WHY IS READING IMPORTANT TO NEUROPSYCHOLOGISTS?

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PNNS May 2019

Goals

- To understand the five parts of reading acquisition identified by the NRP

- To understand the role of phonological awareness in learning to read

- To know how to assess phonological awareness and discuss it in a neuropsychological evaluation report

READING PROFICIENCY

- Approximately half of fourth and eighth graders can demonstrate proficiency on national standardized academic tests

Therefore:

- Approximately half of fourth and eighth graders can NOT demonstrate proficiency on national standardized academic tests

Greater gap for children of color

- Gap between AA and Hispanic children and peers is longstanding and intractable

- 25-30 point reading gap between AA and Caucasian children measured by National Assessment of Educational Progress (NAEP) has remained unchanged for last decade

- Majority of AA fourth grade students read at or below "basic" levels in 2016 samples

- Only 14% of AA students considered proficient or advanced (NCES, 2016)

Consequences for children of color

- For every year student are in school the disparity increases by one-tenth of a standard deviation
- Thus, the longer students of color are in school, the larger the gap becomes
- Nevertheless, racial, ethnic and language minorities are less likely to be identified with learning disabilities

Cultural Language Impact

- Mismatch between language spoken at home and school increases cognitive load for students whose native tongue is not English

- Linguistic characteristics of cultural dialect among AA children significantly overlap with the characteristics of language impairment, making it difficult to distinguish language difference from language disorder

Reading

- Performance is lower for:

  - Lower income students

  - Students of color

Importance of Reading

- Reading is essential for learning in Western industrialized societies

- Impaired reading = Impaired learning

Consequences of not reading

- Failure to master reading by grade three increases the probability of dropping out of high school or limiting post-high school job opportunities

Learning and teaching

- In addition to reading disabilities, there are "teaching disabilities":

- Politics, myths, "popular wisdom" have
 negatively influenced reading methodology, contributing to teaching and learning disabilities.

Myths

- Teaching to "different styles of learning" has been a popular concept. However, experimental research has concluded that "Learning styles" do not really exist.

"There is no one way to teach reading. The teacher is the key to reading success, not the methodology." NEA

Impact of teaching

- "Some children learn in spite of how we teach them. Other children learn *BECAUSE* of how we teach them." Marlowe, 2000

Concerns

- As citizens and tax payers, we should be concerned about how reading competency impacts society as a whole, future wage earners, quality of life and the continuation of a successful life style.

As neuropsychologists,

Reading is

- Luria's second symbol system

- Reciprocal nature of reading and oral language

- Impact of reading on information processing, fund of knowledge, learning, vocational options, emotional adjustment, etc.
- Fascinating human function

Neuropsychologists should understand the reading process if

- You evaluate children, to understand child development
- You evaluate clients with LD, to understand what went wrong, and to understand other cognitive functions within the context of reading failure
- You do forensic evaluations, to differentiate between developmental and acquired disorders

National Reading Panel

- Goal: To identify the scientific evidence relevant to reading acquisition processes, and effective instructional approaches.

- Meta-analytic studies that met criteria:

    Treatment and control groups

    Measured treatment outcomes

    100,000 reading studies reviewed

National Reading Panel Conclusions

- Five primary processes critical for reading competence
- Alphabetics: Phonological Awareness
- Alphabetics: Phonics
- Fluency
- Vocabulary Comprehension
- Text Comprehension

Phonological Awareness

Phonemes

- Smallest unit constituting spoken language
- Combine to form syllables
- English has about 41 phonemes
- Differ from graphemes, which are units of written language
- Phonemes translated into graphemes for written spelling

Phonological Awareness

- Ability to focus on and manipulate phonemes in spoken words

- Universal critical function for reading

- Impaired phonemic awareness (and RAN) are early predictors of reading disabilities in languages with more transparent orthographies than English, including all Romance languages

Aspects of Phonological Awareness

- Phoneme isolation: first sound in *paste*

- Auditory discrimination: same/different

- Phoneme identification: simil/differences in *ball, bike, bat*

- Phoneme categorization: which word does not belong: *bus, bat, rug*

Aspects of Phonological Awareness 2

- Phonemic blending: what word do these sounds make? *s-k-u-l*?

