Getting on Track Early for School Success

Literacy Assessment Field Test Data Analysis: Evaluation Report

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Summary

Promoting the development of oral language among preschool children is foundational to our work at the University of Chicago. We are developing a coherent system of literacy instruction that begins in pre-K and reliably enables children of all social, ethnic, and linguistic backgrounds to attain high levels of reading comprehension and academic achievement by grade 3. At the core of this system are statistically reliable assessments that integrate research and practice and provide information to preschool teachers that is highly relevant to individual, group, and whole class instruction. Our approach is grounded in research demonstrating that focusing on early oral language development positively influences children's later proficiency in reading comprehension, writing and numerical reasoning (Dickinson, McCabe, Anastasopoulos, Peisner-Feinberg, Poe, 2003; Dickinson & Neuman, 2006; Dickinson & Tabors, 2001; Griffin, Hemphill, Camp and Wolf, 2004; Scarborough, 2001; Gunderson & Levine, 2011).

Recent preschool evaluations find that these oral language skills are not sufficiently emphasized in preschool instruction (Castro, Espinosa, & Paez, 2011). We seek to change this state of affairs by clarifying instructional goals for the development of critical early language and print related skills in preschool settings and providing teachers with frequent objective, accurate and valid assessments of these.

This paper reports on the Classical Item and Item-Response-Theoretic (IRT) analyses of the Pre-K Oral Language and Literacy Assessment field test data as of August 2013. The field test occurred between October and December 2012. The assessment was administered to 417 students ranging in age from 37 to 67 months. The racial and ethnic composition of the field test sample was: 59.6% African American; 20.8% White; 8% Hispanic; and 11.6% Other. The validation of the assessment included administration of the following gold-standard assessments of preschool literacy skills: the Woodcock-Johnson-III (WJ-III) and the Receptive One-Word Picture Vocabulary Test – 4 (ROWPVT-4).

Data analysis is scheduled to be complete by the winter of 2014. For more details on the Pre-K Literacy Assessment field test, please see "*Getting on Track Early for School Success*: Project Overview."

Classical Item Analysis – Literacy Field Test

As the first step in evaluating the operating characteristics of the literacy assessment instrument in the field-test sample of preschool aged children, we computed classical item and test statistics for most measures in the instrument. The results from this initial classical item analysis are included in Appendix A. They summarize information at the level of individual measures for all print-based and nearly all oral language measures in the instrument and classical statistics for the individual items in the instrument. For each measure, the results include the:

- number and type of items in the measure
- number of children who completed it
- estimate of the internal consistency of the items (alpha coefficient of reliability)
- average correlation among the items
- range of item p-values1
- age range and median age in months of the preschoolers at the time they completed the measure

It also presents classical statistics for the individual items in the instrument. For each item in each measure, it includes:

- the number of children who attempted the item (#tried)
- the number who answered the item correctly (#right)
- the percent or p-value of children who answered the item correctly (#right/ #tried)
- a logit transform of the item's p-value2
- point-biserial (Pearson) and biserial item-test correlations, which indicate the degree to which the responses to the item correlate with the sum of correct responses to the other items in the measure

The results from the classical analysis indicate that our measures of print-based literacy and oral language performed quite well in the field test sample of preschool children. Of the 278 multiple-choice and free-response items in the instrument, all but five items fell within the desired range of item difficulty (i.e., p-value $\geq$ $\geq$0.07 and $\leq$0.93). The difficulty level of the insdividual items within most measures varied widely, covering the range of proficiencies within our large sample of children. With few exceptions, each measure included some items that proved to be relatively difficult for the sample of preschool children. These results suggest that the difficulty range of our pool of items is well suited for measuring

the range and mix of proficiencies in the target population of low-income preschoolers as well as growth in the children's skills as they benefit from classroom instruction and attain higher levels of proficiency.

The responses to the individual items also displayed desirable Pearson item-test correlations. These correlations serve as an index of each item's power to discriminate among individuals at higher and lower levels of proficiency. Of the 278 multiple-choice and free-response items in the instrument, only nine items exhibited Pearson item-test correlations below 0.20, a cutoff commonly used in samples of this size to identify items potentially in need of revision (e.g., Schmeiser and Welch, 2006). Close to 90 percent of the items displayed relatively strong (0.30 to 0.49) to very strong (above 0.50) item-test correlations, with over 40 percent of items in the very strong range, indicating that the items are capable of discriminating among preschool children of varying levels of proficiency. With the exception of Story Comprehension, all measures yielded alpha coefficients above 0.80. Reliability estimates of this magnitude are generally considered to be good to excellent. They are unusually high for measures with 30 or fewer items, especially when obtained with samples of preschool-aged children, and speak favorably for the measures we have developed.

IRT (Item-Response-Theoretic) Analysis – Literacy Field Test

Preliminary results from fitting IRT models to the field-test data also reveal that the overwhelming majority of items in the literacy assessment instrument exhibit favorable measurement properties. To illustrate, the results from fitting a two-parameter IRT model to the item responses from three of the literacy measures in the instrument, Word Morphology, Rhyming, and Upper-Letter Identification, are displayed in Exhibits 1 through 3 in the form of item characteristic curves (ICCs). The ICC for each item describes in probabilistic terms what happens when children with varying levels of proficiency encounter the item on the assessment instrument. The ICC gives the probability of correct response to the item as a function of the characteristics of the item and a child's level of proficiency on the underlying construct, commonly referred to as θ (theta). The shape of each ICC and its placement along the proficiency scale depend on the estimates of the item's parameters (location and slope) obtained in the IRT analysis. The location (or difficulty) parameter of an item refers to the point along the proficiency where a child has a 0.5 probability of answering the item correctly. The slope parameter refers to the steepness of the ICC in the middle section of the curve. It measures how well the item discriminates between children with proficiencies above and below the item's location on the proficiency scale. Items with steeper curves have more discriminating power than items with flatter curves. Exhibit 4 displays typical ICCs found in

practice with the two-parameter model. The dashed lines in the exhibit show that items 1 and 3 have a difficulty level of -1.0 on the theta scale, while Item 2 has a difficulty level of 0.0 on the scale. Item 2 displays a rather high discrimination of 2.0, Item 3 an average discrimination of 1.0, and Item 1, a lower than average discrimination of 0.5.

Examining Exhibits 1 through 3, we see that the Word Morphology items, which cover a broad range of word structures, vary widely in their difficulty levels ranging in value from -1.77 to 2.88 on the theta scale. As expected, the Rhyming items, which focus on a specific skill, display considerably less variation in their item difficulties. The same holds true for the Upper-Case Letter Identification items. The slopes for most items in these measures fall within the average to high range. As expected, the slopes for the Word Morphology items tend to be a bit lower than the slopes for items in the other two measures, which focus on specific skills. With the exception of the slope for item WMA11, the items as a whole exhibit desirable measurement properties suitable for developing booklets adapted to the proficiency levels of individual children in a pre-school classroom.

