

Response to Treatment for Naming Impairment in Individuals with Aphasia



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Introduction

One of the most common characteristics of aphasia is difficulty naming (anomia). During instances of anomia, an individual may still be able to access characteristics of the word they are trying to name. For example, individuals may recall the meaning of the word (semantic), sounds within the word (phonological), or how the word is spelled (orthographic). The Lexical Retrieval Cascade Treatment developed at the University of Arizona is an approach that promotes the use of self-cueing strategies to support word retrieval. Self-cueing can help individuals retrieve the correct word or provide enough meaningful information for a listener to understand what word is trying to be communicated. Most standardized naming tests do not provide a means to characterize such information, and thus fail to capture the full communicative value of responses. For this study, we developed a scoring system to quantify the meaningful information provided on the Boston Naming Test (BNT) when individuals with aphasia failed to retrieve the target word. Scoring was applied to responses before and after treatment.

Data Sources

Participants

- 12 individuals with aphasia (4 Broca's, 4 Anomic, 3 Conduction, 1 Wernicke's) due to left hemisphere damage
- Mean age = 62-years-old; Mean time post onset = 4.5 years
- All participated in a comprehensive assessment battery, including the Boston Naming Test, before and after treatment.
- All participated in the Lexical Retrieval Cascade treatment for an average of 5 weeks.