- Phoneme segmentation: break this word into parts, tapping for each sound. *Baseball*

- Phoneme deletion: say *smile* without saying /s/

Phonological Awareness results

- Teaching only one or two skills at a time is better than larger skill sets simultaneously

- Targeted instruction in small groups better than 1:1 or total class instruction

- Intensive 5-18 hours over time

- Effect size largest in early readers and disabled readers in lower grades (universal)

- Use of letters more effective than not

Phonics

- Different from phonological awareness

- How to use letter/sound correspondence and spelling patterns in reading

- There are many programs that teach phonics.

- The goal is to enable students to acquire sufficient knowledge and use of alphabetic code to make progress in learning to read and communicate in written language

Phonics conclusions

- ***Systematic*** instruction in any one of a number of phonics programs is more beneficial than combined programs or non-phonetic approaches, such as sight vocabulary or whole word methods.

Fluency

- Critical component of skilled reading

- Ability to read text with *speed*, *accuracy* and proper *expression*

- Necessary in order to understand what you are reading

- Lack of fluency distracts from the ability to think about the content of what you are reading

Fluency training

- Fluency training is essential: It does not happen automatically

- Best approach is oral reading with feedback

- Practice is critical

- Oral reading with feedback benefits good readers as well as those with challenges

Reading Comprehension

- Cognitive process that integrates complex skills

- Critical role of vocabulary learning and development

- Active interactive strategic processes are necessary and critical

- Teacher preparation and understanding is essential in order to teach reading comprehension

Vocabulary Comprehension

- Oral vocabulary is the key to making the transition from oral to written forms

- Unknown vocabulary needs to be acquired by explicit and implicit methodology

- No evidence based studies of methodology for vocabulary comprehension in NRP because diversity of studies did not permit meta analysis

Vocabulary comprehension strategies

Teacher competence is critical!

Explicit learning

- Pre-instruction re unknown vocabulary

- Repeated instruction

- Vocabulary learning per se

Implicit learning

Incidental

Context learning

Text Comprehension

- Requires the coordinated and flexible use of several different instructional approaches
  - Cooperative learning

  - Comprehension monitoring during reading

  - Five questions: who, what, where, when, why

  - Summarization

  - Graphic and semantic organizers

National Reading Panel Conclusions

- Teachers need better instruction in instructional methodology

- Teachers need to translate scientific reading research into classroom instruction

Case Study: JW

- Multiple sub-chronic hemorrhages > 20 weeks

- C-section 36 weeks

- Birth weight 5 lbs. 4 oz.

- Apgars 9

- Failure to thrive for first year (total 10 lbs)

- Developmentally delayed at age one

JW Delayed language development

- "Delayed processing"
- Reduced language comprehension
- Short, disorganized sentences
- Impaired communication in context
- Multiple word usage errors
- Impaired intonational patterns
- Unintelligible speech (50% at 5 years)

JW History

- Seen by me at 7 years 11 months

- Prior services included
  - SLP
  - Special education
  - Sylvan learning
  - Private school for "learning challenged"
  - Homeschooled by mother using various curricula

Name: JW

Age: 7-11   Hand: R   Grade: 2

WISC-V		SS
Verbal Comp.		108
Similarities	10	
Vocabulary	13	
Information	9	
Visual Spatial		105
Block Design	11	
Visual Puzzles	11	
Fluid Reasoning		112
Matrix Reason	11	
Figure Weights	13	
Working Memory		97
Digit Span	8	
Picture Span	11	
Processing Speed		86
Coding	10	
Symbol Search	5	
Full Scale IQ		106

Date: 1/8, 1/9, 1/10, 1/15, 1/16 /2019

Feifer Assessment of Mathematics

Forward Numbers	84
Backward Numbers	73
Backward Numbers	88
Numeric Capacity	98
Sequences	88
Object Counting	80
Rapid Number Naming	82
Addition Fluency	80
Subtraction Fluency	93
Linguistic Math Concepts	81
Spatial Memory	102
Perceptual Estimation	94
Number Comparison	77
Addition Knowledge	77
Subtraction Knowledge	94

Tower of London	SS
Accuracy	130
Initiation Time	90
Execute/PS Time	116

Feifer Assessment of Reading

Phoneme Awareness	83
Nonsense Word Decoding	75
Isolated Word Fluency	57
Oral Reading Fluency	60
Positioning of Sounds	53
Rapid Automatic Naming	<50
Verbal Fluency	85
Visual Perception	72
Irregular Wd Rdg Fluency	70
Orthographic Processing	83
Semantic Concepts	109
Morphological Processing	70
Word Recall	94
Silent Reading Comprehension	68
Silent Reading Fluency	65

