

# Neuropsychological assessment and rehabilitation: an experience report at the ILCN - Instituto Luso Cubano de Neurologia in Porto, Portugal

## Summary

This experience report aims to describe a period of observational/ethnographic activity in Neuropsychology, carried out at the ILCN - Instituto Luso Cubano de Neurologia, in the city of Porto, Portugal. This study presents the unit's assessment and rehabilitation models, drawing parallels with the assessment and therapeutic models in Brazil; a characterization of the Institute is carried out, with a profile of the patients and the functions performed by the multi-professional team. The theoretical concepts referenced by the neurosciences will also be described, as will the procedures and instruments used in the follow-ups, the aim of which was to qualify the treatments in order to promote the development and functionality of the users in the face of the difficulties they face on a daily basis, variables which have a direct impact on the establishment of their autonomy and quality of life. To illustrate the activities carried out, two case studies were selected which were monitored by the team from the renowned institute.

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## Introduction

Neuropsychology is becoming increasingly important in academic and scientific circles, due to its potential as a modern tool for scientific progress and for the development of people, especially those affected by neurological disorders. Society's growing interest in neuropsychology is related to its breadth of discoveries about the brain in its healthy and pathological aspects. Thus, according to Miotto, de Lucia and Scaff<sup>1</sup> "Neuropsychology is the area of psychology and neuroscience that studies the relationships between the central nervous system, cognitive functioning and behavior", with the aim of expanding knowledge in health with a focus on the quality of life, well-being and development of individuals and communities using instruments, studies, activities and research based on scientific evidence in the most diverse areas of knowledge.

The assessment and rehabilitation process described in this article was provided by the Luso Cuban Institute of Neurology in Porto, as a condition for training in a multiprofessional neurology team. As well as learning about institutional dynamics and the techniques used, the period described enabled a comparative model to be set up between the *modus operandis* of the ILCN, where there is a high quality of human and material resources, and the theoretical and practical models in Brazil. The charisma and playfulness transmitted by the team of professionals at the ILCN expresses an atmosphere of growth for the patients and raises the level of treatment offered at the unit. A similar atmosphere of institutional climate can be found in health care contexts in Brazil, where there is a humanistic perspective. Through this experience, it can be seen that, in addition to the use of techniques, the use of the human factor is an indispensable condition as the main builder of positive bonds, considering that these strengthen the therapies developed.

The multi-professional team was able to provide operational support, where they applied assessment tests, as well as planning and carrying out the Neuropsychological Rehabilitation process proposed by the institute. The aim of this report is to present the observational/

ethnographic experience carried out at the Instituto Luso Cubano de Neurologia - ILCN, Clinica Norte, Porto, Portugal. Next the treatment center with its institutional characteristics, the profile of the patients served, defining the theoretical and practical context of the activities with a description of the assessment and intervention techniques used by the professionals and, finally, two clinical cases in Neuropsychological rehabilitation developed during the period of institutional experience.

## Institutional history

The Luso Cuban Institute is a center specializing in Neurology, with many specialties and uses high technology for health care. Created on June 1, 2014, it is a private establishment with legal personality and administrative, financial and patrimonial autonomy. It came about through the entrepreneurial initiative of Portuguese people who saw the immense demand in Portugal for neurological treatment, and who sought inspiration from a large neurology institute in Cuba in order to implement the care model in Portuguese territory. Considered one of the country's major treatment and rehabilitation centers, the ILCN receives users/patients from all over the world. It was created to efficiently treat neurological disorders in a wide range of age groups, including children, adults and the elderly.

The institute is staffed by professionals of the highest academic quality who, together with the use of technology, positively transform the lives of patients. The ILCN has eight rooms for the intensive care of patients, an environment with four rooms on the second floor for therapy sessions in Neuropsychology and Speech Therapy; a kitchen and a cafeteria for users to eat their meals; two bathrooms adapted for people with disabilities, as well as elevators to help transport clients; it also has a shared gym in a large space with six rooms where the various professional skills/categories work together, always from an interdisciplinary and multi-professional perspective.

