Detection of Brain Damage in Psychiatric Populations

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The role of the clinical neuropsychologist has traditionally been limited to the detection of brain damage in non-psychiatric or neurologically impaired populations. This study examined the relative effectiveness of commonly used tests in in-patient mental health facilities in detecting brain damage and differentiating between specific subpopulations along this parameter.

Forty-five in-patients from two state hospitals volunteered. Three groups of 15 patients each (schizophrenic with brain-damage, schizophrenic without brain-damage, and affective disorders with brain-damage) were administered the Luria-Nebraska Neuropsychological Battery, Form A of the Whitaker Index of Schizophrenic Thinking, and Part A of the Trail Making Test. Diagnosis of schizophrenia and affective disorder was ascertained by a clinical psychologist and psychiatrist using DSM III criteria. Confirmed neurological diagnosis was made using medical examinations by physicians and/or tests such as CAT Scans or EEGs. All participants in the brain-damaged group exhibited maladaptive behavior after incurring damage.

Results indicated that the Luria-Nebraska was more effective than the Whitaker in detecting brain damage. The Trail Making Test did not reliably detect damage. Regarding differentiation between groups, affective disorders exhibited less impairment than non-damaged schizophrenics who exhibited less deficits than damaged schizophrenics on the Luria-Nebrasks and the Whitaker. In order of greatest differential group effects, the following scales of the Luria-Nebraska supported this gradient deficit; Motor, Pathognomonic, Rhythm, Arithmetic, Writing, Visual, Left Hemisphere, and Receptive Speech. Similar differences were also observed for the Similarities subtest, the time factor, and the Index of the Whitaker to a lesser extent.

The relative usefulness of these instruments for the psychologist practicing in psychiatric facilities are elucidated.

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PURPOSE

1) EXAMINATION OF THE RELATIVE EFFECTIVENESS OF COMMONLY USED PSYCHOMETRIC TESTS IN INPATIENT MENTAL HEALTH FACILITIES IN DETECTING BRAIN DAMAGE

2) EXAMINATION OF A HYPOTHESIZED GRADIENT DEFICIT ACROSS THESE POPULATIONS (E.G., BRAIN DAMAGED INDIVIDUALS EXHIBIT MORE DEFICITS ON THESE TESTS THAN SCHIZOPHRENICS WITHOUT BRAIN DAMAGE WHICH, IN TURN, EXHIBIT MORE DEFICITS THAN AFFECTIVED DISORDERS)

PARTICIPANTS

GENERAL CRITERIA: (1) INPATIENT FROM NORTHEAST FLORIDA STATE HOSPITAL OR CHERRY HOSPITAL VOLUNTEER

(2) RIGHT-HANDED

(3) MALE

(4) SIXTH GRADE EDUCATION MINIMUM

VARIABLE	DAMAGED SCHIZOPHRENIC	NON-DAMAGED SCHIZOPHRENIC	AFFECTIVE DISOORDERS
AGE	46.2	30.2	34.2
YEAR OF ONSET	31.5	21.4	29.3
# HOSPITALIZATIONS	1.7	5.0	2.3
LENGTH OF CURRENT HOSPITALIZATION (IN DAYS)	1163.1	113.7	57.5

LURIA-NEBRASKA NEUROPSYCHOLOGICAL BATTERY

SCALE	DAMAGED SCHIZOPHRENIC	NON-DAMAGED SCHIZOPHRENIC	AFFECTIVE DISORDERS
MOTOR.	40.3	13.2	10.3
RHYTHM.	13.0	7.6	5.8
TACTILE	13.5	8.9	4.0
VISUAL.	23.5	10.0	5.5
RECEPTIVE SPEECH.	18.0	12.4	6.9
EXPRESSIVE SPEECH	26.3	15.2	10.1
WRITING.	12.2	7.2	4.3
READING	9.3	6.5	4.8
ARITHMETIC.	17.8	9.0	7.7
MEMORY	18.4	13.3	11.5
INTELLECTUAL	38.5	30.0	25.7
PATHOGNOMONIC.	26.0	15.7	9.4
LEFT HEMISPHERE.	11.8	6.4	3.3
RIGHT HEMISPHERE	14.8	6.3	3.1

WHITAKER INDEX, TRAIL MAKING, & DIMASCIO SCALE

INSTRUMENT	DAMAGED SCHIZOPHRENIC	NON-DAMAGED SCHIZOPHRENIC	AFFECTIVE DISORDERS
WIST SIMILARITIES	6.3	7.1	2.5
WIST WORD PAIRS	3.0	3.7	1.3
WIST NEW INVENTIONS	5.4	6.9	3.5
WIST TIME	14.7	9.7	8.2
WIST INDEX	29.4	27.4	15.5
TRAIL MAKING PART A	125.2''	90.3''	67.5''
DIMASCIO SCALE	8.7	5.3	4.1

CONCLUSIONS

1) THE LURIA-NEBRASKA NEUROPSYCHOLOGICAL BATTERY WAS MORE EFFECTIVE THAN THE WHITAKER INDEX OF SCHIZOPHRENIC THINKING IN DETECTING BRAIN DAMAGE: THE TRAIL MAKING TEST DID NOT DIFFERENTIATE BETWEEN GROUPS: DIMASCIO SCALE WAS USEFUL IN DETECTION OF BRAIN DAMAGED INPATIENTS

2) AFFECTIVE DISORDERS EXHIBITED LESS IMPAIRMENT THAN NON-DAMAGED SCHIZOPHRENICS WHO EXHIBITED LESS DEFICITS THAN BRAIN-DAMAGED SCHIZOPHRENICS: ORIGINAL GRADIENT HYPOTHESIS WAS SUPPORTED AS MEASURED BY THE LURIA-NEBRASKA NEUROPSYCHOLOGICAL BATTERY, THE WHITAKER INDEX OF SCHIZOPHRENIC THINKING, AND, TO A LESSER EXTENT, THE DIMASCIO SCALE