**NONWORD REPETITION TASK (NWR)**

**(Dollaghan & Campbell, 1998)**

**ADMINISTRATION**

**AND**

**STANDARD SCORES**

**(Redmond & Ash, 2017)**

**ADMINISTRATION AND SCORING**

**NONWORD REPETITION TASK (NWR)**

**(Dollaghan & Campbell, 1998)**

**PURPOSE:** This test was designed to minimize biases associated with traditional language tests. Nonword repetition may have a considerable clinical utility as a screening measure for language impairment in children.

**MATERIALS:** Scoring Sheet, MP3 player, headphones, headphone splitter, and recorder

**AGES:** 5;0-adult- Redmond norms are available for ages 5;0-9;11

**TIME TO ADIMINSTER:** 5-10 minutes

**SAMPLE ITEMS:**

* Give the child a set of headphones. Connect their headphones and yours to the MP3 player, utilizing the headphone splitter. Find the Nonword Repetition Task tract. Tell the child that they will hear some directions and make sure that they are listening before pushing play on the MP3 player. The directions will be heard in the headphones, ***“I’m going to have you say some made-up words. The first few words will be practice. Say the words exactly the way that I say them”.***  If necessary you can push the pause button on the MP3 player to allow the child more time to finish their response.
* If necessary, remind the child to repeat EXACTLY what they hear.
* There are 3 practice items
* The practice words may be re-administered if the child performs in a way that suggests that they do not understand the task or if during the protocol it seems they need to be re-directed to providing imitative responses.
* Proceed to testing item 1.

**TEST ITEMS:**

* Introduce the test items by checking with the child that they understood and then continue with the task. You will hear, **“Great. Now we are going to say some more made-up words. You will hear a woman say the words, then I want you to say them just like she said them”.**
* Administer all test items from 1 to 16 (there is no basal or discontinue rule).
* If the child requests a repetition or something occurred that distracted the child, you may pause the MP3 player and pronounce the word for them one more time.
* You may also pause the MP3 player to provide more time for the child to finish their production.
* Do not tell the child if his or her responses are right or wrong; only give general encouragement and praise.

**SCORING**

 **During the Assessment**

* Circle any phoneme that the child omits or gets incorrect. For an incorrect phoneme, write the phoneme that the child substituted above the incorrect phoneme. Distortions of a phoneme are considered correct.
* Write in any additional phonemes for later scoring purposes (additional phonemes are not considered incorrect but it may help line up syllables for scoring purposes). Raw scores are calculated on the percentage of correct phonemes.

 **After the Assessment**

* Before scoring, the assessment will be re-listened to and written verbatim on the score sheet
* Sum all of the correct phonemes in each column (1-syllable, 2-syllable etc). Added phonemes are disregarded. Distortions of a phoneme are considered correct. Omitted and phoneme substitutions are considered incorrect.
* If the child adds or omits a syllable, use the vowels as anchors to line up the child’s production with the target, and then proceed to score individual phonemes. For example, if a child said, “voʊt͡ʃip” for “ɗævoʊnɔɪt͡ʃig” you would match up the vowels for the second and fourth syllables and count the first and third syllables as omitted, and as such the child would receive a score of 4 for that word (1 point for each for v, oʊ, t͡ʃ,and i).
* Sum the number of phonemes correct from each column and write it in the space for Total Number of Phonemes Correct.
* Calculate the child’s percentage of phonemes correct by dividing by 96. Write the percentage in the blank. **Use the conversion tables to calculate the standard score and percentile rank.**

Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Clinician: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Nonword Repetition Task

**Directions:** Say: “Now you will hear some made-up words. Say them after you hear them, exactly the way that you hear them”.

