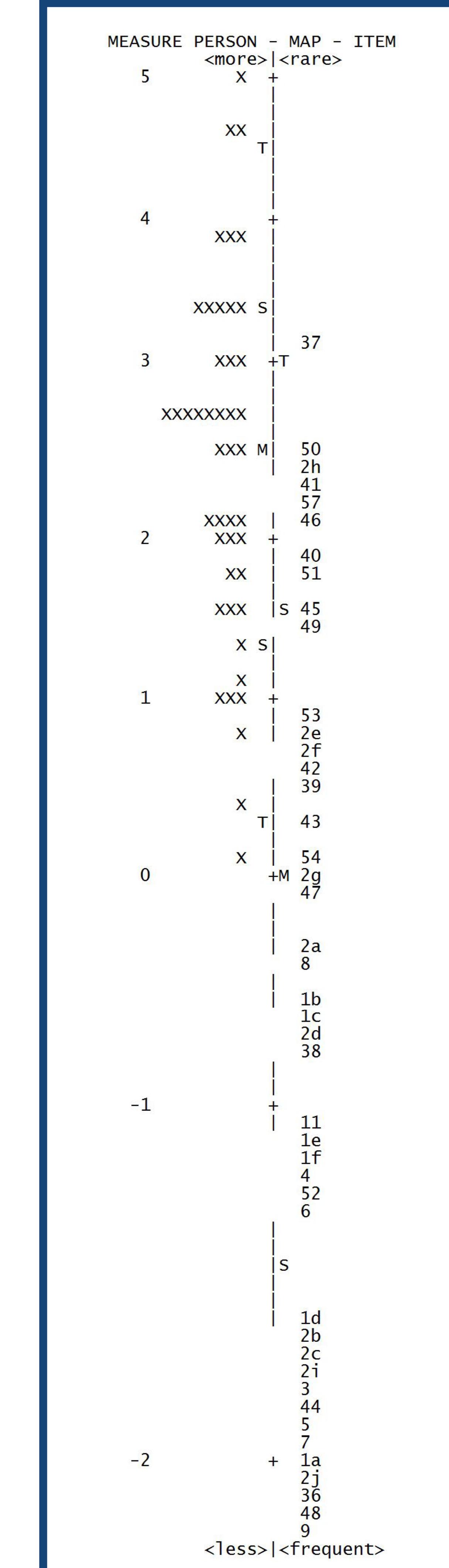
- The mean difficulty for the items is more than two standard deviations below the mean ability of the sample.
- There is only one item that measures ability above the mean of the sample.

### Form B item map shows that:

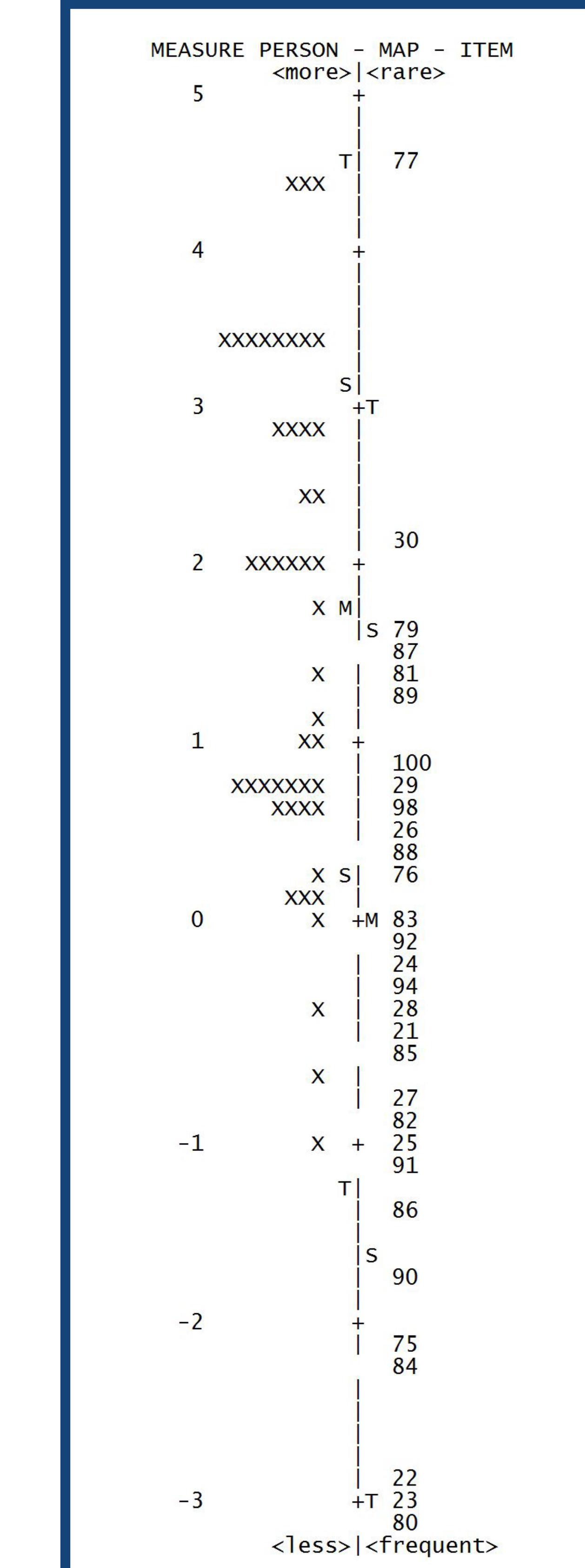
- The mean difficulty for items is more than one standard deviation below the mean person ability.
- There are only two items that measure ability above the mean person ability.

<sup>1</sup>J.-E. Gustafson (1980) Testing and obtaining fit of data to the Rasch model. *British Journal of mathematical and Statistical Psychology*, 33, p. 220.

Form A



Form B



### Key:

- X = 1 person
- M = mean
- S = 1 standard deviation
- T = 2 standard deviations
- Measure = Rasch scale values
- Person = daily estimate of the people in the sample
- Map = logit scale
- Item = difficulty of each item in the set

## Conclusions and Next Steps

The item set meets most of the assumptions of the Rasch model with the exception of two misfit items. The mean difficulty of the items for both forms was much lower than the person mean. This is a positive quality for a screening tool meant to screen out test takers with very little knowledge of the COS process.

We are currently conducting a linking for the forms in Level 1 and testing the reliability and validity of the Level 2 forms.