The ILCN offers both outpatient and inpatient treatment, where patients undergo their therapies during the day and retire to rest in the evening. Inpatient care makes daily commuting easier and is often

used by patients who don't live in the city of Porto, so that they can be closer to the place where they are undergoing their treatment, while remaining close to the institution with a high-quality service, having companions and intensive nursing care. The team is made up of sixteen members who carry out their assessments and follow-up in an integrated manner. The professional staff is made up of two Psychomotricians, two Speech Therapists/Speech Therapists, three Neuropsychologists, three Doctors, three Occupational Therapists and three Nurses who take turns providing care.

24 hours a day to meet the demands of the inmates. It also includes acupuncture, music therapy and a neurophysiology service with EMT - Transcranial Magnetic Stimulation, a team coordinator, a neuropsychology coordinator and a general coordinator with a neurologist.

### ILCN'S daily life

The activities of the Neuropsychology Service include: Reading of the files planned with the patients who will be seen that day, week and cycle; Rehabilitation and cognitive stimulation of regular patients; discussion of cases among the team on a daily basis and also a weekly multiprofessional meeting, which took place on Wednesdays; Complete neuropsychological assessments with newly arrived patients; reassessments of the therapies developed; preparation of multiprofessional reports; support for the patients' families with practical guidance on the users' ADLs - Activities of Daily Living with a focus on improving functionality and autonomy in everyday family life.

When reading the files, the professionals analyze the activities that have already been carried out and focus on the areas that can bring the most benefit to the patient; just as happens naturally, they can also follow the previously established program. In the neuropsychological assessment, the professionals receive the patients and meet their demands through initial contact and an interview conducted by the institute; they then carry out the assessments using the BENA - Adult Neuropsychological Examination Battery or the BENC - Child Neuropsychological Examination Battery, adapted for the Portuguese population. The information is complemented with the family members who usually accompany the patient, following a model of evaluation structure similar to the Brazilian context and at the same time taking into account the cultural specificities of the Portuguese and/or the patient's country of origin. Subsequently, and during the course of the follow-up, the patient undergoes new tests, in which their personality potential and cognitive functions will be assessed and reassessed, such as: Self and allpsychic orientation; attention; calculation; memory; comprehension of oral and written language; executive functions correlating them with lesions in the prefrontal cortex and the existence of apraxias.

After the neuropsychological assessment, a multi-professional opinion is drawn up defining the patient's need to be accompanied by the neuropsychology 'valence' and the other categories, if so to treatment, a workload is suggested, at which time the patient is included in the therapy schedule, after which an Individual Therapy Plan is drawn up. Depending on the needs and possibilities, the patient is seen every day of the week in monthly cycles, with an intensive regime covering all categories, in a model organized by the coordination. The therapies are permeated by operational adjustments aimed at restoring the users' health within the perspectives planned in the assessment. After the entire therapeutic process, a multi-professional report is drawn up with a picture of the follow-up and guidelines for the post-discharge period.

Patients come from a wide range of social, ethnic and cultural backgrounds. They may be admitted spontaneously, through referrals from outside consultations or from hospitals in the region. At the ILCN, the most different neurological aspects are covered, so that the most frequently treated conditions during my period of experience were Traumatic Brain Injury (TBI); Alzheimer's Disease; ASD - Autistic Spectrum Disorder; CVA - Cerebrovascular Accidents; Neurodevelopmental Disorders; ADHD - Attention Deficit Disorder with or without Hyperactivity and various other issues of neural affectation. The Institute works with the aim of offering specialized care, in an integrated manner, with a team that guarantees appropriate responses to the demands of clients going through this difficult phase of health rehabilitation.

### The neuropsychology service

The ILCN team works in a humanized and welcoming format with the aim of supporting patients by assessing them, and carrying out rehabilitation therapies with a project that uses initial interviews and test results as a basis, but with a specific human warmth tint in order to tailor the users' follow-up with a significant affective tone. From a cognitive point of view, they aim to enhance their preserved functions while working on the issues and characteristics of each individual. Depending on the severity of the neurological deficits, each category will determine the workload for the follow-up, which is a multi-professional effort. The subject is assessed, and after the opinion of each professional, a therapeutic project is drawn up, taking into account the characteristics of individuals with their intellectual, cultural and socio-emotional possibilities, in order to overcome difficulties and barriers in daily life.

