

## Vocabulary and Reading Comprehension



- Vocabulary size is a major correlate of comprehension.
- The relationship between comprehension and vocabulary is reciprocal.



## Vocabulary is the Bridge!!




## Information on Vocabulary Helps to. . .

- Detect vocabulary impairments that are one symptom of a possible language disorder
- Measure one aspect of semantic development, especially among nonreaders
- Identify appropriate interventions to facilitate vocabulary development
- Identify students at risk for reading difficulties
- Identify English vocabulary level of English Language Learners
- Determine if examinee's production vocabulary is consistent with recognition vocabulary



## Overview of Semantic Development (Selected Vocabulary Milestones)

| Age | Vocabulary Milestones |
| :--- | :--- |
| $8-12$ months | Understanding of 3-50 words |
| $12-18$ months | Avg. expressive vocab size 50-100 words at 18 months (words for <br> agent, action, object, location, possession, rejection, <br> disappearance, nonexistence, denial) |
| $18-24$ months | Avg vocabulary size 200-300 at 24 months |
| $24-30$ months | Basic questions (Who? What? What X doing? Where X going? |
| $30-36$ months | Understands basic spatial term (in, on, under) |
| $36-42$ months | Understands early temporal concepts, basic color words, basic <br> kinship terms |
| $42-48$ months | Understands words for basic shapes, size (big, little) |
| $48-60$ months | Understands letter names and sounds, numbers, basic conjunction <br> words (when, so, because, if) |

Paul, R. (2001). Language Disorders from Infancy through Adolescence. St. Louis, MO, Mosby.

## Overview of Semantic Development (Selected Vocabulary Milestones - cont'd)

| Age | Vocabulary Milestones |
| :--- | :--- |
| $5-7$ years | Average expressive vocabulary size is 5000 |
| $7-9$ years | • School introduces new words not encountered in conversation. <br> • Word definitions included synonyms and categories. Some words <br> have multiple meanings. |
| Capacity for figurative language increases. |  |

Paul, R. (2001). Language Disorders from Infancy through Adolescence. Mosby. St. Louis, MO.

## Vocabulary Development: Receptive and Expressive

| Age | Receptive <br> Vocabulary | Expressive <br> Vocabulary |
| :--- | :--- | :--- |
| 16 months | $100-200$ words | $<50$ words |
| 6 years | $20,000-24,000$ words | $2600-7000$ |

Berko Gleason, J. B., \& Bernstein Ratner, N. (2018). The development of language. Boston, MA: Pearson.

## Receptive-Expressive Performance (when difference is $\mathbf{1 0}+$ SS points)

| Sample | RLI > ELI | ELI > RLI |
| :--- | :---: | :---: |
| Normative Sample | $17.5 \%$ | $17.9 \%$ |
| Language Disorder | $27.2 \%$ | $9.3 \%$ |


| CELF-5 ${ }^{\text {A\&NZ }: ~ R e c e p t i v e ~ L a n g u a g e ~}$ |
| :---: |
| Index; |
| Expressive Language Index |

## Vocabulary by Part of Speech

|  | Nouns | Verbs | Adjectives | Function <br> words |
| :--- | :---: | :---: | :---: | :---: |
| First 50 words | $40 \%$ | $<10 \%$ | $<10 \%$ | $<10 \%$ |
| Productive <br> Vocabulary <br> $>600$ words | $40 \%$ | $25 \%$ |  | $15 \%$ |

Berko Gleason, J. B., \& Bernstein Ratner, N. (2018). The development of language. Boston, MA: Pearson.

## Individual Differences in Vocabulary Development



- Home environments rich in language experiences facilitate young children's vocabulary development and ease the transition from home to school.
- When children enter school they are often exposed to vocabulary that may not be common to their home environment (e.g. curriculum may include lessons about foreign countries, exotic animals).
- It is common for children who've developed strong vocabulary foundations (i.e. home vocab) to build upon this with their school vocabulary.
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## Differences in Vocabulary Acquisition



Hart, B., \& Risley, T. R. (1995). Meaningful differences in the everyday experience of young American children. Baltimore, MD: Brookes

## Breadth and Depth of Vocabulary



| Depth |
| :--- |
| Degree of various <br> kinds of word <br> knowledge |

## Vocabulary Development of Bilingual Children

Vocabularies of bilingual children develop at the same rate as vocabularies of monolingual children when both their languages are taken into account.