Exhibit 1: ICCs for Word Morphology – Form A

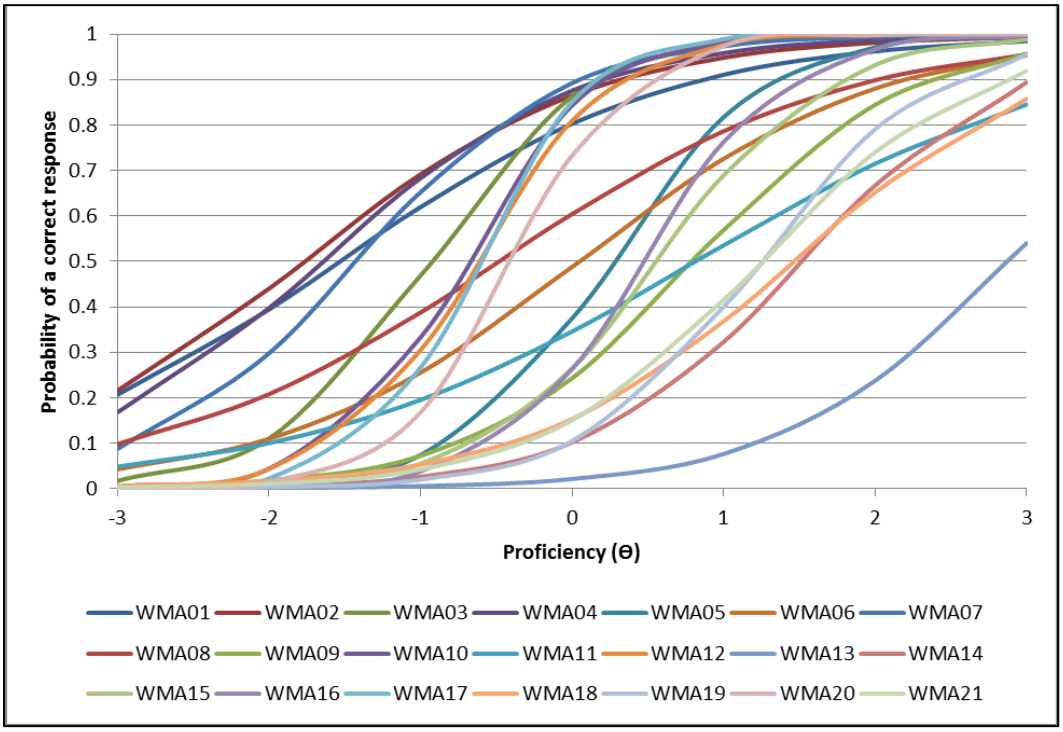


Exhibit 2: ICCs for Rhyming Form A

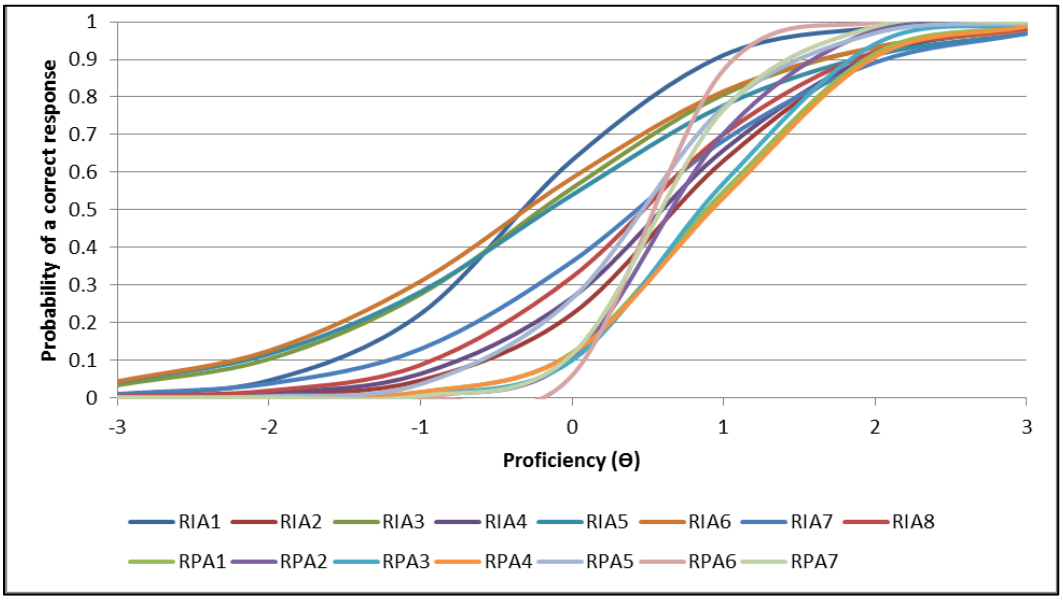


Exhibit 3: ICCs for Upper-Case Letter Identification

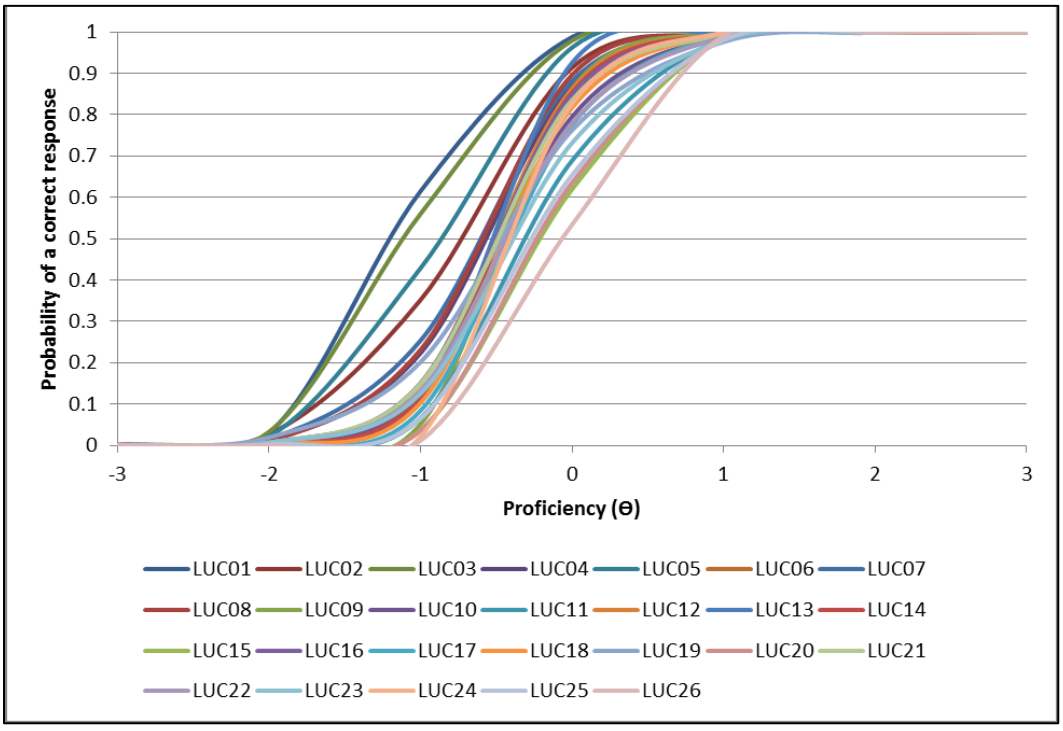
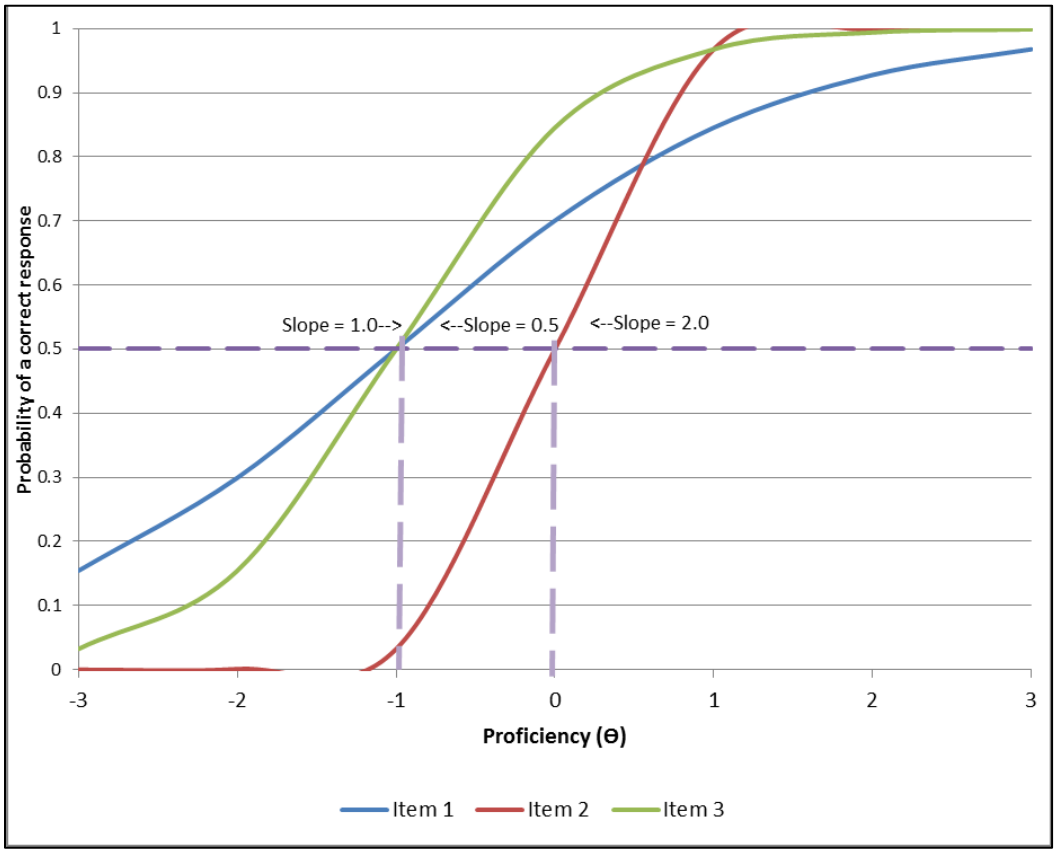


Exhibit 4: Typical Item Characteristic Curves for a Two-Parameter IRT Model



To examine the feasibility of using the age of a child as a proxy for proficiency in the selection of items for the baseline booklets for each child, we fit a logistic model to the responses to each individual item in the Word Morphology, Rhyming, and Upper-Letter Identification measures of the assessment instrument. Age in months at the time of testing served as the predictor variable in each of these analyses, with the item responses, scored as right and wrong, as the dependent variable. From the parameter estimates obtained in these analyses, we generated the curves displayed in Exhibits 