**Practice:**

**T1)** bæθrIs \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **T2)** rεθəlεt \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **T3)** træ∫əməs \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |  |
| --- | --- | --- | --- |
| **1-syllable** | **2-syllable** | **3-syllable** | **4-syllable** |
| 1. n      ɑɪ     b

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | 5. t   eɪ  v  ɑ  k \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | 9. tʃ  i  n  oɪ   t   ɑʊ  b\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | 13. v  eɪ  t  ɑ  tʃ  ɑɪ  d  oɪ  p \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 1. v   oʊ    p

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | 6. tʃ   oʊ  v  æ  g \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | 10. n  ɑɪ  tʃ  oʊ  v  eɪ  b\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | 14. d  æ  v  oʊ  n  oɪ  tʃ  i  g \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 1. t   ɑʊ   dʒ

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | 7. v  æ  tʃ  ɑɪ  p \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | 11. d  oɪ  t   ɑʊ   v  æ   b\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | 15. n   ɑɪ  tʃ   oɪ   t  ɑʊ  v  u   b \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 1. d    oɪ     f

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | 8. n   oɪ  t  ɑʊ  f \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | 12. t  eɪ   v   oɪ  tʃ  ɑɪ  g\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | 16. t  æ  v  ɑ  tʃ   i  n  ɑɪ  g \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 1-syllable phonemes correct /12 | 2-syllablephonemes correct /20 | 3-syllablephonemes correct /28 | 4-syllablephonemes correct /36 |

Total Number of Phonemes Correct: \_\_\_\_\_\_/96 = \_\_\_\_\_\_\_\_\_% Standard Score: \_\_\_\_\_\_\_\_\_\_\_ Percentile Rank: \_\_\_\_\_\_\_\_\_\_\_\_

**Demographics**

Norms for Nonword Repetition Tast (NWR: Dollaghan & Campbell, 1998) were from children who were attending regular education only. Children were excluded from the standardization sample if they were receiving any special education services (e.g., resource, reading, speech-language services), receiving English as a second language service, participated in an extended learning program, or had been diagnosed with ASD, ADHD, or a psychiatric disorder.

|  |  |  |  |
| --- | --- | --- | --- |
| **Ethnic Category** | **Females** | **Males** | **Total** |
| Hispanic | 2 (3.4%) | 3 (4.1%) | 5 (3.8%) |
| Not Hispanic  | 57 (96.6%) | 67 (91.8%) | 124 (93.9%) |
| Unknown | -- | 3 (4.1%) | 3 (2.3%) |
| **ETHNIC TOTAL** | **59 (44.7%)**  | **73 (55.3%)** | **132** |
|  |  |  |  |
| **Racial Categories** |  |  |  |
| American Indian | -- | 1 (1.4%) | 1 (0.8%) |
| Asian | 2 (3.4%) | 4 (5.5%) | 6 (4.5%) |
| Pacific Islander | -- | 2 (2.7%) | 2 (1.5%) |
| Black | 3 (5.1%) | 1 (1.4%) | 4 (3.0%) |
| White | 54 (91.5%) | 62 (84.9%) | 116 (87.9%) |
| More than one race | -- | -- | -- |
| Unknown | -- | 3 (4.1%) | 3 (2.3%) |
| **RACIAL TOTAL** | **59 (44.7%)** | **73 (55.3%)** | **132** |

**NWR Consistency**

Inter-rater consistency was performed by randomly selecting 36 participants from the Redmond standardization sample and re-listening and re-scoring the audio recording of the NWR administration. Analyzed using Pearson’s r.

n = 36

|  |  |  |
| --- | --- | --- |
|  | **#agreements/(#agreements + #disagreements) \*100** | ***r*** |
| **NWR** | 96.67% | .89\*\* |

\**p* <.05, \*\**p* <.01, \*\*\**p* < .001 (two tailed)

**NWR (n = 132) Raw Scores**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **AGE** | **N** | **MEAN** | **SD** | **RANGE** | **15TH %ILE** | **10TH %ILE** | **5TH%ILE** |
| 5:0 – 5;11 | 20 | 84.00 | 6.94 | 72-98 | 76.15 | 75.10 | 72.15 |
| 6;0 - 6;11 | 30 | 86.20 | 9.03 | 59-96 | 75.60 | 71.20 | 65.05 |
| 7;0 - 7;11 | 33 | 88.79 | 6.25 | 77-98 | 79.00 | 78.00 | 77.00 |
| 8;0 – 8;11 | 37 | 90.41 | 5.55 | 79-99 | 83.70 | 82.20 | 79.00 |
| 9;0 – 9;11 | 12 | 92.42 | 5.09 | 82-100 | 85.80 | 83.20 | 82.00 |

