A Treatment Procedure for Writing Disorders

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Developmentally, learning to write occurs much later (8-9 years) than verbal expression (2-3 years). Writing is not spontaneously acquired but requires special training before it is learned. It is a voluntary, organized skill that requires an individual to encode sequences of phonemes, recode into visual signs (graphemes) and, finally, recode into smooth motor acts. Any interference disrupting this system is likely to result in writing deficits.

An individual must be able to distinguish, analyze and synthesize the phonetic components of words. If he is unable to discern the phonetic composition of words he is unable to associate the auditory stimuli with visual symbols; thus he is unable to write words.

Complex spatial analysis is required to recode phonemes into graphemes. If there are visuo-spatial deficits, then an individual may be unable to recall visual patterns of letters, resulting in errors in the written product.

Similarly, an individual must be able to plan, initiate, and sequence motor behavior. If there is a disruption in this process, the individual is unable to execute the act of writing.

In November, 1975, a 67-year old man was evaluated. He suffered from a cerebral vascular accident subsequent to a left carotid endarterectomy performed in June, 1975. The Porch Index of Communicative Ability was administered and the results indicated a disproportionate deficit in graphic skills compared to other speech and language modalities. On Subtests A-D, in which the client was required to write the function of the objects, generate the names and write the names to dictation, his written responses consisted of illegible but differentiated markings. When required to copy the names, he was able to produce legible letters but his responses were not necessarily accurate. He was able to copy geometric forms but they were distorted due to the use of a non-preferred hand (Figure 1). Because of this client's particular deficit in writing, I became interested in determining the specific problem and developing a program to improve his graphic skills. He was given some sample tasks, many of which were used in the treatment program later, and his behavior was observed. In addition, he attempted to describe what was happening and why he could not write a particular grapheme or word. Through observation and listening, it appeared that the client's primary difficulties were in remembering the configuration of a grapheme and in motorically planning and executing a written letter or word.

The treatment tasks selected represented a multi-modality approach, employing auditory comprehension and retention, visual comprehension and retention, verbal cueing and kinesthetic feedback.

I. Treatment Plan

A. Treatment began by having him trace the alphabet letters as they were named by the clinician, and as they were named in a sequence of two, three, etc.

B. In conjunction with this task, he was given homework assignments to practice copying letters of the alphabet.

1. Initially, he was given the printed capital letter, and a dot to dot form of the letter with arrows indicating how he was to draw his lines.

2. This was slowly faded out an he then simply printed the letters from the copy provided.

C. He wrote the alphabet in serial order from dictation. When no errors were made (although he continued to make self-corrections) the alphabet was dictated in random order.

D. He was required to point to a printed word included in an array of six words, after the clinician spelled it. Later, to increase complexity, a series of words were chosen that started with the same letter and looked similar (i.e., sign, sing, sight, signal).

E. He pointed to printed words included in an array of six after the clinician named them. As he improved, the task was changed to pointing to a sequence of two and three words.

F. He simultaneously traced and spelled words out loud after the clinician named them.

G. He copied printed words. Then, the printed word card was removed and he was asked to write the words after a five-second delay. (He was encouraged to simultaneously spell the word aloud.)

H. He wrote words after the clinician dictated them.

I. He is now required to generate and write the names of items in specified categories.

J. Finally, he has been asked to formulate and write short sentences using previous practice words.

On the graphic subtests of the PICA, he has improved from 6.517 (36%) to 12.233 (88%), with five months of treatment (Figure 2).

The tasks described above are only a sample of the tasks that might be used. For an expanded list of tasks, refer to the Appendix. One may want to sample a patient's behavior on each task and then devise a hierarchially based plan of treatment that meets the needs of that individual patient.

Discussion

Q: Has a delay been used, where the item is covered up for five seconds, then the patient is asked to respond?

