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Archives of Clinical Neuropsychology 23 (2008) 763–776

Archives of CLINICAL NEUROPSYCHOLOGY

Commentary

Flexible vs. fixed batteries in forensic neuropsychological assessment: Reply to Bigler and Hom

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Accepted 14 September 2008

Abstract

The present commentary addresses issues raised by Bigler [Bigler, E. D. (2007). A motion to exclude and the 'fixed' vs. 'flexible' battery in 'forensic' neuropsychology: Challenges to the practice of clinical neuropsychology. *Archives of Clinical Neuropsychology, 22*, 45–51] and Hom [Hom, J. (2008). Commentary. Response to Bigler (2007): The sky is not falling. *Archives of Clinical Neuropsychology, 23*, 125–128] relative to the acceptability of flexible vs. fixed batteries (i.e. Halstead–Reitan Battery or HRB) in forensic neuropsychology. The *Frye* and *Daubert* rulings are reviewed, followed by comparisons of the sensitivity to brain dysfunction of the HRB and Wechsler Scales of Intelligence, and measures of verbal supraspan learning. Specific comparisons of the sensitivity to brain dysfunction of two flexible batteries [Rohling, M. L., Meyers, J. E., & Millis, S. R. (2003). Neuropsychological impairment following traumatic brain injury: A dose–response analysis. *The Clinical Neuropsychologist, 17*, 289–302; Larrabee, G. J., Millis, S. R., & Meyers, J. E. (2008). Sensitivity to brain dysfunction of the Halstead–Reitan vs. an ability-focused neuropsychological battery. *The Clinical Neuropsychologist*, *22*, 813–825] and the HRB are discussed. Issues related to determination of error rates are reviewed, as well as the sensitivity of the HRB to location and etiology of brain dysfunction, in comparison to similar data recently published employing a flexible battery [Fargo, J. D., Schefft, B. K., Szaflarski, J. P., Howe, S. R., Yeh, H.-S., & Privatera, M. D. (2008). Accuracy of clinical neuropsychological vs. statistical prediction in the classification of seizure types. *The Clinical Neuropsychologist, 22*, 181–194]. It is concluded that flexible batteries covering the core domains of neuropsychological functioning including language, perceptual and spatial functions, sensorimotor skills, attention, information processing and working memory, verbal and visual learning and memory, and intellectual and problem solving skills, including executive functioning, are as valid as approaches relying on the HRB augmented by measures of language function, memory, and intellectual skills, and that both approaches most likely meet *Frye* and *Daubert* standards for admissibility into evidence in legal proceedings.

Keywords: Flexible battery; Halstead–Reitan Battery; Admissibility

Recently, Bigler (2007) presented an argument in support of the use of flexible battery neuropsychological assessment in forensic neuropsychology that was stimulated by a *Daubert* (*Daubert v. Merrell Dow*, 1993) challenge he faced. In particular, the specific *Daubert* challenge faced by Bigler cited papers supporting a fixed battery (i.e., Halstead–Reitan Battery (HRB)) authored by Hom (2003) and Russell, Russell, and Hill (2005). In support of his argument for the acceptability of a flexible battery, Bigler reviewed the history of developments in neuropsychology subsequent to the original validation work on the Halstead–Reitan Battery. Bigler also cited position papers by the American Academy

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0887-6177/$ – see front matter
doi:10.1016/j.acn.2008.09.004

of Neurology (1996) recognizing a flexible approach as valid, and recent surveys by Rabin, Barr, and Burton (2005) and Sweet, Nelson, and Moberg (2006), demonstrating that the predominant approach in modern neuropsychology was a flexible assessment approach. Although Bigler did not make the following point, arguments that fixed battery approaches are the only truly validated procedures strongly imply that the majority of clinical neuropsychologists are practicing in an invalid manner. This is obviously an untenable position, considering the publication of the Houston guidelines for training in neuropsychology (Hannay, Bieliauskas, Crosson, Hammeke, Hamsher, & Koffler, 1998), and the proliferation of pre- and postdoctoral training programs that currently exists in the field. If a field is sufficiently developed to have consensus guidelines for training, and programs for providing such training, and the predominant assessment approach relies on a flexible battery, how can the majority of the field be practicing in an invalid manner?