What are the implications for assessment?

## Implications for Assessment

Examiners must understand how to score responses that are provided in a different language.

Examiners must understand how to score dialectal or regional responses that do not match the target response.

See the EVT-3 Examiner's Manual for initial guidance of items scored as "correct."

Scoring responses provided in another language and Scoring dialectal/regional responses that do not match the target

- Working in a Culturally and Linguistically Diverse Society | This Clinical Guideline has three main purposes:
- to act as a guide for Australian speech pathologists working with Culturally and Linguistically Diverse (CALD) populations
- to be used as a document that provides support and advocates for the rights of CALD populations
- to expand on the Association's Working in a Culturally and Linguistically Diverse Society Position Paper. Member only
download www.speechpathologyaustralia.org.au > Clinical Guidelines
- See ASHA.org and search "dialect and assessment"
- American Speech-Language-Hearing Association, Assessment and intervention for Speakers of Non-mainstream English dialects, Online Journal.
- American Speech-Language-Hearing Association. Spoken Language Disorders: Cultural and Linguistic Considerations. Practice Portal.
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## Assessing Recognition Vocabulary: Characteristics of The Assessment Instrument

- Each PPVT item consists of two parts: the stimulus word, and an array of four pictures.
- One picture depicts the stimulus word, and the other three are distractors that are appealing choices for examinees who are unsure of the correct answer.



## PPVT-5: Format for Items



Put your finger on (stimulus word).
Show me (stimulus word).
Point to (stimulus word).

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Find (stimulus word).
Where is (stimulus word)?
*Tell me the number for (stimulus word).

## Assessing Production Vocabulary:

Characteristics of The Assessment Instrument

- Examiner shows a picture to the examinee and asks something about the picture.
- The examinee must respond with one word that provides an acceptable label for the picture, that answers a specific question about the picture, or that provides a synonym for a word that fits the pictured context.



## EVT-3: Format for Items



Read the stimulus question for each item as presented on the Record Form.

For example, What is this? (point to flower)

## Basal Rule and Ceiling Rule

| Test | Basal Rule | Ceiling Rule |
| :--- | :--- | :--- |
| PPVT-5 | 3 consecutive | 6 consecutive |
| EVT-3 | correct items <br> from start point | incorrect <br> responses |

$$
\begin{array}{ll}
\text { PPVT-4 } & \begin{array}{l}
\text { Specified number of correct and incorrect responses within an } \\
\text { item set }
\end{array} \\
\text { EVT-2 } & \begin{array}{l}
\text { 5 consecutive correct responses and } 5 \text { consecutive incorrect } \\
\text { responses }
\end{array}
\end{array}
$$

Response Times: 10 seconds per response \| 1 repetition allowed PPVT-5 Prompt: Try One. Point to the one you think it might be EVT-3 Prompt: Let's go on.

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Assessing Vocabulary

## Start Point Rule

- Recommended age-based start points are shown in the Record Forms and on the tabs in the Stimulus Book.
- If you anticipate that an examinee may perform well below average for his or her age, you may begin test administration with Item 1.


## PPVT-5

| Item |  |  |  | Score |
| :---: | :---: | :---: | :---: | :---: |
| Training Items A |  |  |  |  |
| A1. |  |  |  | + - |
| 1 | 2 | 3 | 4 | NR |
| A2. |  |  |  | + - |
| 1 | 2 | 3 | 4 | NR |



## Recording and Scoring Responses: EVT-3



## Calculating Raw Score Rule

PPVT-5

| Calculating the Raw Score |  |  | Calculating the Raw Score |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | Ceiling Item |  |  | Ceiling Item |  |
|  | Total Errors | - |  | Total Errors | - |
| Form A | Raw Score |  | Form $B$ | Raw Score |  |

