Aphasia Assessment

Introduction

While reviewing materials for this document, it became evident that the assessment of aphasia and other symbolic manipulation deficits is more art than quantitative science. In order for deficits to be properly assessed, the examiner must have a firm grasp of the logic underlying the family of problems collectively called aphasia. The casual reader or inexperienced clinician can very quickly become confused with the somewhat cryptic terminology of aphasiology.

Lezak (1983) suggests that a review of language and speech functions that will indicate whether communication problems are present will include examination of the following aspects of verbal behavior:

1. Spontaneous speech
2. Repetition of words, phrases, sentences
3. Speech comprehension
4. Naming
5. Reading
6. Writing

The art of aphasia assessment is in the details. Common screens and tests for aphasia (i.e. Halstead Aphasia Screen) employ a pathognomonic approach of assessment. This means that the examiner must be able to draw meaningful conclusions about brain impairment from the qualitative nature of the subject's responses. Quantitative scoring is typically downplayed in favor of the examiner's clinical judgment of the patient's pattern of deviant responses. Such a strategy places a significant burden on the neuropsychologist who interprets the results; he/she must be able to (1) identify a defective performance, and (2) judge whether it is the type of deficit characteristic of persons with cerebral damage (Reitan & Wolfson, 1985). The strength of this testing strategy, and the factor that makes it such a valuable complement to the test-data scaled on a continuous distribution, is that specific deficits of known cerebral significance may be discerned. The weakness of this format is that without provision of guidelines and examples of evaluating a subject's performances, the neuropsychologist doing the interpretation must have considerable experience and competence in order to be able to judge whether the performances represent brain-related deficits. Later, I will list some aphasia tests that have tried to skirt around this problem by quantifying the process as best as possible, but it is my opinion that these tests will produce meaningless data points unless a skilled observer is there to handle the interpretation process.

For the sake of brevity, I will touch upon the two of the major domains of impairment in aphasia: expressive and receptive processes.

Etiology

Aphasia is a primary disturbance in the comprehension or production of speech, caused by brain damage (see illustration figures for locales). Not all speech disturbances are aphasias; a patient must have difficulty comprehending, repeating, or producing meaningful speech, and this difficulty must not be caused by simple sensory or motor deficits or by lack of motivation. For example, inability to speak caused by deafness or paralysis of the speech muscles is not considered aphasia. In addition, the deficit must be relatively isolated; that is, the patient must appear to be aware of what is happening in his/her environment and to comprehend that others are attempting to communicate.

Expressive aphasia (a.k.a. motor aphasia, nonfluent aphasia, or Broca's aphasia) is caused by damage to a region of the inferior left frontal lobe. This results in the disruption of normal speech production. This disorder is characterized by slow, laborious, and nonfluent speech. Patients with expressive aphasia find it easier to say some types of words than others. They have great difficulty saying little words with grammatical meaning (i.e. a, the, some, in, etc.). The words that they do manage to say are almost entirely content words (i.e. apple, throw, heavy, etc.). An example of expressive aphasia is provided by Goodglass, 1976:

> Ah...Monday...ah Dad and Paul...and Dad...hospital. Two...ah doctors..., and ah...thirty minutes...and yes...ah...hospital. And, er Wednesday...nine o'clock. And er Thursday, ten o'clock...doctors.

Expressive aphasia is much more than a deficit in producing words. In general, three major speech deficits are produced by lesions in and around Broca's area: (1) agrammatism, (2) anomia, and (3) articulation difficulties. Agrammatism refers to a patient's difficulty in using grammatical constructions, as evidenced in the above example. Anomia refers to a word-finding difficulty; and because all aphasics omit words or use inappropriate ones, anomia is actually a primary symptom of all forms of aphasia. In the third major characteristic, articulation difficulties, patients mispronounce words, often altering the sequence of sounds. For example, lipstick might be pronounced "likstip".

Receptive Aphasia (a.k.a. sensory aphasia, fluent aphasia, or Wernicke's aphasia) is characterized by poor speech comprehension and production of meaningless speech. Unlike, Broca's aphasia, Wernicke's aphasia is fluent and unlabored; the person does not strain to articulate words and does not appear to be searching for them. The patient maintains a melodic line (or prosody), with the voice rising and falling normally. An example of receptive deficit is provided (Kertesz, 1981):

> *Examiner*: What kind of work did you do before you came into the hospital?
> *Patient*: Never, now mista oyge I wanna tell you this happened when happened when he rent. His...his kell come down here and is...he got ren something. It happened. In thesse ropiers were with him for hi...is friend...like was. And it just happened so I don't know, he did not bring around anything. And he did not pay for it. And he roden all o these arranjen from the pedis on from iss pescid.

