The Influence of Ralph Reitan on the Development of the Luria-Nebraska Neuropsychological Battery

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Although the Luria-Nebraska Neuropsychological Battery (LNNB) (Golden, Purisch, & Hammmeke, 1980) appears to be very different from the work of Ralph Reitan, the story of its development indicates that it was heavily influenced by the ideas and approaches pioneered by Reitan. Indeed, its very development would not have occurred without his influence.

The current author of this paper was initially exposed to Reitan’s work during graduate school at the University of Hawaii (UH) PhD program by an adjunct, William Tsushima, who was at the time the head neuropsychologist at Straub Clinic in Honolulu, Hawaii. This exposure was the impetus behind the development of the LNNB. Although the UH program was at the time heavily behavioral, with major influence from the efforts of Roland Tharp and Len Ullman, the program was essentially forced to offer a semi-traditional assessment course in order to get APA accreditation. Dr. Tsushima was asked to do a presentation on neuropsychology and most specifically the work of Reitan which heavily influenced the standard test battery administered at the Straub Clinic.

To this fledgling graduate student, this was a seminal moment. I had already become somewhat disenchanted with strict behaviorism, not because it was unsuccessful in many cases but because it failed to explain individual differences in abilities and reactions to events within the patient’s life. In looking for explanations for individual differences, I was repeatedly told that they were due simply to different reinforcement histories. This was an inadequate answer for me, and I looked toward biological explanations which would better explain the interactions between the stimulus and the response in the individual. I was also looking for reasons why the human had skills that animals and others could not achieve—while the rat and general animal model explained a great deal, it was not sufficient to explain everything.

This was met with general disdain by most of the faculty. When I suggested that studying the brain might be useful, I was told it was a “black box” which could not be studied: stick to what you can see in the real environment. Then, Dr. Tsushima came along with a presentation on the work of Ralph Reitan which he had gained from attending some of Reitan’s workshops. Here was an individual who had developed (with Halstead, of course) a set of psychological tests which could be used to identify the location and type of a brain injury. Most importantly, here was an individual with tests you could see which evaluated the status of the black box—thus it was no longer unknowable and no longer had to be ignored when we evaluated an individual.

Not surprisingly, this idea was not met with enthusiasm by most of the students or most of the faculty, but I began to “secretly” read everything I could find: handouts from the workshops that Dr. Tsushima and others had attended and those articles which were available in the literature. I found a young, up and coming faculty member (Dr. Anthony Marsella, who later became president of the University of Hawaii) who was willing to let me do my master’s thesis and dissertation in the area of cognitive processing and neuropsychology. My master’s thesis focused on differences in processing styles between different generations of Japanese Americans as they acculturated to the American culture, while my dissertation explored the use of the Stroop Color and Word Test in brain-injured clients (Golden, 1976).

In seeking an internship, I wanted to find somewhere which could train me in the Halstead—Reitan and Reitan’s work. I discovered this at Hawaii State Hospital in Kaneohe, where there was an APA accredited program and an experimental head injury rehabilitation program run by Dr. Howard Gudeman and Dr. Jim Craine (see Gudeman, Craine, Golden, & McLaughlin,
The program administered the full HRNB but had become concerned about the role of the HRNB in rehabilitation. This concern focused on the fact that the battery did not test all areas of function with equal balance.

Thus, they sought to extend the HRNB with additional tests. Some of these were selected from the work of experimental neuropsychologists, and others were developed at the program, often complex tests of higher nonverbal functions. As the battery grew, the tests could take as long as 5 days to administer as opposed to the 1 day of the HRNB. They also sought to extend interpretation of the HRNB. While Reitan focused solely on discernible patterns and data, they introduced the qualitative ideas of Luria (1966) in the analysis of the extended test battery, with the goal of not only localizing and describing disorders but identifying specific cognitive skills for remediation and rehabilitation. Based on the combination of a strict empirical approach married to Luria’s qualitative approach, they would design specific cognitive training tasks for each patient in the hopes of achieving cognitive improvement.

Thus, my training was a somewhat schizophrenic combination of the strict empiricism of Reitan and the almost diametrically opposite qualitative approach of Luria. When I started practice in South Dakota following my internship, I quickly found that the local hospitals would not allow sufficient time for me or my students to give the entire HRNB. I was also asked questions which appeared to need more low level evaluations for working in rehabilitation with very low level clients who were unable to complete many of the HRNB tests. I was not comfortable with using Luria’s qualitative methods as clearly their effectiveness was based on the skill of the user, making it difficult to use students or psychometricians.

Out of this was born the idea of somehow combining Reitan’s principles and ideas with Luria’s procedures as detailed in his work (Luria, 1966, 1973) and the presentation of his test items by Christensen (1975). This required the need for standardization as prescribed by Reitan, focusing on developing items and scales from which patterns could be statistically derived independent of theory. It required the use of pathognomonic items (a standard part of Luria’s work as well), comparison of the left and right sides of the body, the development of general scales sensitive to brain damage, and a reliance on statistical rather than theoretical inferences and interpretation. At the same time, we wanted the items to be able to be interpreted using Luria’s qualitative methodology and inferential analysis.

This required that all the items be standardized rather than administered in an open, qualitative format. It also required that the items be placed in scales. Originally, the idea was to have many scales which reflect each area within the current scales (similar to the factor scales which were later derived). While such scales may have made more sense from a theoretical view, they proved unwieldy due to the number of scales which made analysis of statistically clinical patterns very difficult if not impossible. Thus, it was decided to take an atheoretical approach and stick with general scales (such as Motor or Visual) which combined a variety of skills and reflected diverse areas of the brain rather than any single “area” or functional system. Thus, the scale patterns were studies from a purely empirical perspective, identifying patterns associated with specific areas of the brain or specific disorders copying Reitan’s approach (as well as the empirical approach used by the MMPI).

This had the advantage of keeping the test short without having to develop a plethora of scales which would have needed many more items to be reliable. At the same time, qualitative evaluation could still be done at the item level and items could be combined based on theory. In addition, items could be combined empirically rather than theoretically to generate localization scales or factor scales. This author saw this blending as allowing the best of both worlds, but not everyone necessarily agreed. Those on the qualitative side thought that a standardized testing approach destroyed the usefulness of the items and the empirically derived scales were atheoretical horrors. Those on the empirical side demanded scales which measured only one thing (although it is disputed by this writer that such scales exist elsewhere) and which followed traditional test structure without the qualitative component. It should however be noted that qualitative interpretations of tests has become increasingly common since the release of the LNNB. Research has shown clearly that both Luria’s and Reitan’s approaches have been successful in understanding patients and the brain.

Although Reitan clearly did not endorse the LNNB (he said to me that there was no reason to have the LNNB since the HRNB already existed and needed no additional help), his principles and ideas were essential to both my development as a neuropsychologist and to the development of the LNNB. He was an innovative and intelligent man who singlehandedly set the foundation for clinical neuropsychology as it exists today. He is sorely missed but his ideas will live on for a long time yet to come.

References