EVT-3


## Converting Raw Scores to Standard Scores

Step 1. Calculate the Raw Score
Calculate the raw score by recording the number of the last item (Ceiling Item) administered in the "Calculating the Raw Score" table. Subtract the total number of 0 scores (Total Errors) from this item number. The difference is the Raw Score (see Figure 2.6).

| Calculating the Raw Score |  |  |
| ---: | ---: | :---: |
| Ceiling Item | 114 |  |
| Total Errors | -9 |  |
| Raw Score | 105 |  |

Figure 2.6 Completed "Calculating the Raw Score" Table

## Converting Raw Scores to Standard Scores

Step 2. Convert Raw Scores to Standard Scores
Convert a raw score to a standard score by using the age-appropriate standard score table in appendix A . Locate the individual's raw score in the first column of the table, labeled "Raw Score," note either Form A or B, and read the corresponding scaled score equivalent in the "Standard Score" column to the right (see Figure 2.7). Record the standard score in the "Score Summary" table on the Record Form (see A in Figure 2.8).


Figure 2.7 Standard Score, Percentile Rank, Normal Curve Equivalent, and Stanine
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PPVT-5 Manual, page 18
Assessing Vocabulary

## Converting Raw Scores to Standard Scores

Step 3. Determine Confidence Intervals
The second column of the "Score Summary" table (Confidence Interval) presents two levels of confidence: $90 \%$ and $95 \%$. Select the level of confidence that is appropriate for the purpose of the assessment or is required by your agency or district. The $95 \%$ level results in the broadest range of scores and provides you with the highest degree of confidence that the true score is actually in the range specified. Both the $90 \%$ and $95 \%$ levels are commonly used by decision-making teams to make diagnostic decisions and determine eligibility for services. Indicate the selected confidence level by placing an X in either the $90 \%$ or $95 \%$ box of the "Confidence Interval" column. Then write the associated score range in the space provided (see B in Figure 2.8).

Step 4. Determine Percentile Ranks
A percentile rank expresses an individual's score relative to his or her age group in percentile points. It indicates the percentage of individuals tested who have scored equal to or lower than a specific score. Locate the individual's standard score in Table A. 1 and read across to the right to the "Percentile Rank" column. Record the percentile rank for the score in the third column of the "Score Summary" table (see C in Figure 2.8).

Step 5. Determine Normal Curve Equivalents
The fourth column presents the Normal Curve Equivalent. Find the individual's standard score in the second column of Table A. 1 and read across to the corresponding normal curve equivalent. Record the normal curve equivalent on the Record Form (see D in Figure 2.8).

## Step 6. Determine Stanines

The fifth column presents the stanine. Find the individual's standard score in the second column of Table A. 1 and read across to the corresponding stanine. Record the stanine on the Record Form (see E in Figure 2.8).

## Converting Raw Scores to Standard Scores

## Step 7. Determine Test-Age Equivalents

A test-age equivalent provides a gross estimate of an individual's performance in relation to individuals in the normative sample. Find the individual's raw score in the first column of Table B. 1 and read across the row to locate the corresponding test-age equivalent for the appropriate form (A or B). Record this value in the sixth column of the "Score Summary" table (see F in Figure 2.8).

Step 8. Determine Growth Scale Values
A growth scale value reflects the range of vocabulary ability from very low to very high. An individual's test performance can be placed on this scale to provide a means for tracking growth. Find the individual's raw score in the first column of Table B. 1 and read across the row to locate the corresponding growth scale value for the appropriate form ( A or B ) in the "GSV" column. Record this value in the seventh column of the "Score Summary" table (see G in Figure 2.8). To determine if an individual's vocabulary growth is significant, use the "PPVT-5 Scores Over Time" table on the last page of the Record Form. See the Discrepancy Comparison section in this chapter for more information.