5 through 7. The curves show the probability of a correct response to each item in a measure as a function of a child's age in months. Although the relationship between age in months and the probability of a correct response was statistically significant for most of the items examined here, the values of the slope parameters tended to be low, especially in the case of Word Morphology. The results of these analyses suggest that age in months, especially in the case of Word Morphology, provides only a limited amount of information on how a given child will respond to any particular item in these measures. Nonetheless, the results demonstrate that older children tend to have more developed skills in these areas than their younger counterparts.

Exhibit 5: Probability of a Correct Response to Each Word Morphology Item as a Function of Age

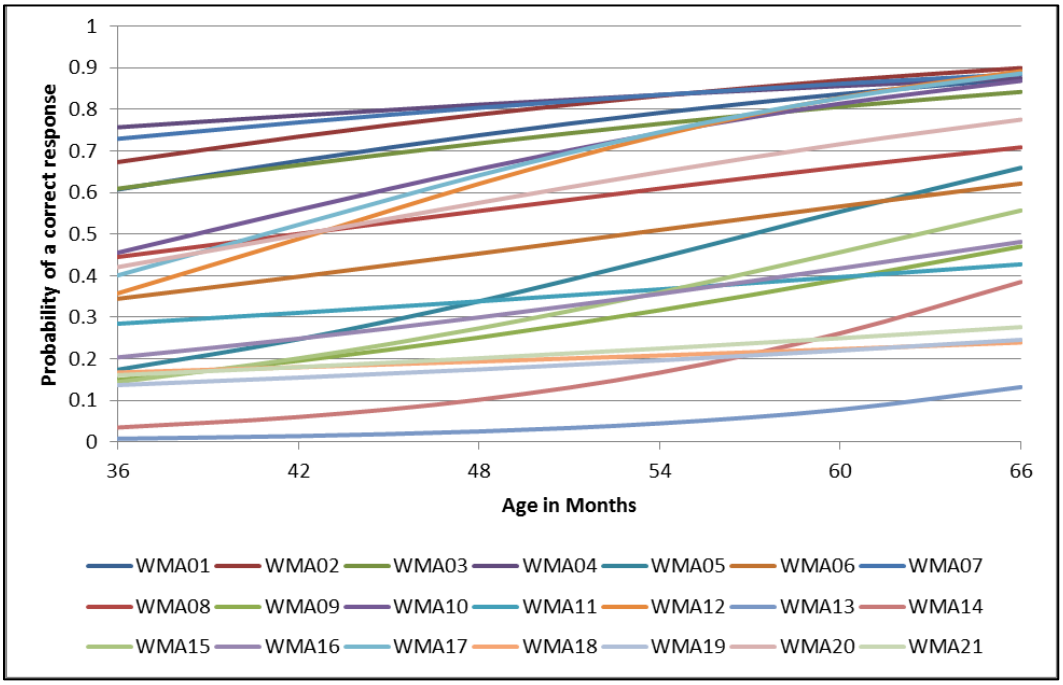


Exhibit 6: Probability of a Correct Response to Each Rhyming Item as a Function of Age