**NWR standard score conversion tables: 5;0-5;11**

**Raw scores are based on the percent of the total correct number of phonemes**

n = 20 (11 boys, 9 girls)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |  |
| **Raw Score** | **Standard Score** | **Percentile** | **Raw Score** | **Standard Score** | **Percentile** | **Raw Score** | **Standard Score** | **Percentile** |
| 0 | 40 | <0.1 | 40 | 40 | <0.1 | 80 | 91 | 27 |
| 1 | 40 | <0.1 | 41 | 40 | <0.1 | 81 | 93 | 32 |
| 2 | 40 | <0.1 | 42 | 40 | <0.1 | 82 | 95 | 37 |
| 3 | 40 | <0.1 | 43 | 40 | <0.1 | 83 | 97 | 42 |
| 4 | 40 | <0.1 | 44 | 40 | <0.1 | 84 | 100 | 50 |
| 5 | 40 | <0.1 | 45 | 40 | <0.1 | 85 | 102 | 55 |
| 6 | 40 | <0.1 | 46 | 40 | <0.1 | 86 | 104 | 61 |
| 7 | 40 | <0.1 | 47 | 40 | <0.1 | 87 | 106 | 66 |
| 8 | 40 | <0.1 | 48 | 40 | <0.1 | 88 | 108 | 70 |
| 9 | 40 | <0.1 | 49 | 40 | <0.1 | 89 | 110 | 75 |
| 10 | 40 | <0.1 | 50 | 40 | <0.1 | 90 | 112 | 79 |
| 11 | 40 | <0.1 | 51 | 40 | <0.1 | 91 | 115 | 84 |
| 12 | 40 | <0.1 | 52 | 40 | <0.1 | 92 | 117 | 87 |
| 13 | 40 | <0.1 | 53 | 40 | <0.1 | 93 | 119 | 90 |
| 14 | 40 | <0.1 | 54 | 40 | <0.1 | 94 | 121 | 92 |
| 15 | 40 | <0.1 | 55 | 40 | <0.1 | 95 | 123 | 94 |
| 16 | 40 | <0.1 | 56 | 40 | <0.1 | 96 | 125 | 95 |
| 17 | 40 | <0.1 | 57 | 41 | <0.1 | 97 | 128 | 97 |
| 18 | 40 | <0.1 | 58 | 43 | <0.1 | 98 | 130 | 98 |
| 19 | 40 | <0.1 | 59 | 45 | <0.1 | 99 | 132 | 98 |
| 20 | 40 | <0.1 | 60 | 48 | <0.1 | 100 | 134 | 99 |
| 21 | 40 | <0.1 | 61 | 50 | <0.1 |  |
| 22 | 40 | <0.1 | 62 | 52 | 0.1 |
| 23 | 40 | <0.1 | 63 | 54 | 0.1 |
| 24 | 40 | <0.1 | 64 | 56 | 0.1 |
| 25 | 40 | <0.1 | 65 | 58 | 0.2 |
| 26 | 40 | <0.1 | 66 | 61 | 0.5 |
| 27 | 40 | <0.1 | 67 | 63 | 1 |
| 28 | 40 | <0.1 | 68 | 65 | 1 |
| 29 | 40 | <0.1 | 69 | 67 | 1 |
| 30 | 40 | <0.1 | 70 | 69 | 2 |
| 31 | 40 | <0.1 | 71 | 71 | 3 |
| 32 | 40 | <0.1 | 72 | 74 | 4 |
| 33 | 40 | <0.1 | 73 | 76 | 5 |
| 34 | 40 | <0.1 | 74 | 78 | 7 |
| 35 | 40 | <0.1 | 75 | 80 | 9 |
| 36 | 40 | <0.1 | 76 | 82 | 12 |
| 37 | 40 | <0.1 | 77 | 84 | 14 |
| 38 | 40 | <0.1 | 78 | 87 | 19 |
| 39 | 40 | <0.1 | 79 | 89 | 23 |