Hom (2008) has responded to Bigler (2007) and in his response, identified himself as the opposing expert in the legal case that was the basis for Bigler's commentary. In this response, Hom cites his 2003 article, and a subsequent chapter (Hom & Nici, 2004) in emphasizing that forensic neuropsychologists must answer the Forensic Question: is there cognitive dysfunction and if so, is this dysfunction a result of the event under consideration? Hom contends that to answer this question, the forensic neuropsychologist must use a technique which can not only discern the presence of cognitive/psychological impairment, but can also determine a likely cause for the impaired findings. Hom references his earlier papers (2003; Hom & Nici, 2004) as showing that the Halstead–Reitan Battery can answer the Forensic Question; that is, determine the presence and cause of impairment. These earlier papers cite papers by Reitan (1964) and Finkelstein (1977) as demonstrating the ability of the HRB to answer the presence, location and cause of impairment, as well as reference numerous publications dating to 1955 that support the validity of the HRB. He also addresses Bigler's (2007) concern that legal arguments excluding flexible approaches hampers the development of our field by providing information to the courts leading to restriction of practice in neuropsychology. Hom contends that exclusion of [flexible battery] evidence in a particular case does not guarantee exclusion in future forensic cases, nor preclude use of these procedures in clinical settings.

In referencing Bigler's response to the specific *Daubert* challenge, Hom described Bigler's responses as very general and superfluous to the issues at hand. Hom contends that evidence was not offered supporting the flexible battery approach; rather Bigler chose to attack the method of the opposing side (i.e., HRB) which was not at issue, and no evidence was provided as to the reliability or validity of the flexible battery approach (note that Russell, 2007, offers a similar criticism of Bigler's paper). In particular, Hom (2008) states that neuropsychological methods must be able to provide independent information regarding whether the impaired scores are from brain dysfunction or not, and if they are, whether such dysfunction occurred recently or was long-standing, whether it involves specific areas of the brain, and whether the neuropsychological findings are representative of the specific condition at issue in the case.

In the present paper, I further address issues raised by Hom (2008) in his reply to Bigler (2007), by focusing on issues presented in Hom's (2003) article, and in the Russell et al. (2005) paper. The current commentary will consider, in broad strokes, the admissibility standards under *Frye* (*Frye v. United States*, 1923), and *Daubert*, followed by a more in depth consideration of basic assumptions stated in Hom's (2003, 2008) commentaries, including whether there is a known error rate for the HRB as opposed to a flexible battery, and evidence as to whether the HRB is more valid than flexible approaches.

So that the reader has an appreciation of my own background and experience in neuropsychology I, like many of my contemporaries who achieved their Ph.D.s in the late 1970s, early 1980s had my first exposure to neuropsychology by training on the HRB. On a summer VA clerkship at the Iowa City VA Hospital in 1977, I was trained on the Benton laboratory procedures. On internship at the University of Oklahoma Health Sciences Center in 1979–1980, I received supervised clinical experience on both the HRB and Luria Nebraska batteries. On post-doctoral fellowship in 1981–1983 at the University of Texas Medical Branch in Galveston, Texas, I had further experience with Benton laboratory approaches, as well as specialized measures of learning and memory (e.g., Verbal Selective Reminding Test; Continuous Recognition Memory Test) that are useful in evaluation of traumatic brain injury and Alzheimer-type dementia, as well as experience with tests of information processing (e.g., Paced Auditory Serial Addition Test) useful in evaluation of traumatic brain injury. I have published on the HRB (Leonberger, Nicks, Larrabee, & Goldfader, 1992; Loring & Larrabee, 2006), LNNB (Larrabee, Kane, & Rodgers, 1982; Larrabee, Kane, Schuck, & Francis, 1985), Benton approaches (Larrabee, 2000; Youngjohn, Larrabee, & Crook, 1993), and specialized neuropsychological assessment approaches (Larrabee & Curtiss, 1995). I have consulted on the development of the NAB, WAIS-IV and WMS-IV, among other instruments. My career research focus has been on construct validity and other types of validity in neuropsychological assessment (e.g., Larrabee, Kane, & Schuck, 1983; Larrabee, Largen, & Levin, 1985) as well as