NAP
Narrative Assessment Protocol

Khara Pence, Ph.D.
Laura Justice, Ph.D.
Carolyn Gosse, B.A.

Preschool Language and Literacy Lab
University of Virginia
Charlottesville, Virginia
Coding the Narrative Assessment Protocol (NAP)
* updated 08/22/08*
Location of electronic document is Z:\P3L\Projects\NAP\CodingGuidelines

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Introduction

Overview of the Narrative Assessment Protocol

The Narrative Assessment Protocol (NAP) is a tool that is designed to assess children’s spoken narrative language abilities using a narrative sample elicited with the wordless storybook *Frog, Where are You?* (Mayer, 1969). Importantly, the NAP facilitates the coding of a narrative sample in real time and eliminates the need for narrative transcription. The NAP is organized into two overarching domains of narrative content and organization: **Microstructure** and **Macrostructure**. The microstructure domain quantifies five indicators of microstructural narrative development: 1) sentence structure, 2) phrase structure, 3) modifiers, 4) nouns, and 5) verbs. These five domains are captured by coding the presence of 18 items. The macrostructure domain is currently under development, and when complete, should include at least four indicators: 1) initial event, 2) search, 3) resolution, and 4) semantic scoring. The NAP is designed to serve at least two functions. First, the NAP can be used to describe individual differences in narrative language abilities for children of the same age. Second, the NAP can be used to describe children’s development in narrative language across time.

Short Literature Review

The use of narrative storytelling in the assessment of oral language development can provide rich information about a child’s ability to integrate many dimensions of language, including syntax (e.g., use of conjunctive ties), vocabulary (e.g., use of specific terms), and morphology (e.g., use of past tense verb markers). Effective use of narrative language also requires one to carefully organize content within and across utterances. This complexity, combined with the lack of feedback from the listener that is present in conversational exchange, makes narrative a cognitively demanding task that can reveal aspects of oral language development not captured by standardized assessments or informal observation (Justice et al., 2006). Because many elements of storytelling (e.g. syntactic complexity, story grammar elements, attribution of causality; see Price, Roberts, & Jackson, 2006, for review) follow a developmental progression, narrative assessment may prove useful as a means of tracking change over time and predicting a child’s future language development.

Although clearly recognized as an important component of a comprehensive language assessment, narrative assessment is not currently widely used by researchers or clinicians, due at least in part to the time consuming nature of collecting and analyzing narrative structure. For instance, to use narrative assessment as part of a language assessment, the clinician must collect, transcribe, and analyze the narrative, and then compare outcomes against some sort of interpretable metric. These features make the use of narratives somewhat unrealistic for the busy speech-language clinician or researcher, despite the possible benefits of using narrative analysis to evaluate a child’s language skills. Thus, the NAP is intended to allow both researchers and clinicians to assess children’s narrative development and abilities in a timely manner.
Psychometric Properties of the Narrative Assessment Protocol

Reliability

**Becoming a Reliable User of the NAP.** To become a reliable user of the NAP, coders participate in a comprehensive self-study training program in which they review background literature concerning language and grammar (Justice & Ezell, 2002) and complete accompanying exercises, view narrative samples and accompanying transcripts, complete practice coding sessions, and undergo a reliability assessment. (See the section of this document entitled *Familiarization, Practice, and Reliability.*) To be deemed reliable, coders must demonstrate agreement (within one value) on 15 out of 18 items (83%) for three consecutive master-coded videos.

**Inter-Rater Reliability for the NAP.** The developers of the NAP coded 20 videos independently and then met to resolve any disagreements. Disagreements (within one value) were tallied and reliability was calculated for each of the 18 NAP items, as well as for the total NAP score (sum of 18 items). See Table 1 for NAP inter-rater reliability.