**NWR standard score conversion tables: 6;0-6;11**

**Raw scores are based on the percent of the total correct number of phonemes**

n = 30 (14 boys, 16 girls)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |  |
| **Raw Score** | **Standard Score** | **Percentile** | **Raw Score** | **Standard Score** | **Percentile** | **Raw Score** | **Standard Score** | **Percentile** |
| 0 | 40 | <0.1 | 40 | 40 | <0.1 | 80 | 89 | 23 |
| 1 | 40 | <0.1 | 41 | 40 | <0.1 | 81 | 91 | 27 |
| 2 | 40 | <0.1 | 42 | 40 | <0.1 | 82 | 93 | 32 |
| 3 | 40 | <0.1 | 43 | 40 | <0.1 | 83 | 94 | 34 |
| 4 | 40 | <0.1 | 44 | 40 | <0.1 | 84 | 96 | 40 |
| 5 | 40 | <0.1 | 45 | 40 | <0.1 | 85 | 98 | 45 |
| 6 | 40 | <0.1 | 46 | 40 | <0.1 | 86 | 99 | 47 |
| 7 | 40 | <0.1 | 47 | 40 | <0.1 | 87 | 101 | 53 |
| 8 | 40 | <0.1 | 48 | 40 | <0.1 | 88 | 102 | 55 |
| 9 | 40 | <0.1 | 49 | 40 | <0.1 | 89 | 104 | 61 |
| 10 | 40 | <0.1 | 50 | 40 | <0.1 | 90 | 106 | 66 |
| 11 | 40 | <0.1 | 51 | 41 | <0.1 | 91 | 107 | 68 |
| 12 | 40 | <0.1 | 52 | 43 | <0.1 | 92 | 109 | 73 |
| 13 | 40 | <0.1 | 53 | 44 | <0.1 | 93 | 111 | 77 |
| 14 | 40 | <0.1 | 54 | 46 | <0.1 | 94 | 112 | 79 |
| 15 | 40 | <0.1 | 55 | 48 | <0.1 | 95 | 114 | 82 |
| 16 | 40 | <0.1 | 56 | 49 | <0.1 | 96 | 116 | 86 |
| 17 | 40 | <0.1 | 57 | 51 | <0.1 | 97 | 117 | 87 |
| 18 | 40 | <0.1 | 58 | 53 | 0.1 | 98 | 119 | 90 |
| 19 | 40 | <0.1 | 59 | 54 | 0.1 | 99 | 121 | 92 |
| 20 | 40 | <0.1 | 60 | 56 | 0.1 | 100 | 122 | 93 |
| 21 | 40 | <0.1 | 61 | 58 | 0.2 |  |
| 22 | 40 | <0.1 | 62 | 59 | 0.3 |
| 23 | 40 | <0.1 | 63 | 61 | 0.5 |
| 24 | 40 | <0.1 | 64 | 63 | 1 |
| 25 | 40 | <0.1 | 65 | 64 | 1 |
| 26 | 40 | <0.1 | 66 | 66 | 1 |
| 27 | 40 | <0.1 | 67 | 68 | 2 |
| 28 | 40 | <0.1 | 68 | 69 | 2 |
| 29 | 40 | <0.1 | 69 | 71 | 3 |
| 30 | 40 | <0.1 | 70 | 73 | 4 |
| 31 | 40 | <0.1 | 71 | 74 | 4 |
| 32 | 40 | <0.1 | 72 | 76 | 5 |
| 33 | 40 | <0.1 | 73 | 78 | 7 |
| 34 | 40 | <0.1 | 74 | 79 | 8 |
| 35 | 40 | <0.1 | 75 | 81 | 10 |
| 36 | 40 | <0.1 | 76 | 83 | 13 |
| 37 | 40 | <0.1 | 77 | 84 | 14 |
| 38 | 40 | <0.1 | 78 | 86 | 18 |
| 39 | 40 | <0.1 | 79 | 88 | 21 |

