

The Iwria-Nebraska Neuropsychological Battery:

A Crisis in Clinical Neuropsychology?

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Running head: Iwria-Nebraska Neuropsychological Battery

Clinical neuropsychology has emerged from increasing demands to assess and rehabilitate brain damaged individuals (Lezak, 1976). This demand has developed not only a unique discipline, which draws simultaneously from clinical and biopsychology, but has led to the development of organizations and journals. For example, recently the American Psychological Association approved the formation of Division 40, Clinical Neuropsychology. Several journals, such as the Journal of Clinical Neuropsychology and Clinical Neuropsychology, have been founded with the hopes of encouraging and disseminating research in the field.

The traditional role of the clinical neuropsychologist has been limited to evaluation of the neurologically-injured individual, with assessment tools such as the Bender-Gestalt. Recently, however, this role has been expanded in various ways. Satz and Fletcher (1981) note that clinical neuropsychology is now concerned with such issues as neuro-development, and rehabilitation as well as assessment. Nevertheless, practitioners as well as researchers appear to still be focusing their efforts on developing more valid and reliable assessment techniques.

Although such instruments as the Bender-Gestalt continues receiving widespread use, Bigler and Ehrlich (1981) have suggested that such tools provide, at best, limited information about brain functioning. Instead, longer and more involved instruments which purport to measure a wide variety of behaviors are more highly recommended. One of these instruments which has received widespread acclaim (and criticism) is the Luria-Nebraska Neuropsychological Battery (LNNB) by Golden, Hammek, and Purisch, 1978.

The Battery is based on the theoretical premises set forth by the late noted

Russian neuropsychologist, A.R. Luria (see Luria, 1973). Luria purported

that higher order functions (such as language) originate from functional

systems involving all portions of the brain. Thus, each contribute in de-

velopment of a whole. Nevertheless, the unorthodox and unsystematic brain

assessment techniques result in serious psychometric limitations. A.L.

Christensen (1974) provided the field with the first attempt at standard-

izing Luria's techniques. (see Figure 1) According to Charles Golden from

the University of Nebraska Psychiatric Institute, this attempt still fell

short of basic requirements for a psychometrically-sound neuropsychological

instrument due to the lack of reliability and validity of the observational

technique.

Insert Figure 1 here

As Table 1 indicates, the INNB is comprised of 14 scales: motor, rhythm,

tactile, visual, receptive speech, writing, reading, arithmetic, memory, in-

tellectual, pathognomic, right hemisphere, and left hemisphere. The first

11 scales are formed from 269 items which are measured trihotomously.

That is, an individual scores 0 if no impairment is evident. If moderate

impairment is observed, a score of 1 is given, while a score of 2 is attained

if substantial impairment is recorded. These raw scores are converted in-

to scale scores using T values, such as seen on the MMPI. A score of one

deviation above the mean (i.e., T of 60 or higher) suggests brain impair-

ment. Specific interpretation techniques are provided by Golden including

age and education adjustments.

Strong criticisms have been levelled against Golden's research and the sub-

sequent development of the Luria-Nebraska. Adams (1980) indicated that pro-

blems involving various aspects of Golden's research, including his subject selection procedure, seriously question the validity of the instrument. Apparently, Golden did not control for age, education, or psychotropic medication. Spiers (1981) adds to these criticisms by questioning not only the research methods but test construction as well. Specifically, he states that items are inappropriately referred to as scales. Furthermore, Spiers suggests that the trichotomous scoring system seriously limits interpretation of performance. Most recently, Crosson and Warren (1982) not only reported heterogeneity of scales, but problems with the limited assessment of behaviors often altered as a function of neural damage. Specifically, they question the battery's ability to examine functional deficits in aphasic individuals.

Although Golden has provided various retorts to these criticisms (e.g., Golden, 1980), the strongest support for the efficacy of this instrument is derived from Golden's laboratory at Nebraska. To illustrate, Golden claims that the LNNB can significantly discriminate brain-injured non-schizophrenics from long term non-brain-injured schizophrenics (Purisch, Golden, & Hammeke, 1978). Furthermore, he contends that this instrument successfully discriminates both groups from normal individuals. More recent efforts by Golden and colleagues (Lewis, Golden, Moses, Osmon, Purisch, & Hammeke), indicate that the LNNB is useful in the localization of the deficit as well. Still, one cannot help but to note that these studies have been conducted by Golden, who certainly is not an unbiased participant/observer of the instrument.

Independent efforts by others, nevertheless, appear to support Golden's original contentions. Fuente, Heidelberg-Sanders, and Lund (1982) reported that

the battery is capable of significantly discriminating schizophrenics with and without brain damage. As the next figure indicates, there was a significant difference between groups for all 14 scales. Ireland and Puentes (in press) found the LNNB more sensitive than the traditional WAIS (Wechsler Adult Intelligence Scale) in detecting brain damage in this population. In a more important study, Malloy and Webster (1982) found that the Luria-Nebraska was effective in detection of soft-neurological signs, (i.e., difficult to detect, minimal brain damage).

More importantly than these criticisms could be the crisis brewing in the field of clinical neuropsychology. If one considers the status of individuals, such as Adams (editor for the Journal of Clinical Neuropsychology), as well as the number and gravity of the criticisms of the LNNB, it is clear that a schism within the field is developing. While the discrepancies pointed out by Adams and others stand by themselves, the heuristic value of Golden's research must also be given notice. Could issues such as increased efficiency (in terms of time and range of clinical capabilities) as well as increased financial remunerations be responsible for catapulting Golden and his battery into historical prominence? If so, could Kuhn's (1962) concept of scientific revolutions be applicable in this case? While we tend to think so, we also believe that this revolution is based on pragmatic and financial rather than scientific interests.

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