

ACHIEVEMENT OUTCOME MEASURES USED IN THE EVALUATION OF THE TENNESSEE VOLUNTARY PRE-K PROGRAM

The Peabody Research Institute at Vanderbilt University, with the cooperation of the Division of School Readiness and Early Learning at the Tennessee State Department of Education, received a grant in 2009 from the U. S. Department of Education Institute of Education Sciences to conduct a study of the effectiveness of the Tennessee Voluntary Pre-K program (TN-VPK).

This document provides a description of the academic achievement outcome measures that are being used to assess the effects of TN-VPK on the participating children.

Principal Investigator:

Mark W. Lipsey, Director
Peabody Research Institute
mark.lipsey@vanderbilt.edu

Co-Principal Investigator:

Dale C. Farran, Senior Associate Director
Peabody Research Institute
dale.farran@vanderbilt.edu

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PEABODY
research
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**Peabody Research Institute
Vanderbilt University**

Box 181 GPC
230 Appleton Place
Nashville, TN 37203-5721

Phone: 615.322.8540

PEABODY
research
institute

DIRECTLY-ASSESSED ACADEMIC ACHIEVEMENT OUTCOMES

The outcome measures used to assess academic achievement in the evaluation of the Tennessee Voluntary Pre-K program (TN-VPK) were selected from the Woodcock-Johnson III (WJ-III) battery of achievement tests. The WJ-III is a nationally normed, individually administered assessment. Two subtests were selected to measure early literacy skills (Letter-Word Identification and Spelling), two were selected to measure early language skills (Picture Vocabulary and Oral Comprehension), and two were selected to measure early math skills (Applied Problems and Quantitative Concepts). These tests are widely used in research to assess the cognitive and academic skills of young children and as outcome measures for early childhood programs. Of particular relevance to the Tennessee Pre-K study is evidence in prior research conducted at the Peabody Research Institute showing that preschool children's scores on these tests are predictive of their later scores on the TCAP, Tennessee's statewide achievement tests administered in the third grade for all students.

For the main comparison between children enrolled in TN-VPK and comparable children whose parents applied but were not able to enroll because of limited space in the program, these tests were administered at the beginning of the Pre-K school year (pretest) and again at the end (posttest). They will also be administered at the end of kindergarten, first grade, and second grade (follow up).

The selected WJ-III tests are administered individually to each child by trained assessors.



Brief descriptions of each of these WJ-III tests are provided below.

Woodcock-Johnson III Tests of Achievement (WJ-III)

Subtests used as measures of emergent literacy skills:

Letter-Word Identification

Letter-Word Identification assesses children's letter and sight word identification ability. Items include identifying and pronouncing letters and words presented to the child.

Spelling

Spelling assesses children's prewriting skills, such as drawing lines and tracing, writing letters, and spelling orally presented words.

Subtests used as measures of **emergent language skills:**

Picture Vocabulary

Picture Vocabulary assesses children's ability to name objects presented in pictures; it measures early language development and lexical knowledge.

Oral Comprehension

Oral Comprehension assesses children's ability to comprehend a short passage and supply the missing word using syntactic and semantic clues; it measures their listening ability and understanding.

Subtests used as measures of **emergent mathematics skills:**

Applied Problems

Applied Problems assesses children's ability to analyze and solve numerical and spatial problems presented verbally with accompanying pictures of objects.

Quantitative Concepts

Quantitative Concepts assesses children's knowledge of mathematical concepts, symbols, and vocabulary, including numbers, shapes, and sequences; it measures aspects of quantitative math knowledge and recognition of patterns in a series of numbers.

Two additional WJ-III tests were added for each of the follow-up assessment periods (end of kindergarten, first grade, and second grade). Brief descriptions of each of these tests are provided below.

Calculation

Calculation assesses children's mathematical computation abilities through the completion of visually-presented numeric math problems.

Passage Comprehension

Passage Comprehension assesses children's reading comprehension skills through their ability to match conceptually similar pictures and representations and complete sentences and paragraphs with appropriate words that maintain the semantic properties of the stimulus and make sense in the context of the passage.

- For more information on these tests and the WJ- III achievement battery see: Woodcock, R. W., McGrew, K. S., & Mather, N. (2001). *Woodcock- Johnson III Tests of Achievement*. Rolling Meadows, IL: Riverside Publishing.

TEACHER RATINGS OF ACADEMIC, SOCIAL, AND BEHAVIORAL OUTCOMES

The measures used to assess teacher perceptions of children's academic, social, and behavioral qualities in the evaluation of TN-VPK were selected from measures developed and used in prior projects by Peabody Research Institute staff. Two measures were selected to assess children's school-related academic and behavioral abilities. These measures have been widely used in research studies at the Peabody Research Institute. As is true of the direct assessments of children's academic achievement, prior research conducted at PRI has shown that teacher ratings on these measures are indicative of children's later academic achievement as measured by the TCAP.