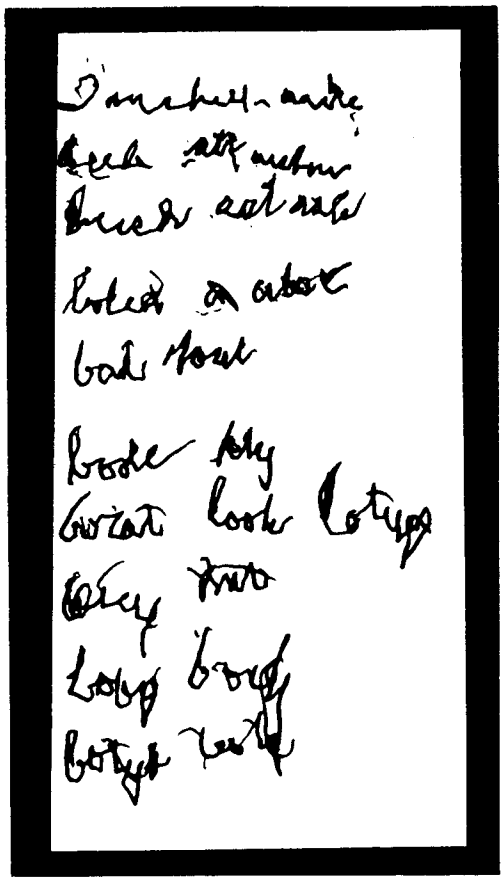
A: A similar task was used in which the patient was shown the printed word, the card was removed, and then he was required to respond.

Q: What was stimulated, printing or cursive writing?

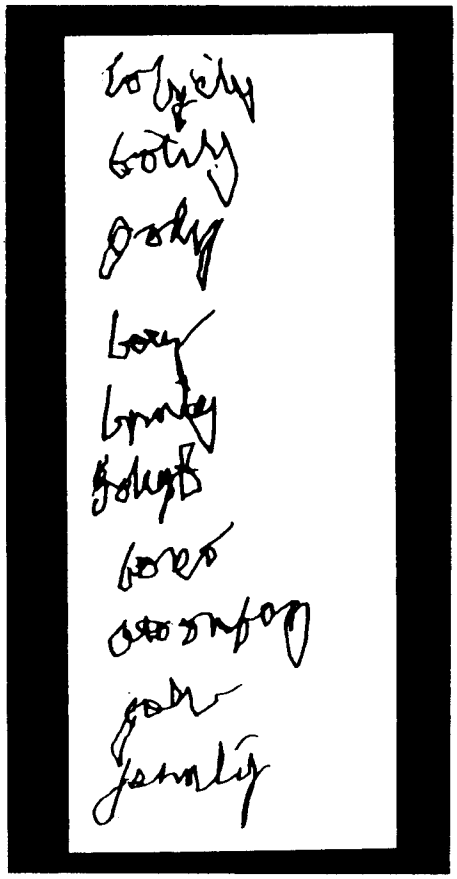
A: Printing was stimulated in this program, but recently we have begun to work on cursive writing. Because of poor coordination in the non-preferred hand he chooses to print except when signing his name.

Q: Along with the writing program was a program of auditory stimulation and reading provided at the same level? For instance, if he were writing three-word sentences, was he stimulated to repeat three-word sentences and read three-word sentences also?

A: No, he was asked to do only the tasks described. However, his program now includes working on improving auditory comprehension and reading skills.

