Papeles del Psicólogo, 2008. Vol. 29(3), pp. 301-306
http://www.cop.es/papeles

THE FUNCTIONS AND TRAINING OF A CLINICAL NEUROPSYCHOLOGIST: A PROPOSAL

José Ignacio Quemada* and Enrique Echeburúa**
** Servicio de Daño Cerebral. Hospital Aita Menni. Bilbao.*
*** Facultad de Psicología. Universidad del País Vasco. San Sebastián*

The functions of a clinical neuropsychologist and the syllabus of a specialized training in clinical neuropsychology are discussed in this paper. Assessment, rehabilitation, work with families and team management are some of the areas covered. The authors propose a training framework for clinical neuropsychologists based on their experience in teaching, neurorrehabilitation and research in clinical psychology.
Keywords: *Functions of Clinical Neuropsychologist. Syllabus of Clinical Neuropsychology.*

En este trabajo se realiza una reflexión personal sobre las funciones y el contenido formativo de la especialidad de la neuropsicología clínica. Se detallan las funciones requeridas en el ámbito de la evaluación, del tratamiento, del apoyo familiar y de la gestión. Asimismo se presentan algunas ideas en cuanto a la formación requerida para su debate y crítica desde la experiencia docente, investigadora y clínica de los autores.
Palabras clave: *Funciones de la neuropsicología clínica. Formación de los neuropsicólogogos*

Neuropsychology exerts a certain fascination among many psychology students as well as those who are completing a specialization in clinical psychology. Beyond its practical usefulness, what makes neuropsychology greatly attractive is its field of study (biological correlates of basic psychological functions) and the area bordering with medicine, specifically with neurology and with diagnostic tests of recent development (exploration through structural or functional neuroimaging).

The concept of neuropsychology and the scope of the profession, as well as the necessary training to become an expert in this discipline, nowadays are a subject of debate. Neuropsychology concerns itself with the study of the cognitive development of the biological substratum and of basic psychological processes such as attention, memory, conscience, verbal and nonverbal learning, thought and language, among others. Therefore, it refers to a theoretical and descriptive disciple related to the areas of basic psychological study and to psychobiology.

In addition, clinical neuropsychology has as its objective to identify cognitive deficits and their effects on the daily life of neurological patients, design adequate instruments for neuropsychological exploration and establish a rehabilitation plan consistent with the findings obtained. In this sense, clinical neuropsychology is more directly related to clinical psychology.

The framework for action in clinical neuropsychology can be stretched or extended with respect to both the target population and the phase of intervention. For example, using a wide framework, we can talk about assistance for people with neurological disability and contemplate intervention in dementia, multiple sclerosis, Parkinson's disease, ictus, cerebral palsy and cranium-encephalic traumatism (CET); rehabilitation interventions as well as assistance in problems derived from chronicity would be included and, therefore, everything related to assistance from Social Services. In a more constricted framework, we can speak of the skills required by neuropsychologists who belong to multidisciplinary teams for the rehabilitation of people with acquired brain damage (CET and ictus essentially). The considerations proposed in this article essentially fall within this second framework.

Occasionally, we succumb to the reductionism of limiting the work of a neuropsychologist to the psychometric assessment of a range of cognitive processes, especially attention, memory and the executive functions, as these are the processes with the greatest arsenal of psychometric instruments (Muñoz Céspedes & Tirapu, 2001). However, in a Rehabilitation Service for people with brain damage, neuropsychological rehabilitation is understood in a more complex manner. On the one hand,

Correspondence: Enrique Echeburúa. *Facultad de Psicología. Avda. de Tolosa, 70. 20018 San Sebastián. España.*
E-mail: enrique.echeburua@ehu.es

it becomes essential to incorporate ways of intervening on the detected problems; and, on the other hand, the domains of the psyche which are being worked on surpass the purely cognitive definition (Pelegrín, Muñoz Céspedes & Quemada, 1997) since volitive, emotional and behavioural aspects have to be included as a final result.

