
Gearing Up for Kindergarten
Project Report for United Way of Cass-Clay
Gearing Up for Kindergarten Expanded Research Project
Project Report #5

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Executive Summary

The United Way of Cass-Clay provided funding for an expanded research project on the *Gearing Up for Kindergarten* program to NDSU Extension Service and a research team at North Dakota State University in 2014. The scope of work for the project outlined a series of research projects associated with the program. This document provides an executive summary of the research findings associated with Research Project #5 in the scope of work.

Research Project #5

Review existing parent and teacher assessments used in the *Gearing Up for Kindergarten* program. Conduct and post a summary of reliability and validity analysis of the instruments used to date. Determine next steps to strengthen research and evaluation on the program.

Background and Methods

Gearing Up for Kindergarten is a family education opportunity for parents and their children who will be entering kindergarten in the following year. The *Gearing Up for Kindergarten* program provides families with an intensive educational experience that combines early learning activities for pre-kindergarten children with parent education opportunities for adults. A variety of evaluation strategies are being used to assess progress in meeting the program's objectives and the development of children and families who participate.

Evaluation instruments were developed by Dr. Sean Brotherson of the NDSU Extension Service with consultation from faculty in the Department of Human Development and Family Science at NDSU. Evaluation instruments were developed to assess the outcomes of program participants, both children and parents, as related to objectives such as healthy parenting, early literacy and school readiness. The parent and teacher assessments were created following best practices in developing, pilot testing, and revising each scale to ensure strong reliability and validity and meaningful measurement of intended outcomes of *Gearing Up for Kindergarten*.

Strong *reliability* means that the measurement produced by a scale will be consistent across different raters and over time. High levels of consistency in measurement also means that random measurement error, which is present in any measurement by variations in respondents, item interpretations, and contexts, is minimized. Strong *validity* means that the scale is actually measuring what it was intended to measure and not something else. If a measure is highly valid, that means that systematic error in measurement, which occurs when other factors affect the outcome of the scale, is minimized.

The primary evaluation instrument used to assess participants in the program has been the Practical Parent Assessment for School Readiness. This evaluation tool was developed specifically for the Gearing Up for Kindergarten project. It exists in both a long-form and a short-form version. Children are rated on a 5-point scale by their parents in six key areas of development related to school readiness. Additionally, parents rate themselves on a number of key parenting practices related to preparing children for school. Parents also complete items about their child and about themselves that focus on school knowledge and familiarity, as well as an 8-item parent-child reading interaction measure.

To assess the validity of each scale, we conducted both exploratory and confirmatory factor analyses. These are analyses which group questionnaire items together on the basis of how responses to them are correlated. Items which generate similar responses are grouped and are isolated from other items whose responses do not follow the same pattern.

To assess the reliability of each scale, we computed Cronbach's alpha coefficient, which is a measure of the degree to which the items in the scale are all answered similarly. Alpha scores of .70 to .99 are conventionally accepted as indicating adequate to excellent reliability.

Data for these analyses were from six years of the *Gearing Up for Kindergarten* program, from 2006 to 2012. Respondents included nearly a thousand program participants. All respondents participated in the program in the state of North Dakota. Parents were the key informants about themselves and about their children. They completed questionnaires both before and after participating.

Executive Summary of Key Findings

A brief summary of key findings from the study is included here. Key findings from the study analysis are summarized.

- The Practical Parent Assessment of School Readiness (PPASR) was created to measure several facets of children's readiness for school and parents' involvement in that process. As a newly created measure, the PPASR needed to be subjected to several tests in order to insure that its scales provided accurate and useful indications of the constructs we wanted it to measure (aspects of school readiness). Those tests showed that the scales of the PPASR showed strong validity and adequate to good levels of reliability. Results from exploratory and confirmatory factor analyses provided evidence for the strong validity of the scales of the Practical Parent Assessment of School Readiness (PPASR).
- Some of the scales needed to incorporate a slightly different list of questionnaire items than originally intended. In a few instances, analyses suggested that the list of items comprising each scale be modified slightly (through the omission of some items originally intended for the scale and the addition of other items originally intended for other scales). For example, Item 28 – "Tries to learn and use new words," was originally intended as a component of the Basic Academic Skills scale, but analyses showed it fit better in the Learning Approach and Effort scale. The list of items that fit best into each scale is provided in the table below.
- In order to assess the reliability of each scale in the PPASR, each scale was subjected to a reliability analysis using Cronbach's alpha coefficient scores. The table below also shows the Cronbach's alpha score for each subscale in the PPASR. Scores above .70 tend to indicate adequate reliability. These scores for the PPASR scales range from .68 to .89 for the long