CVLT-C

Trial 1	1.0
Trial 5	1.0
Trials 1-5 (T)	56
Free Recall (Short)	0.5
Cued Recall (Short)	1.5
Free Recall (Long)	0.5
Cued Recall (Long)	1.0

Early Reading Assessment Quotient		61
Written Word Vocabulary	5	
Rapid Orthographic Naming	5	
Silent Orthographic Efficiency	2	

CHAMP

Verbal Memory		122
Lists	14	
Instructions	14	
Lists Delayed	13	
Instructions Delayed	14	
Lists Recognition	16	
Instruction Recognition	14	
Visual Memory Recognition		
Objects	14	
Places	14	
Objects Delayed	15	
Places Delayed	12	
Immediate Memory		126
Delayed Memory		122
Total Memory Index		125

CELF-5

Sentence Comprehension	10
Linguistic Concepts	8
Word Structure	10
Word Classes	9
Following Directions	8
Formulated Sentences	9
Recalling Sentences	9
Understanding Spoken Paragraphs	11

CASL-2

Non-Literal Language	86
Receptive Vocabulary	94
Expressive Vocabulary	91
Inference	102

CTOPP-2		GE
Elision	5	K.4
Blending Words	6	1.0
Phoneme Isolation	6	1.0
Non-Word Repetiton	3	<K.0

Woodcock-Johnson Achievement		GE
Letter-Word Ident	55	K.0
Passage Compreh	47	<K.0
Writing	77	K.8

Composite Score Summary

Composite		Sum of Scaled Scores	Composite Score	Percentile Rank	95% Confidence Interval	Qualitative Description	SEM
Verbal Comprehension	VCI	23	108	70	100-115	Average	4.24
Visual Spatial	VSI	22	105	63	97-112	Average	4.24
Fluid Reasoning	FRI	24	112	79	104-118	High Average	3.67
Working Memory	WMI	19	97	42	90-105	Average	4.50
Processing Speed	PSI	15	86	18	79-97	Low Average	5.20
Full Scale IQ	FSIQ	76	106	66	100-111	Average	3.00
Nonverbal	NVI	67	109	73	102-115	Average	3.35
General Ability	GAI	58	111	77	105-116	High Average	3.00
Cognitive Proficiency	CPI	34	89	23	83-97	Low Average	4.24

Subtest Scaled Score Profile
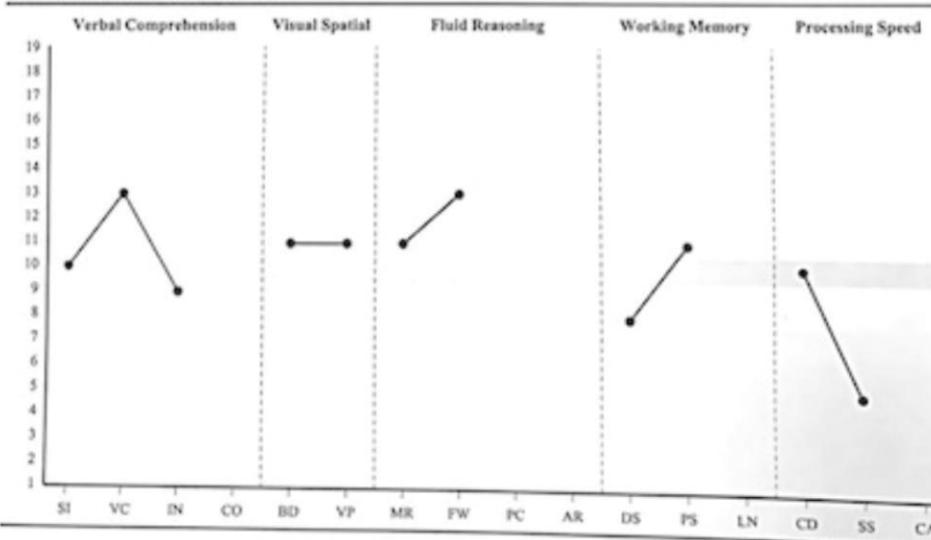
WISC-V

- Variability between and within subtests

- General Ability Index   111

- Cognitive Proficiency   89

WISC-V

- Variability between and within subtests

- General Ability Index   111

- Cognitive Proficiency   89

Language Measures

- CASL-2   WISC-V
- Vocabulary   Vocabulary   13
  - Receptive 94
  - Expressive 91

  Non-Literal Language 89

Language Measures

- CELF-5
- Following Directions   8

- Linguistic Concepts   8

- Word Classes   9

- Understand Spoken Paragraphs 11

Reading

- W-J-IV (55 Wds, 47 Comp) – She is a non-reader

- What about pre-reading?