Thus, the neuropsychology service developed at the ILCN focuses on maintaining and/or recovering the quality of life and autonomy of the people who come to the institute, with the aim of compensating for, reducing or circumventing cognitive deficits, as well as guiding patients and their families to deal with the functional difficulties resulting from brain injuries, which in most cases are extremely serious and have various complexities that require the team to work hard and constantly update their clinical management. The treatment begins with the difficulties the patient presents, but goes in many directions in order to have a positive impact on the users' lives.

The team has made it clear that it follows the conceptual prism of the hierarchical modules of cognitive networks described in Luria's Neuropsychology.<sup>2</sup> (The team is also guided by a treatment model that moves from the simplest to the most complex activities, taking into account the evolutionary development of the neocortex and its impact on the neurological health of the users, thus taking into account that the main objective in the use of techniques, instruments and human resources is for the subject to obtain the greatest degree of independence and functionality with the highest possible quality of life, always considering the inherent limitations that they may present, in their different degrees and knowing that a total neuropsychological recovery is very difficult.

### Methodology

The experience was of a professional observational nature with ethnographic resources and this report follows a descriptive/exploratory model as it sought to provide practical support for neuropsychology by monitoring the therapy sessions carried out during the treatment of patients at the institute. Initially, all the sectors and professionals were introduced to facilitate an understanding of the needs in the field of activities and the breadth of the treatments

developed, as well as the routine with the institution's timetable, which was followed within the daily needs of the ILCN. The objectives developed were structured as follows: Address the characteristics of the Institution and the Neuropsychology service; Acquire experience in terms of Assessment.

Neuropsychology; Deepening knowledge of clinical assessment methods and therapeutic intervention techniques; Intervention in rehabilitation with participation in the preparation of intervention plans; Monitoring of rehabilitation sessions and, finally, Participation in multidisciplinary team meetings with feedback on the impressions acquired, all described in this report. The population of the clinical case studies to be presented is made up of two patients who are members of the neuropsychology unit. One was a male participant, aged 86, retired, married, with three children, diagnosed with Alzheimer's disease, from Angola, on the African continent. The other, a male child, aged 06, from the district of Porto, Portugal, who is being followed up in rehabilitation after neurological consequences resulting from hypoxia secondary to drowning.

The cases are real, enlightening and were chosen to cover different age groups; they are indicated by the initial letters of their names to protect the confidentiality of their identity. The processes and instruments used in the assessment of the two cases chosen will be highlighted, as well as those used throughout the assessment and rehabilitation process with the other users. Due importance will be given to the clinical interview, as it allows us to obtain information about the various areas of the patient's current and past experience and also to develop a good therapeutic relationship based on dialogic contact, guiding the patient in defining the objectives for the therapeutic intervention and motivating them towards their recovery. In addition, clinical observations were carried out, which enabled the team to gather valuable information for monitoring and defining each patient's therapeutic projects.

## Neuropsychological assessment: Brazilian and ILCN standards

The neuropsychological examination in Brazil follows the standards international, mainly influenced by the North American academic community, which considers it to be a clinical investigation procedure aimed at clarifying questions about a patient's cognitive, behavioral and emotional functioning. Thus, the assessment no longer focuses its interest on localization, but on establishing the extent, impact and cognitive consequences.<sup>3</sup>

The neuropsychological assessment carried out at the ILCN aims, following its model, to identify the extent of the alterations or changes in mood, personality and behavior; to what extent these alterations or changes are a direct or indirect consequence of the brain injury; to find out which domains of cognition are affected; how serious the dysfunction is and what the implications of the alterations are for the individual's activities of daily living. With this information collected, they seek to understand what guidance can be offered to the individual and mediated with their family members and/or carers to better adapt to any deficits, and finally what practical methodologies can be applied in a rehabilitation process that is intended to be efficient. Thus, the neuropsychological assessment carried out at the institute focuses on the application of interview techniques, quantitative and qualitative examinations of the skills that make up cognition, covering the constitutional processes of perception, attention, memory, emotions, executive functions, language and reasoning.

