

**The need for teaching Neuropsychology  
in the department of Psychology**

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Usually, after a brain damage the patient should be psychologically evaluated, in reality, it is a neuropsychological evaluation; since the evaluator should examine the brain functions, that is, the brain's strengths and weaknesses through evaluating the behavioral abilities.

The field of study called "Neuropsychology" is a common area between two great disciplines: Psychology and Neurology. The simplest definition of Neuropsychology has been provided by Stephen Hallett in his book entitled "Neuropsychology": 'it is the study of the relationship between brain structure and behavior'<sup>(1)</sup>. This Definition relates the unseen brain functions, whether they reflect a normal process or a dysfunction, to the observed behavior, whether it is a linguistic behavior or a social one; we are concerned with looking for a possible link between brain and behavior. It is also useful to mention the definition given by Graham Beaumont when he says: 'Neuropsychology as one of the Neurosciences, seeks to understand the relationship between the brain and behavior, that is, it attempts to explain the way in which the activity of the brain is expressed in observable behavior' <sup>(2)</sup>.

The definitions above emphasize the central role of psychologists in Neuropsychology, in particular in evaluation and rehabilitation.

These tasks (evaluation and rehabilitation) refer implicitly to two main branches of Neuropsychology:

- Clinical Neuropsychology: it deals, mainly, with studies on brain –injured subjects. In this field, we are concerned to the assessment and rehabilitation of patients with disorders and illnesses in brain; patients who have lesions of the brain that can be result of a disease, tumors or physical damage or trauma <sup>(3)</sup>.
- Experimental Neuropsychology: it deals with normal subjects; we are concerned with investigating in the relationship between a healthy brain structure and action.
- In addition, we may add another branch considered as important as the two mentioned above, it is the cognitive neuropsychology. This specialty focuses the existence of a deep link between cognition (functional side) and the brain (neurological side). 'Of course it would be very convenient if we could understand the nature of cognition without the nature of the brain itself. But unfortunately it is very difficult if not impossible to build and prove theories about our thinking in absence of neurobiological constraints' <sup>(4)</sup>.

So, in practical Psychology we are interesting more in clinical Neuropsychology, whereas in theoretical Psychology we deal more with experimental Neuropsychology. The following definition shows the official position of the National Academy of Neuropsychology; the American organization gives a typical definition of clinical Neuropsychology: 'a clinical Neuropsychologist is a professional within the field of Psychology with a special expertise in the applied science of brain-behavior relationships. Clinical Neuropsychologists use this knowledge in the assessment, diagnosis, treatment, and/ or rehabilitation of patients across lifespan with neurological, medical, neuro-developmental and psychiatric conditions, as well as other cognitive and learning disorders'. (see the official position of the National Academy of Neuropsychology approved by the board of Directors 05/05/2011)

This definition determines the actual frontiers of clinical Neuropsychology as well as the Neuropsychologist's tasks.

I believe that teaching Neuropsychology as a single module in the department of Psychology at the University of Mascara is not enough to fulfill the scientific needs, and to answer the social requirements for a skilful specialist in this field of study, it became obvious that we need to teach Neuropsychology as an independent specialty.

Therefore, we have to wonder about the Neuropsychologist's tasks if we want to know which kind of materials that should be included in the educational program. So, what are the main tasks of Neuropsychologist?

In order to assess the patient state, after a brain damage, we need, first of all, to ensure that the brain functions normally, this is why the procedure that must be followed consists of: first, the review of the medical and other records, then, an interview with the patient and, often another person who knows him well, and finally, administration of tests that measure the patient's abilities and mood <sup>(5)</sup>.

We easily conclude that the first task is part of neurologist responsibilities, but the remaining steps should be done by a neuropsychologist. The interview is aiming at making a diagnosis and localization of any cerebral pathology through testing the individual abilities, and any behavioral trouble reflects necessarily a brain damage or dysfunction. Neuropsychologist must administrate a set of tests in order to measure the psychological abilities such as general intelligence, memory... Neuropsychology offers a robust system for the measurement and quantification of cognitive function, emotional state and behavioral repertoire through standardized tests, questionnaire and observation (6).

The neuropsychologist's tasks differ depending on the kind and the aim of Neuropsychology itself; in experimental Neuropsychology we are aiming at determining the individual strengths and weaknesses, whereas in clinical Neuropsychology, diagnosis of brain function or dysfunction is our goal. Therefore, the procedure followed by the Neuropsychologist differs accordingly; however, the tools used stay the same in both cases, interview, observation, tests and questionnaires are always used in individual assessment.