To summarize, neuropsychology is a basic discipline while clinical neuropsychology is a discipline which is applied to people with a neurological disability. The responsibilities of a clinical neuropsychologist include assessment and rehabilitation without limiting the latter to the cognitive domain.

The aim of this work, drawn from our teaching, research and clinical experience, is to propose a personal reflection regarding neuropsychology as a scientific discipline, the training of a neuropsychologist and the connections to professional needs and to society's expectations. These points of view represent, as it could not be any other way, our personal way of looking at things. This is not a closed proposal-not even a systematic proposal-but rather these are open reflections pertaining to those subject matters which worry us in our daily practice.

THE FUNCTIONS OF A CLINICAL NEUROPSYCHOLOGIST

From the point of view of evaluation, the clinical neuropsychologist has to use screening tests and diagnostic instruments for the detection and assessment, respectively, of the cognitive deficits presented by the patient**.** An adequate neuropsychological battery should be composed of a series of validated, reliable, standardized tests with normalized measures which can be used to identify and quantify the cognitive changes derived from cerebral dysfunctions (Junqué, 2006; Lezak, howieson & Loring, 2004). Although some authors recommend using only one battery to assess the entire cognitive range, quite often it is more efficient to choose, from a range of available tests, those which assess the problems which are more evident and are adjusted to the purpose of the evaluation.

Diagnostic tests have to be effective (provide relevant information for later intervention), but also efficient, that is, they should provide the maximum significant information with the least possible time loss and discomfort for the patient. Efficacy must be related to posterior intervention possibilities. The usefulness of complex diagnostic tests which consume a lot of time and do not offer clear clues as to how to outline an adequate therapeutic program is not always clear.

Moreover, the information obtained from these tests turns out to be insufficient when proposing a neuropsychological intervention or rehabilitation plan. In the clinical field, the neuropsychologist is required to contemplate four other areas besides the cognitive one. These would be 3Cs and 2Fs: **C**ognition, **C**onscience, **C**onduct, **F**unctioning and **F**amily. Furthermore, hierarchical or priority relationships are established among them which should be taken into account if we aim for an effective and sensible intervention. For example, intervening on emotional, adaptive or severe behaviour alterations is a priority as they are very perturbing for coexistence and they hinder any other type of rehabilitation work. Likewise, alterations of consciousness must be promptly recognized in order to apply strategies to facilitate the collaboration of the patient. The assessment of the patient's autonomy in daily activities obliges the therapist to adopt an ecological perspective and a practical sense for the patient and family. Next, we describe these intervention domains in more detail, and a reflection regarding the role of the (neuro)psychologist in team management is offered.

a) The management of emotional and behavioural alterations

Aggressiveness, negativism and socially inadequate conduct, or apathy itself, are frequently present in persons with brain damage. In fact, these constitute a serious obstacle to their social re-insertion and, hence, are preferential targets of any rehabilitation program (Quemada, Sánchez Cubillo & Marín Ojeda, 2006).

The persistence in time of behavioural alterations has severe consequences for the social integration of the individual, for the wellbeing of the family (Gleckman & Brill, 1995) and for the consistent implementation of rehabilitation programs (Harmsen, Geurst, Fasotti & Bevaart, 2004). In addition, without treatment these alterations tend to become chronic and more severe (Johnson & Balleny, 1996) which entails a greater risk of psychiatric institutionalization (Gloag, 1985). However, physical rehabilitation and speech therapy techniques are more universally implemented in Cranial-encephalic Trauma Rehabilitation Units than non-pharmacological strategies for treatment of behavioural alterations.