Sessions at ILCN last an average of 60 minutes, depending on the patient's symptoms. The exercises begin with simpler procedures

and gradually increase in complexity with a dialogical flow of input and output inspired by the bottom up and top down holistic treatment system. The interventions proved effective in assisting patients with cognitive impairment, behavioral changes or affective dysregulation. For the evaluation, tasks were suggested, the result of a carefully developed plan to access different cognitive domains. Neuropsychologists evaluated the phenomena observed and their relationship to the main complaint, the clinical history, the evolution of symptoms, models of psychological functioning and the general psychopathological picture.

According to Malloy-Diniz "the neuropsychological examination is an armed clinical examination and, like any clinical examination, comprises a comprehensive anamnesis and clinical observation of the patient", but it is very important to make good use of measuring instruments for psychometric testing in a mixed quantitative/quali format as it broadens the horizons of the cognitive and behavioral functioning of the evaluated subjects. The clinic is always sovereign and the definition of a classic neurological syndrome is based on the observation of its signs and symptoms. with the results of the various tests are only complementary in the diagnostic construction and treatment orientation.<sup>4</sup>

Thus, at the ILCN, as in the Brazilian context, the assessment itself consists of an interview, behavioral observation, and the application of tests and scales. Information about the patient's life is provided during the initial interview; the children being treated are accompanied by their families, who are essential for collecting the data needed to move forward with treatment.

Subsequently, the patient undergoes a series of tests to assess cognitive abilities, such as: orientation in terms of self, time and space; the attentional module; calculation processes; the different areas of memory; comprehension of oral and written language; lesions in the prefrontal cortex and the existence of apraxia. If necessary, other instruments can be used to contribute to diagnosis and treatment. In these assessments, cognitive functions are measured, observed and described in the way explained in the next section, with emphasis on the most commonly assessed in both Brazil and Portugal.

## The neuropsychology of cognitive functions

### Attention and its assessments

Attention is explained by different models; in general, this function is defined as a complex system that enables the individual to filter relevant information for a limited period of time. However, when evaluating this construct, it is necessary to investigate different factors that can influence the examination of this function, such as tiredness, drowsiness and the use of alcohol and other psychoactive substances. Another precaution that needs to be taken into account is that attention levels vary over the course of days and often over the course of the same day, meaning that poor performance in an assessment at a single moment does not necessarily imply significant impairment of this function. Thus, we can say that of all the cognitive functions, attention is probably the one that is most frequently compromised in cases of brain damage. It can also be the only expression of more subtle injuries, as in the case of mild traumatic brain injuries (TBIs); in addition to often occur in individuals with cerebrovascular diseases and in different types of dementia.<sup>5</sup>

It is also important to point out in the assessment that attention has some very peculiar characteristics, such as: *Selectivity*, which consists of selecting part of the stimuli available for processing while keeping the rest *suspended*. Another important characteristic of attention

emphasized by ILCN neuropsychologists is the ability to *switch* between one type of task and another, successively. In Brazil, this is called *divided* attention, the ability to focus on two different stimuli simultaneously. Last but not least is the concept of sustained attention, which corresponds to the ability to maintain attentional focus on a given activity for a prolonged period of time with the same pattern of consistency.

At the ILCN, neuropsychologists use their own protocol for assessing cognitive functions, which are always reassessed during treatment on the BENA and the BENC, as well as other instruments. In Brazil, many tests can be used to assess attention, including: the Stroop test, which is recognized as a test of selectivity and inhibitory control; the TAVIS-3, which is a computerized test; the CPT-II, which is also a computerized task in which the examinee must react to transient stimuli that appear in the center of the screen. And the Concentrated Attention (CA), which consists of a task in which the examinee has to mark the target stimulus among several other distracting stimuli.