Figure 2.8 Completed Score Summary

PPVT-5 Manual, page 18

## Converting Raw Scores to Standard Scores

Step 9. Complete Graphical Profile of Standard Scores A Graphical Profile is a visual aid used to interpret standard scores. Mark the individual's standard score on the "Standard Score" line. Then draw a straight vertical line through the standard score and across the other scales The values that the drawn line intersects correspond to the percentile, normal curve equivalent (NCE), and stanine values (see Figure 2.9).


## Extreme Raw Scores

The procedure for obtaining standard scores and other derived scores applies in all circumstances except when the examinee earns a raw score of 0 . If this occurs, do not report a standard score or other derived score
for the test.

PPVT-5 Manual, page 18

## Converting Raw Scores to Standard Scores

## Step 1. Calculate the Raw Score

Calculate the raw score by recording the number of the last item (Ceiling Item) administered in the "Calculating the Raw Score" table. Subtract the total number of 0 scores (Total Errors) from this item number. The difference is the Raw Score (see Figure 2.7).

| Calculating the Raw Score |  |
| ---: | ---: |
| Ceiling Item | 104 |
| Total Errors | $-\quad 8$ |
| Raw Score | 96 |

Figure 2.7 Completed "Calculating the Raw Score" Table

# Converting Raw Scores to Standard Scores 

## Step 2. Convert Raw Scores to Standard Scores

Convert a raw score to a standard score by using the age-appropriate standard score table in appendix A Locate the individual's raw score in the first column of the table, labeled "Raw Score," note either Form A or Form B, and read the corresponding scaled score equivalent in the "Standard Score" column to the right (see Figure 2.8). Record the standard score in the "Score Summary" table on the Record Form (see A in Figure 2.9).


Figure 2.8 Standard Score, Percentile Rank, Normal Curve Equivalent, and Stanine

## Converting Raw Scores to Standard Scores

Step 3. Determine Confidence Intervals
The second column of the "Score Summary" table (Confidence Interval) presents two levels of confidence: 90\% and $95 \%$. Select the level of confidence that is appropriate for the purpose of the assessment or is required by your agency or district. The $95 \%$ level results in the broadest range of scores and provides you with the highest degree of confidence that the true score is actually in the range specified. Both the $90 \%$ and $95 \%$ levels are commonly used by decision-making teams to make diagnostic decisions and determine eligibility for services. Indicate the selected confidence level by placing an X in either the $90 \%$ or $95 \%$ box of the "Confidence Interval" column. Then write the associated score range in the space provided (see B in Figure 2.9).
Step 4. Determine Percentile Ranks
A percentile rank expresses an individual's score relative to his or her age group in percentile points. It indicates the percentage of individuals tested who have scored equal to or lower than a specific score. Locate the individual's standard score in Table A. 1 and read across to the right to the "Percentile Rank" column. Record the percentile rank for the score in the third column of the "Score Summary" table (see C in Figure 2.9).
Step 5. Determine Normal Curve Equivalents
The fourth column presents the Normal Curve Equivalent. Find the individual's standard score in the second column of Table A. 1 and read across to the corresponding normal curve equivalent. Record the normal curve equivalent on the Record Form (see $D$ in Figure 2.9).

Step 6. Determine Stanines
The fifth column presents the stanine. Find the individual's standard score in the second column of Table A. 1 and read across to the corresponding stanine. Record the stanine on the Record Form (see E in Figure 2.9).

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## Converting Raw Scores to Standard Scores

## Step 7. Determine Test-Age Equivalents

A test-age equivalent provides a gross estimate of an individual's performance in relation to individuals in the normative sample. Find the individual's raw score in the first column of Table B. 1 and read across the row to locate the corresponding test-age equivalent for the appropriate form ( $A$ or $B$ ). Record this value in the sixth column of the "Score Summary" table (see F in Figure 2.9).

Step 8. Determine Growth Scale Values
A growth scale value reflects the range of vocabulary ability from very low to very high. An individual's test performance can be placed on this scale to provide a means for tracking growth. Find the individual's raw score in the first column of Table B. 1 and read across the row to locate the corresponding growth scale value for the appropriate form (A or B) in the "GSV" column. Record this value in the seventh column of the "Score Summary" table (see G in Figure 2.9). To determine if an individual's vocabulary growth is significant, use the "EVT-3 Scores Over Time" table on the last page of the Record Form. See the Discrepancy Comparison section in this chapter for more information.


