Neuropsychological test

Neuropsychological tests are specifically designed tasks used to measure a psychological function known to be linked to a particular brain structure or pathway. Tests are used for research into brain function and in a clinical setting for the diagnosis of deficits. They usually involve the systematic administration of clearly defined procedures in a formal environment. Neuropsychological tests are typically administered to a single person working with an examiner in a quiet office environment, free from distractions. As such, it can be argued that neuropsychological tests at times offer an estimate of a person's peak level of cognitive performance. Neuropsychological tests are a core component of the process of conducting neuropsychological assessment, along with personal, interpersonal and contextual factors.

Most neuropsychological tests in current use are based on traditional psychometric theory. In this model, a person's raw score on a test is compared to a large general population normative sample, that should ideally be drawn from a comparable population to the person being examined. Normative studies frequently provide data stratified by age, level of education, and/or ethnicity, where such factors have been shown by research to affect performance on a particular test. This allows for a person's performance to be compared to a suitable control group, and thus provide a fair assessment of their current cognitive function.

Several studies claimed that surgery in eloquent areas is possible without causing severe cognitive decline. However, this conclusion was relatively ungrounded due to the lack of extensive neuropsychological testing in homogenous patient groups.

Neuropsychological testing of patients in the course of their recovery from brain injury enables analysis of cognitive deficiencies and/or emotional changes. The principle study objective was to define organic and/or reactive personality changes and the course of these changes in the function of the time span following brain artery aneurysm surgery in both female and male patients. The study was carried out at the Clinical Department of Neurosurgery, Zagreb University Hospital Center in Zagreb. The data refer to the period from 1989 to 2012 collected in two time intervals, i.e. 11 months and 12-48 months following brain artery aneurysm surgery. Of 72 patients included in the study, there were 28 male and 44 female patients. Neuropsychological testing consisted of clinical interview, clinical assessment of frontal lobe syndrome, Cornell personality questionnaire and Emotional Profile Index. Study results showed evidence of frontal lobe syndrome in 32% of patients on first testing and significant recovery on retesting, when only 17% of patients presented with frontal lobe syndrome. The reactive personality changes found in both testing intervals indicated increased neuroticism. In the first testing period, asthenic syndrome occurred most often, followed by conversion and aggressive-antisocial syndromes, while in the second testing interval asthenic syndrome was most pronounced and conversion and antisocial syndromes showed the same level of expression. The results also showed higher depressive and disorganizing states, which were even more pronounced in the second testing interval. As regards sex differences, the inclination toward cardiovascular somatization and destructiveness was more expressed in females than in males, showing a tendency of aggravation with increasing the time span following surgery. It may be concluded that the study has contributed to better understanding of organic and/or reactive personality changes in patients undergoing brain artery aneurysm surgery [1)].

Intelligence

Intelligence testing in a research context is relatively more straightforward than in a clinical context. In research, intelligence is tested and results are generally as obtained, however in a clinical setting intelligence may be impaired so estimates are required for comparison with obtained results. Premorbid estimates can be determined through a number of methods, the most common include: comparison of test results to expected achievement levels based on prior education and occupation and the use of hold tests which are based on cognitive faculties which are generally good indicators of intelligence and thought to be more resistant to cognitive damage, e.g. language.

National Adult Reading Test (NART)

Wechsler Adult Intelligence Scale (WAIS)

Wechsler Intelligence Scale for Children (WISC)

Wechsler Preschool and Primary Scale of Intelligence (WPPSI)

Wechsler Test of Adult Reading (WTAR)

Memory

Memory is a very broad function which includes several distinct abilities, all of which can be selectively impaired and require individual testing. There is disagreement as to the number of memory systems, depending on the psychological perspective taken. From a clinical perspective, a view of five distinct types of memory, is in most cases sufficient.

Semantic memory and episodic memory (collectively called declarative memory or explicit memory); procedural memory and priming or perceptual learning (collectively called non-declarative memory or implicit memory) all four of which are long term memory systems; and working memory or short term memory.[5] Semantic memory is memory for facts, episodic memory is autobiographical memory, procedural memory is memory for the performance of skills, priming is memory facilitated by prior exposure to a stimulus and working memory is a form of short term memory for information manipulation.

Benton Visual Retention Test

California Verbal Learning Test

Cambridge Prospective Memory Test (CAMPROMPT)

Gollin figure test

Memory Assessment Scales (MAS)

Rey Auditory Verbal Learning Test

Rivermead Behavioural Memory Test

Test of Memory and Learning (TOMAL)

Mental Attributes Profiling System

Wechsler Memory Scale (WMS)

Language

Language functions include speech, reading and writing, all of which can be selectively impaired.[citation needed]

Boston Diagnostic Aphasia Examination Boston Naming Test Comprehensive Aphasia Test (CAT) Multilingual Aphasia Examination

Executive function

1)

Pačić-Turk L, Šulentić T, Meštrović AH, Paladino J, Mrak G. PERSONALITY CHANGES FOLLOWING BRAIN ARTERY ANEURYSM SURGERY. Acta Clin Croat. 2016 Dec;55(4):565-78. PubMed PMID: 29117647.