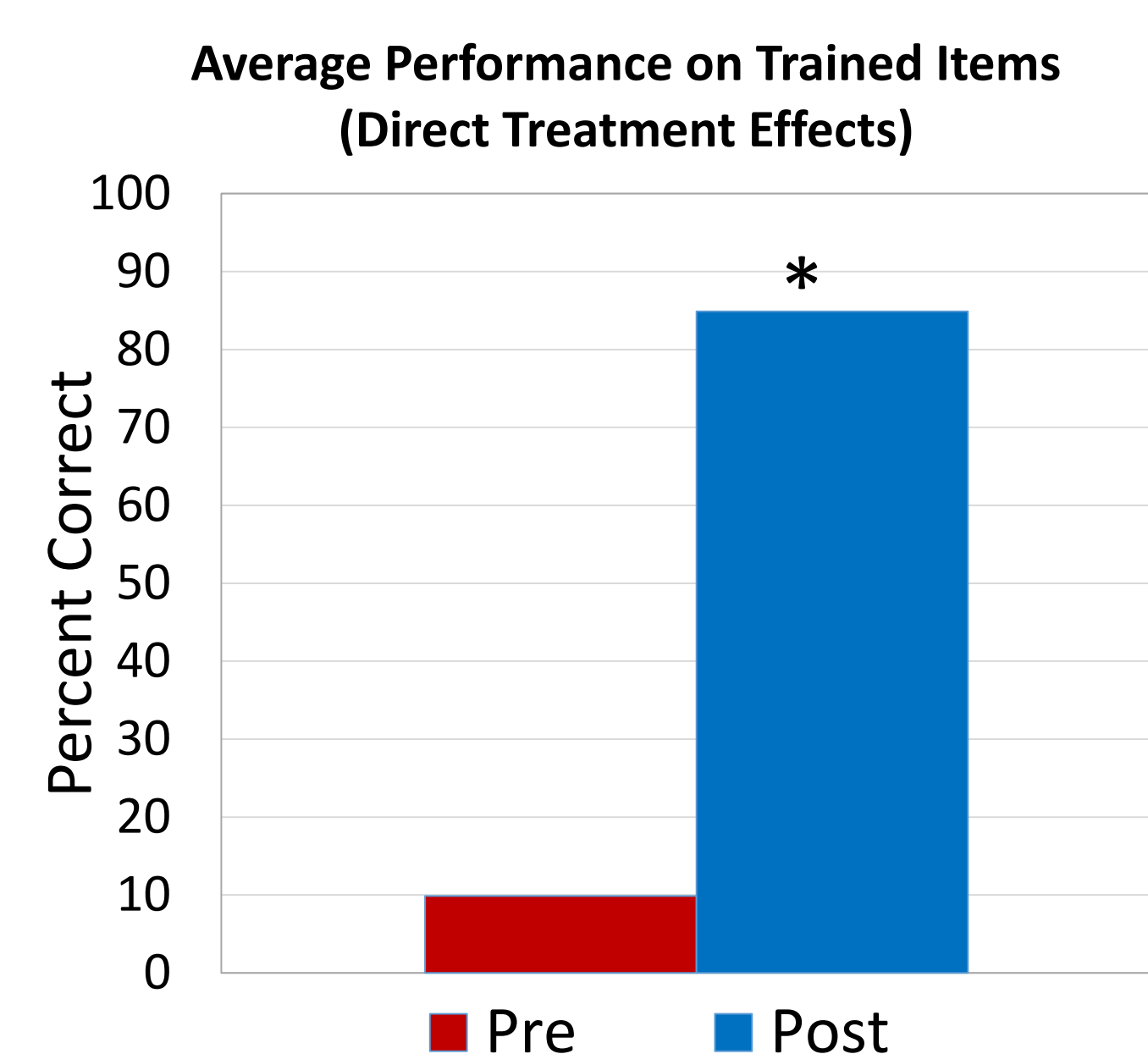
Lexical Retrieval Cascade Treatment

- Train Lexical Retrieval Cascade by presenting target word (out of 20 items) and ask subject, "What is this?"
- If individual does not name correctly, then prompt
 - "Tell me about it." (semantic self-cue)
 - "Can you write it? Can you write the first letter?" (orthographic self-cue)
 - "Can you say the first sound?" (phonemic self-cue)
- "Can you read it?" (word provided)
- "Copy the word, Can you say it?"

Treatment Results

All participants demonstrated significant improvement in the ability to name trained items, $t(11) = -19.81, p < .0001$. (Figure 1).

Figure 1. Average percent correctly named target items across three baseline and three maintenance points.



Methods

Boston Naming Test (BNT)

- The BNT is a 60-item standardized picture-naming test used to evaluate word retrieval.
- The BNT is a subtest of the Boston Diagnostic Aphasia Examination (BDAE)