**NWR standard score conversion tables: 7;0-7;11**

**Raw scores are based on the percent of the total correct number of phonemes**

n = 33 (15 boys, 18 girls)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|   |  |  |  |  |  |  |  |  |
| **Raw Score** | **Standard Score** | **Percentile** | **Raw Score** | **Standard Score** | **Percentile** | **Raw Score** | **Standard Score** | **Percentile** |
| 0 | 40 | <0.1 | 40 | 40 | <0.1 | 80 | 78 | 7 |
| 1 | 40 | <0.1 | 41 | 40 | <0.1 | 81 | 81 | 10 |
| 2 | 40 | <0.1 | 42 | 40 | <0.1 | 82 | 83 | 13 |
| 3 | 40 | <0.1 | 43 | 40 | <0.1 | 83 | 86 | 18 |
| 4 | 40 | <0.1 | 44 | 40 | <0.1 | 84 | 88 | 21 |
| 5 | 40 | <0.1 | 45 | 40 | <0.1 | 85 | 90 | 25 |
| 6 | 40 | <0.1 | 46 | 40 | <0.1 | 86 | 93 | 32 |
| 7 | 40 | <0.1 | 47 | 40 | <0.1 | 87 | 95 | 37 |
| 8 | 40 | <0.1 | 48 | 40 | <0.1 | 88 | 98 | 45 |
| 9 | 40 | <0.1 | 49 | 40 | <0.1 | 89 | 100 | 50 |
| 10 | 40 | <0.1 | 50 | 40 | <0.1 | 90 | 102 | 55 |
| 11 | 40 | <0.1 | 51 | 40 | <0.1 | 91 | 105 | 63 |
| 12 | 40 | <0.1 | 52 | 40 | <0.1 | 92 | 107 | 68 |
| 13 | 40 | <0.1 | 53 | 40 | <0.1 | 93 | 110 | 75 |
| 14 | 40 | <0.1 | 54 | 40 | <0.1 | 94 | 112 | 79 |
| 15 | 40 | <0.1 | 55 | 40 | <0.1 | 95 | 114 | 82 |
| 16 | 40 | <0.1 | 56 | 40 | <0.1 | 96 | 117 | 87 |
| 17 | 40 | <0.1 | 57 | 40 | <0.1 | 97 | 119 | 90 |
| 18 | 40 | <0.1 | 58 | 40 | <0.1 | 98 | 122 | 93 |
| 19 | 40 | <0.1 | 59 | 40 | <0.1 | 99 | 124 | 95 |
| 20 | 40 | <0.1 | 60 | 40 | <0.1 | 100 | 126 | 96 |
| 21 | 40 | <0.1 | 61 | 40 | <0.1 |  |
| 22 | 40 | <0.1 | 62 | 40 | <0.1 |
| 23 | 40 | <0.1 | 63 | 40 | <0.1 |
| 24 | 40 | <0.1 | 64 | 40 | <0.1 |
| 25 | 40 | <0.1 | 65 | 42 | <0.1 |
| 26 | 40 | <0.1 | 66 | 45 | <0.1 |
| 27 | 40 | <0.1 | 67 | 47 | <0.1 |
| 28 | 40 | <0.1 | 68 | 50 | <0.1 |
| 29 | 40 | <0.1 | 69 | 52 | 0.1 |
| 30 | 40 | <0.1 | 70 | 54 | 0.1 |
| 31 | 40 | <0.1 | 71 | 57 | 0.1 |
| 32 | 40 | <0.1 | 72 | 59 | 0.3 |
| 33 | 40 | <0.1 | 73 | 62 | 1 |
| 34 | 40 | <0.1 | 74 | 64 | 1 |
| 35 | 40 | <0.1 | 75 | 66 | 1 |
| 36 | 40 | <0.1 | 76 | 69 | 2 |
| 37 | 40 | <0.1 | 77 | 71 | 3 |
| 38 | 40 | <0.1 | 78 | 74 | 4 |
| 39 | 40 | <0.1 | 79 | 76 | 5 |