- Which of the precursors to reading has she learned?

- Needs to learn?

- How to measure?
- (This is a neuropsychologist's task, not a teacher's task)

Feifer Assessment of Reading

- Ages 4-21 years
- Excellent for reading analysis/problem identification
- Subtests are short and targeted
- Preschoolers-35 minutes
- K and 1st grade –approximately 60 minures
- Grades 2-college – approximately 75-90 minutes

far™

feiferassessmentofreading™
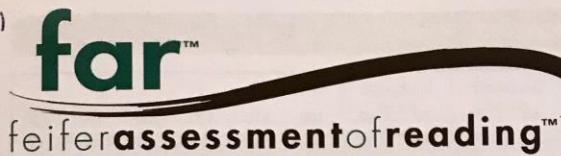
Steven G. Feifer, DEd

Examinee's name_____ Grade_____ Appendix D norms table used _____

Age_____ Gender _____ Examiner's name _____ Date _____

Score Summary

Page range	Subtest	Raw score	Standard score	Index standard score	Percentile rank	Confidence interval ☐ 90% ☐ 95%		
5-10	Phonemic Awareness (PA)							
22-23	Nonsense Word Decoding (NWD) 2nd+		+					
24-27	Isolated Word Reading Fluency (ISO) K+		+					
28-32	Oral Reading Fluency (ORF) K+		+					
40-42	Positioning Sounds (PS)		+					
A BC	**Phonological Index (PI)** =							
11-13	Rapid Automatic Naming (RAN)							
20-21	Verbal Fluency (VF)		+					
35	Visual Perception (VP)		+					
36-37	Irregular Word Reading Fluency (IRR) 2nd+		+					
38-39	Orthographical Processing (OP) K+		+					
👁	**Fluency Index (FI)** =							
	PI + FI = Mixed Index (MI)							
14-17	Semantic Concepts (SC)							
18-19	Word Recall (WR)		+					
33-34	Print Knowledge (PK) PK–1st		+					
43-44	Morphological Processing (MP) 2nd+		+					
45-55	Silent Reading Fluency: Comprehension (SRF-C) 2nd+		+					
📖	**Comprehension Index (CI)** =							
	PI + FI + CI = FAR Total Index (TI)							
45-55	Silent Reading Fluency: Rate (SRF-R) 2nd+							

Test of Pre-School Early Learning

- 3 years to 5 years 11 months
- Print Knowledge-Familiarity with books, turning pages, pointing to pix, text
- Definitional Vocabulary-Identification of objects and use
- Phonological Awareness-Single score-uses pictures
- Elision-omitting word parts, Blending
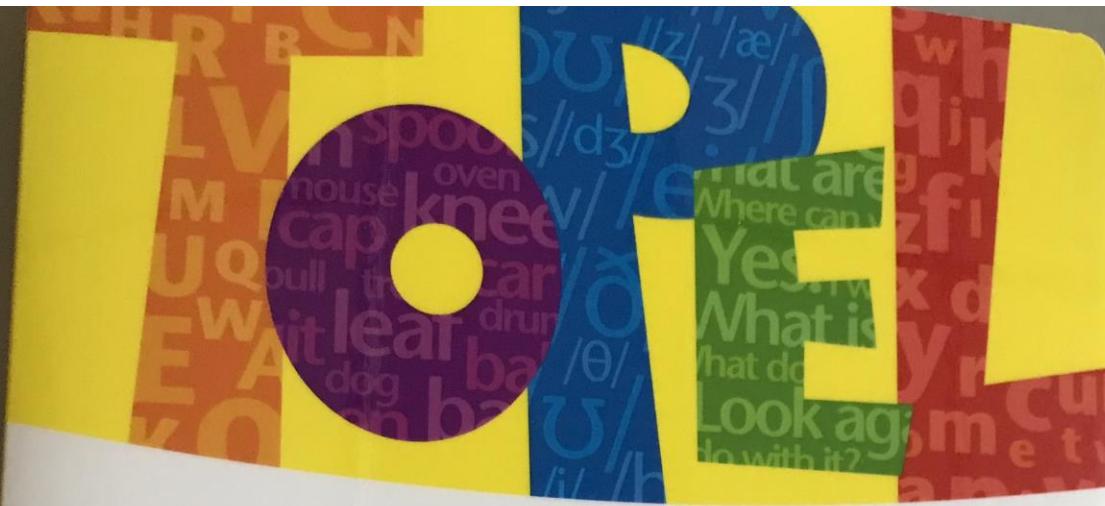
Test of Preschool Early Literacy