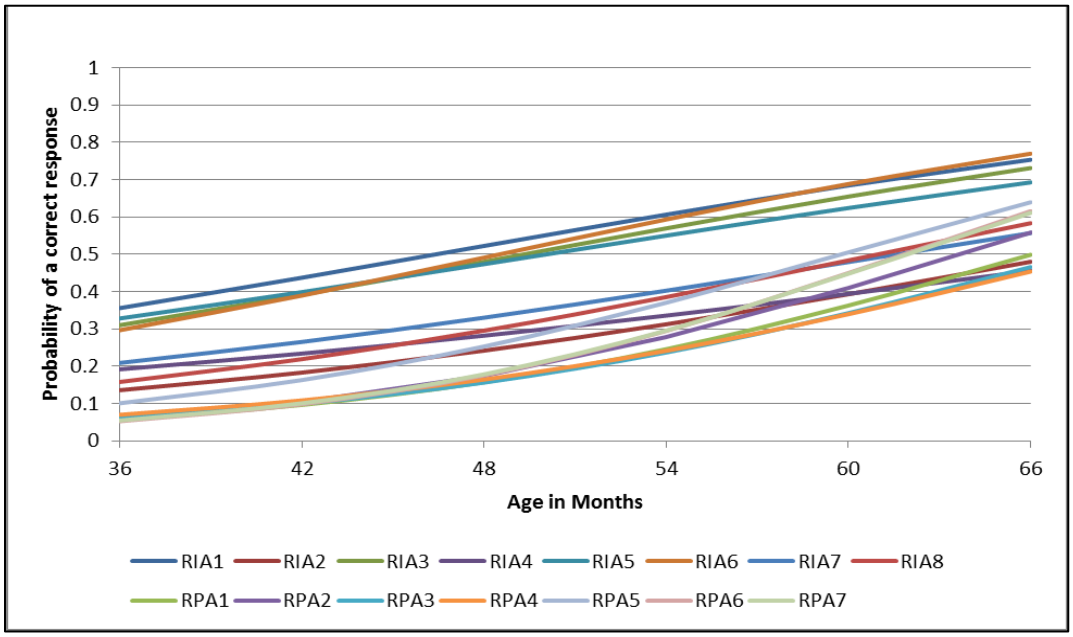
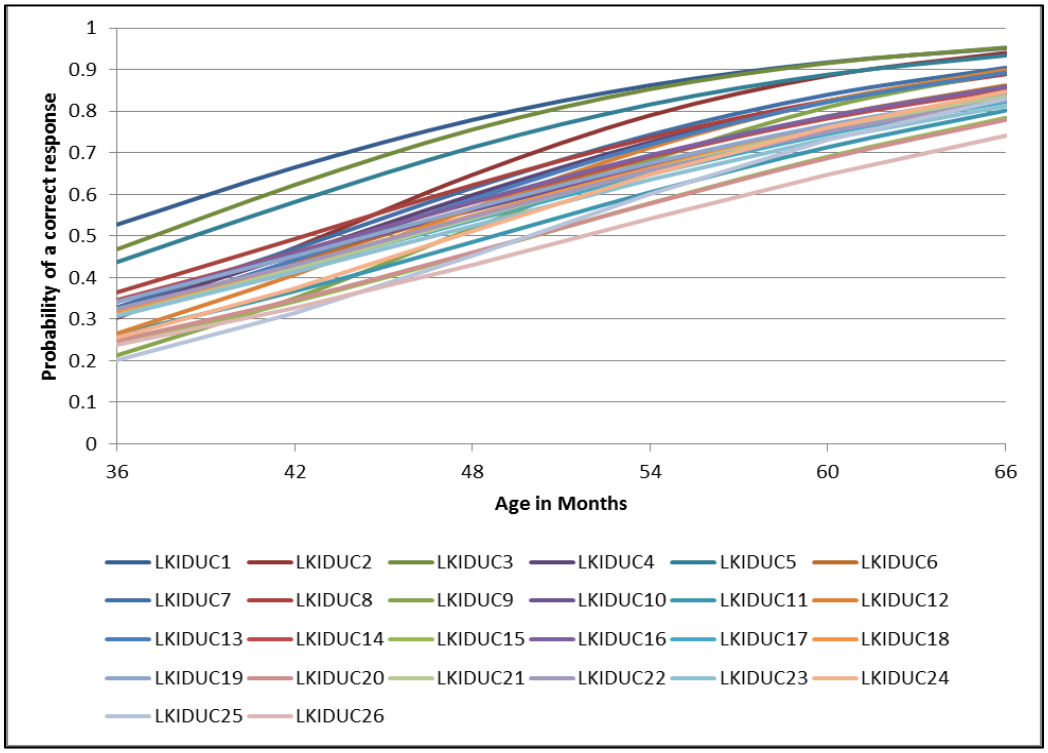
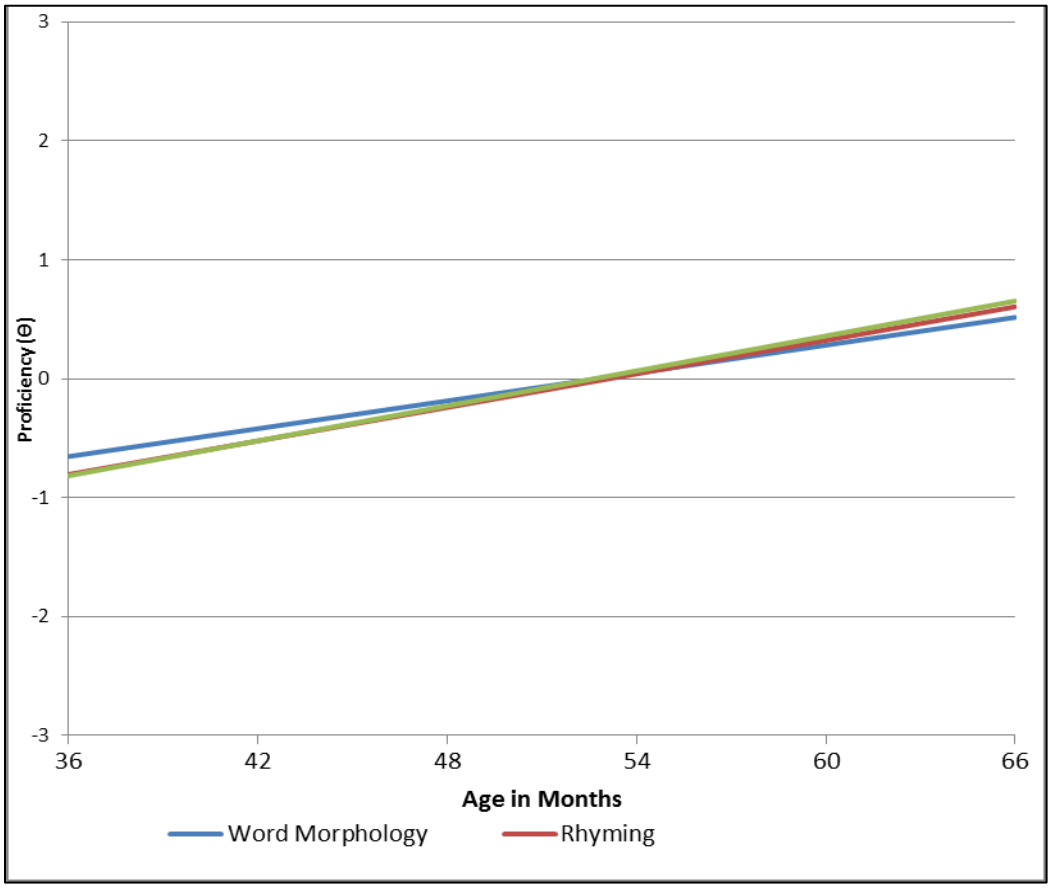