Figure 2.9 Completed Score Summary
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## Converting Raw Scores to Standard Scores

Step 9. Complete Graphical Profile of Standard Scores
A Graphical Profile is a visual aid used to interpret standard scores. Mark the individual's standard score on the
"Standard Score" line. Then draw a straight vertical line through the standard score and across the other scales. The values that the drawn line intersects correspond to the percentile, normal curve equivalent (NCE), and stanine values (see Figure 2.10).


Figure 2.10 Completed Graphical Profile of Standard Scores

## Converting Raw Scores to Standard Scores

## Extreme Raw Scores

The procedure for obtaining standard scores and other derived scores applies in all circumstances except when the examinee earns a raw score of 0 . If this occurs, do not report a standard score or other derived score for the test.

## Score Comparison

Many examiners will want to compare an individual's test performance across multiple administrations of the same test (i.e., EVT-3 Form A, EVT-3 Form B). They may also want to compare an individual's test performance of expressive and receptive vocabulary skills (e.g., EVT-3 Form A and PPVT-5 Form B) to aid in the interpretation of scores. Because the PPVT-5 and EVT-3 instruments were standardized using the same normative group, direct comparison of these two scales is possible.
https://support.pearson.com/usclinical/s/article/PPVT-5-Comparison-Report-with-EVT-3
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## Converting Raw Scores to Standard Scores



Figure 2.12 Comparing Standard Scores

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## Converting Raw Scores to Standard Scores

## Completing the Score Profile

The Score Profile on the last page of the Record Form enables you to visually compare EVT-3 to PPVT-5 standard scores. Write the standard score and confidence interval for EVT-3 and PPVT-5 (see A in Figure 2.13). Mark an $X$ on the line that corresponds to the EVT-3 and PPVT- 5 standard scores. Then place bars that correspond to the upper and lower limits of the confidence interval around each score. Shade the area between the bars (see Figure 2.13).


Figure 2.13 Score Profile

## Converting Raw Scores to Standard Scores

## Comparing Standard Scores

The "Standard Score Comparison" table on the last page of the Record Form helps you evaluate the PPVT-5 and EVT-3 standard score differences. To complete the "Standard Score Comparison" table, write the PPVT-5 and EVT-3 standard scores in their respective columns (see A in Figure 2.11). Subtract the EVT-3 score from the PPVT-5 score. Record the difference in the "Difference" column, remembering to note whether the resulting value is positive or negative (see B in Figure 2.11). A positive number represents a PPVT-5 score that is greater than the EVT-3 score; a negative number indicates an EVT-3 score that is greater than the PPVT-5 score.

Table C. 1 provides the required differences between the standard scores needed for statistical significance (critical values) at the .05 and .10 levels for each age range. Circle the significance level you wish to use in the "Standard Score Comparison" table (see C in Figure 2.11). Find the appropriate age in Table C. 1 and the significance level. Read across to the appropriate column and write the number in the "Critical Value" column (see D in Figure 2.11). The absolute value (i.e., the value without regard to the + or - sign) of the score difference must be equal to or greater than the critical value to be statistically significant. Circle Yes in the "Significant Difference" column if the score difference is equal to or greater than the critical value. Circle No if the difference is less than the corresponding critical value (see E in Figure 2.11).

For all significant differences, the PPVT-5 provides the percentage of individuals in the normative sample (base rate) who obtained the same or greater discrepancy between PPVT-5 and EVT-3 standard scores. Base rates are provided at $\leq 25 \%, \leq 15 \%, \leq 10 \%, \leq 5 \%$, and $\leq 2 \%$. The values reported in Table C. 1 are separated into - and + columns, based on the direction of the difference. Read across the "Base rate" columns to locate the absolute value of the individual's score difference. Enter the base rate in the "Prevalence in Normative Sample" column in the "Standard Score Comparison" table (see F in Figure 2.11).