Christopher J. Lonigan   Richard K. Wagner   Joseph K. Torgesen

Examiner's Manual

Test of Preschool Early Literacy

TOPEL
Examiner Record Booklet

Christopher J. Lonigan   Richard K. Wagner   Joseph K. Torgesen   Carol A. Rashotte

Section 1. Identifying Information

Child's Name _____

Female ☐   Male ☐

	Year	Month	Day
Date of Testing	_____	_____	_____
Date of Birth	_____	_____	_____
Chronological Age	_____	_____	_____

Parents' Names _____
Preschool/Daycare/School _____
Examiner's Name _____
Examiner's Title _____

Section 2. Record of Scores

Subtests	Raw Score	%ile Rank	Standard Score	Descriptive Rating
1. Print Knowledge	_____	_____	_____	_____
2. Definitional Vocabulary	_____	_____	_____	_____
3. Phonological Awareness	_____	_____	_____	_____
Sum of Standard Scores			⬭	
Early Literacy Index	_____		⬭	_____

Section 3. Other Test Data

Test Name	Date	Standard Score	TOPEL Equivalent
1. _____			
2. _____			
3. _____			
4. _____			

Section 5. Testing Conditions

1. Place Tested _____

_____

	Interfering			Not Interfering	
2. Noise Level	1	2	3	4	5
3. Interruptions	1	2	3	4	5
4. Distractions	1	2	3	4	5
5. Light	1	2	3	4	5
6. Temperature	1	2	3	4	5

7. Notes: _____

_____

_____

Section 4. Profile of Standard Scores

Standard Scores	TOPEL				Other Tests				Standard Scores
	Print Knowledge	Definitional Vocabulary	Phonological Awareness	Early Literacy Index	1.	2.	3.	4.	
150	·	·	·	·	·	·	·	·	150
145	·	·	·	·	·	·	·	·	145
140	·	·	·	·	·	·	·	·	140
135	·	·	·	·	·	·	·	·	135
130	·	·	·	·	·	·	·	·	130
125	·	·	·	·	·	·	·	·	125
120	·	·	·	·	·	·	·	·	120
115	·	·	·	·	·	·	·	·	115
110	·	·	·	·	·	·	·	·	110
105	·	·	·	·	·	·	·	·	105
100	—	—	—	—	—	—	—	—	100
95	·	·	·	·	·	·	·	·	95
90	·	·	·	·	·	·	·	·	90
85	·	·	·	·	·	·	·	·	85
80	·	·	·	·	·	·	·	·	80
75	·	·	·	·	·	·	·	·	75
70	·	·	·	·	·	·	·	·	70
65	·	·	·	·	·	·	·	·	65
60	·	·	·	·	·	·	·	·	60
55	·	·	·	·	·	·	·	·	55

Early Reading Assessment

- Written Word Vocabulary-matching letters, pointing, multiple choice format, examiner guides each item

- Rapid Orthographic Naming-pictures, letters, numbers, words

- Silent Orthographic Efficiency-one minute to rapidly visually match letters, words

Early Reading Assessment 2

*Phonological Awareness-manipulation of word parts (omissions)

- Receptive Vocabulary-identification of single words in array of 4, similar to PPVT-4