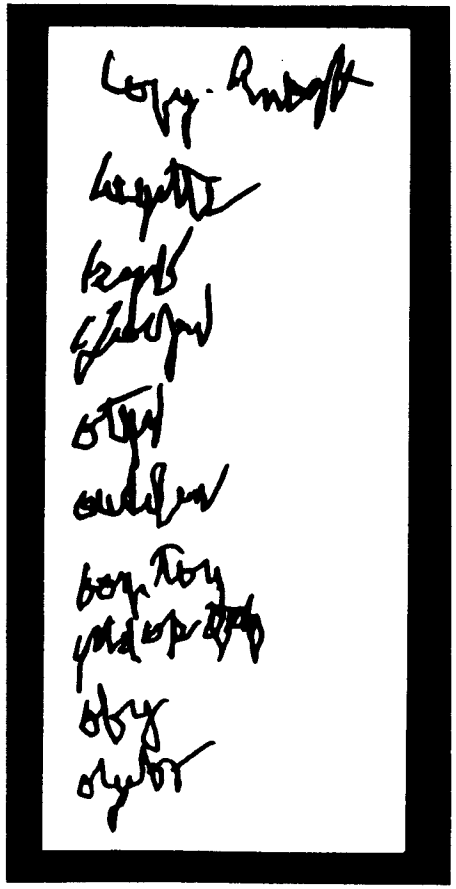


Subtest A

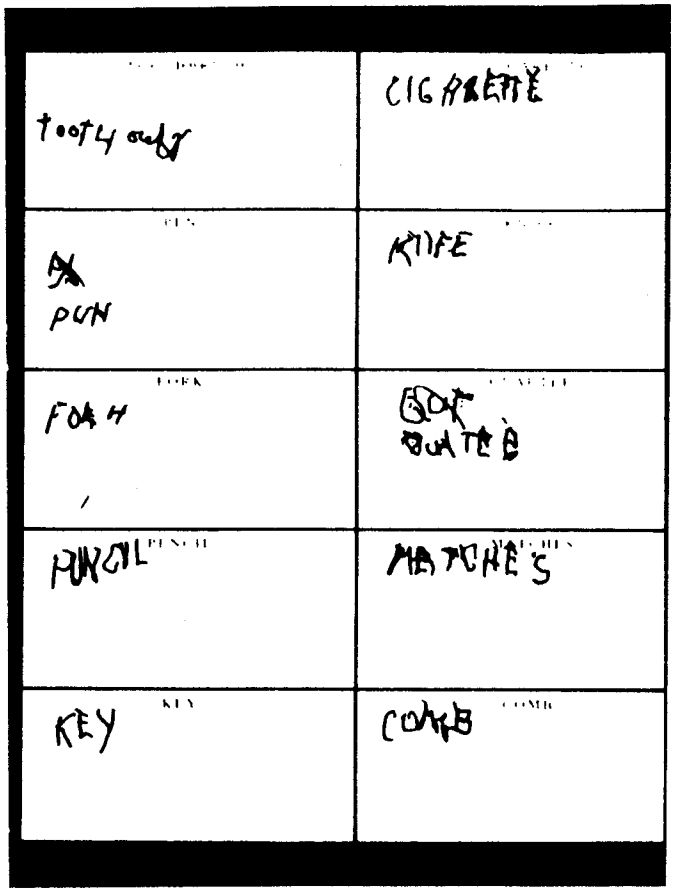


Subtest B

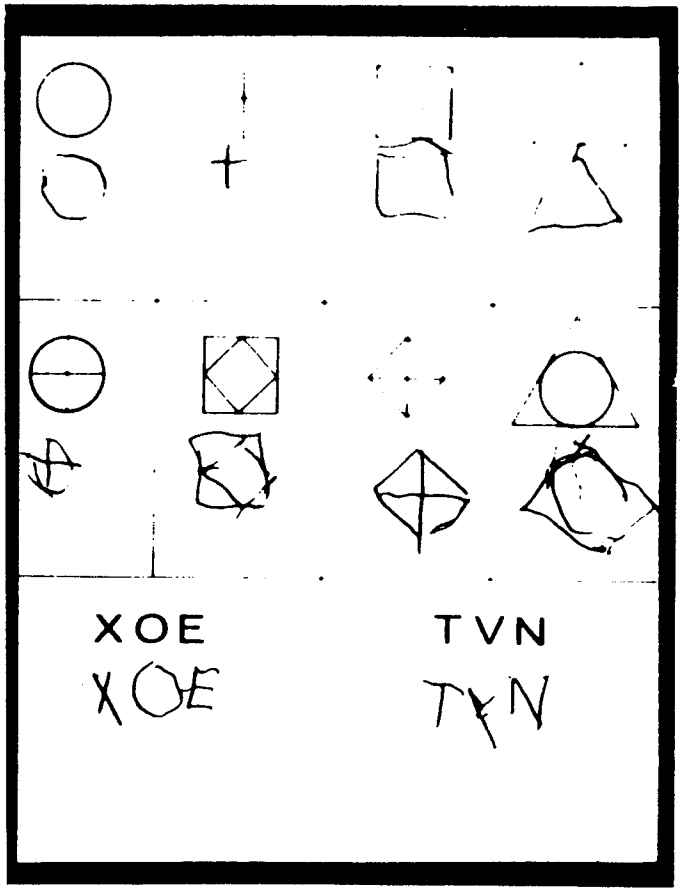
Figure 1. Pre-treatment graphic subtests results.