## Converting Raw Scores to Standard Scores

PPVT-5 Compared to EVT-3

| Standard Score Comparison |  | PPVT-5 <br> Acr $B$ |  | $\begin{aligned} & \text { EyT-3 } \\ & \text { A } \mathrm{A} \text { B } \end{aligned}$ | Difference |  | Statistically Significant Leve! <br> (05) 10 C | Critical Value |  | Significant Difference |  | Prevalence in Normative Sample |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | 98 (A) 88 |  |  |  |  | $\rightarrow 7.78 \text { D }$ | Yes No C |  | $\leq 25 \% \mathrm{P}$ |  |
| Table C. 1 Statistics for Pairwise Comparisons between PPVT-5 and EVT-3 by Age |  |  |  |  |  |  |  |  |  |  |  |  |  |
| PPVT-5/EVT-3 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Reference age group | Significance level |  | <25\% |  |  |  |  | Base rates10\% |  | 55\% |  |  |  |  |
|  |  |  | 515\% | 52\% |  |  |  |  |  |  |  |
|  | . 05 | . 10 |  |  | (t) | (-) | (+) | (-) | (+) | (4) | ( + ) | $(-)$ | (t) |  | (-) |
| Overall sample | 7.42 | 6.22 | 6.0 | 6.0 | 10.0 | 10.0 | 13.0 | 1.0 | 17.0 | 15.0 | 23.0 |  | 22.0 |
| 2.6-4:11 | 6.58 | 5.52 | 7.0 | 7.0 | 11.0 | 11.0 | 14.0 | 10 | 18.0 | 18.0 | 25. |  | 22.0 |
| 5:0-6:11 | 778 | 6.53 | 7.0 | 5.0 | 9.0 | 8.0 | 12.0 | 10 | 15.0 | 15.0 | 20. |  | 25.0 |
| 7:0-10:11 | 778 | 65 | 7.0 | 60 | 4 | 9 | 140 | 120 | 20.0 | 16.0 | 24. |  | 25.0 |
| 11:0-14:11 | 7.21 | 6.05 | 4.0 | 8.0 | 9.0 | 11.0 | 13.0 | 13.0 | 18.0 | 17.0 | 24.0 |  | 21.0 |
| 15:0-24:11 | 832 | 6.98 | 6.0 | 60 | 9.0 | 10.0 | 12.0 | 12.0 | 160 | 15.0 | 21.0 |  | 19.0 |
| 25:0-60:11 | 7.21 | 6.05 | 5.0 | 5.0 | 9.0 | 8.0 | 11.0 | 11.0 | 15.0 | 14.0 | 21. |  | 18.0 |
| 61:0-90:11+ | 6.58 | 5.52 | 6.0 | 5.0 | 10.0 | 9.0 | 13.0 | 12.0 | 20.0 | 16.0 | 23.6 |  | 23.6 |

Figure 2.11 Comparing Standard Scores
https://support.pearson.com/usclinical/s/article/PPVT-5-Comparison-Report-with-EVT-3

## Converting Raw Scores to Standard Scores

## Completing the Score Profile

The Score Profile on the last page of the Record Form enables you to visually compare PPVT-5 to EVT-3 standard scores. Write the standard score and confidence interval for PPVT-5 and EVT-3 (see A in Figure 2.12). Mark an X on the line that corresponds to the PPVT-5 and EVT-3 standard scores. Then place bars that correspond to the upper and lower limits of the confidence interval around each score. Shade the area between the bars (see Figure 2.12).


Figure 2.12 Score Profile

## PPVT-5 report

EVT-3 report
Comparison Report
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Assessing Vocabulary

## Administration and Scoring: Paper/Pencil and Digital Options



## The Bridge of Vocabulary 2

Explicit, research-based vocabulary intervention activities tied to academic standards.


Montgomery, J. (2019). The bridge of vocabulary: Evidence-based activities for academic success (2nd ed.). Bloomington, MN: NCS Pearson.