form scales and thus indicate acceptable levels of reliability. The modified scales of the Short Version of the PPASR were also tested. In general, alphas for these shorter scales were lower than for their longer counterparts but still in the acceptable range. The Social Guidance and Emotional Guidance scales are exceptions with low reliability; different items may need to be used to measure these constructs for parents.

- The scales of the PPASR were found to be both reliable and valid, with some adjustments to the composition of some of the scales. The modified scales of the shorter version of the PPASR also proved to have acceptable reliability, with the exception of two scales which should be avoided or revised. Thus, we believe the PPASR (in either version) has sufficient psychometric quality to justify its continued use.
- Overall, we conclude that the PPASR in either form can be recommended for continued use. This judgment is based on the solid psychometric properties identified for nearly all scales in the PPASR as it is currently designed. Minor adjustments would further strengthen the scales within the overall instrument.
- Other steps that could be taken to demonstrate validity would be to have the same sample of parents complete both the PPASR and other established measures so that comparisons among different measures of similar (or the same) constructs could be made. In addition, cross-informant validity could be checked by comparing these parent reports of child outcomes with (preschool or GUK) teacher reports of similar constructs.

Scales Used in the Study

In the Practical Parent Assessment for School Readiness, children are rated on a 5-point scale by their parents in key areas of development related to school readiness. Additionally, parents rate themselves on a number of key parenting practices related to preparing children for school. The following scales designed to assess aspects of kindergarten readiness were measured by the questionnaire:

- Learning approach and effort
- Physical skills and abilities
- Social development and peer relations
- Emotional development and competence
- Basic academic skills
- Health and fitness
- Child school knowledge
- Parent school knowledge
- Child school familiarity
- Parent school familiarity

In addition, the following parental practices were measured by the parent questionnaire:

- Child developmental guidance
- Social guidance
- Reading guidance
- Emotional guidance
- Practical guidance

Table 1: Scale Analysis and Reliability Scores for the PPASR Measure

Scale Name	Long Form		Short Form	
	Items	Alpha	Items	Alpha
PPASR – Perceptions of Your Child				
Learning approach and effort	1,2,4,6,7,8,9,27,28,34	.81	1,2,3,4	.68
Physical skills and abilities	10,11,12,13,14,15,16,50	.77	NA	NA
Social development and peer relations	17,18,19,20,21,23,24,25,26,39	.89	5,6,7,8,9	.79
Emotional development and competence	3,5,22,29,35,36,37,38,40,41,42	.85	14,15,16,17	.72
Basic academic skills	30,31,32,33	.82	10,11,12	.83
Health and fitness	43,44,45,46,47,48,49,51,52	.75	18,19	.68
PPASR – Practices as a Parent				
Child developmental guidance	1,2,3,4,5,6	.85	1,2,3,4	.75
Social guidance	7,8,9	.68	5,6	.54
Reading guidance	10,11	.75	7,8	.75
Emotional guidance	12,13,14,15	.79	9,10	.65
Practical guidance	16,17,18	.69	NA	NA
Parent-Child Reading Interactions	NA	NA	1,2,4,5,6,7,8	.87
PPASR – Child School Knowledge and Familiarity				
Child school knowledge	1,2,3,4,5	.74	1,2,3	.75
Child school familiarity	6,7,8,9,10,11,12,13	.87	7,8,9,10	.76
PPASR – Parent School Knowledge and Familiarity				
Parent school knowledge	1,2,3,4,5	.74	4,5,6	.73
Parent school familiarity	6,7,8,9,10, 11,12,13	.87	11,12,13,14	.75

Conclusion

These findings indicate the PPASR shows solid validity and reliability as a scientific instrument for measuring outcomes. Further exploration of these measures and others used in the program would be beneficial. We conclude based on this analysis that the measures are useful for continued study and assessment of the *Gearing Up for Kindergarten* program.¹

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