**NWR standard score conversion tables: 8;0-8;11**

**Raw scores are based on the percent of the total correct number of phonemes**

n = 37 (22 boys, 15 girls)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| n =  |  |  |  |  |  |  |  |  |
| **Raw Score** | **Standard Score** | **Percentile** | **Raw Score** | **Standard Score** | **Percentile** | **Raw Score** | **Standard Score** | **Percentile** |
| 0 | 40 | <0.1 | 40 | 40 | <0.1 | 80 | 71 | 3 |
| 1 | 40 | <0.1 | 41 | 40 | <0.1 | 81 | 74 | 4 |
| 2 | 40 | <0.1 | 42 | 40 | <0.1 | 82 | 77 | 6 |
| 3 | 40 | <0.1 | 43 | 40 | <0.1 | 83 | 79 | 8 |
| 4 | 40 | <0.1 | 44 | 40 | <0.1 | 84 | 82 | 12 |
| 5 | 40 | <0.1 | 45 | 40 | <0.1 | 85 | 85 | 16 |
| 6 | 40 | <0.1 | 46 | 40 | <0.1 | 86 | 88 | 21 |
| 7 | 40 | <0.1 | 47 | 40 | <0.1 | 87 | 90 | 25 |
| 8 | 40 | <0.1 | 48 | 40 | <0.1 | 88 | 93 | 32 |
| 9 | 40 | <0.1 | 49 | 40 | <0.1 | 89 | 96 | 40 |
| 10 | 40 | <0.1 | 50 | 40 | <0.1 | 90 | 98 | 45 |
| 11 | 40 | <0.1 | 51 | 40 | <0.1 | 91 | 101 | 53 |
| 12 | 40 | <0.1 | 52 | 40 | <0.1 | 92 | 104 | 61 |
| 13 | 40 | <0.1 | 53 | 40 | <0.1 | 93 | 107 | 68 |
| 14 | 40 | <0.1 | 54 | 40 | <0.1 | 94 | 109 | 73 |
| 15 | 40 | <0.1 | 55 | 40 | <0.1 | 95 | 112 | 79 |
| 16 | 40 | <0.1 | 56 | 40 | <0.1 | 96 | 115 | 84 |
| 17 | 40 | <0.1 | 57 | 40 | <0.1 | 97 | 117 | 87 |
| 18 | 40 | <0.1 | 58 | 40 | <0.1 | 98 | 120 | 91 |
| 19 | 40 | <0.1 | 59 | 40 | <0.1 | 99 | 123 | 94 |
| 20 | 40 | <0.1 | 60 | 40 | <0.1 | 100 | 125 | 95 |
| 21 | 40 | <0.1 | 61 | 40 | <0.1 |  |
| 22 | 40 | <0.1 | 62 | 40 | <0.1 |
| 23 | 40 | <0.1 | 63 | 40 | <0.1 |
| 24 | 40 | <0.1 | 64 | 40 | <0.1 |
| 25 | 40 | <0.1 | 65 | 40 | <0.1 |
| 26 | 40 | <0.1 | 66 | 40 | <0.1 |
| 27 | 40 | <0.1 | 67 | 40 | <0.1 |
| 28 | 40 | <0.1 | 68 | 40 | <0.1 |
| 29 | 40 | <0.1 | 69 | 42 | <0.1 |
| 30 | 40 | <0.1 | 70 | 44 | <0.1 |
| 31 | 40 | <0.1 | 71 | 47 | <0.1 |
| 32 | 40 | <0.1 | 72 | 50 | <0.1 |
| 33 | 40 | <0.1 | 73 | 52 | 0.1 |
| 34 | 40 | <0.1 | 74 | 55 | 0.1 |
| 35 | 40 | <0.1 | 75 | 58 | 0.2 |
| 36 | 40 | <0.1 | 76 | 61 | 0.5 |
| 37 | 40 | <0.1 | 77 | 63 | 1 |
| 38 | 40 | <0.1 | 78 | 66 | 1 |
| 39 | 40 | <0.1 | 79 | 69 | 2 |