### Memories and their evaluations

Memory involves various processes of receiving, archiving and recalling information. It is a multifaceted function, involving various neural mechanisms and of fundamental importance for the functioning of the individual. Memory can be understood through its multiple attributes, such as declarative (explicit) memory, characterized by the ability to consciously store and retrieve information from experiences. This, in turn, involves two adjacent systems: episodic memory, related to the subject's information retrieval system, and semantic memory, which is defined as our mental encyclopedia.<sup>6</sup>

Non-declarative (implicit) memory is that which allows us to acquire perceptomotor or cognitive skills through repeated exposure and activities that follow constant rules, but which do not require retrieval and the conscious or intentional ability of the experience. With regard to memory, we can also remember its prospective capacity, which refers to the function of remembering to carry out an action planned for the future. Memory assessment at the ILCN is carried out using traditional instruments, the most common being the Wechsler Battery Digit Span for working memory, for example. In Brazil, other tests are also used, such as the Pictorial Memory Test (TEPIC), the Recognition Memory Test (TEM-R) and others that have been validated for the Brazilian population by Satepsi.

### Languages and their evaluation

Alexander Luria, considered the father of neuropsychology, understood that language is one of the most important organizing elements of brain activity, and that it is a very important cognitive skill for human socialization and communication. Therefore, acquired language disorders generally interfere significantly with communicative, social, work and social (re)integration skills.<sup>7</sup> Language manifests itself in the form of comprehension, reception and decoding of linguistic *input*, which includes listening and reading, or in the aspect of expressive coding and *output* production, which includes speech, writing and signaling. In the process of recognizing and understanding words, in an interactive model, sensory information of the target word (*bottom-up* processing) occurs simultaneously with the contextual information, which involves *top-down* processing (expectations, context, memory and attention of the listener/reader). Many of the patients monitored by the ILCN team had some kind of language disorder, the most common being aphasia.

The tasks selected to assess oral and written language generally involve expression (spontaneous language, automatic language,

naming, repetition) and comprehension, at the levels of words, sentences and speech. At the ILCN, language was assessed from the outset where such tasks were already in the initial assessment protocol with expressive, phonetic and semantic aspects. In Brazil, the instruments most commonly used language assessment tools are the Boston Naming Test, the Semantic Verbal Fluency Test (Animal Category) and the Token Test.

### Executive functions and their assessment

The FEx - executive functions are divided into hot and cold and consist of a "set of cognitive processes that, in an integrated way, allow the individual to direct behaviors towards goals, evaluate efficiency and abandon ineffective strategies in favor of more efficient ones and, with this selection, solve immediate, medium and long-term problems" by MALLOY-DINIZ. The very definition of FEx already shows its adaptive value for the individual, as it facilitates management in relation to other cognitive abilities, as if they were the conductor of an orchestra. Various cognitive processes have been identified as being part of the FEx, such as planning, inhibitory control, decision-making, cognitive flexibility, working memory, attention, categorization, fluency, creativity and decision-making.

The neuropsychologists at the ILCN spend most of their assessments focusing on executive functions. These functions also help with goal setting, generation, selection and inhibition of schemas, working memory, spontaneous generation of schemas, inhibition/monitoring/rejection of schemas, realization of postponed intentions (ABREU & Cols, 2016).

The assessment of executive functions at the ILCN follows a similar model to that developed in Brazil, involving the solution of conflicting situations (Stroop), mental alternation of responses to specific stimuli (Trail Making Test); the Frontal Behavior Inventory (FBI), which is an example of a structured script used for interviews to investigate dysexecutive symptoms. Other tests are also used, such as the Tower of London Test, the Tower of Hanoi and the Porteus Maze Test.

### Empirical-analogical & digital-technological rehabilitation

A comprehensive model with a holistic approach is the best way to treat victims of brain damage, and neuropsychological rehabilitation is the process by which a qualified professional uses training and tasks for cognitive compensation and remediation.<sup>8</sup>

To re-create an environment conducive to the development of users after any neurological diagnosis.

