Four Year Old At-Risk Project

Renee' Patrick, Ph.D.
University of Kansas
Lifespan Institute at Parsons
Parsons, Kansas

Gayle Stuber, Ph.D.
Kansas State Department of Education
Special Education
Topeka, Kansas

At-Risk Summary: 2011-2012 School Year
The Kansas Early Learning Inventory for Fours Revised (KELI-4R)

Background

The Four Year Old At-Risk project has been using the Kansas Early Learning Inventory for Fours (KELI-4) for several years as a measure of child progress. During the 2010-2011 school year, the Kansas State Department of Education began work on revising the KELI-4. This was done in order to align the instrument with Kansas Early Learning Standards as well as to reduce costs. Revision was also undertaken in order to place the tool online so that teachers could more readily access the assessment tool, the information could be available for use at the state level, and the data could be deposited for future longitudinal research and use with the state's longitudinal data system. Data from this year's collection cycle will be used to begin standardization and norming on the KELI-4R.

In addition to child assessments, information on teacher practices was collected from each teacher submitting student data and information on home practices were completed by parents and entered into the online data collection system by teachers.

Kansas Early Learning Inventory for Fours Revised: KELI-4R

Preschool teachers from At-Risk classrooms were asked to complete assessments based upon their observation of semi-randomly selected children in their class. Data were provided on a total of 3593 At-Risk students over the course of the 2011-2012 school year.

The KELI-4R consists of 80 items divided into ten theoretical subscales. These subscales include Physical Development, Social-Emotional Development, Personal Social Skills, Oral Language, Phonemic Awareness, Alphabet Knowledge, Print Awareness, Writing Skills, Emergent Math, and Problem Solving. Items were initially piloted in the previous school year (2010-2011). Changes in item wording were based on feedback provided to the scale developers by preschool teachers participating in the item piloting project during the 2010-2011 school year. General descriptive statistics and initial validation of the tool were performed on data collected for the fall data collection period for the 2011-2012 school year. The following table presents the basic descriptive statistics for the theoretically derived subscales.

Descriptive Statistics

SCALE	N	Range	No. Items	Min	Max	Mean	SD	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Physical Development	3590	36.00	12	.00	36.00	24.4359	7.01	49.160	-.364	.041	-.363	.082
Social-Emotional Development	3591	24.00	8	.00	24.00	14.1016	5.26	27.619	.023	.041	-.573	.082
Personal Social Skills	3589	33.00	11	.00	33.00	19.4199	6.74	45.371	-.102	.041	-.377	.082
Oral Language	3589	27.00	9	.00	27.00	14.6055	6.77	45.888	-.180	.041	-.599	.082
Phonemic Awareness	3590	24.00	8	.00	24.00	7.7655	5.14	26.411	.609	.041	-.061	.082
Alphabet Knowledge	3590	12.00	4	.00	12.00	6.4125	3.15	9.905	.013	.041	-.848	.082
Print Awareness	3589	18.00	6	.00	18.00	6.3845	4.01	16.068	.573	.041	-.156	.082
Writing Skills	3588	15.00	5	.00	15.00	6.2517	3.70	13.689	.329	.041	-.567	.082
Emergent Math	3588	39.00	13	.00	39.00	18.6812	9.22	85.031	.074	.041	-.764	.082
Problem Solving	3588	12.00	4	.00	12.00	6.1530	2.57	6.613	.286	.041	-.244	.082
Valid N (listwise)	3584											

The following scale distributions exhibit kurtosis, indicating that the largest proportion of students' scores are centered toward the mean, Social-Emotional Development, Oral Language, Alphabet Knowledge, Writing Skills, and Emergent Math. The following scale distributions are moderately skewed, indicating that students' scores tend to fall either more to the right or the left of the mean, Phonemic Awareness and Print Awareness. Based on the statistics and also using a visual inspection of the score distribution, the majority of students scores fall below the mean with regard to those two subscales.

Initial Validation

Initial validation of the KELI-4R consists of alpha coefficients for each theoretically derived subscale, interscale correlations, and an exploratory factor analysis carried out in Mplus for categorical variables.

Using an oblique geomin rotation for exploratory factor analysis of categorical variables, all of the data for the At-Risk students was analyzed. The resulting factor model resulted in 5 factors. Fit indices indicate that five factors fit the model best. The following fit indices are within acceptable parameters for the data; CFI = 0.906, TFI = 0.893, RMSEA = 0.069. CFI and TFI score closer to 1.00 are considered acceptable fit scores and RMSEA scores approaching .05 and under are considered acceptable. A confirmatory factor analysis will be completed on spring data once they are available. In addition to confirmatory factor analysis, data will be explored to determine whether ratings on each scale are constant between the two measurement points. Items that do not consistently measure child ability across two time points will be eliminated from the final edition of the KELI-4R.

