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The
Assessment of Aphasia
and Related Disorders

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auditory language almost invariably impair reading—particularly reading of connected material. The most striking apparent exception to this rule is in the case of pure word-deafness (described above), where reading is preserved. The anatomic reason proposed for this exception is that the auditory association area is essentially intact, but disconnected from its input from the primary auditory areas.

The relation between reading and auditory comprehension levels is often confusing in the Wernicke's aphasic. These patients, as we have observed, may fail to grasp a word spoken to them out of context, even while repeating it correctly. On seeing the same word written, they often understand it at once. Thus, at the one-word level, reading is superior to auditory comprehension. When the written message increases to sentence length, its difficulty increases enormously, while comprehension of the spoken message is sometimes facilitated by the sentence context.

May not reading comprehension be autonomous from the auditory comprehension system? We know that deaf-mutes learn to read and grasp meaning without ever having had an auditory experience of the word. It is plausible that this mode of reading plays at least a secondary role in normal reading, as well. Supporting evidence shows that some aphasics grasp meaning while saying the wrong word aloud. Conversely, some patients will point to a written word related in meaning, but not in sound, to a spoken model.

The analytic examination of reading requires determination of whether letters and words are recognized as familiar configurations, quite apart from their meaning. Can spoken and written words be matched on the basis of phonic associations, still without concern for meaning? Both of these functions are examined by means of multiple-choice subtests. In the rare cases of alexia caused purely by disconnection of the visual input from the cortical language area, the

patient continues to understand oral spelling. Comprehension of oral spelling may be lost either because of impaired recognition or limited auditory span for letter names or because of disturbance of the audio-visual associations on which reading is based.

The simplest level of reading for meaning is that of pairing written words with corresponding concepts, usually in the form of pictures. In the present examination, a multiple-choice selection of pictures is used. Comprehension of connected text is then tested by means of a graded series of multiple-choice sentence completion items, increasing from three-word sentence to paragraph length.

Writing

Writing is the most complex of the language modalities and has a correspondingly large number of dimensions for examination. At the level of mere motor execution, writing may fail with respect to the recall of the form of letters or of the movements involved in producing them. As in speech, there are automatized, serial tasks such as one's name and address, or the alphabet, which may be preserved when all other writing is lost. Slavish copying from a printed model may still be possible when the subject cannot transcribe into cursive script.

While, in the speaker's mind, the smallest significant units of oral speech are morphemes, when we deal with writing, letters have much more autonomy. The recall of letters to dictation is, therefore, tested prior to examining the ability to write words to dictation.

When a word is written to dictation, we do not know whether the process involved is primarily one of phonetic translation from sound to spelling or whether comprehension of the meaning of the word has played an intermediary role. However, when the patient is required to write the names of pictured objects, we know that the initiating process is the concept of the object and we are testing "written word-finding." Observa-

tion of the writing process and of patient's errors indicate that three types of association are at work. One is the automatic translation of sounds into the motor sequences for letters, following the phonic rules of the language; another is the recall of syllables and short words as complete graphic motor sequences, bolstered by a visual model of the word configurations; a third is the availability of oral spelling as a guide to writing. Because oral spelling is unhampered by the slowness of recalling and writing individual letters, we often find oral spelling a bit superior to written spelling to dictation. Only by specifically testing each process do we obtain an inkling as to how they are interacting in the patient's performance of a complex writing task.

As we raised the question about reading, we may ask how independent written expression is from formulated oral language. Is there a direct association between concept and written expression that does not go through the intermediary of auditorily formulated inner speech? The performance of aphasics indicates such autonomous writing may occur at the one-word level, when, for example, a patient writes or spells orally a word which he cannot recall in

speech. Further evidence is seen in patients who, on dictation of a given word, write another which is related in meaning, but not in sound (paragrammia). However, the vast preponderance of aphasic performance indicates that writing is built on the capacity to formulate spoken language. Thus, the ability to write may approach, but rarely exceed, the capacity to speak. As in the case of reading, the exception to this rule is in patients whose disorder is purely articulatory and apparently spares the speech formulation system.

The medium of writing does not provide the melodic and rhythmic sentence contour which helps the aphasic to organize his grammatical sequences and, particularly, to fit in the small connectives and inflectional forms. Because writing is a slower, word-by-word process, sentence-writing makes a heavy demand on knowledge of grammatical rules and on retention of the string of projected words, along with recall of what has already been written. Consequently, grammar may be more primitive in written language than in speech.

In the present aphasia battery, the writing of connected material is elicited by dictation and by presentation of a story-picture which the patient is asked to describe in writing.