**NWR standard score conversion tables: 9;0-9;11**

**Raw scores are based on the percent of the total correct number of phonemes**

n = 12 (11 boys, 1 girl)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |  |
| **Raw Score** | **Standard Score** | **Percentile** | **Raw Score** | **Standard Score** | **Percentile** | **Raw Score** | **Standard Score** | **Percentile** |
| 0 | 40 | <0.1 | 40 | 40 | <0.1 | 80 | 63 | 1 |
| 1 | 40 | <0.1 | 41 | 40 | <0.1 | 81 | 66 | 1 |
| 2 | 40 | <0.1 | 42 | 40 | <0.1 | 82 | 69 | 2 |
| 3 | 40 | <0.1 | 43 | 40 | <0.1 | 83 | 72 | 3 |
| 4 | 40 | <0.1 | 44 | 40 | <0.1 | 84 | 75 | 5 |
| 5 | 40 | <0.1 | 45 | 40 | <0.1 | 85 | 78 | 7 |
| 6 | 40 | <0.1 | 46 | 40 | <0.1 | 86 | 81 | 10 |
| 7 | 40 | <0.1 | 47 | 40 | <0.1 | 87 | 84 | 14 |
| 8 | 40 | <0.1 | 48 | 40 | <0.1 | 88 | 86 | 18 |
| 9 | 40 | <0.1 | 49 | 40 | <0.1 | 89 | 89 | 23 |
| 10 | 40 | <0.1 | 50 | 40 | <0.1 | 90 | 92 | 30 |
| 11 | 40 | <0.1 | 51 | 40 | <0.1 | 91 | 95 | 37 |
| 12 | 40 | <0.1 | 52 | 40 | <0.1 | 92 | 98 | 45 |
| 13 | 40 | <0.1 | 53 | 40 | <0.1 | 93 | 101 | 53 |
| 14 | 40 | <0.1 | 54 | 40 | <0.1 | 94 | 104 | 61 |
| 15 | 40 | <0.1 | 55 | 40 | <0.1 | 95 | 107 | 68 |
| 16 | 40 | <0.1 | 56 | 40 | <0.1 | 96 | 110 | 75 |
| 17 | 40 | <0.1 | 57 | 40 | <0.1 | 97 | 113 | 81 |
| 18 | 40 | <0.1 | 58 | 40 | <0.1 | 98 | 116 | 86 |
| 19 | 40 | <0.1 | 59 | 40 | <0.1 | 99 | 119 | 90 |
| 20 | 40 | <0.1 | 60 | 40 | <0.1 | 100 | 122 | 93 |
| 21 | 40 | <0.1 | 61 | 40 | <0.1 |  |
| 22 | 40 | <0.1 | 62 | 40 | <0.1 |
| 23 | 40 | <0.1 | 63 | 40 | <0.1 |
| 24 | 40 | <0.1 | 64 | 40 | <0.1 |
| 25 | 40 | <0.1 | 65 | 40 | <0.1 |
| 26 | 40 | <0.1 | 66 | 40 | <0.1 |
| 27 | 40 | <0.1 | 67 | 40 | <0.1 |
| 28 | 40 | <0.1 | 68 | 40 | <0.1 |
| 29 | 40 | <0.1 | 69 | 40 | <0.1 |
| 30 | 40 | <0.1 | 70 | 40 | <0.1 |
| 31 | 40 | <0.1 | 71 | 40 | <0.1 |
| 32 | 40 | <0.1 | 72 | 40 | <0.1 |
| 33 | 40 | <0.1 | 73 | 42 | <0.1 |
| 34 | 40 | <0.1 | 74 | 45 | <0.1 |
| 35 | 40 | <0.1 | 75 | 48 | <0.1 |
| 36 | 40 | <0.1 | 76 | 51 | <0.1 |
| 37 | 40 | <0.1 | 77 | 54 | 0.1 |
| 38 | 40 | <0.1 | 78 | 57 | 0.1 |
| 39 | 40 | <0.1 | 79 | 60 | 0.4 |