<table>
<thead>
<tr>
<th>NAP Item</th>
<th>Percent Reliable (within one value)</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sentence Structure: Compound Sentence</td>
<td>.80</td>
<td>.41</td>
</tr>
<tr>
<td>Sentence Structure: Complex Sentence</td>
<td>.75</td>
<td>.44</td>
</tr>
<tr>
<td>Sentence Structure: Negative Sentence</td>
<td>.95</td>
<td>.22</td>
</tr>
<tr>
<td>Sentence Structure: Interrogative Sentence</td>
<td>1.00</td>
<td>.00</td>
</tr>
<tr>
<td>Phrase Structure: Elaborated Noun Phrase</td>
<td>.85</td>
<td>.37</td>
</tr>
<tr>
<td>Phrase Structure: Compound Noun</td>
<td>1.00</td>
<td>.00</td>
</tr>
<tr>
<td>Phrase Structure: Prepositional Phrase</td>
<td>.95</td>
<td>.22</td>
</tr>
<tr>
<td>Modifier: Adverb</td>
<td>.75</td>
<td>.44</td>
</tr>
<tr>
<td>Modifier: Advanced Modifier</td>
<td>.95</td>
<td>.22</td>
</tr>
<tr>
<td>Nouns: Pluralized Noun</td>
<td>1.00</td>
<td>.00</td>
</tr>
<tr>
<td>Nouns: Possessive Form</td>
<td>1.00</td>
<td>.00</td>
</tr>
<tr>
<td>Nouns: Tier 2 Noun</td>
<td>.90</td>
<td>.31</td>
</tr>
<tr>
<td>Verbs: Auxiliary Verb + Main Verb</td>
<td>.95</td>
<td>.22</td>
</tr>
<tr>
<td>Verbs: Copula Be Verb</td>
<td>.80</td>
<td>.41</td>
</tr>
<tr>
<td>Verbs: Irregular Past Tense Verb</td>
<td>.95</td>
<td>.22</td>
</tr>
<tr>
<td>Verbs: Regular Past Tense Verb</td>
<td>.95</td>
<td>.22</td>
</tr>
<tr>
<td>Verbs: Tier 2 Verb</td>
<td>.90</td>
<td>.31</td>
</tr>
<tr>
<td>Verbs: Compound Verb</td>
<td>1.00</td>
<td>.00</td>
</tr>
<tr>
<td>NAP Sum</td>
<td>.91</td>
<td>.08</td>
</tr>
</tbody>
</table>
Validity

**Concurrent Validity.** The concurrent validity of the NAP was examined with three aims in mind: To determine (1) the degree of congruence between NAP scores as coded online (from video) and offline (from transcripts), (2) the degree of congruence between NAP scores and commonly-used measures of narrative microstructure, and (3) the degree of congruence between NAP scores and standardized measures of language ability.

Participants included 30 children assessed in their prekindergarten year and 5 children assessed in their kindergarten and first grade years who were drawn from two larger studies of preschool language/literacy intervention.

Children were administered a comprehensive portfolio of standardized language measures including the Clinical Evaluation of Language Fundamentals Preschool, Second Edition (CELF PS-2; Wiig, Secord, & Semel, 2004) in the preschool year. Additionally, a spoken fictional narrative using the wordless storybook *Frog Where Are You?* (Mayer, 1969) was videotaped for each child. The NAP was scored online for 30 preschoolers, 5 kindergartners, and 5 first graders and was scored offline (from transcripts produced with SALT, Research V9; Miller & Iglesias, 2006) for a subset of the sample (10 preschoolers, 5 kindergartners and 5 first graders).

To address our first aim, we computed correlations for the five NAP indicators derived from online and offline coding for 20 children. A Bonferroni corrected alpha of .01 for five comparisons (.05/5) was used to control for Type I error. All five correlations were statistically significant and were greater than or equal to .58 (range = .58 - .92).

To address our second aim, correlations were computed between the sum of the five NAP indicators derived from online coding and four measures computed using SALT: (1) TNW, (2) NDW, (3) Number of utterances (C-units), (4) MLU (mean length of C-units), as well as the percentage of grammatically acceptable C-units, and the percentage of complex sentences, for the same 20 children. A Bonferroni corrected alpha of .01 for six comparisons (.06/5) was used. Four of the five correlations were statistically significant and were greater than or equal to .62 (range = .62 - .87). The only non-significant correlation was between the sum of the five NAP indicators and the number of utterances.

To address our third aim, correlations were computed for 30 preschoolers between the sum of the five NAP indicators and standardized scores on three core language subtests of the CELF-PS 2: (1) Sentence Structure, (2) Word Structure, and (3) Expressive Vocabulary, as well as for the composite standard score for the three subtests. A Bonferroni corrected alpha of .01 for four comparisons (.05/4) was used. All four correlations were significant and were greater than or equal to .51 (range = .51 - .66).