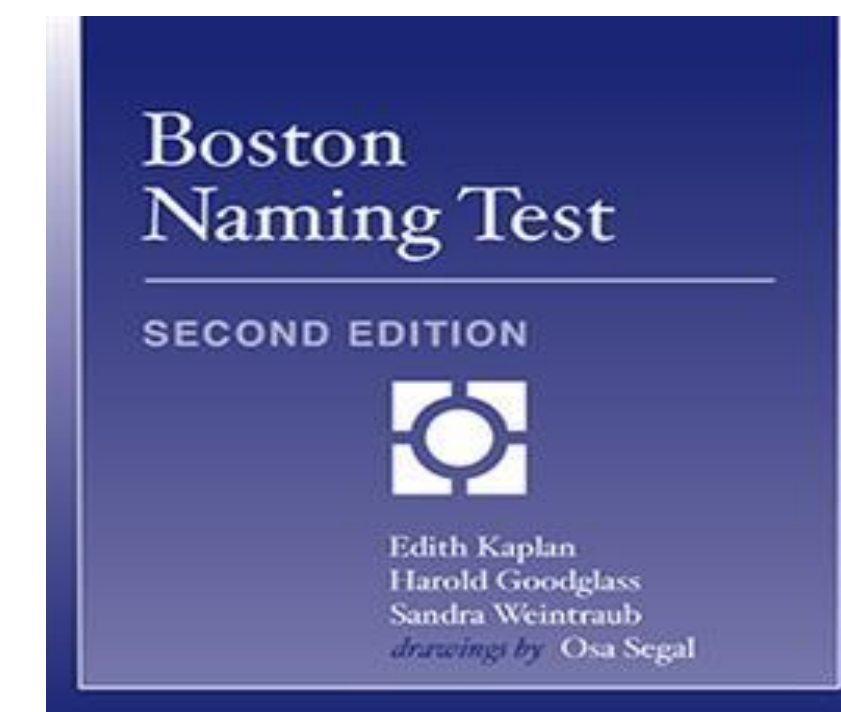


Figure 2. BNT



Figure 3. Example of difficult BNT item

Scoring

- The BNT was administered both before and after lexical retrieval cascade treatment
- The standard scoring of the BNT was complemented by an analysis of self-cueing from the individual that led to correct responses.
 - The self-cued information (semantic, orthographic, phonemic, or some combination) was coded.
- If the correct response was not produced, comments were evaluated relative to meaning provided about the target to determine the meaningful information score (MIS).

Meaningful Information Score

- 1 point: specific information (listener can guess item)
- .5 point: general information (listener may guess item, though more information could be expressed)
- 0 point: vague information (listener cannot guess item)

Target Item: Igloo

Sample Responses:

- 1 point:** "It's like an ice house... Where Eskimos live"
- .5 point:** "It starts with 'I'... it's like a house"
- 0 point:** "I know what it is.."

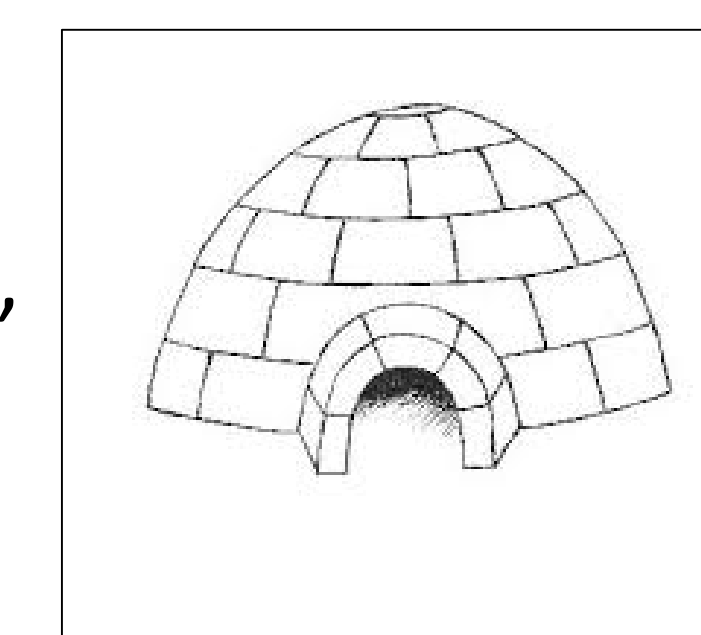


Figure 4. Example of Image used in the BNT

Results

- On the BNT, naming of untrained items improved from an average of 18.3 to 20.6 of 60 items, which was not statistically significant, $t(11) = -1.47, p = .084$ (Figure 5).
- When credit was given for meaningful information provided, an average of 24.54 of 60 items were appropriately communicated, demonstrating a significant improvement after treatment, $t(11) = -3.24, p = .004$ (Figure 5).