Early Reading Assessment

ERA

Donald D. Hammill • Nils A. Pearson • Wayne P. Hresko • John J. Hoover

Picture Book

Early Reading Assessment

ERA

Examiner Record Form

Donald D. Hammill, Nils A. Pearson, Wayne P. Hresko, and John J. Hoover

Section 1. Identifying Information

Name _____ Female ☐ Male ☐ Grade _____

	Year	Month	Day

Date Tested _____ _____ _____   School* _____

Date of Birth _____ _____ _____   Examiner's Name _____

Age* _____ _____ _____   Examiner's Title _____

*Use years and months. Do not round up.   *If appropriate

Section 2. Record of Scores

Core Subtests	Raw Score	Age Equiv.	%ile Rank	Scaled Score	SEM	Descriptive Term
Written Word Vocabulary (WWV)	_____	_____	_____	_____	(1)	_____
Rapid Orthographic Naming (RON)	_____	_____	_____	_____	(1)	_____
Silent Orthographic Efficiency (SOE)	_____	_____	_____	_____	(1)	_____

Sum of Scaled Scores = ☐

Early Reading Index (ERI) _____ ◯ (4) _____

Supplemental Subtests						
Phonological Awareness (PA)	_____	_____	_____	_____	(1)	_____
Receptive Vocabulary (RV)	_____	_____	_____	_____	(1)	_____

Section 3. Descriptive Terms

Scaled Score	1–3	4–5	6–7	8–12	13–14	15–16	17–20
Descriptive Term	Very Poor	Poor	Below Average	Average	Above Average	Superior	Very Superior
Index Score	< 70	70–79	80–89	90–110	111–120	121–130	> 130

Section 4. Interpretation and Recommendations

_____

_____

_____

_____

_____

_____

CTOPP-2 Ages 4-6

- Elision
- Blending Words
- Sound Matching-uses pictures-initial/final*
- Memory for Digits
- Nonword Repetition
- Rapid Digit Naming/Rapid Letter Naming
- Rapid Color Naming*
- Rapid Object Naming*

CTOPP-2

Examiner Record Booklet   Ages 4–6

Richard K. Wagner   Joseph K. Torgesen   Carol A. Rashotte   Nils A. Pearson

Section 1. Identifying Information

Name _____

Female ☐   Male ☐   Grade _____

Parent/Guardian _____

School _____

	Year	Month	Day
Date Tested	_____	_____	_____
Date of Birth	_____	_____	_____
Age*	_____	_____	_____

Teacher's Name _____

Examiner's Name _____

Examiner's Title _____

*When accessing the normative tables, use years and months. Do not round up.

Section 2. Subtest Performance

Subtest	Raw Score	Age Equiv.	Grade Equiv.	%ile Rank	Scaled Score	SEM	Descriptive Term
Core							
1. Elision (EL)	_____	_____	_____	_____	⬭	1	_____
2. Blending Words (BW)	_____	_____	_____	_____	⬭	1	_____
3. Sound Matching (SM)	_____	_____	_____	_____	⬭	1	_____
4. Memory for Digits (MD)	_____	_____	_____	_____	⬭	1	_____
5. Nonword Repetition (NR)	_____	_____	_____	_____	⬭	1	_____
6. Rapid Digit Naming (RD)	_____	_____	_____	_____	⬭	1	_____
7. Rapid Letter Naming (RL)	_____	_____	_____	_____	⬭	1	_____
8. Rapid Color Naming (RC)	_____	_____	_____	_____	⬭	1	_____
9. Rapid Object Naming (RO)	_____	_____	_____	_____	⬭	1	_____
Supplemental							
10. Blending Nonwords (BN)	_____	_____	_____	_____	⬭	1	_____

Section 3. Composite Performance

Composite	EL	BW	SM	MD	NR	RD	RL	RC	RO	Sum of Scaled Scores	%ile Rank	SEM	Composite Score	Descriptive Term
Phonological Awareness	__	__	__							⬭	____	4	⬭	_____
Phonological Memory				__	__					⬭	____	6	⬭	_____
Rapid Symbolic Naming						__	__			⬭	____	4	⬭	_____
Rapid Non-Symbolic Naming								__	__	⬭	____	5	⬭	_____

Section 4. Descriptive Terms

Scaled Score	1–3	4–5	6–7	8–12	13–14	15–16	17–20
Descriptive Term	Very Poor	Poor	Below Average	Average	Above Average	Superior	Very Superior
Composite Score	<70	70–79	80–89	90–110	111–120	121–130	>130