Exhibit 7: Probability of a Correct Response to Each Upper-Case Letter Identification Item as a Function of Age



We also examined the linear relationship between the estimates of proficiency obtained in the IRT analysis and the age of the children at the time of testing. Exhibit 8 shows the results from this regression analysis. It reveals that age in months at the time of testing displays a weak, but positive linear relationship with proficiency, accounting for about 10 percent of the variance in the proficiency scores on each measure. In interpreting these results, it is important to note that the proficiency scores, as well as the underlying distributions, for Rhyming and Upper-Case Letter Identification are not normally distributed. The rhyming scores displayed bimodality, suggesting that the ability to rhyme may be an all or none phenomenon. Inspection of the proficiency scores for Upper-Case letter Identification, on the other hand, revealed that nearly 30 percent of the children in the field-test sample were able to correctly identify all 26 upper-case letters.

Exhibit 8: Proficiency as a Function of Age for Three Measures in the Assessment Instrument



In addition, we looked at the correlations among the proficiency scores on the three measures. They are presented in Exhibit 9. Again, it is important to consider that the proficiency scores for Rhyming and Upper-Case Letter Identification are not normally distributed.

Exhibit 9: Correlations Among the Proficiency Scores

Measure	Word Morphology	Rhyming	Upper-case Letter Identification
Word Morphology	1.0	-	-
Rhyming	0.36	1.0	-
Upper-Case Letter Identification	0.36	0.40	1.0

The IRT analyses presented above represent three of the seven literacy domains.

For Further Information

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Related Papers

1. "Getting on Track Early for School Success: Project Overview." (November 2013). Getting on Track Early for School Success: www.norc.org/gettingontrack

2. "Research and Practice in the Field of Early Literacy Learning." (November 2013). Getting on Track Early for School Success: www.norc.org/gettingontrack

3. "Research and Practice in the Field of Early Mathematics Learning." (November 2013). Getting on Track Early for School Success: www.norc.org/gettingontrack

4. "From the Classroom to the Lab and Back: Instructional Strategies to Improve Children's Early Math Skills." (November 2013). Getting on Track Early for School Success: www.norc.org/gettingontrack

Appendix A: Pre-K Literacy Classical Item Analysis

Item Statistics for Concepts about Print

ITEM	NAME	#TRIED	#RIGHT	PCT	LOGIT/1.7	ITEM*TEST CORRELATION PEARSON	BISERIAL
1	CAP01	403.0	274.0	68.0	-0.44	0.338	0.441
2	CAP02	403.0	285.0	70.7	-0.52	0.450	0.596
3	CAP03	403.0	267.0	66.3	-0.40	0.395	0.512
4	CAP04	403.0	164.0	40.7	0.22	0.397	0.503
5	CAP05	403.0	246.0	61.0	-0.26	0.542	0.689
6	CAP06	403.0	173.0	42.9	0.17	0.577	0.727
7	CAP07	403.0	160.0	39.7	0.25	0.665	0.843
8	CAP08	403.0	171.0	42.4	0.18	0.645	0.814
9	CAP09	403.0	197.0	48.9	0.03	0.622	0.780
10	CAP10	403.0	176.0	43.7	0.15	0.646	0.813
11	CAP11	403.0	163.0	40.4	0.23	0.671	0.850
12	CAP12	403.0	225.0	55.8	-0.14	0.512	0.645
13	CAP13	403.0	197.0	48.9	0.03	0.515	0.645
14	CAP14	403.0	114.0	28.3	0.55	0.451	0.601
15	CAP15	403.0	178.0	44.2	0.14	0.475	0.598

Item Statistics for Receptive and Expressive Rhyming – Form A

ITEM	NAME	#TRIED	#RIGHT	PCT	LOGIT/1.7	ITEM*TEST CORRELATION PEARSON	BISERIAL
1	RIA1	401.0	231.0	57.6	-0.18	0.523	0.660
2	RIA2	401.0	122.0	30.4	0.49	0.607	0.798
3	RIA3	401.0	218.0	54.4	-0.10	0.445	0.559
4	RIA4	401.0	133.0	33.2	0.41	0.577	0.748
5	RIA5	401.0	210.0	52.4	-0.06	0.404	0.507
6	RIA6	401.0	226.0	56.4	-0.15	0.410	0.516
7	RIA7	401.0	157.0	39.2	0.26	0.496	0.631
8	RIA8	401.0	148.0	36.9	0.32	0.565	0.723
9	RPA1	401.0	96.0	23.9	0.68	0.608	0.836
10	RPA2	401.0	108.0	26.9	0.59	0.706	0.948
11	RPA3	401.0	95.0	23.7	0.69	0.637	0.878
12	RPA4	401.0	94.0	23.4	0.70	0.597	0.824
13	RPA5	401.0	141.0	35.2	0.36	0.626	0.806
14	RPA6	401.0	115.0	28.7	0.54	0.793	1.053
15	RPA7	401.0	115.0	28.7	0.54	0.728	0.967

Item Statistics for Receptive and Expressive Rhyming – Form B

ITEM	NAME	#TRIED	#RIGHT	PCT	LOGIT/1.7	ITEM*TEST CORRELATION PEARSON	ITEM*TEST CORRELATION BISERIAL
1	RIB1	399.0	197.0	49.4	0.01	0.450	0.564
2	RIB2	399.0	166.0	41.6	0.20	0.529	0.668
3	RIB3	399.0	180.0	45.1	0.12	0.420	0.528
4	RIB4	399.0	149.0	37.3	0.30	0.579	0.739
5	RIB5	399.0	106.0	26.6	0.60	0.502	0.677
6	RIB6	399.0	158.0	39.6	0.25	0.487	0.618
7	RIB7	399.0	127.0	31.8	0.45	0.527	0.688
8	RIB8	399.0	180.0	45.1	0.12	0.483	0.607
9	RPB1	399.0	128.0	32.1	0.44	0.653	0.851
10	RPB2	399.0	122.0	30.6	0.48	0.736	0.967
11	RPB3	399.0	151.0	37.8	0.29	0.733	0.934
12	RPB4	399.0	133.0	33.3	0.41	0.761	0.986
13	RPB5	399.0	105.0	26.3	0.61	0.720	0.971
14	RPB6	399.0	88.0	22.1	0.74	0.699	0.978
15	RPB7	399.0	118.0	29.6	0.51	0.690	0.912