Although not ideal for measuring the reliability of scales with categorical variables, alpha coefficients are standardly reported for behavioral rating scales. The same parameters apply for scales with non-categorical or continuous variables, with acceptable alpha scores falling at 0.80 or higher. The following table presents each subscale and its corresponding alpha score based on standardized items.

Alpha Coefficients

Scale	Alpha Score
Physical Development	0.906
Social-Emotional Development	0.932
Personal Social Skills	0.928
Oral Language	0.943
Phonemic Awareness	0.902
Alphabet Knowledge	0.826
Print Awareness	0.862
Writing Skills	0.901
Emergent Math	0.865
Problem Solving	0.930

.

DEMOGRAPHIC INFORMATION

Of the children sampled from the At-Risk program 48.6% were female and 51.4% were male. Several children were receiving special education services. The following table presents the percentage of children in each educational category.

	Percent	Valid Percent	Cumulative Percent
Regular Education Services	89.1	89.1	89.1
Autism	.2	.2	89.3
Developmentally Delayed	6.2	6.2	95.5
Emotionally Disabled	.1	.1	95.6

Hearing Impaired	.1	.1	95.7
Multiply Disabled	.0	.0	95.7
Other Health Impaired	.1	.1	95.8
Speech-Language Delayed	4.2	4.2	100.0
Total	100.0	100.0	

*Frequency counts omitted to maintain privacy.

The following table presents the number of students who qualified for the national lunch program. Although children often are not served meals in many of the At-Risk programs due to the short duration of programming days (2.5 hours in some locations), qualifying for the lunch program is one of the qualification criteria for the program.

National Lunch Program

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Regular Lunch	1197	33.3	34.4	34.4
	Reduced Lunch	311	8.7	8.9	43.3
	Free Lunch	1973	54.9	56.7	100.0
	Total	3481	96.9	100.0	
Missing	System	112	3.1		
Total		3593	100.0		

Results of Parent Surveys

Parents were also surveyed for this project. Parents were sent a survey to complete at home or during their wait time at parent teacher conferences in the fall. They then returned the completed surveys to teachers who input parent responses in the online web application

for the project. Parents were asked how often they or another adult reads to their children and how often they participate in other home literacy practices. They were also asked about childcare experiences and family functioning.

A total of 3111 parents completed survey questions. The following table presents the percentage of parents reporting a home literacy practice on a daily basis.

Home Literacy Practice	Percent Reported on Daily Basis
Someone reads to my child in our home	59.7
My child and I talk about what happened during the day	93.2
My child reads/pretends to read to others	55.8
Some takes my child to a library, museum, etc.	3.8

‘Parents reading to children on a daily basis’ was significantly correlated with children reading or pretending to read. These two items were correlated at .411, $p < .01$ and have a chi square distribution of 936.48, df 16, p. < .01. Approximately 75.7 percent of children who are read to daily, either read or pretend to read on a daily basis.

The following school transitions practices engaged in by both parents and school were reported by the parents. Parents reported on which of the home transition practices they anticipated utilizing to ensure a good transition into Kindergarten for their child. They also reported on the practices the local school district offered. Only 1.1 percent of parents reported they would not engage in any school transition practices. Approximately 24.3 percent of parents reported they did not know what the school offered with regard to local Kindergarten transition services.

Transition Practice	Percent Using the Practice
Parent Practice	
I will contact the school to see who my child's teacher will be	66.5
I will arrange for my child to meet the teacher prior to school starting	79.5
I will arrange for my child to visit the school prior to school starting	72.2
I will talk with my child about what to expect in Kindergarten	89.5
School Practice	
The people at our school arrange for my child to visit prior to school starting	57.4
The Kindergarten teacher or other staff will visit my home prior to school starting	13.0
The teacher or someone at the school will talk to my child about Kindergarten	50.5
The school hosts Kindergarten roundup for parents to register and ask questions	57.7

Results of Preschool Teacher Practices

Preschool teachers were surveyed regarding their teaching practices using the Preschool Teacher Practices Survey. Items include questions about the structural environment, teacher-student interactions and curricular and planning choices. In addition teachers were asked how long they have taught as a lead teacher in preschool. A total of 340 teachers were surveyed.

Teaching

	N	Minimum	Maximum	Mean	Std. Deviation
Number of years lead taught preschool	340	0	39	8.31	7.413
Number of years the assistant taught preschool	160	0	35	6.86	6.445
Valid N (listwise)	160				

Teachers reported on the program composition with regard to inclusion of special education students, full or half day programming and inclusion of at risk students.

Program Component	% Yes	% No
My class is a full day program	19.3	80.7
I have special education students in my class	77.5	22.5
I have at risk students in my class	99.4	00.6

Best practices data will be analyzed in conjunction with data collected in the spring of 2012 to determine which practices best promote student growth in each of the KELI-4R areas.