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Detection of Malingering on the Halstead-Reitan Battery: A Cross-Validation

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Using the Halstead-Reitan Battery profiles of 796 people, a formula for the detection of malingering was cross-validated to assess the false positive rate. Subjects included normals, psychiatric cases, and all major types of organics. The formula incorrectly designated 27% of the sample as fakers (i.e., as false positives). Of the 120 head trauma cases, 27 (22.5%) obtained Fake scores, while 93 (77.5%) were correctly assessed as not malingering. © 1997 National Academy of Neuropsychology. Published by Elsevier Science Ltd

The need for the detection of malingering on neuropsychological testing has been well documented (Faust, Ziskin, & Hiers, 1991; Rogers, 1988; Rogers, Harrell & Liff, 1993; Ziskin, 1995). Studies have demonstrated that the Halstead-Reitan Battery (HRB) can easily be faked by adults (Heaton, Smith, Lehman, & Vogt, 1978), adolescents (Faust, Hart, Guilmette, & Arkes, 1988) and children (Faust, Hart, & Guilmette, 1988).

To solve the problem, Mittenberg and colleagues validated a formula to detect such invalid profiles (Mittenberg, Rotholc, Russell, & Heilbronner, 1996). They argued that the use of such a formula adds to "more confidence in the diagnosis" by adding to the convergent evidence "from a variety of sources including the history, behavioral observations, and other test results." They caution that "the use of any one method in isolation can result in diagnostic errors." "The method presented here should not be the only basis for evaluating the validity of observed neuropsychological impairment in head trauma patients" (p. 279). Even so, a discriminative function (Table 1) was derived that yielded an overall hit rate of 88.75%, with 16.2% false positives and 6.2% false negatives, using a matched sample of 160 head trauma victims and normal fakers.

TABLE 1
Faking Formula: SCORE

If SCORE is greater than 0, then the profile should be considered malingered.

$$\text{SCORE} = (\text{Categories} \times .01335924) + (\text{TPT Time} \times -.04932242) + (\text{TPT Memory} \times -.1911619) + (\text{Seashore Rhythm correct} \times -.02631231) + (\text{Speech Perception errors} \times .03914169) + (\text{Trails A} \times .01072021) + (\text{Trails B} \times -.01152765) + (\text{Tapping} \times .004032426) + (\text{Sensory Suppressions} \times .02293813) + (\text{FTNW} \times -.02050771) + 1.80943$$

Note. Raw scores are used. Tapping is the sum of the average performance of the right and left hand trials. Sensory suppressions is the sum of all errors on tactile, auditory, and visual trials. Finger Tip Number Writing (FTNW) is the sum of right and left side errors.

However, Mittenberg et al.'s (1996) relatively small sample included no non-faking normals, psychiatric cases, or organics with etiologies other than head trauma. A cross-validation using a much larger and varied population was therefore done.

METHOD

Participants

As part of several large research projects (largely done at the Miami VA Medical Center), such as the development of the HRNES (Russell & Starkey, 1993), 796 subjects had been given the full HRB. All were evaluated by neurologists, who utilized all neurological methods deemed necessary. The cases were followed for at least 1 year to verify that there was no change in diagnosis. The sample's demographics are: age $M = 45$ (range 14–78; $SD = 14$), education $M = 11.96$ (range 0–20; $SD = 3$), 95% male, 90% white, Average Impairment Rating (AIR) (Russell, 1984) $M = 2.15$ (range .08–5.11; $SD = .88$), WAIS-R FSIQ $M = 91.6$ (range 36–137; $SD = 15.2$). The sample was divided into 13 diagnostic categories (Table 2).

None of the Ss had any reason to malingering. They were all evaluated for treatment purposes, not involved in litigation, and not seeking compensation. Anyone suspected of faking had been removed from the sample.

Materials

The formula uses the raw scores of the Category Test, Tactual Performance Test (TPT) (Total Time and Memory), Seashore Rhythm Test, Speech-Sounds Perception Test, Trail Making Test, Finger Tapping Test, and Perceptual Disorders Examination (Suppressions). Each test was given under the supervision of the junior author according to standard procedure (Reitan & Wolfson, 1985; Russell, Neuringer, & Goldstein, 1970). Score ceilings were used for the TPT (10 min per trial), Trails A (180''), and Trails B (300'') (Russell & Starkey, 1993).

Procedure

The formula in Table 1 was applied to each subject's raw test scores. The pattern of false positives was explored with a combination of cross-tabulations, correlations, and chi-squares. Cross-tabulations were used to determine the accuracy of the formula results. Correlations were used to examine the relationship of the formula results with the S's age, education, and severity of impairment as measured by the AIR. Chi-squares were used to compare the relationship between the formula result and the severity of impairment for each diagnosis.

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