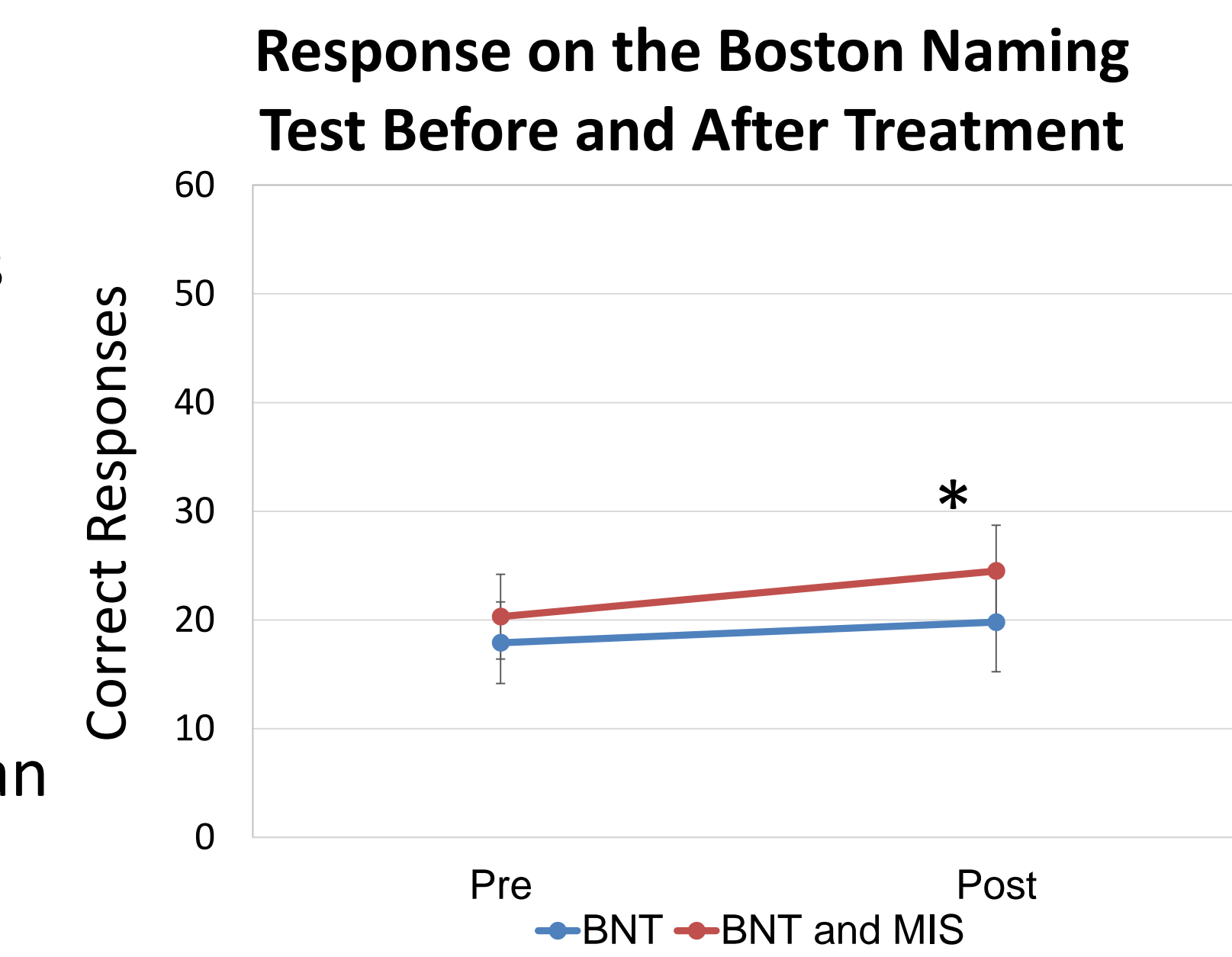


Figure 5. Average performance on the Boston Naming Test (BNT) using standard scoring and with the addition of correct, meaningful information for items not named (MIS = Meaningful information score).