To sum up we say, a typical neuropsychological evaluation will involve assessment of the following abilities: (clinical psychology- a guide for patients and their families):

- General intellect
- Higher level executive skills
- Attention and concentration
- Learning and memory
- Language
- Visual-spatial skills
- Motor and sensory skills
- Mood and personality

Unlike evaluation, rehabilitation is practically related to clinical Neuropsychology, since we need to rehabilitate after a disorder, injury, damage or dysfunction. So, we rarely talk about rehabilitation in experimental Neuropsychology. 'One of the difficulties in developing neurological rehabilitation has been to formulate a model of how function is reinstated, when that does occur. As there is no significant regrowth of damage tissue in the central nervous system, what process results in lost functions being regained? There are at least four ways in which this might happen. First, recovery may result from the reinstatement of function at its original site, in tissue that has not been irreversibly damaged but only temporarily upset by processes associated with the acute effects of the lesion. Second, recovery may result from the adoption of the function of the damaged area that did not originally serve it. Some have considered that this process of neural relocation might be fundamentally programmed into the system. Third, there may simply be adaptation to the deficit. Finally, some have thought that recovery reflects the original tissue regaining control of functions that have been temporarily taken away by other sites during the acute phase of illness' <sup>(7)</sup>.

This passage tries to explain what a neuropsychologist is attempting to do when rehabilitating a patient after brain damage or dysfunction, by giving four hypotheses:

- Rehabilitation enables brain to reinstate function at its original site;
- Rehabilitation permits a safe area to adopt the function belonging to the damaged area;
- Rehabilitation allows the patient to adapt to the deficit;
- Rehabilitation reflects that recovery is regaining control of functions that have been temporarily taken away by other sites in the brain during illness.

In reality, I provided these tasks just as an example, to clarify the need for forming psychologists in Neuropsychology in our departments of Psychology, and that nobody else than psychologists can exercise this profession. However, other interveners are involved, mainly physiologists, neurologists and specialists in other branches of neurosciences.

Unlike clinical Psychology and the other specialties opened in the department of Psychology in Mascara, if Neuropsychology is adopted, it will need a particular curriculum that should include at least the following modules:

- Psychopathology: the student has to know the different behavioral disorders and mainly those in relation with brain damage, and which reflect dysfunction.

- Physiology: the student should have a detailed picture about brain, as well as the different areas and their functions.
- Neuroscience: it comprises the study of neuroanatomy, neurophysiology, brain functions and related psychological and computer based models ‘
- Psychometrics: the student needs to use psychological tests in neuropsychological evaluation, diagnosis, assessment and rehabilitation.
- Developmental Psychology: in order to know the different developmental stages and the changes occurred during life.
- Techniques of research: interview, case study, observation and questionnaires must be mastered by the student.

This curriculum is so flexible so as many other modules can be included, in addition, to realize it we'll need laboratories to experience the hypotheses given by teachers and students.

### **Conclusion:**

As we have seen, Neuropsychology became one of the most important branches in the field of Psychology; it is a combination of two prominent disciplines: Neurology and Psychology. It seeks in the possible relationship between the different brain areas and behavior; experimental Neuropsychology is related to researching in the normal process and development of a brain functions in relation to the suitable behavioral aspects, whereas clinical Neuropsychology is concerned with investigating in brain illnesses and damages when reflected as behavioral disorders.

In Algeria, Neuropsychology is still regarded as a depended branch; this is why it is taught as a module within a curriculum of other specialties. We hope to see Neuropsychology as an independent specialty in our department of Psychology in Mascara. Therefore, I urge all the teachers working in our department to do their best to achieve this goal in spite of many obstacles that should first be removed, such as: the lack of specialists in this field, the absence of a program in Neuropsychology and a department of medicine in the University of Mascara. Therefore, we have first to overcome these difficulties through following the steps as follows:

- Forming teachers of Psychology in Neuropsychology, mainly abroad in countries known by their reputation in this field of study, such as Great Britain, Russia and North America (each represents a distinguished approach in Neuropsychology). North American approach called ‘systematic collection of tests’ is based on psychological model of abilities, and allows use of scores that combine results from different tests. The Russian approach named ‘single case approach’ is based on behavioral Neurology and model of abnormal function. Finally, British approach called ‘investigation of individual cases by selection of standardized tests’ focuses on difficulties of individual patient, and allows development of a model of individual patient’s disability<sup>(8)</sup>.
- Building a curriculum, this is why we have to benefit from experiences of other Universities, at home and abroad.
- The need to establish a department of medicine in Mascara, as well as an academic hospital.

Finally, I say that we really need to develop teaching Neuropsychology in our University to facilitate diagnosis, assessment, evaluation and rehabilitation of behavioral deviations caused by brain damage.

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