Item Statistics for the Uppercase Letter Identification

ITEM	NAME	#TRIED	#RIGHT	PCT	LOGIT/1.7	ITEM*TEST CORRELATION PEARSON	ITEM*TEST CORRELATION BISERIAL
1	LUC01	398.0	331.0	83.2	-0.94	0.655	0.975
2	LUC02	398.0	295.0	74.1	-0.62	0.708	0.958
3	LUC03	398.0	325.0	81.7	-0.88	0.672	0.980
4	LUC04	398.0	275.0	69.1	-0.47	0.757	0.993
5	LUC05	398.0	310.0	77.9	-0.74	0.713	0.997
6	LUC06	398.0	262.0	65.8	-0.39	0.814	1.051
7	LUC07	398.0	280.0	70.4	-0.51	0.748	0.988
8	LUC08	398.0	280.0	70.4	-0.51	0.767	1.013
9	LUC09	398.0	253.0	63.6	-0.33	0.849	1.088
10	LUC10	398.0	253.0	63.6	-0.33	0.787	1.009
11	LUC11	398.0	232.0	58.3	-0.20	0.775	0.979
12	LUC12	398.0	266.0	66.8	-0.41	0.790	1.025
13	LUC13	398.0	272.0	68.3	-0.45	0.834	1.089
14	LUC14	398.0	261.0	65.6	-0.38	0.807	1.041
15	LUC15	398.0	220.0	55.3	-0.12	0.779	0.979
16	LUC16	398.0	264.0	66.3	-0.40	0.793	1.027
17	LUC17	398.0	246.0	61.8	-0.28	0.795	1.013
18	LUC18	398.0	254.0	63.8	-0.33	0.808	1.036
19	LUC19	398.0	256.0	64.3	-0.35	0.711	0.914
20	LUC20	398.0	222.0	55.8	-0.14	0.791	0.995
21	LUC21	398.0	262.0	65.8	-0.39	0.787	1.017
22	LUC22	398.0	252.0	63.3	-0.32	0.764	0.978
23	LUC23	398.0	244.0	61.3	-0.27	0.747	0.950
24	LUC24	398.0	242.0	60.8	-0.26	0.861	1.094
25	LUC25	398.0	227.0	57.0	-0.17	0.764	0.964
26	LUC26	398.0	208.0	52.3	-0.05	0.791	0.992

Item Statistics for Lowercase Letter Identification

ITEM	NAME	#TRIED	#RIGHT	PCT	LOGIT/1.7	ITEM*TEST CORRELATION PEARSON	BISERIAL
1	LLC01	398.0	280.0	70.4	-0.51	0.726	0.959
2	LLC02	398.0	289.0	72.6	-0.57	0.670	0.897
3	LLC03	398.0	315.0	79.1	-0.78	0.594	0.840
4	LLC04	398.0	261.0	65.6	-0.38	0.753	0.971
5	LLC05	398.0	213.0	53.5	-0.08	0.613	0.770
6	LLC06	398.0	248.0	62.3	-0.30	0.793	1.011
7	LLC07	398.0	253.0	63.6	-0.33	0.762	0.976
8	LLC08	398.0	254.0	63.8	-0.33	0.762	0.977
9	LLC09	398.0	225.0	56.5	-0.15	0.801	1.008
10	LLC10	398.0	217.0	54.5	-0.11	0.716	0.900
11	LLC11	398.0	223.0	56.0	-0.14	0.734	0.924
12	LLC12	398.0	136.0	34.2	0.39	0.577	0.746
13	LLC13	398.0	249.0	62.6	-0.30	0.755	0.964
14	LLC14	398.0	171.0	43.0	0.17	0.634	0.799
15	LLC15	398.0	225.0	56.5	-0.15	0.752	0.947
16	LLC16	398.0	235.0	59.0	-0.22	0.728	0.921
17	LLC17	398.0	237.0	59.5	-0.23	0.776	0.982
18	LLC18	398.0	189.0	47.5	0.06	0.696	0.874
19	LLC19	398.0	257.0	64.6	-0.35	0.730	0.939
20	LLC20	398.0	170.0	42.7	0.17	0.742	0.936
21	LLC21	398.0	120.0	30.2	0.49	0.517	0.681
22	LLC22	398.0	227.0	57.0	-0.17	0.757	0.954
23	LLC23	398.0	24.0	6.0	1.62	0.188	0.373
24	LLC24	398.0	185.0	46.5	0.08	0.770	0.966
25	LLC25	398.0	194.0	48.7	0.03	0.719	0.901
26	LLC26	398.0	192.0	48.2	0.04	0.788	0.988
27	LLC27	398.0	154.0	38.7	0.27	0.601	0.764
28	LLC28	398.0	62.0	15.6	0.99	0.433	0.657

Item Statistics for Letter-Sound Correspondence

ITEM	NAME	#TRIED	#RIGHT	PCT	LOGIT/1.7	ITEM*TEST CORRELATION PEARSON	BISERIAL
1	LSND01	398.0	151.0	37.9	0.29	0.530	0.676
2	LSND02	398.0	252.0	63.3	-0.32	0.631	0.808
3	LSND03	398.0	214.0	53.8	-0.09	0.693	0.870
4	LSND04	398.0	176.0	44.2	0.14	0.692	0.870
5	LSND05	398.0	120.0	30.2	0.49	0.621	0.818
6	LSND06	398.0	23.0	5.8	1.64	0.206	0.415
7	LSND07	398.0	259.0	65.1	-0.37	0.612	0.788
8	LSND08	398.0	190.0	47.7	0.05	0.690	0.866
9	LSND09	398.0	237.0	59.5	-0.23	0.691	0.876
10	LSND10	398.0	136.0	34.2	0.39	0.596	0.770
11	LSND11	398.0	127.0	31.9	0.45	0.578	0.754
12	LSND12	398.0	167.0	42.0	0.19	0.734	0.927

Item Statistics for Listening Comprehension – Form A

ITEM	NAME	#TRIED	#RIGHT	PCT	LOGIT/1.7	ITEM*TEST CORRELATION PEARSON	BISERIAL
1	LCA01	401.0	352.0	87.8	-1.16	0.314	0.507
2	LCA02	401.0	269.0	67.1	-0.42	0.297	0.386
3	LCA03	401.0	337.0	84.0	-0.98	0.407	0.614
4	LCA04	401.0	329.0	82.0	-0.89	0.444	0.650
5	LCA05	401.0	300.0	74.8	-0.64	0.440	0.599
6	LCA06	401.0	337.0	84.0	-0.98	0.477	0.719
7	LCA07	401.0	254.0	63.3	-0.32	0.374	0.478
8	LCA08	401.0	322.0	80.3	-0.83	0.327	0.469
9	LCA09	401.0	257.0	64.1	-0.34	0.434	0.557
10	LCA10	401.0	122.0	30.4	0.49	0.213	0.280
11	LCA11	401.0	177.0	44.1	0.14	0.088	0.111
12	LCA12	401.0	209.0	52.1	-0.05	0.370	0.463
13	LCA13	401.0	311.0	77.6	-0.73	0.593	0.827
14	LCA14	401.0	170.0	42.4	0.18	0.267	0.337
15	LCA15	401.0	295.0	73.6	-0.60	0.377	0.508
16	LCA16	401.0	252.0	62.8	-0.31	0.389	0.498
17	LCA17	401.0	125.0	31.2	0.47	0.229	0.300
18	LCA18	401.0	192.0	47.9	0.05	0.302	0.379
19	LCA19	401.0	332.0	82.8	-0.92	0.501	0.741
20	LCA20	401.0	257.0	64.1	-0.34	0.340	0.436
21	LCA21	401.0	307.0	76.6	-0.70	0.433	0.598
22	LCA22	401.0	322.0	80.3	-0.83	0.461	0.661
23	LCA23	401.0	316.0	78.8	-0.77	0.320	0.451
24	LCA24	401.0	267.0	66.6	-0.41	0.405	0.524
25	LCA25	401.0	225.0	56.1	-0.14	0.310	0.391
26	LCA26	401.0	317.0	79.1	-0.78	0.476	0.673
27	LCA27	401.0	102.0	25.4	0.63	0.194	0.263
28	LCA28	401.0	329.0	82.0	-0.89	0.436	0.639
29	LCA29	401.0	329.0	82.0	-0.89	0.448	0.656
30	LCA30	401.0	327.0	81.5	-0.87	0.199	0.289