Findings indicate that the NAP demonstrates adequate online-offline scoring validity, and demonstrates adequate concurrent validity with measures derived from transcription software as well as standardized measures of language ability. The NAP is expected to allow for the timely assessment of narrative development by both researchers and clinicians.
Coding Procedure

Materials

1. *Coding forms.* Coding forms can be found in the project file cabinet (e.g., CHT, STR) in the NAP to be coded folder.

2. *DVDs.* To find a DVD to code, reference the Excel spreadsheet that can be found on the z drive under the following pathway J:\PRJ\Data\Cohort1\CHILD\NAP (where PRJ stands for project (e.g., STR, CHT, PCR) and Choose a DVD which has not yet been coded. Note also that Cohort2 would be substituted in the pathway for Cohort 2 data.

3. *DVD player that can handle small diameter disks.* All of the Narrative samples are on mini-DVDs. Make sure the DVD player you choose is compatible with this size disk. All transcribing room computers can accept mini DVDs (Macs cannot).

4. *Headphones or speakers.* The sound recording for many of the narrative samples is not optimal. Headphones will help you to discern what the child is saying.

Familiarization, Practice, and Reliability

1. Review the pages of *The Syntax Handbook* (Justice & Ezell, 2002) that are relevant to the NAP (Appendix 2). Complete the accompanying exercises to sharpen your skills and then check your answers.

2. **Familiarization**- Watch 2 videos while reading the accompanying transcripts.

3. **Practice**- Complete 5 practice videos by watching and coding the videos and before looking at the transcript to verify/correct your codes.

4. **Reliability**- Begin reliability by coding 3 videos. To be deemed reliable, you must agree with the master codes on 15 out of 18 items (83%) within one value on the frequency scale for three consecutive videos. For example, if you code a 2, and the master code is 3+, this would be considered an agreement within one value.

5. If you do not attain 15/18 (83%) in the first 3 videos, continue to code by sets of three until reliability is achieved.

<table>
<thead>
<tr>
<th>Subject Number</th>
<th>Data Wave</th>
<th>Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>10016932</td>
<td>Spring 05</td>
<td>Familiarization</td>
</tr>
<tr>
<td>10016932</td>
<td>Spring 06</td>
<td>Familiarization</td>
</tr>
<tr>
<td>10017779</td>
<td>Spring 05</td>
<td>Practice</td>
</tr>
<tr>
<td>10017779</td>
<td>Spring 06</td>
<td>Practice</td>
</tr>
<tr>
<td>10017902</td>
<td>Spring 05</td>
<td>Practice</td>
</tr>
<tr>
<td>10017902</td>
<td>Spring 06</td>
<td>Practice</td>
</tr>
<tr>
<td>10017876</td>
<td>Spring 05</td>
<td>Practice</td>
</tr>
<tr>
<td>10017876</td>
<td>Spring 06</td>
<td>Reliability</td>
</tr>
<tr>
<td>10017371</td>
<td>Spring 05</td>
<td>Reliability</td>
</tr>
<tr>
<td>10017371</td>
<td>Spring 06</td>
<td>Reliability</td>
</tr>
<tr>
<td>30204</td>
<td>Fall 05</td>
<td>Reliability</td>
</tr>
<tr>
<td>30501</td>
<td>Fall 05</td>
<td>Reliability</td>
</tr>
</tbody>
</table>
Data Entry
- Retrieve child assessments from To Be Entered in SPSS folder in the 2nd file drawer of project file cabinet.
- Write your computing ID and the date next to “Entered:” stamp
- Identify and open the appropriate database for the child assessment and enter the codes into SPSS
- Place code sheets in the Entered in SPSS To Be Checked folder in the 2nd file drawer of project file cabinet.

Data Checking
- Retrieve child assessments from Entered in SPSS To Be Checked folder in 2nd file drawer of project file cabinet.
- Write your computing ID and the date next to “Checked:”
- Identify and open the appropriate database for the child assessment and check the SPSS entries.
- Place code sheets in the Archive drawer of the project file cabinet.