A very important element in the daily life of the ILCN is the multiple uses of technology at the service of users. According to Albuquerque and Scalabrini<sup>9</sup> "the use of computers in rehabilitation has proved to be extremely important in the treatment of patients". In this way, the therapeutic rehabilitation projects at the ILCN are permeated by different tasks, activities and techniques, including the use of *stimulation software (RehaCom, Play Attention and the CogniPlus system)* which trains cognitive functions using computer games.

RehaCom, an activity of German origin, was the most widely used. It has playful characteristics and provides the user with challenges that expand their neurological apparatus and archives the results of the various sessions carried out throughout the treatment, allowing the user's daily progress to be visualized, obtaining information on performance in the tasks throughout the follow-up.

The main activities that *RehaCom* exercises are: Acoustic reaction capacity; Attention/concentration; Figure memory; Shopping; Distributed attention; Face memory; Visuoconstructive capacity; Logical reasoning; Topological memory; Daily plan; Spatial operations; Reactive behavior; Verbal memory; Vigilance; Two-dimensional operations; Visuomotor coordination; Word memory; Reaction capacity; Visuo-motricity. In addition to these, we also use some analogical stimulation exercises with paper and pencils, techniques with cubes, balls, images and other playful activities that are of fundamental importance for the bonding between therapist and patient, as well as of paramount importance for the motivation of users so that they remain in the orbit of the proposed treatments.

### The treatments at the ILCN and their in-formative consequences

The neuropsychologists were very receptive and welcoming, and were always available to provide information about the activities and therapeutic objectives with the patients. Their guidance was very important in improving our understanding of neuropsychological phenomena and thus broadening our knowledge of the various techniques used, always taking into account the uniqueness of each subject. It was also very important to learning about cognitive stimulation/rehabilitation programs. The institute's professionals sought to promote efficiency for training potentialization with critical observations pertinent to the development of activities.

During the follow-up process, obstacles to therapeutic progress arose and difficulties in accepting treatment can occur for various reasons, but according to Abrisqueta-Gomez<sup>8</sup> "they will be greater in people with acquired deficits, due to the sudden or insidious interruption of their daily functioning". Thus, with regard to this surprise factor of injuries, psychotherapy proves to be a decisive factor, as it can be seen that psychological support for effective emotional management are key elements in treatment due to the bond that is built between professional and patient in a progressive, organic and punctual routine that the ILCN institute establishes. In this sense, clinical psychology can contribute to the success of treatment and be decisive in it.<sup>10</sup>

At the end of the follow-up in each cycle, a reassessment is carried out to analyze the progress of the therapies and thus define new objectives, i.e., based on the results, the follow-up is rethought, where the stimulation/rehabilitation program can be altered, or there may be a suggestion of clinical discharge with the necessary guidance for the patient and their family. One practice that helps in the daily lives of professionals during follow-ups is to take notes of the activity and functions worked on that day, so that the program continues with the same plan and efficiency, even with a different professional the next day. These processes record the patient's emotional, cognitive and behavioral performance in that session.

After the neuropsychological re-assessment and that of the team, the professionals draw up an opinion, and according to the demand, signal the discharge process or the respective continuity program with new deadlines. In general, the professionals specify and recommend the therapies and workload to achieve the desired goals, taking into account the severity of the conditions presented. At the end of the cycle, a report is given to family members so that they can continue to care for the patient, learning strategies that can make it easier for them to function in everyday life.

Using as a model the practices transmitted in university academies in Brazil, I suggested, at a meeting, the insertion of home visits to continue the care at home with a TA - Therapeutic Accompaniment,

and that this consists of a set of procedures and techniques used directly in an extra-consultative context, with an expanded clinical model in which the follow-up is carried out in various places where the patient lives (home, square, schools, streets) where a positive bond is built that enables the re-construction of social and affective ties that facilitate the patient's inclusion and reintegration into society.<sup>11</sup>

The inclusion of therapeutic follow-up practices in the scope of treatment would prevent some loss of function in patients who progress well with the sessions during the week, but whose progress slows down as the guidance is partially lost at home. In this context, the therapist carries out home visits, and various other possible follow-ups, to the patients in order to reinforce the guidelines in the technical reports and gather other necessary information.