Because of the speech deficit of people with Wernicke's aphasia, when examiners try to assess their ability to comprehend speech, they must ask them to use nonverbal responses. That is, one cannot assume that they do not understand what other people say to them just because they do not give proper answers. A commonly used testing technique (i.e. Token test-like formatting) assesses the patient's ability to understand questions by pointing to objects arranged in an array. When tested this way, patients with receptive deficits show poor comprehension.

Wernicke's aphasia, like Broca's aphasia, actually appears to consist of several deficits. The abilities that are disrupted include (1) recognition of spoken words (pure word deafness), (2) comprehension of the meaning of words (transcortical sensory aphasia), and (3) the ability to convert thoughts into words (conduction aphasia). Interestingly, a common comorbid occurrence in receptive patients is that they often seem unaware of their deficit (anosognosia).

Assessment Measures

Due to the broad nature of aphasia assessment, I have limited discussion of screens and tests to those readily available. Interested parties should consult Chapley (1986) or Lezak (1983) for comprehensive listings.

Screening measures - Typically screening measures are employed as supplements to neuropsychological testing batteries. They signal the presence of an aphasic disorder and may even call attention to its specific characteristics, but they do not provide the fine discriminations of a complete aphasia test battery. These tests do not require technical knowledge of speech pathology for competent administration or interpretation.

A. Halstead Screening Test (1984) -

The Halstead Screening Test requires the subject to perform a series of tasks (see attached protocol and stimulus examples); name common objects; spell simple words; identify individual numbers and letters; read, write, enunciate, and understand spoken language; identify body parts; calculate simple arithmetic problems; differentiate between right and left; and copy simple geometric shapes. The receptive and expressive components of the test provide an opportunity to judge whether the limiting deficit for a patient is principally receptive or expressive in character. These simple performances, when defective, provide powerful findings that implicate the left or the right cerebral hemisphere.

To aid the examiner in interpretation, Reitan & Wolfson (1985) have published detailed results regarding the accuracy of pathognomonic signs generated by performances on the screening test. Osgood & Miron (1963) point out that test-retest reliability of responses (in the psychometric sense) has never been a hallmark of the responses of the aphasic individual. Nevertheless, Reitan (1985) asserts that a single defective performance, when it occurs, is still a valid indication of brain impairment. In addition, the entire protocol, as contrasted with undue emphasis on individual responses, must be considered in evaluating the patient. An older copy of this test can be found in the test file cabinet at the PSC, newer versions are in the neuropsychology lab at the PSC.

B. Token Test - Revised (1978) -
The Token Test is a simple, easy-to-administer test using a minimum of material. The test requires about a fourth-grade education, and is usually easy for the normal subject though, its use in psychiatric populations has been limited, however, and it is likely that poorer "normal" performance would be found in such groups (Golden, 1990). The test has been found sensitive to aphasic disorders that are not apparent upon observation of the patient.

The test requires 20 tokens, varying in shape (circle and square), size (small - large), and color (red, yellow, green, blue, and white), so that every possible combination is represented. The test has 62 commands, each of which requires the manipulation of, or attention to, one or more of the shapes. For example, one may ask "Touch the green rectangle." In more complex items, the patient might be instructed to "Put the red square under the red circle." If an item is missed initially, it is repeated. If correct the second time, the patient gets full credit. A shorter 39-item version of the test was developed by Spreen and Benton (1969).

The test is able to discriminate aphasics from normals about 90 percent of the time (Boller, 1968). The test can be found in the neuropsychology lab at the PSC.

Aphasia Tests - Most aphasia tests involve lengthy, precise, and well-controlled procedures. They are best administered by persons, such as speech pathologists, who have more than a passing knowledge with aphasiology and are trained in the specialized techniques of aphasia examinations.

A. Examining for Aphasia (Eisenson, 1954) -
One of the first commercially available test batteries, Examining for Aphasia was designed to provide the clinician with a guided approach for evaluating aphasic language disturbances. Eisenson states that results of the examination "enable the clinician to obtain an overall view of the patient's strengths and weaknesses" as well as determine the "level of ability within a given area of language function." Changes in test performance are taken as indicators of improvement and are considered of value in planning therapy.

The test is dichotomized into primarily receptive and expressive portions. Within each of these sections, a further division is made between subtests designed to test subsymbolic or low symbolic levels and those tapping higher symbolic levels. Test administration is extremely flexible. The examiner is given the choice of administering either the receptive or the expressive portion first; the examiner may also choose to administer all the low-level tests before the higher-level tests. More importantly, a variety of stimulus presentations are acceptable. Scoring of items is on a pass/fail basis, and the examiner is instructed to indicate the nature of the response on the record form.