Data Analysis

References


Appendix 1: Micro-Structure Coding Catalog

Directions:

1. Begin coding after the examiner provides directions for the child to begin telling a story. Do not code while child is supposed to be looking at the pictures, even if the child begins his narrative during this time.
2. Do not code off-topic discourse, such as conversation with the examiner about the camera or other conversation not pertaining to the book. Do not code questions about the book addressed to the examiner (e.g., Is that a frog?)
3. Record unique usages for the following categories: modifiers, nouns, verbs. Children only score points for unique usages in these categories. Unique usages are not required for sentence structure and phrase structure, although there is space for notes.
4. A unique usage of a copula ‘be’ verb is any verb that has a different subject or object.
5. If a child self-corrects, score the corrected form.
6. If a child uses one of the indicators in a grammatically incorrect utterance, give the child credit for any indicators correctly constructed. For example, if the child says “They was looking out the window.”, give the child credit for auxiliary verb + main verb because subject agreement is not part of the indicator. As another example, if the child says “he don’t know it’s a tree”, give the child credit for negative sentence because don’t conveys the negative structure even though the subject-verb agreement is incorrect.
7. If the child is making a complex sentence, but leaves out the auxiliary verb (e.g., He trying to find the frog.), give the child credit for the complex sentence, but not auxiliary verb+main verb.
8. If the examiner recasts or expand a child’s utterance, and then the child imitates the more sophisticated utterance, do not give the child credit for the more sophisticated utterance.
9. If the child repeats an utterance because the examiner asks for clarification, do not code the repeated utterance. For example, if the child says “He said, where are you frog?” and the examiner says “what?” and the child repeats “He said, where are you frog?” do not code the repetition. If the child repeats without prompting from the examiner, code the repeated utterance.
<table>
<thead>
<tr>
<th>Structure</th>
<th>Definition</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sentence Structure</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compound sentence</td>
<td>Compound sentences contain a <em>coordinating conjunction</em> used to join two or more independent clauses to form a compound sentence: <strong>for, nor, but, or, yet, so</strong></td>
<td>• He jumped out the window <em>but</em> he didn’t get far. \n• She likes it <em>so</em> she’ll buy it.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> Do not score if one of two conjoined clauses does not contain its own subject. Do not score two independent clauses joined by the coordinating conjunction <strong>and</strong>(^1).</td>
<td></td>
</tr>
<tr>
<td>Complex sentence</td>
<td>Complex sentences contain two verbs (minimally) and a <em>subordinating conjunction</em> used to join a dependent clause to another dependent clause or an independent clause. Examples of common subordinating conjunctions are: <strong>when, that, who, which</strong></td>
<td>• She ate the one <em>that</em> I didn’t like. \n• That boy <em>who</em> hit me is mean. \n• When the boy and the dog woke up, they noticed the frog was gone.</td>
</tr>
<tr>
<td></td>
<td>Complex sentences may also use infinitives, which sometimes are not explicitly marked with “to”, as in the asterisked example.</td>
<td>• John is calling to tell us about the class \n• Please help your mom get dinner ready.*</td>
</tr>
<tr>
<td></td>
<td>Complex sentences may also be in the form of reported speech, as in the example</td>
<td>• The little boy said &quot;come out wherever you are&quot;.</td>
</tr>
</tbody>
</table>

\(^1\) Many children begin each page by saying ‘and,’ so it is difficult to tell whether they have truly said a complex sentence or are reflexively saying ‘and.’
**Subordinating Conjunctions:**

<table>
<thead>
<tr>
<th>after</th>
<th>as long as</th>
<th>if</th>
<th>in order that</th>
<th>that</th>
<th>until</th>
<th>whenever</th>
</tr>
</thead>
<tbody>
<tr>
<td>although</td>
<td>as though</td>
<td>in order that</td>
<td>though</td>
<td>what</td>
<td>till</td>
<td>where</td>
</tr>
<tr>
<td>because</td>
<td>provided that</td>
<td>till</td>
<td>whatever</td>
<td>wherever</td>
<td></td>
<td></td>
</tr>
<tr>
<td>as far as</td>
<td>before</td>
<td>since</td>
<td>unless</td>
<td>when</td>
<td>so</td>
<td>while</td>
</tr>
<tr>
<td>as if</td>
<td>how</td>
<td>so</td>
<td></td>
<td></td>
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</tbody>
</table>

**Negative sentence**

Sentence that uses **no or not**, or a **contracted form of no or not** (e.g., can’t, won’t, ain’t, don’t, doesn’t) to negate the meaning of the sentence.