Item Statistics for Listening Comprehension – Form B

ITEM	NAME	#TRIED	#RIGHT	PCT	LOGIT/1.7	ITEM*TEST CORRELATION PEARSON	ITEM*TEST CORRELATION BISERIAL
1	LCB01	397.0	333.0	83.9	-0.97	0.279	0.420
2	LCB02	397.0	151.0	38.0	0.29	0.324	0.413
3	LCB03	397.0	326.0	82.1	-0.90	0.391	0.573
4	LCB04	397.0	302.0	76.1	-0.68	0.509	0.699
5	LCB05	397.0	277.0	69.8	-0.49	0.443	0.583
6	LCB06	397.0	305.0	76.8	-0.71	0.527	0.729
7	LCB07	397.0	248.0	62.5	-0.30	0.414	0.529
8	LCB08	397.0	315.0	79.3	-0.79	0.456	0.647
9	LCB09	397.0	286.0	72.0	-0.56	0.414	0.552
10	LCB10	397.0	164.0	41.3	0.21	0.252	0.318
11	LCB11	397.0	145.0	36.5	0.33	0.074	0.095
12	LCB12	397.0	236.0	59.4	-0.22	0.350	0.443
13	LCB13	397.0	309.0	77.8	-0.74	0.410	0.573
14	LCB14	397.0	181.0	45.6	0.10	0.283	0.355
15	LCB15	397.0	284.0	71.5	-0.54	0.459	0.610
16	LCB16	397.0	291.0	73.3	-0.59	0.233	0.314
17	LCB17	397.0	127.0	32.0	0.44	0.284	0.371
18	LCB18	397.0	237.0	59.7	-0.23	0.203	0.257
19	LCB19	397.0	302.0	76.1	-0.68	0.526	0.723
20	LCB20	397.0	280.0	70.5	-0.51	0.463	0.612
21	LCB21	397.0	298.0	75.1	-0.65	0.430	0.586
22	LCB22	397.0	329.0	82.9	-0.93	0.464	0.687
23	LCB23	397.0	331.0	83.4	-0.95	0.389	0.581
24	LCB24	397.0	288.0	72.5	-0.57	0.480	0.642
25	LCB25	397.0	267.0	67.3	-0.42	0.386	0.502
26	LCB26	397.0	329.0	82.9	-0.93	0.471	0.698
27	LCB27	397.0	159.0	40.1	0.24	0.284	0.360
28	LCB28	397.0	305.0	76.8	-0.71	0.407	0.564
29	LCB29	397.0	335.0	84.4	-0.99	0.418	0.634
30	LCB30	397.0	247.0	62.2	-0.29	0.337	0.430

Item Statistics for Story Comprehension – Form A

ITEM	NAME	#TRIED	#RIGHT	PCT	LOGIT/1.7	ITEM*TEST CORRELATION PEARSON	ITEM*TEST CORRELATION BISERIAL
1	SCA1	386.0	227.0	58.8	-0.21	0.297	0.375
2	SCA2	386.0	198.0	51.3	-0.03	0.417	0.523
3	SCA3	386.0	53.0	13.7	1.08	0.336	0.527
4	SCA4	386.0	185.0	47.9	0.05	0.341	0.427
5	SCA5	386.0	171.0	44.3	0.13	0.358	0.450
6	SCA6	386.0	197.0	51.0	-0.02	0.500	0.627
7	SCA7	386.0	212.0	54.9	-0.12	0.387	0.486
8	SCA8	386.0	77.0	19.9	0.82	0.259	0.371

Item Statistics for Story Comprehension – Form B

ITEM	NAME	#TRIED	#RIGHT	PCT	LOGIT/1.7	ITEM*TEST CORRELATION PEARSON	ITEM*TEST CORRELATION BISERIAL
1	SCB1	390.0	332.0	85.1	-1.03	0.288	0.442
2	SCB2	390.0	212.0	54.4	-0.10	0.539	0.678
3	SCB3	390.0	259.0	66.4	-0.40	0.565	0.732
4	SCB4	390.0	215.0	55.1	-0.12	0.370	0.465
5	SCB5	390.0	240.0	61.5	-0.28	0.501	0.638
6	SCB6	390.0	78.0	20.0	0.82	0.230	0.329
7	SCB7	390.0	4.0	1.0	2.69	0.053	0.188
8	SCB8	390.0	221.0	56.7	-0.16	0.418	0.526

Item Statistics for Wordless Book Comprehension – Form A

ITEM	NAME	#TRIED	#RIGHT	PCT	LOGIT/1.7	ITEM*TEST CORRELATION PEARSON	ITEM*TEST CORRELATION BISERIAL
1	WPA1	390.0	146.0	37.4	0.30	0.354	0.453
2	WPA2	390.0	86.0	22.1	0.74	0.209	0.293
3	WPA3	390.0	331.0	84.9	-1.01	0.322	0.491
4	WPA4	390.0	229.0	58.7	-0.21	0.439	0.555
5	WPA5	390.0	243.0	62.3	-0.30	0.526	0.671
6	WPA6	390.0	275.0	70.5	-0.51	0.635	0.840
7	WPA7	390.0	245.0	62.8	-0.31	0.545	0.696
8	WPA8	390.0	277.0	71.0	-0.53	0.619	0.821
9	WPA9	390.0	167.0	42.8	0.17	0.428	0.540

Item Statistics for Wordless Book Comprehension – Form B

ITEM	NAME	#TRIED	#RIGHT	PCT	LOGIT/1.7	ITEM*TEST CORRELATION PEARSON	ITEM*TEST CORRELATION BISERIAL
1	WPB1	379.0	190.0	50.1	0.00	0.437	0.548
2	WPB2	379.0	73.0	19.3	0.84	0.156	0.225
3	WPB3	379.0	181.0	47.8	0.05	0.247	0.310
4	WPB4	379.0	240.0	63.3	-0.32	0.444	0.568
5	WPB5	379.0	231.0	60.9	-0.26	0.519	0.660
6	WPB6	379.0	266.0	70.2	-0.50	0.614	0.810
7	WPB7	379.0	228.0	60.2	-0.24	0.531	0.674
8	WPB8	379.0	273.0	72.0	-0.56	0.652	0.869
9	WPB9	379.0	176.0	46.4	0.08	0.385	0.483