The therapeutic companion can mediate the subject's adaptation to their home environment, because considering that the main objective is to gain functionality in the activities of daily living, there is no more suitable space than the family environment to achieve the desired objectives. Corroborating this idea, Corrêa<sup>12</sup> suggests the IEP - Instrumental Enrichment Program to support rehabilitation processes, because according to him "the IEP instruments enable the therapist to actively intervene in the rehabilitation process to understand how information is captured, elaborated and operationalized in the mind of the person being mediated".

Thus, as Mader Joaquin<sup>13</sup> reminds us, neuropsychological assessment and rehabilitation are not finished research processes; they are constantly being structured and will probably be so for a long time to come; we will therefore exemplify two clinical cases monitored at the Luso Cuban Institute of Neurology in order to elucidate the points of this experience report.

## Clinical cases monitored at ILCN

### Clinical case I

Mr. L&K, 86 years old, from Luanda - Angola, referred by a psychologist in his homeland. The patient is being treated for hypertension, has a history of successful treatment for prostate cancer and was diagnosed with Alzheimer's disease stage III, after showing signs of dementia. The patient has already had other treatments in the USA; he was a member of the armed forces for the colonial liberation of his homeland, and his experiences have left deep marks on his memory, such as the contexts of war and plane crashes, in the face of these memories, he says "We had to fight to be [free] men, but today we are friends, it had to be this way, there was no other way to free us". The ethnographic experience of the follow-up sessions began in the first week of the 7th Cycle. In other words, the patient was already being monitored at the institute, and was assessed at the ILCN for the first time in 2018, with an interview and the use of the BENA - Adult Neuropsychological Examination Battery, when the advanced stage of the disease was found, so that the therapeutic objectives with him were, from the outset, to slow down the rate of functional loss with multi-professional monitoring in which the Neuropsychology workload is 2 hours a day.

A therapeutic plan was drawn up for the patient with the general aim of reducing the losses caused by the disease and, more specifically, stimulating attentional and mnemonic mechanisms, executive functioning, accommodating emotional demands and promoting greater self-perception. In order to achieve these objectives, the activities carried out were diverse; they ranged from reading newspapers, where the patient is encouraged to reproduce the information found, always trying to correlate it with his personal history, to questions regarding

temporal and spatial orientation. Mr. L&K has significant losses in autobiographical memory, so the neuropsychologists used family videos to overcome the deficits and compensate for these losses; in one of these videos, the patient's daughter sings a beautiful song, thus working on memory and emotional ties.

The patient expresses some mood swings and this makes it difficult to manage the therapeutic plan, but for the most part Mr. L&K is friendly, cordial and playful; he loves music and this seems to be a major factor in strengthening the bond between patient and team; he often hums "I need a friend who wants me, who pampers me, I need!" which refers to the good times he had with this soundtrack in his homeland. According to him, he misses Angola and, as a result, we work on questions about African culture in order to fill these existential gaps.

The cognitive domains worked on with the patient were concentrated attention; executive functioning with logical sequences; temporal and spatial orientation; praxis; remote, autobiographical and immediate auditory-verbal memory; as well as the ability to perform calculations. The activities were always carried out with the aid of digital or analog technologies. The therapists try not to make the tasks too complex so that the patient doesn't become frustrated with the exercise and start to reject the activity, which would hinder his therapeutic project; in this sense, his treatment plan includes both exercises that address his difficulties and exercises that enhance his preserved areas in order to slow down the dementia process. Mr. L&K was followed up by the whole team and in general terms the patient showed oscillation with evolution in behavioral terms and slight improvements in the execution of activities.