Hence, the clinical neuropsychologist should include this area in his/her *screening* assessment and develop adequate treatment strategies. Behaviour analysis includes detailed observation of the nature of the alteration, its antecedents and consequences. Intervention requires a solid training in cognitive-behavioural therapy, with programs focusing on rewards/punishments and cognitive distortions as well as the environmental or personal conditions which predispose an individual to non-desirable behaviour. The problems derived from apathy require planning the activities in consensus with the patient and/or family and monitoring these using external controls.

On the other hand, not all patients display the same degree of severity or the same type of alteration. Thus, there are less severe patients who display anxiety and suffering due to the deficits shown and for the future or who feel depressed when faced with the awareness that the situation is already, in some ways, irreversible and entails a rupture with their previous lives. These emotional alterations (anxiety, rage and depression) could require a different treatment than those emotional and behavioural disorders present in very severe patients.

b) Cognition, conscience and functionality

The recovery of autonomy in daily activities, both basic and instrumental, constitutes one of the main objectives of any rehabilitation program. It can be approached from gaining autonomy in hygiene or dress to being able to give a class if the patient is a teacher or pronouncing a sentence in the case of a judge. The loss of autonomy can be a consequence of diverse types of deficits. Here, we focus on the losses due to deficits in mental functioning.

Based on what has been said in the previous paragraph, in rehabilitation the parallel assessment of the loss of functioning and the cognitive, emotional and volitive processes is of interest. These three processes offer clues as to why there is a loss in functioning and shed light on how to intervene. In addition, the available knowledge about the possibilities of the restoration of cognitive processes (in general limited) will more or less guide us in the sense of trying to train processes per se or focalizing the efforts in implementing environmental change and/or external and procedural aids which facilitate the success in the tasks. These last strategies are known by the term *function compensation* and they usually have more scope than the purely restorative.

Rehabilitation demands active participation on the part of the person who is the object of assistance. Such participation requires his/her involvement, and this is not possible if there is no awareness of the type of existing problem. Conscience is probably a heterogeneous group of psychological processes which can be divided in diverse manners. A simple way divides it according to the domain affected: language, sight, external space, own body, capacity for movement, cognitive skills, social skills. This way, we can find people with spatial negligence, cortical blindness, Brocca's aphasia with no awareness, anosognosia for hemiplegia or lack of recognition of personality change (Quemada, Sánchez Cubillo & Muñoz Céspedes, 2007).

On the other hand, conscience can be organized according to the *"profoundness or persistence"* of the information which must be present to organize behaviour. Thus, in order to "be conscious of the lack of something" we need to have knowledge of the loss of a capacity but also affective resonance must be present; that is, the patient must *"care"* that this shortage may lead to behavioural consequences. Lastly, both knowledge and affective response must persist in time and be incorporated into one's life plan, because if not, it becomes useless knowledge for real life matters.

The analysis of these questions, the planning of consciousness rehabilitation or its recognition and the decision of not intervening (in those cases where it is decided that it would only produce suffering) require the intervention of an expert in psychological processes. Clinical neuropsychologists and psychiatrists must be situated in the forefront of this reflection.

c) Assistance for families of individuals with cerebral damage

Cerebral injury alters the balance of the family system .in a definitive way. Those close to the person have to cope with an extraordinarily painful situation for which nobody is ever ready and which challenges their coping and adaptation capacities. In a didactic manner, and therefore reductionist, the necessities shown by the families can be structured around three concepts: need of *information*, need of *training in the management of new skills* and need of *psychological adaptation to a sudden change* to which the person cannot be indifferent. The clinical neuropsychologist is called on to intervene in all these areas as the protagonists or coordinator of such interventions.

Information is required in all phases; however, its nature changes. At an initial stage, information pertains to the severity of the lesion, vital risk and medical decisions taken; subsequently, patients should be informed of the consequences and rehabilitation options; and lastly, information should be focused on social resources and legal issues regarding labour capacity, civil or economic compensation rights (Quemada, Ormaechea & Muñoz Céspedes, 2003).