Subtest D

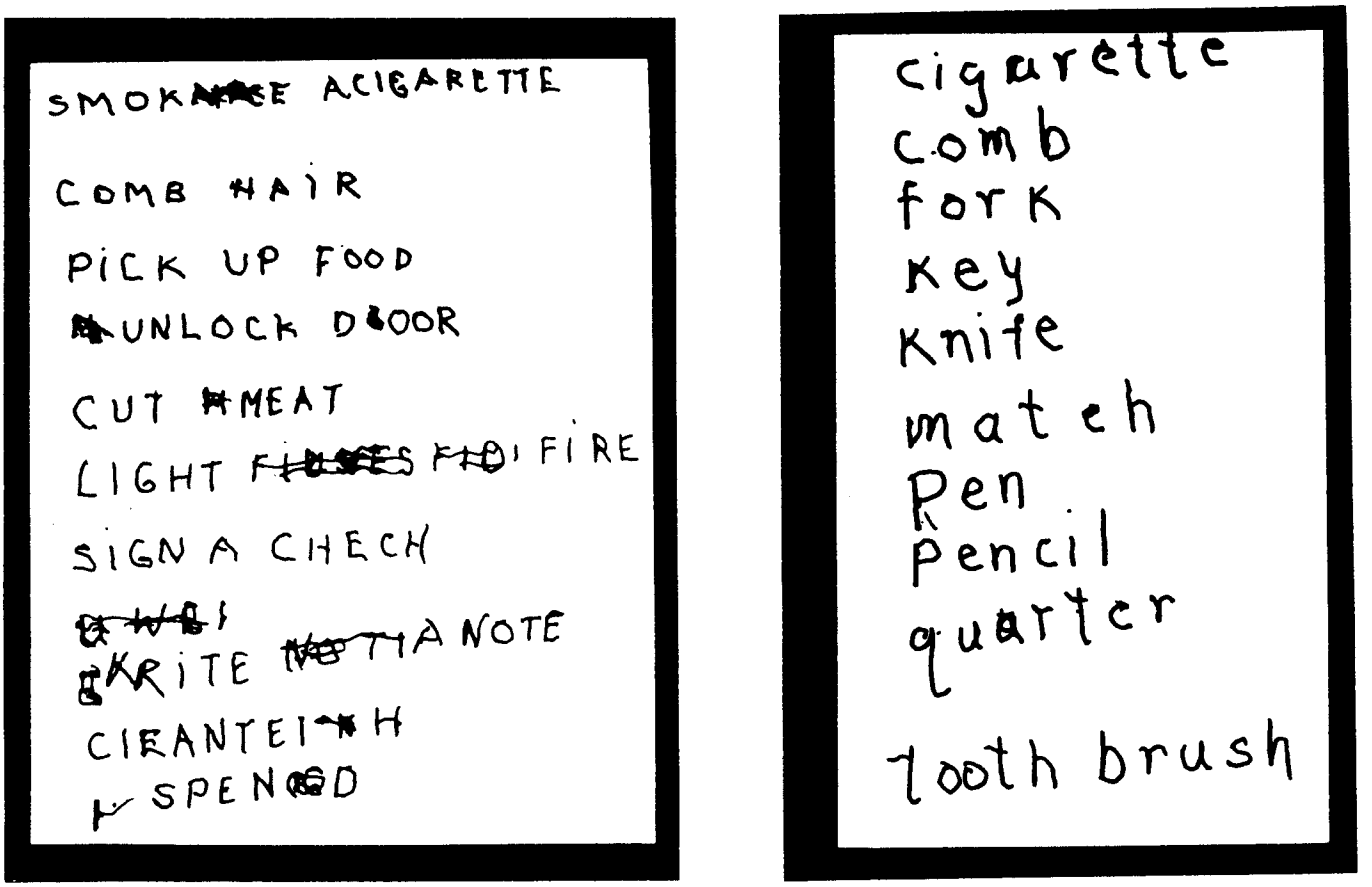


Subtest E



Subtest F

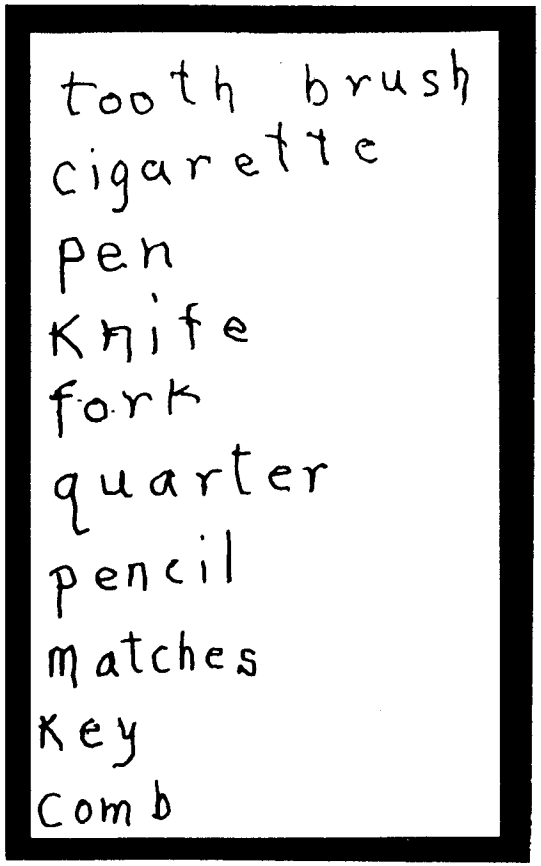
Figure 1 (continued). Pre-treatment graphic subtests results.