4 5 6 7 8 9 10 11   22 21 20 19 18 17 16 15 14 13

CTOPP-2 Ages 7-24

- Elision
- Blending Words
- Phoneme Isolation*
- Memory for Digits
- Nonword Repetition
- Rapid Digit Naming/Rapid Letter Naming
- Blending Nonwords*
- Segmenting Nonwords*

4

Comprehensive Test of Phonological Processing—Second Edition

CTOPP-2

Examiner Record Booklet   Ages 7–24

Richard K. Wagner   Joseph K. Torgesen   Carol A. Rashotte   Nils A. Pearson

Section 1. Identifying Information

Name _____   Female ☐   Male ☐   Grade _____

Parent/Guardian _____   School _____

	Year	Month	Day
Date Tested	_____	_____	_____
Date of Birth	_____	_____	_____
Age*	_____	_____	_____

Teacher's Name _____

Examiner's Name _____

Examiner's Title _____

*When accessing the normative tables, use years and months. Do not round up.

Section 2. Subtest Performance

Subtest	Raw Score	Age Equiv.	Grade Equiv.	%ile Rank	Scaled Score	SEM	Descriptive Term
Core							
1. Elision (EL)	_____	_____	_____	_____	⬭	1	_____
2. Blending Words (BW)	_____	_____	_____	_____	⬭	1	_____
3. Phoneme Isolation (PI)	_____	_____	_____	_____	⬭	1	_____
4. Memory for Digits (MD)	_____	_____	_____	_____	⬭	1	_____
5. Nonword Repetition (NR)	_____	_____	_____	_____	⬭	1	_____
6. Rapid Digit Naming (RD)	_____	_____	_____	_____	⬭	1	_____
7. Rapid Letter Naming (RL)	_____	_____	_____	_____	⬭	1	_____
Supplemental							
8. Blending Nonwords (BN)	_____	_____	_____	_____	⬭	1	_____
9. Segmenting Nonwords (SN)	_____	_____	_____	_____	⬭	1	_____

Section 3. Composite Performance

Composite	Subtest Scaled Score									Sum of Scaled Scores	%ile Rank	SEM	Composite Score	Descriptive Term
	EL	BW	PI	MD	NR	RD	RL	BN	SN					
Phonological Awareness	___	___	___							⬭		4	⬭	_____
Phonological Memory				___	___					⬭		6	⬭	_____
Rapid Symbolic Naming						___	___			⬭		4	⬭	_____
Alternate Phonological Awareness								___	___	⬭		4	⬭	_____

Section 4. Descriptive Terms

Scaled Score	1–3	4–5	6–7	8–12	13–14	15–16	17–20
Descriptive Term	Very Poor	Poor	Below Average	Average	Above Average	Superior	Very Superior
Composite Score	<70	70–79	80–89	90–110	111–120	121–130	>130

4   5   6   7   8   9   10   22   21   20   19   18   17   16   15   14   13

RAN/RAS

- Rapid naming of

- Objects
- Colors
- Numbers
- Letters
- Two-set letters and numbers
- Three-set letters and numbers

4

RAN/RAS Tests

Rapid Automatized Naming and Rapid Alternating Stimulus Tests

Examiner Record Form

Section 1. Identifying Information

Name _____

Female ☐ Male ☐ Grade _____

Speech Deviation Yes ☐ No ☐ Type _____

Language Spoken _____

	Year	Month	Day
Date Rated	_____	_____	_____
Date of Birth	_____	_____	_____
Age	_____	_____	_____

School _____

Examiner's Name _____

Examiner's Title _____

Section 2. Record of Scores

Test	Raw Score	Age Equivalent	Grade Equivalent	%ile Rank	Standard Score	Descriptive Rating
1. Objects	_____	_____	_____	_____		_____
2. Colors	_____	_____	_____	_____		_____
3. Numbers	_____	_____	_____	_____		_____
4. Letters	_____	_____	_____	_____		_____
5. 2-Set Letters and Numbers	_____	_____	_____	_____		_____
6. 3-Set Letters, Numbers, and Colors	_____	_____	_____	_____		_____

Section 3. Interpretation and Recommendations

_____
_____
_____
_____
_____
_____
_____
_____

PAL-II

- Very extensive task analysis
- Cumbersome to give
- Very detailed treatment plans in online treatment manuals

QUESTIONS

- ???

- Thank you