- The frog can’t go there.
- He doesn’t like that dog.

**Interrogative**

Yes-no questions that use “do insertion” or wh-questions that use inversion

- Frog, are you hiding in my boot?
- Where are you hiding?
- Do you want to help find my frog?

**Phrase Structure**

**Elaborated noun phrase (ENP)**

Phrase consisting of one or more **modifiers** *(determiner, initiator, adjectival)* preceding a singular or plural noun

**Note:** do not code ENP if only the or a/an precedes the noun.

- The little frog…
- All of the bees…
- The frog’s head

- A bee…

If the child uses an incorrect possessive form, do not give credit

- Him nose v. his nose

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2 ENPs add more specificity to a noun than the common definite and indefinite articles.
**Compound noun**

Coordinating conjunction used to join nouns as subjects or objects: **and, nor, but, or, yet, so**

- The boy or the dog…
- The hat nor the sweater…

**Prepositional phrase**

Phrase consisting of the object of the preposition, the preposition, and any associated adverbs or adjectives

- The frog was in the jar.
- The boy climbed up the tree.

**Modifiers**

**Adverb**

A word ending in -ly that modifies a verb by providing information about manner, place, time, degree, number, reason, affirmation, or negation.

- Daily
- Happily
- She was absolutely tired.

**Note:** adverb phrases are excluded (e.g. on top of, in here). Deictic terms that rely on position of speaker in relation to the listener (e.g. here and there) are excluded. Also, remember that not all words ending in –ly are adverbs (e.g., lovely grandmother)

**Advanced modifiers**

Single word adjectives or adverbs that add significant precision to a noun or verb.

- The frog was in the filthy water…
- Bees were flying around.
- He was falling backward.

**Nouns**

**Pluralized noun**

Noun with plural marker attached: /s/, /z/, /iz/

- The five frogs…
- Those cats…

**Note:** code pluralized noun even if the plural form is overgeneralized

- The sheeps…

**Possessive form**

Noun with possessive marker: /s/, /z/, or /iz/

- The boy’s hats
- The mouse’s cheese
Tier-two noun
Noun that is a more complex or more precise form of a common noun (Beck & McKeown, 2002). Proper nouns are not included.
- Doe, reindeer, owl, marsh, pond, swamp, beehive, puddle, bumblebee, branch, etc.

<table>
<thead>
<tr>
<th>Verbs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auxiliary verb + main verb</td>
</tr>
</tbody>
</table>
- The boy was yelling at the dog. |
- The girls are going with him. |
- The cat’s drinking. |
- We’re walking with you. |
| Copula ‘be’ verb +… | Verb of being used in contracted or uncontracted form as main verb in clause |
- He’s tired. |
- The frog was here. |
- I am. |
- The boy was not mad. |
| Note: “was” is coded as a copula as long as it is not an auxiliary verb (i.e., do not code as irregular past tense). |
| Note: copula that appear in questions are also counted in this category. |
| Irregular past tense verb | Verb that marks past tense irregularly |
- The dog fell… |
- That mouse ran away… |
- He got a frog. |
| Note: do not code irregular past tense verbs marked with regular past tense verb ending |
- The boy felled down… |
- The mouse runned away… |
| Regular past tense verb | Verb with regular past tense marker attached: /Id/ or /t/ |
- The dog walked… |
- He climbed… |
Tier-two verb

Verb that is more precise or complex form of a verb (Beck & McKeown, 2002) or is a synonym for a basic-level, all general purpose verb (make, do, go)

- Rushed, whirled, chased, sprinted, sneaked, approached, etc.

Compound verb

Note: Do not give credit for verbs that are repeated for emphasis.
- She looked and looked.
- She ran and laughed.
- The frog swam and hid.

Appendix 2: Grammar and Syntax Guides and Practice Questions

See hard copies of the relevant readings or access the following folder on the z drive here: J:\P3L\Projects\NAP\PDFs for coding guidelines

Part 1 – pp. 232 - 239
Part 2 – pp. 249-250, 240, 246, 247
Part 3 – pp. 248, 187, 188, 251, 189
Part 4 – pp. 190, 191, 193, 194, 202
Part 5 – pp. 203 - 207
Part 6 – pp. 208, 209, 44 - 46
Part 7 – pp. 47 - 49, 65, 69