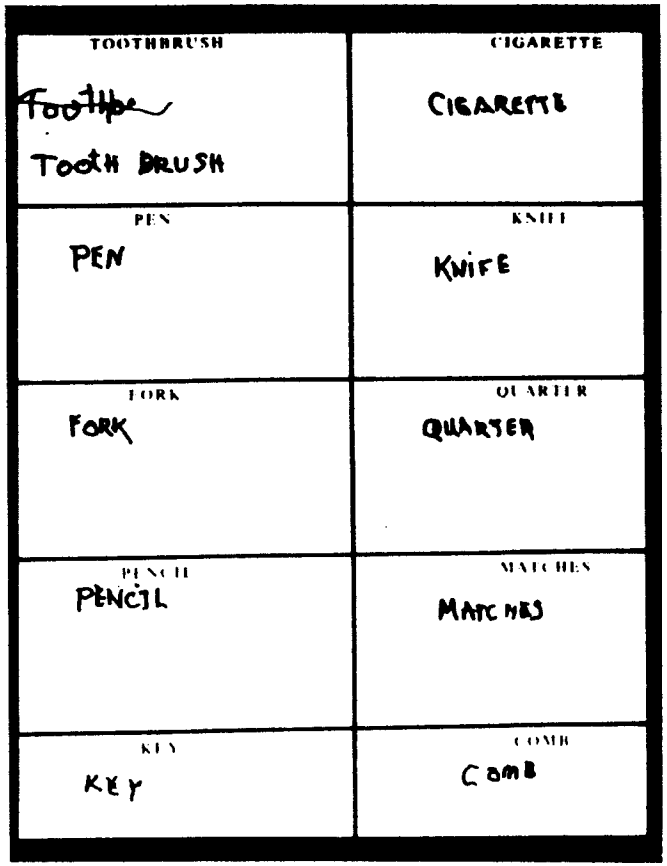
Subtest A

Subtest B

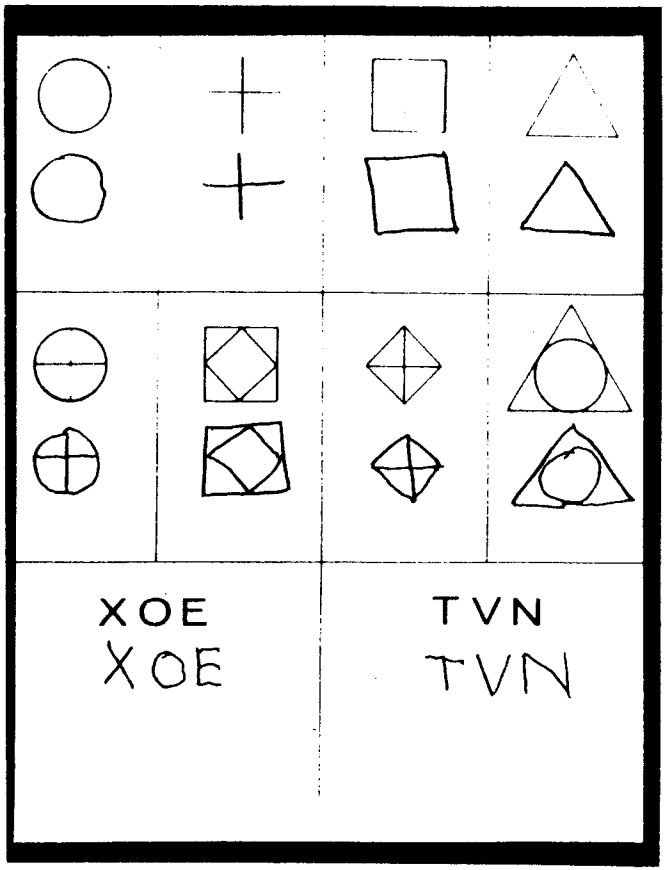
Figure 2. Post-treatment graphic subtests results.



Subtest D



Subtest E



Subtest F

Figure 2 (continued). Post-treatment graphic subtests results.

Appendix

These tasks may be used as part of an evaluation to determine specific areas of deficit or incorporated into a treatment program.

A. Point to alphabet letters as the sound is produced.
   1. Point to sequence of 2 sounds, then 3.

B. Point to printed words after synthesizing the sounds of the words into a whole (g - o, c - a - t).
   1. Begin with 2 sounds and gradually increase length of words.

C. Point to the alphabet letter after it is named. (If motor planning deficits exist, may have patient trace the letters rather than point.)
   1. Point to sequence of 2 letters, 3 letters, etc.

D. Point to printed words after the clinician spells them.
   1. Begin with short, unrelated words that have varied spellings and gradually increase complexity by selecting words with similar spellings (sign, sight, signal, sigh).

E. Point to printed words after the clinician names them.
   1. Increase number of printed words in the array (may start with four words and increase to ten as patient improves).
   2. Begin with short, common words and move to more abstract (nouns, verbs, prepositions).
   3. Point to cursively written words.

F. Copy letters of the alphabet.
   1. May want to begin with printed capital letters, then small printed letters, and finally transcribe these into cursive writing.

G. Write letters of the alphabet to dictation.
   1. Begin dictation by presenting the alphabet in serial order.
   2. With patient improvement, dictate the alphabet in random order.

H. Clinician simultaneously spells word aloud with patient. (Array of printed words is present.)
   1. Clinician fades out simultaneous spelling.
   2. Clinician spells word; patient imitates.
   3. Clinician says word; patient spells aloud.

I. Same steps as above but eliminate the array of printed words.

J. Patient writes the word after the clinician dictates it.

K. Patient generates and writes all the words he can think of in a particular category.

L. Patient copies structured sentences, such as "I eat carrots"; "I eat pie"; "I eat peas."

M. Patient writes structured sentences from dictation.
   1. To increase complexity of task, use less structured sentences.

N. Clinician gives patient a word and he must formulate and write a sentence.

This provides a basic outline of tasks that might be used in the re-training of writing. A clinician should expand or reduce the complexity of the program to meet the needs of individual patients.

References

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