

DESCRIPTION

The *Evaluating Executive Functions: Pre-K3, Pre-K4 & Kindergarten* assessment, a 48-item validated instrument administered to over 10,000 students in North America, was designed to assess children 3 to 6 years of age on their: **(a) cognitive flexibility¹ (CF)**, **(b) working memory² (WM)**, and **(c) inhibitory control³ (IC)**. These three areas of executive function are measured across 9-observable skills:

Flexibility (F)
Memory (M)
Planning Skills (PS)

Organization (O)
Self-Help Skills (SHS)
Impulse Control (IC)

Emotional Control (EC)
Task Initiation (TI)
Self-Monitoring (SM)

SCORING

For each item, the classroom teacher rates the child's executive functions utilizing a 3-point Likert scale:

- 0: Several Reminders (3+)**
- 1: Few Reminders (1-2)**
- 2: No Reminders**



As the child's scores increase, so does the mastery of the child's executive functions. Based on these scores, students are classified as being in the **developing** (scoring 60% or less; 0-58), **progressing** (scoring 61-79%; 59-76), or **mastering** (scoring 80% or more; 77-96) stage of executive functions development.

VALIDATION

The items for the *Evaluating Executive Functions: Pre-K3, Pre-K4 & Kindergarten* assessment were initially written utilizing published literature focused on the development of executive functions in young children. Validity was established by employing a panel of experts consisting of one measurement and four early childhood (EC) experts.

The members of the expert panel reviewed the assessment for the wording of items, addition and/or deletion of items, and whether the items were developmentally appropriate to ensure the assessment was measuring what it was intended to measure. Feedback was received and the assessment revised through two rounds of validation prior to the administration to children. Table 1 provides a detailed description of the qualifications of the members of the expert panel.

¹CF = Allows the child to deal with any encountered problems by using different strategies.

²WM= Responsible for holding information and having it accessible when it is needed to complete a task.

³IC = Allows the child to ignore any distractions and focus on the task at hand.

TABLE 1. VALIDATION EXPERTS

	EDUCATION	PRE-SCHOOL TEACHING	K-12 TEACHING	UNIVERSITY TEACHING
EXPERT A	Doctorate of Education: EC Education University of North Texas	4-years Preschool Director	3-years (K-3)	13-years EC Program Director
EXPERT B	Doctorate of Education: EC Education University of Houston	4-years EC Director	N/A	13-years EC Professor
EXPERT C	Doctorate of Philosophy: EC & Elem. Education University of Southern MS	11-years	3-years (K-5)	12-years EC Special Education Professor
EXPERT D	Masters of Education: Educational Neuroscience University of Calgary	5-years EC Director	2-years (K-5)	N/A
EXPERT E	Doctorate of Education: Research & Measurement George Washington University	N/A	2-years (9-12)	20-years Research & Statistics Professor



PARTICIPANT DEMOGRAPHICS

The *Evaluating Executive Functions: Pre-K3, Pre-K4, Kindergarten* assessment has been administered to a diverse body of students were from diverse racial/ethnic backgrounds and income groups. Tables 2 and 3 show the student demographics from the sites/schools.

TABLE 2. SCHOOL SITES

	CANADA		UNITED STATES		
	Calgary	Saskatchewan	Arkansas	Pennsylvania	Texas
# School districts	1	1	13	1	14
# Schools/sites	9	2	20	4	46
% Economically disadvantaged or free or reduced-price lunch	****	****	79.1%	91.0%	88.4%

****Data Not Available

TABLE 3. STUDENT DEMOGRAPHICS

	CANADA		UNITED STATES		
	Calgary	Saskatchewan	Arkansas	Pennsylvania	Texas
African-American	17.4%	8.4%	20.4%	3.8%	21.8%
American Indian or Alaska Native	19.4%	2.8%	0.4%	0.0%	0.0%
Asian	19.8%	14.0%	1.0%	0.0%	1.4%
Hispanic/Latino	19.1%	5.6%	11.0%	86.7%	60.5%
Native Hawaiian or Other Pacific Islander	0.0%	0.0%	0.3%	0.0%	0.0%
White	7.6%	67.0%	65.3%	8.6%	12.9%
Two or more races	16.7%	2.2%	1.6%	0.9%	3.4%

RELIABILITY

Once the assessment was validated, it was assessed for reliability or internal consistency. **Table 4** displays the reliability coefficients for the *Pre-K3, Pre-K4 & Kindergarten* student administration in Canada and the United States.

In addition, the results of the test-retest reliability, consistency of students' scores across tests, was significant at the **.001 level**. This assessment has demonstrated to be both a valid and reliable measure for assessing students' executive functions.

TABLE 4. RELIABILITY COEFFICIENTS

	CANADA		UNITED STATES		
	Calgary	Saskatchewan	Arkansas	Pennsylvania	Texas
Entire Instrument	.967	.947	.977	.982	.974
A. Cognitive Flexibility	.777	.741	.884	.913	.886
• Flexibility	.777	.741	.884	.913	.886
B. Working Memory	.902	.800	.935	.961	.935
• Memory	.848	.711	.885	.939	.852
• Planning Skills	.817	.764	.884	.923	.791
• Organization	.714	.802	.732	.884	.792
C. Inhibitory Control	.931	.926	.960	.912	.954
• Self-Help Skills	.754	.841	.855	.927	.858
• Impulse Control	.850	.894	.916	.920	.853
• Emotional Control	.808	.736	.885	.936	.850
• Task Initiation	.768	.770	.857	.880	.854
• Self-Monitoring	.715	.799	.839	.894	.821

Note. Cronbach's alphas greater than .70 are considered acceptable (Fraenkel, J., Wallen, N., & Hyun, H. (2022). *How to design and evaluate research in education*. New York: McGraw-Hill.)