The selected measures were collected from children's kindergarten teachers early in the fall of the school year after Pre-K. For the main comparison between children enrolled in TN-VPK and comparable children whose parents applied but were not able to enroll because of limited space in the program, these tests will also be administered at the end of kindergarten, first grade, and second grade (follow up). These two instruments provided six outcome scores that were examined for evidence of Pre-K effects.

Brief descriptions of each of these scales and subscales are provided below.

Teacher Ratings of Children's Skills

The **Cooper-Farran Behavioral Rating Scales** was used to investigate children's behavior in the classroom setting. The scales include scores for children's work-related skills and social behavior within the classroom.

- For more information on this test see: Cooper, D. H., & Farran, D. C. (1991). *The Cooper Farran Behavioral Rating Scales*. Brandon, VT: Clinical Psychology Publishing.

The **Academic and Classroom Behavior Record** was used to assess children's academic and behavioral preparedness for later schooling. The measure includes scores for children's kindergarten readiness, liking for school, and behavior problems within the classroom.

Cooper-Farran Behavioral Rating Scales

Work Related Skills

The Work Related Skills score is a factor score derived from a principal components factor analysis that summarizes the teachers' responses to a set of interrelated items about the child's ability to work independently, listen to the teacher, remember and comply with instructions, complete games and activities, function within designated time periods, and otherwise behave appropriately in relation to classroom work and prescribed activities.

- Example: *PLEASE READ THE DESCRIPTORS AND THEN CIRCLE THE NUMBER THAT BEST DESCRIBES THE CHILD ON THAT ITEM. YOU MAY USE THE EVEN-NUMBERED POINTS IF THE CHILD'S SKILL FALLS BETWEEN THE BEHAVIORAL DESCRIPTORS.*

1. Performance of Daily Nonacademic Tasks

1	2	3	4	5	6	7
Cheerfully does own chores, then takes on extra duties		Independently attends to routines		Will do chores, but only with prodding		Often refuses to perform daily chores

Social Behavior

The Social Behavior score is a factor score also derived from a principal components factor analysis that summarizes the teachers' responses to a set of interrelated items about the child's social interactions with peers including appropriate behavior while participating in group activities, play, and outdoor games; expression of feelings and ideas during group discussions; and response to others mistakes or misfortunes. The same instructions as given to teachers in the previous example on this page apply to these questions, as well.

- Example: Response to Helpful Criticism from Teacher

1	2	3	4	5	6	7
Accepts criticism easily, uses it to improve performance		Attends to criticism, but does not apply it		Ignores or pretends not to hear criticism		Angrily rejects teacher's attempts to help

Academic and Classroom Behavior Record (ACBR)

Readiness for Kindergarten

The Readiness for Kindergarten score is a factor score derived from a principal components factor analysis that summarizes the teachers' responses to a set of interrelated items about how well prepared the child is for kindergarten in literacy and language skills, math skills, and social behavior.

- Example: *How well prepared for kindergarten work is this child in **math**?*

1	2	3	4	5	6	7
Extremely well prepared; understands numbers, shapes, and patterns		Above average preparation for this grade level		Slightly below average preparation for this grade level		Very unprepared for this grade level; cannot count to ten or identify shapes

Liking for School

The Liking for School score is a factor score derived from a principal components factor analysis that summarizes the teachers' responses to a set of interrelated items about the child liking or disliking school, having fun at school, enjoying and engaging in classroom activities, and seeming happy at school.

- Example: *How do you think this child feels about school? Circle response to each.*

a. Likes to Come to School	Always	Sometimes	Never
b. Dislikes School	Always	Sometimes	Never

Behavior Problems

The Behavior Problems score relates to whether the child has shown any behavior problems from a list including explosive and overactive behaviors, attention problems, physical or relational aggression, social withdrawal or anxiety, motor difficulties, and the like. Teachers' responses were coded into two outcome variables: (1) a dichotomous variable indicating whether any of the behavior problems on the list have been observed (0= no, 1=yes), and (2) the number of behavior problems on the list that were observed.

- Example: *This year, has the child had any of the following behavior problems that you feel caused concern? Please check all that apply.*
 - Explosive Behaviors (e.g., temper outbursts, easily provoked, unpredictable behavior)
 - Attention Problems (e.g., had difficulty concentrating or staying on task)
 - Overactive Behaviors (e.g., acts impulsively without thinking, disrupts ongoing activities)