## Clinical case II

H. B. O, child, 06 years old, Portuguese, referred after a serious and long hospitalization in the region; undergoing treatment at the ILCN due to hypoxia resulting from a traumatic drowning event; he was submerged for too long and as a consequence developed a Hypoxic-Ischemic Encephalopathy. His mother reports that the staff at the hospital where the patient was admitted initially introduced him to coma induction therapy. After four days, the patient woke up, talked, ate and went into a spontaneous coma for 36 days, when he woke up again, but with some neural sequelae.

At the start of the observational/ethnographic follow-up, the patient was in the 1st week of the 2nd Cycle. From the outset, it was observed that H.B.O. is a child who is approachable, outgoing and willing to undergo treatment, but does not communicate verbally; his parents are always present at therapies, taking turns. H.B. O's concentration on activities fluctuates, but over time he is able to carry them out quickly. The patient and his family have established an excellent relationship of trust which has left the follow-up with a light atmosphere.

The general objective of the multi-professional team and the neuropsychologists with the patient was to stimulate expressive and comprehensive language, promote body awareness; stimulate global cognitive development with an emphasis on the ability to concentrate, solve problems and practical reasoning. During the first cycle the interview had been carried out, at which point the BENC (Neuropsychological Examination Battery for Children) and the Griffiths scale were applied. During the rehabilitation phase, tasks were carried out to stimulate numerical comprehension, the exercise of learning colors, always dialoguing between the use of digital and analog technologies with the use of printed boards with

images to facilitate communication with the child. The patient carries this alternative communication folder with him to facilitate communication in his daily life, the stage for other significant interpersonal relationships, containing information about his daily needs and it is through this folder that H.B. O projects his desires into the world.

The activities carried out with the patient were attention training; memory; visuoconstruction; executive functioning; tasks with numerical associations and logical sequences; activities using tablets, games and playful exercises. Activities for recent memory were tried, but the patient still needed to go through some stages to be able to perform this task more accurately. The parents were instructed on the activities and the patient showed improvements in language development, numerical perception and behavioral attitude.

## Final considerations

Neuropsychological rehabilitation within a 'gold standard' encompasses an expanded model that considers the equivalence between cognitive, emotional and socio-family dimensions. In view of the demands presented, this last element becomes crucial, as closer involvement with the family network in therapies further favors patients' progress, after all, they are the ones who will be with them over time, so some strategies can facilitate this integrality, such as: group psychotherapy sessions for family members so that each one's story can offer mutual support, i.e. so that these caregivers can share the ways and coping mechanisms developed by other family members going through similar situations, and thus favor group learning around neurological phenomena and also about everyday life with the concrete validation of the knowledge that each one brings with them. The device of individual psychotherapy can also contribute to the practice of listening to patients and their families, as caregivers of neurological patients suffer from a great overload of responsibility and often don't know how to relate to the specificities of the patients, accumulating this problem with other personal problems that so often overflow in suffering and serve as obstacles to progress in monitoring the users. The experiential experience in Neuropsychology at the Luso Cuban Institute of Neurology allowed a qualified approach to the various phases of treatment for neurological patients; the daily contact with the users allowed us to observe the humanity that exists in each one of them. The patients are the great teachers of everyday life in health and they have gone through these rehabilitation phases at the ILCN with perspicacity, carrying out their activities, seeking to improve and overcoming the challenges; even with some motivational oscillations, their potential for life and survival value have shown themselves to be an evolutionary engine.

The welcoming of the professionals was also very important so that there could be formative discussions and to enable comparative mediations between the assessment and rehabilitation models in Brazilian and Portuguese contexts, with the respective therapeutic plans and the scope of each technique. In addition to a new and challenging experience, the period was also felt to be a time of fundamental acquisition of skills, resulting from the experiences encountered in the theoretical and practical institutional field. The knowledge imparted at the ILCN is of great importance as a clinical model, enabling us to improve our praxis, which has a direct impact on the quality of life of those we treat in Brazil. Contact with another culture and different worldviews has made this experience at the Luso Cuban Institute of Neurology of great professional, personal, ethical, ethnic and cultural value.<sup>14,15</sup>

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## Conflicts of interest

There is no conflict of interest.

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