Examining for Aphasia is not a standardized test. The author states: "Aphasic patients are characteristically too inconsistent in their responses to permit formal scoring standards to be developed meaningfully." Meaningful interpretation of a patient's performance thus requires considerable clinical judgment with respect to degree of impairment.

B. Boston Diagnostic Aphasia Examination (Goodglass & Kaplan, 1972) -
The authors state that the Boston Aphasia Examination was designed to meet three general aims: "(1) diagnosis of presence and type of aphasic syndrome, leading to inferences concerning cerebral localization; (2) measurement of the level of performance over a wide range, for both initial determination and detection of change over time; (3) comprehensive assessment of the assets and liabilities of the patient in all areas as a guide to therapy."

The test is organized into five major sections:

Conservational and Expository Speech
Auditory Comprehension
Oral Expression
Understanding Written Language
Writing

Interpretation of test results is based upon analysis of the severity rating scale, the rating scale profile of speech characteristics, and the pattern of performance across subtests and modalities after raw scores have been converted to z-scores. Test interpretation is primarily geared toward placing patients into diagnostic categories based on the "classical" anatomical typologies of aphasia. The test's clinical strong points include comprehensiveness, use of standardized data, the ability to distinguish among different patterns of performance, its unique inclusion of scales for measuring qualitative aspects of speech output, and its possible appeal to neuropsychologists and neurologists.

C. Communicative Abilities in Daily Living (Holland, 1980) -
The CADL examines how the patient might handle life activities by engaging him/her in role-playing in a series of simulated situations such as "the doctor's office" or "the grocery store." In keeping with the goal of making the examination as naturalistic as possible, the examiner is encouraged to carry out a dual role as examiner/play-acting participant with such props as a toy stethoscope or boxes of packaged soup. Responses are scored on a three-point scale according to their communicative effectiveness, regardless of the modality used (i.e. spoken, written, or gestural responses are all acceptable). The 68 CADL items sample teen categories of behavior, such as "speech acts," "utilizing context," "social convention," and capacity to participate in role-playing. A series of evaluations of CADL performances of 130 aphasic patients demonstrated that this test was sensitive to aphasia, age, and institutionalization, but not sex or social background. The manual provides category patterns for differentiating aphasia types and cut-off scores for identifying aphasics within predominately nonaphasic populations. Self-training procedures for examiners are provided on scoring standardization.

Bibliography & Related Aphasia Resources

Benson, D. (1979). Aphasia, alexia, and agraphia. New York: Churchill Livingstone.

Boller, F. (1968). Latent aphasia: Right and left "nonaphasic" brain damaged patients compared. Cortex, 4, 245.

Chapley, R. (1986). Language intervention strategies in adult aphasia. New York: Williams & Wilkins.

Davis, G. (1993). A survey of adult aphasia and related language disorders. New Jersey: Prentice-Hall.

Eisenson, J. (1954). Examining for aphasia: A manual for the examination of aphasia and related disturbances. New York: Psychological Corporation.

Emerick, L., and Hatten, J. (1974). Diagnosis and evaluation in speech pathology. New Jersey: Prentice-Hall.

Fawcus, M., Robinson, M., and Williams, J. (1988). Working with aphasic clients. England: Winslow Press

Golden, C. (1990). Clinical Interpretation of Objective Psychological Tests. Boston: Allyn & Bacon.

Goodglass, H., and Kaplan, E. (1976). Assessment of Aphasia and Related Disorders. Philadelphia: Lea & Febiger.

Holland, A. (1980). Communicative abilities in daily living: A test of functional communication for aphasic adults. Baltimore: University Park Press.

Kertesz, A. (1981). Anatomy of jargon. In Jargonaphasia, J. Brown (ed.). New York: Academic Press.

Lezak, M. (1983). Neuropsychological Assessment. New York: Oxford University Press.

Osgood, C., and Miron, M. (1963). Approaches to the study of aphasia: A report of an interdisciplinary conference on aphasia. Illinois: University of Illinois Press.

Schuell, H., Jenkins, J., and Jimenez-Pabon, E. (1969). Aphasia in adults: Diagnosis, prognosis, and treatment. New York: Harper Row.

Spreen, O., and Benton, A. (1969). Neurosensory Center Comprehensive Examination for Aphasia. Victoria, BC: University of Victoria, Department of Psychology, Neuropsychology Laboratory.

Spreen, O., and Strauss, E. (1991). A compendium of neuropsychological tests: Administration, norms, and commentary. New York: Oxford University Press.