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LETTER TO THE EDITOR

Neurobiological aspects of Complex Regional Pain Syndrome (CRPS): Reply to Victor, Boone, and Kulick (2010)

DAVID J. LIBON

Department of Neurology, Drexel University College of Medicine, Philadelphia, Pennsylvania

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My colleagues and I would like to thank Victor, Boone, and Kulick (2010) for their interest in our recent paper on Complex Regional Pain Syndrome (CRPS). In considering an appropriate neuropsychological protocol for patients with CRPS, I consulted the existing scientific literature. I found that neuropsychologists have given CRPS little attention. Koffler et al. (2007) evaluated a small number of CRPS patients before and after Ketamine treatment and found improved performance on some executive tests. Other researchers using newer imaging techniques document considerable central nervous system involvement, including frontal systems involvement (Geha et al., 2008).

After reviewing the literature on CRPS, my colleagues and I hypothesized that at least a portion of CRSP patients could present with differential impairment on executive tests. The protocol presented in our recent paper represents a portion of the total number of tests that are typically given to our patients. There can be little debate that the executive and declarative memory tests employed provide excellent measures of such cognitive constructs as span, working memory, and the ability to encode and retrieve new information.

All CRPS patients who receive evaluation and treatment at our clinic come with a written statement that no member of our team is available for matters involving compensation or litigation, etc. Indeed, no patient studied by Libon et al. (2010) was seeking compensation, and I have never been asked by a patient or a patient's attorney to testify on matters involving compensation. Many of the CRPS patients seen in our clinic have suffered intractable pain for years. As a group these patients are often misdiagnosed, poorly treated, and marginalized. Patients come to our clinic seeking relief, not compensation. The treatment protocol offered in our clinic has been successful in restoring full health to a portion of patients; many patients report a meaningful reduction in pain (Schwartzman et al., 2009).

Correspondence and reprint requests to: David J. Libon, Ph.D., Department of Neurology, Drexel University College of Medicine, New College Building, 245 North 15th Street, Philadelphia, PA 19102. E-mail: dlibon@Drexelmed.edu

The cluster solution described by Libon et al. (2010) involved approximately 135 patients. Since the publication of this paper, more than 300 patients have been studied. The cluster solution obtained with this larger sample is much the same as originally reported in that a portion of patients presents with evidence of a dysexecutive syndrome.

Victor, Boone, and Kulick (2010) expressed concern over certain "medicolegal" issues, such that our findings may have been influenced by reduced effort or response bias. "Effort," or response bias, as a psychological construct is controversial. McGrath, Mitchell, and Kim (2010) concluded that the "justification for the use of bias indicators in applied settings remains elusive." Nonetheless, several researchers have employed procedures derived from commonly administered neuropsychological tests to measure effort or response bias. For example, Babikian, Boone, Luc, and Arnold (2006) recently described several indicators obtained from the Wechsler Digit Span subtest to assess "noncredible" test performance. We calculated the indices suggested by Babikian et al. (2006). Out of approximately 325 patients with CRPS, only 10 (3%) obtained a WAIS-III age-corrected scale score of ≤ 5; and only 14 (4%) obtained a Reliable Digit Span Score of ≤ 6. Thus, on the basis of these measures, there appears to be little evidence for noncredible test performance in our sample.

Our work with these patients has yielded new, unexpected information. First, we are finding very high rates of non-right-handedness. Along with ambidexterity/sinistrality, there is also a high incidence of learning problems and selected autoimmune and other medical problems as described by Norman Geschwind (Geschwind & Galaburda, 1985a, 1985b, 1985c). Indeed, my colleagues and I are readying this information for peer review. This new information, combined with imaging studies on CRPS, and our recently published paper (Libon et al., 2010) clearly demonstrate that CRPS is associated with a rich neurobiological substrate. The fact that many CRPS patients present with elements of the *Geschwindian Triad* (i.e., non-right-handedness, autoimmune disorder, learning problems) undeniably suggests

a congenital basis for this disorder—at least in some patients. We thank Victor, Boone, and Kulick (2010) for their comments and look forward to further discussion regarding the neurobiology that underlies CRPS. (*JINS*, 2010, 1153–1154.)

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