Training in the management of new skills takes on a predominant role in the rehabilitation phase. Family members must learn how to move their loved one from the wheelchair to the car, the bed or bathroom; give food with a certain consistency in order to avoid choking; communicate taking into account problems of aphasia; or respond to certain behaviours avoiding inappropriate reinforcers or rewarding adaptive behaviours. Every therapist involved must develop didactic and communication skills.

Finally, it is about *facilitating the psychological adaptation to the new situation*. The road people follow to the acceptance and adaptation of such a complicated reality is long and filled with negation, projection, hostility, confusion and pain. The neuropsychologist, along with other qualified and experienced members, must accompany and if he/she can, facilitate the processes of bereavement and embracement of life. It is especially important to avoid the abandonment of other vulnerable members of the families (children, for example) in the context of uninterrupted care of the person with brain damage. This type of work requires psychotherapeutic training as well as vital and clinical experience. External supervision can be of great help here.

d) Other functions: team and service management

Work in multidisciplinary teams requires abilities in communication, participation, positive evaluation of the work of others and the search for consensuses which seem essential. Although these capacities are to a great extent determined by personality, it is not less true that dynamics can be understood and favoured, the neuropsychologist being one of the professionals who is expected to be more sensitive and qualified.

In addition, the regular use of behavioural techniques in the rehabilitation of patients requires a team trained in their application. Therapeutic principles are not only the competence of the neuropsychologist but rather they must impregnate the action of the entire team (doctors, nurses, physiotherapists, speech therapists, etc.) and become a part of their common knowledge. It is of vital importance for the success of the programs that the people implicated in them, whether healthcare personnel or family members, understand the programs and their roles in their application.

Likewise, the multidisciplinary team can play an essential role in the mental hygiene of the professionals working with difficult cases. Specifically, discussing complex cases with the rest of the team, assuming one's own limitations and establishing adequate group cohesion, all play a prophylactic role in the prevention of the *burnout syndrome*.

Lastly, and as a professional with maximum qualification, the neuropsychologist can be called on to be the leader or the person responsible for the services. Thus, he/she must be prepared not only to solve interpersonal conflicts but also to manage economic and administrative dimensions of the services.

TRAINING OF THE CLINICAL NEUROPSYCHOLOGIST

On occasion, clinical neuropsychology is presented as the discipline that studies the correlation between images of brains with some kind of lesion and the results of tests which assess very well defined cognitive processes. Both techniques have undoubtedly contributed to the progress of knowledge regarding the relationship between brain and behaviour. However, images, on the one hand, and quantitative measures, on the other hand, lend an apparently exaggerated validity to the discourse. Neither are the cognitive processes settled on extremely contrasted models nor does the available neuroimaging exhaust the descriptive possibilities of the cerebral structure and function.

On the other hand, patients and relatives can derive a transitory satisfaction from being overwhelmed by concepts, images and data, but their persistent demands are focused on the recovery of cognitive and relational capacities which will allow them to take up their previous socio-family roles again. And if such an objective is not possible, we are confronted with the necessity of helping the subject and his/her family to cope with a difficult struggle on the road toward maximum functionality as well as adaptation to the disability.

Therefore, the work of the clinical neuropsychologist cannot be limited to the sole assessment of cognitive

functions in neurological patients but rather this evaluative function must be closely linked to rehabilitation. In turn, intervention goes beyond action on cognitive deficits and must be extended to emotional alterations and behavioural disorders as well as to supporting the affected families and managing the teams.

This complexity of the tasks demands that clinical neuropsychology be directly related to clinical psychology; the latter already includes in its syllabus the approaches to behavioural alterations, medical psychology and work with family systems. It is for this reason that in this article we are in favour of enriching the programs which are already official and not so much in favour of starting to design programs from the beginning, knowing that part of these turn out to be redundant with training programs in clinical psychology.