Item Statistics for Vocabulary and Concepts – Form A

						ITEM*TEST CORRELATION	
ITEM	NAME	#TRIED	#RIGHT	PCT	LOGIT/1.7	PEARSON	BISERIAL
1	VMA01	389.0	275.0	70.7	-0.52	0.452	0.599
2	VMA02	389.0	297.0	76.3	-0.69	0.510	0.703
3	VMA03	389.0	234.0	60.2	-0.24	0.384	0.488
4	VMA04	389.0	311.0	79.9	-0.81	0.479	0.684
5	VMA05	389.0	316.0	81.2	-0.86	0.475	0.689
6	VMA06	389.0	229.0	58.9	-0.21	0.465	0.588
7	VMA07	389.0	237.0	60.9	-0.26	0.379	0.482
8	VMA08	389.0	310.0	79.7	-0.80	0.383	0.546
9	VMA09	389.0	252.0	64.8	-0.36	0.399	0.513
10	VMA10	389.0	293.0	75.3	-0.66	0.459	0.627
11	VCA1	389.0	306.0	78.7	-0.77	0.516	0.727
12	VCA2	389.0	268.0	68.9	-0.47	0.393	0.515
13	VCA3	389.0	263.0	67.6	-0.43	0.396	0.516
14	VCA4	389.0	105.0	27.0	0.59	0.331	0.445
15	VCA5	389.0	68.0	17.5	0.91	0.257	0.378
16	VCA6	389.0	200.0	51.4	-0.03	0.427	0.535

Item Statistics for Vocabulary and Concepts – Form B

						ITEM*TEST CORRELATION	
ITEM	NAME	#TRIED	#RIGHT	PCT	LOGIT/1.7	PEARSON	BISERIAL
1	VMB01	391.0	228.0	58.3	-0.20	0.411	0.520
2	VMB02	391.0	294.0	75.2	-0.65	0.471	0.642
3	VMB03	391.0	263.0	67.3	-0.42	0.393	0.511
4	VMB04	391.0	357.0	91.3	-1.38	0.459	0.816
5	VMB05	391.0	264.0	67.5	-0.43	0.461	0.600
6	VMB06	391.0	320.0	81.8	-0.89	0.508	0.742
7	VMB07	391.0	310.0	79.3	-0.79	0.361	0.511
8	VMB08	391.0	195.0	49.9	0.00	0.201	0.252
9	VMB09	391.0	293.0	74.9	-0.64	0.389	0.529
10	VMB10	391.0	333.0	85.2	-1.03	0.501	0.769
11	VCB1	391.0	199.0	50.9	-0.02	0.397	0.498
12	VCB2	391.0	272.0	69.6	-0.49	0.444	0.583
13	VCB3	391.0	332.0	84.9	-1.02	0.322	0.492
14	VCB4	391.0	237.0	60.6	-0.25	0.514	0.653
15	VCB5	391.0	238.0	60.9	-0.26	0.449	0.571

Item Statistics for Word Morphology – Form A

ITEM	NAME	#TRIED	#RIGHT	PCT	LOGIT/1.7	ITEM*TEST CORRELATION PEARSON	ITEM*TEST CORRELATION BISERIAL
1	WMA01	403.0	307.0	76.2	-0.68	0.331	0.455
2	WMA02	403.0	329.0	81.6	-0.88	0.365	0.533
3	WMA03	403.0	303.0	75.2	-0.65	0.502	0.686
4	WMA04	403.0	331.0	82.1	-0.90	0.393	0.577
5	WMA05	403.0	169.0	41.9	0.19	0.565	0.713
6	WMA06	403.0	196.0	48.6	0.03	0.396	0.497
7	WMA07	403.0	330.0	81.9	-0.89	0.459	0.672
8	WMA08	403.0	236.0	58.6	-0.20	0.362	0.457
9	WMA09	403.0	121.0	30.0	0.50	0.444	0.585
10	WMA10	403.0	286.0	71.0	-0.53	0.579	0.768
11	WMA11	403.0	146.0	36.2	0.33	0.307	0.394
12	WMA12	403.0	277.0	68.7	-0.46	0.561	0.734
13	WMA13	403.0	18.0	4.5	1.80	0.229	0.500
14	WMA14	403.0	66.0	16.4	0.96	0.384	0.575
15	WMA15	403.0	136.0	33.7	0.40	0.517	0.668
16	WMA16	403.0	141.0	35.0	0.36	0.570	0.733
17	WMA17	403.0	281.0	69.7	-0.49	0.602	0.792
18	WMA18	403.0	82.0	20.3	0.80	0.334	0.475
19	WMA19	403.0	77.0	19.1	0.85	0.453	0.654
20	WMA20	403.0	250.0	62.0	-0.29	0.619	0.789
21	WMA21	403.0	87.0	21.6	0.76	0.405	0.569

Item Statistics for Word Morphology – Form B

ITEM	NAME	#TRIED	#RIGHT	PCT	LOGIT/1.7	ITEM*TEST CORRELATION PEARSON	ITEM*TEST CORRELATION BISERIAL
1	WMB01	399.0	278.0	69.7	-0.49	0.394	0.518
2	WMB02	399.0	303.0	75.9	-0.68	0.427	0.587
3	WMB03	399.0	256.0	64.2	-0.34	0.507	0.651
4	WMB04	399.0	307.0	76.9	-0.71	0.478	0.663
5	WMB05	399.0	171.0	42.9	0.17	0.593	0.747
6	WMB06	399.0	192.0	48.1	0.04	0.431	0.540
7	WMB07	399.0	319.0	79.9	-0.81	0.506	0.723
8	WMB08	399.0	251.0	62.9	-0.31	0.492	0.629
9	WMB09	399.0	155.0	38.8	0.27	0.428	0.545
10	WMB10	399.0	248.0	62.2	-0.29	0.560	0.715
11	WMB11	399.0	156.0	39.1	0.26	0.338	0.429
12	WMB12	399.0	242.0	60.7	-0.25	0.549	0.697
13	WMB13	399.0	4.0	1.0	2.70	0.106	0.381
14	WMB14	399.0	41.0	10.3	1.27	0.298	0.505
15	WMB15	399.0	147.0	36.8	0.32	0.423	0.541
16	WMB16	399.0	164.0	41.1	0.21	0.516	0.652
17	WMB17	399.0	274.0	68.7	-0.46	0.615	0.804
18	WMB18	399.0	55.0	13.8	1.08	0.297	0.465
19	WMB19	399.0	71.0	17.8	0.90	0.387	0.568
20	WMB20	399.0	274.0	68.7	-0.46	0.607	0.794
21	WMB21	399.0	72.0	18.0	0.89	0.276	0.404