Individual Performance on the BNT Before and After Treatment

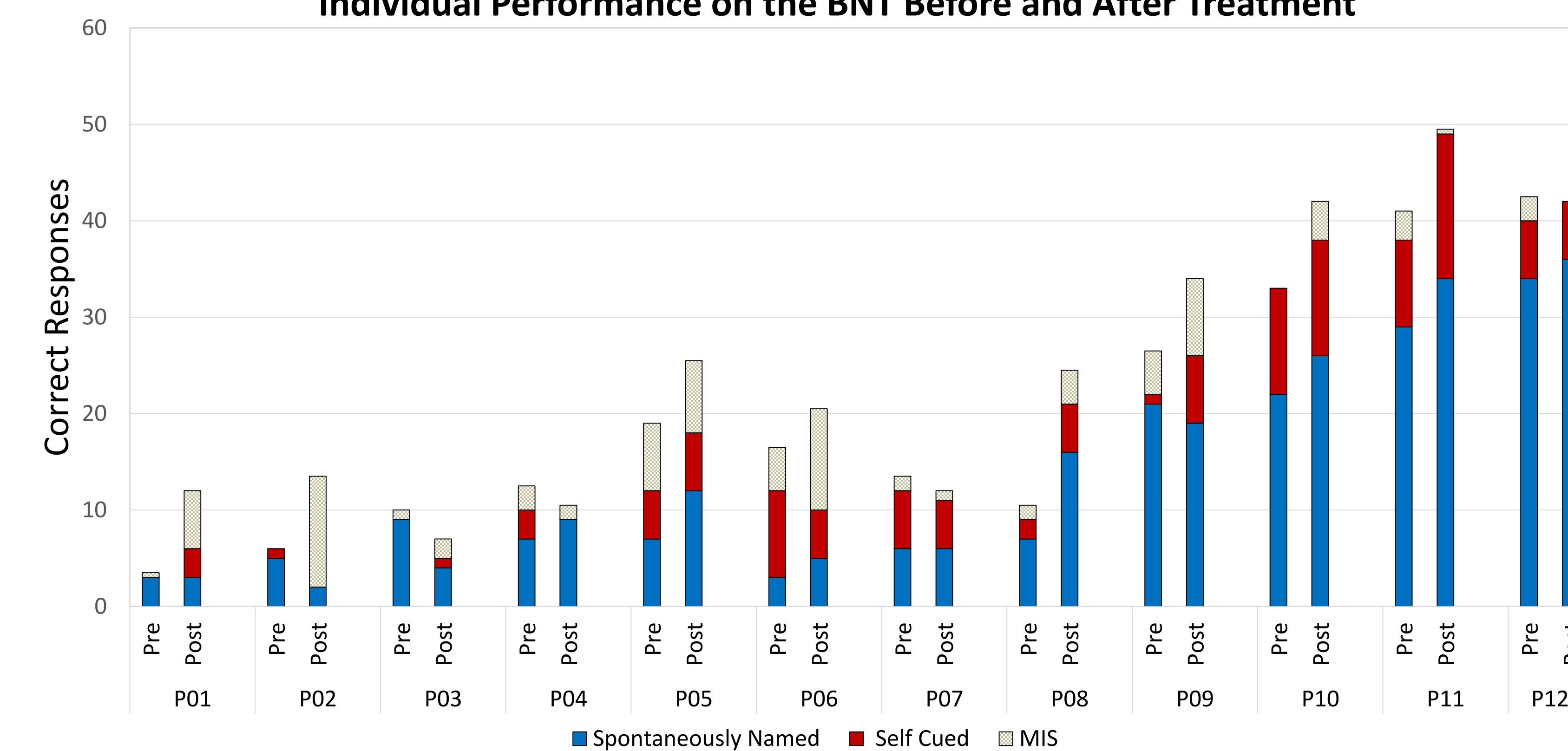


Figure 6. Boston Naming Test scores (spontaneous and self-cued) and additional credit for meaningful information scores (MIS) for 12 participants pre- and post-treatment.

- Figure 6 shows the benefit of a more comprehensive scoring approach that captures correct responses as well as successful self-cueing and the provision of meaningful information.

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Discussion

- Positive treatment outcomes were reflected in the significant improvement in naming of trained items.
- Generalized improvement to the untrained items on the Boston Naming Test was modest after treatment, but the overall communication of information significantly improved.
- Some individuals also demonstrated increased overt self-cueing when naming the item.
- On average, more meaningful information was provided for the listener when naming difficulty occurred.