The specialization in clinical psychology (PIR system) - the only recognized legal way for the training and capacitation of psychologists specialized in clinical psychology - at present has a triennial structure. This duration turns out to be insufficient in order to acquire a specific capacitation and be able to deal with multiple fields (inpatient psychology, rehabilitation units, forensic psychology, etc.), ages (child clinical psychology, geriatric centres) and contents (neuropsychology, addictions, eating disorders, etc.) which are the scope of clinical psychology today. In fact, clinical psychology is, along with that referring to radiation physicists, the only specialty in health sciences for graduates with a duration of 3 years, since the rest have a duration of 4-5 years.

In the present three-year training program, PIRs can avail, for example, of extraordinarily brief placements (maximum 3 months) in hospitalization units or programs, inter-consultation (health psychology) or rehabilitation of chronic patients, as well as placements of 6 months maximum in units of child and adolescent assistance. In addition, these temporal scarcities oblige them in many cases to prolong rotation time in such crucial units as those mentioned, which in turn prevents the future professional from dedicating a minimum amount of time to rotations in areas of special interest, such as psychotherapy, addictions, forensic psychology or neuropsychology itself (Asociación Española de Psicología Clínica y Psicopatología, 2008).

For this reason, a reasonable alternative is to consider clinical neuropsychology an area of specific capacitation of one-year duration, which could be taken at the same level as others (child clinical psychology, psychotherapy, etc.), after having completed the general training in clinical psychology (3 years). The specific areas of capacitation are legally contemplated in articles 24 and 25 of the Ley de Ordenación de Profesiones Sanitarias (Law for the Organization of Health Professions) (LOPS) 8BOE, 22.11.2003), but, with respect to clinical psychology they are still to be developed. Thus, it is not about asking for "*one more year*" of training but rather it is about planning exclusive qualified theoretical-practical training in clinical neuropsychology, supervised by specialists, for people who are already trained as clinical psychologists.

Lastly, reasons of a very pragmatic character can be adduced which recommend clinical neuropsychology professionals to possess clinical and management skills; it is very improbable that Rehabilitation Services would plan to hire clinical psychologists on the one hand, and neuropsychologists on the other, as this would be inefficient and it would unnecessarily complicate team coordination.

CONCLUSIONS

The high rate of accidents (domestic, traffic, labour, sports-related, etc.) and the increase in the survival rate after ictus bring with them the growing importance of acquired cerebral damage and, as a consequence, of the demand for Rehabilitation Services.

Clinical neuropsychologists can conduct their work in different health care settings (hospitals, national health clinics, day centres, etc.) and take on different areas of action (cognitive restoration, functionality, compensation, design of surroundings, behaviour and emotional change, family support, group coordination, etc.). The role of the neuropsychologist, along with physiotherapists, occupational therapists and speech therapists (depending on the problem presented) is essential in rehabilitation (out-patient or in-patient) and in day centres.

Team work is an essential requisite in the daily tasks of neuropsychologists. The rehabilitation of neurological patients requires work on diverse fronts (essentially patient and family) and with different professionals (neuropsychologists, psychiatrists, speech therapists, physiotherapists, etc.) which obliges us to adopt an operative approach and a common language, to be flexible, to have communication skills, to set out some concrete objectives and to count on an integrated health care model as well as to promote adequate social skills (

Echeburúa, Corral & Salaberría, 2005).

The training of the clinical neuropsychologist includes specific aspects such as cognitive science, neuropsychological tests and neuroimaging. But it also shares with clinical psychology the fluent handling of behavioural techniques, skills for working with families and knowledge of psychotherapeutic approaches useful in the work with people with disabilities. Lastly, the management of teams and services are both skills which will increase the versatility and professional attractiveness of neuropsychologists.

Hence, neuropsychology should be considered as a specific capacitation area of clinical psychology. This requires that the specialty of clinical psychology be extended to 4 years and that in the last year neuropsychology can be chosen as the area of capacitation, which would imply the specific learning of this discipline for 1 year through supervised practice in specialized centres.

Finally, the proposal presented in this paper originated merely as a reflection by the authors based on the expounded arguments. Far from being a closed proposal, its objective is to offer a platform for reflection as well as to provide solid theoretical-practical arguments for a debate which is open and that requires making decisions with respect to the training and the role carried out by the clinical neuropsychologist.

REFERENCES

Asociación Española de Psicología Clínica y Psicopatología (2008). *Planteamiento de la AEPCP sobre las propuestas de formación sanitaria para psicólogos y sobre la formación especializada en psicología clínica. Documento de trabajo.* (*AEPCP proposal regarding the health care training of psychologists and specialized training in clinical psychology. Work Document*).

Echeburúa, E., Corral, P. y Salaberría, K. (2005). Reflexiones ante la formación de los psicólogos. Retos de futuro (Reflections on the training of psychologists. Future challenges). *Análisis y Modificación de Conducta, 31*, 175-188.

Gleckman, A.D. y Brill, S. (1995). The impact of brain injury on family functioning: implications for subacute rehabilitation programmes. *Brain Injury, 9*, 385-393.

Gloag, D. (1985). Needs and opportunities in rehabilitation. Rehabilitation after brain injury: Behaviour and emotional problems, long-term needs and the requirements for services. *British Medical Journal, 290*, 913-916.

Harmsen, M., Geurst, A.C., Fasotti, L. y Bevaart, B.J. (2004). Positive behavioural disturbances in the rehabilitation phase after severe traumatic brain injury: An historic cohort study. *Brain Injury, 18*, 787-796.

Johnson, R. y Balleny, H. (1996). Behavioural problems after brain injury: Incidence and need for treatment. *Clinical Rehabilitation , 10*, 173-181.

Junqué, C. (2006). Métodos paraclínicos de diagnóstico en psiquiatría (III): Tests neuropsicológicos. En J. Vallejo (Ed.), *Introducción a la psicopatología y la psiquiatría* (Paraclinical diagnostic methods in psychiatry (III): Neuropsychological tests. In J. Vallejo (Ed) *Introduction to psychopathology and psychiatry) (6th ed.*) (pp. 111-117), Barcelona: Elsevier-Masson.

Lezak, M.D., Howieson, D.B. y Loring, D.W. (2004). *Neuropsychological Assessment*. New York: Oxford University Press.

Muñoz Céspedes, J. M. y Tirapu, J. (2001). *Rehabilitación neuropsicológica* (*Neuropsychological rehabilitation*). Madrid: Síntesis.

Pelegrín, C., Muñoz Céspedes, J.M. y Quemada, J.I. (1997). *Neuropsiquiatría del daño cerebral traumático* (*Neuropsychiatry of traumatic cerebral damage*). Barcelona: Prous Science.

Quemada, J.I., Hormaechea, J.A. y Muñoz Céspedes, J.M. (2003). La peritación psiquiátrica y neuropsicológica del daño cerebral traumático y la Ley 30/95 (Psychiatric and neuropsychological assessment of traumatic cerebral damage.and the Law 30/95). *Actas Españolas de Psiquiatria, 31*, 353-360.

Quemada, J.I., Sánchez Cubillo, I. y Marín Ojeda, J.I.. (2006). Trastornos cognitivos, conductuales y emocionales en el daño cerebral adquirido. En *Manual SERMEF de rehabilitación y medicina física* (Cognitive, behavioral and emotional disorders in acquired crebral brain damage. In *SERMEF manual of medical rehabilitation and physical medicine*) (pp. 591-596). Buenos Aires, Madrid: Panamericana.

Quemada, J.I., Sánchez Cubillo, I. y Muñoz Céspedes, J.M. (2007). El Trastorno Orgánico de la Personalidad: análisis conceptual y estrategias para la investigación (Organic Personality Disorder: conceptual analysis and research strategies). *Actas Españolas de Psiquiatría, 35*, 115-121.