

# MetAphAs Test

Metalanguage  
in Aphasia Assessment



Vicent Rosell-Clari  
Carlos Hernández-Sacristán



# **METAPHAS TEST**

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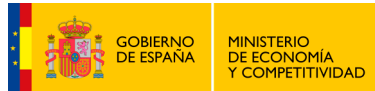
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# Preface

The test presented here, *MetAphAs* (Metalanguage in Aphasia Assessment), is the result of an interdisciplinary convergence between psycholinguistics, speech therapy and clinical linguistics oriented to the study of acquired language disorders, such as aphasia. Its objective is to explore a dimension of language, which has not been considered until now for clinical purposes with the attention it deserves. Our specific focus of interest is the "natural" rather than the "technical" or "grammatical" aspect of metalinguistic knowledge.

*Natural metalinguistic abilities* manifest metacognitive activity that is procedurally involved in verbal behaviour; this requires understanding language as an object of experience and perception for its user and, at the same time, as a communicative instrument subject to monitoring and strategic control (although not necessarily conscious or declarative). *Natural metalinguistic abilities* are different aspects of a generic factor that can be identified in semiotic terms as *reflexivity in language* (Hockett, 1960; Lucy, 1993). Their neuropsychological base would be represented by a complex space of interrelationships between metacognitive and linguistic abilities. The abilities under study are referred to as "natural" to highlight the fact that they are usually put into play without explicit instructions or prior technical training.

A preliminary study (Hernández-Sacristán, Rosell-Clari, Serra-Alegre and Quiles-Climent, 2012) has proposed the basic elements on which an exploration of the metacognitive dimension involved in verbal behaviour should be based.

The results, obtained in a sample of 21 aphasic speakers, have proven that a test on natural metalinguistic abilities shows sensitivity to both severity and aphasia type. The present work further extends findings already advanced in this study, expanding the description of the different aspects under consideration, specifying the scoring criteria for the items and providing examples of how the test should be administered. The objective is to offer a viable tool for the assessment of people with aphasia. We provide here an adapted English version of those chapters of the *MetAphAs* test (originally published in Spanish), which refer to the basic tenets, the definition of items, the administration criteria, and the illustration of different performance profiles as reflected in the scoring sheets (Rosell-Clari, & Hernández-Sacristán, 2014a). Some new statistical data proving reliability and validity of the test are also provided.

The test explores a series of aspects in aphasic phenomenology that, although evaluated in independent research programmes, are shaping a pragmatic-functional framework in aphasiology (Rosell-Clari, & Hernández-Sacristán, 2017). This framework assumes that “the linguistic deficit cannot be fully explained by dissociating verbal behaviour from its particular conditions of use, from the experience that speakers and hearers have about their own behaviour, from general semiotic functions of language and from the relationships between different cognitive capacities involved in language processing” (Rosell-Clari and Hernández-Sacristán, 2014b: 161). The objective of the test is to give an account of different representative aspects of this research paradigm, by assuming a metacognitive perspective on verbal behaviour. This means exploring a cognitive domain where executive function and verbal behaviour blend. Recently published studies confirm the interest in this approach to aphasiology (Cf. Dean, Della Sala, Beschin, & Cocchini, 2017; Dockree, Tarleton, Carton, & FitzGerald, 2015; El Hachoui *et alii*, 2014; Frankel, Penn, & Ormond-Brown, 2007; Kuzmina, & Weekes, 2017; Mayer, Mitchinson, & Murray, 2017; Murray, 2012; Penn, Frankel, Watermeyer, & Rusell, 2010).

Although the *MetAphAs* test has been initially conceived to explore the metacognitive dimension of verbal behaviour in aphasia, this assessment tool, conveniently adapted, may also be suitable in evaluating other types of language disorders, the aetiology of which does not correspond with aphasia. In fact, the evaluation of metalinguistic abilities has been proposed in the examination of neurodegenerative language disorders, such as Alzheimer’s (Harley, Jessiman, MacAndrew, & Astell, 2008). Some of the items of our test have also been examined in patients with right hemisphere lesions, whose language alterations have especially contributed to the development of the pragmatic-functional framework. It is also worth mentioning here that the exploration of metalinguistic abilities occupied

researchers interested in language development, such as Gombert (1992) and Karmiloff-Smith (1986). In this regard, the use of this test may also be suitable in the evaluation of linguistic deficits associated with language acquisition (Rosell, & Bernicot, 2012), however the adaptation of the items may need to be more specific in this case.



# MetAphAs.

## Definition of items

The following items have been conceived to explore natural metalinguistic abilities, as previously defined. After undertaking a series of pilot studies which started in 2008, a total of 40 items have been differentiated and defined; these items were divided into six areas:

- Section I: Inhibited, inner, and deferred speech. Containing 6 items.
- Section II: Control of concurrent semiotic procedures. Containing 5 items.
- Section III: Paraphrastic abilities and associated phenomena. Containing 5 items.
- Section IV: Reported speech and associated phenomena. Containing 4 items.
- Section V: General monitoring abilities and contextualisation cues. Containing 10 items.
- Section VI: Displaced use of language and Theory of Mind (TOM). Containing 10 items.

These sections should not be considered as watertight compartments, and it is easy to realize that some of the items could be assigned to more than one section.

## **Section I. Inhibited, inner, and deferred speech**

The fundamental objective of the items making up part of this section is to assess inner language abilities and other modes of behaviour that may inhibit external vocalisation. The obvious difficulty in directly accessing inner language ability can be circumvented by using tasks which entail this kind of verbal activity. We stress the importance given to exploring an ability that has been considered crucial in the origin of the human language (Bickerton, 1990; Hurford, 2004; Hernández-Sacristán, 2006). Inhibition of speech allows linking communicative activity with high-level psychological processes and grounds the symbolic dimension of human language. Inhibition must therefore be a factor incorporated in any exploration of a specific language pathology, as in the case of aphasia. The following items have been selected to illustrate tasks that manifest inhibition, inner, and deferred speech.

### **1. Monological activity**

Activity intrinsic to inner language often leaves many traces in audible monologue fragments. We have all undoubtedly heard at some point in time someone talking to themselves; similarly, we are all likely to have surprised ourselves doing exactly that.

### **2. Verbalisations supporting everyday activities**

Language can guide, regulate and facilitate the non-verbal behaviour of an individual. We generally resort to this ability when we are involved in tasks that require special attention or control. This item explores subjects' ability in regulating their non-verbal behaviour with the support of words (verbalizations concurrent with non-verbal tasks) and whether this ability facilitates the task.

### **3. Whispering**

When we do not wish a conversation to be overheard, we usually lower our voice, whisper or use an aphonic voice (without vibrating our vocal chords), as we direct utterances close to our interlocutor's ear. We have undoubtedly observed this behaviour several times and we have surely engaged in it ourselves. This mode



demonstrates the ability to control a final phase in speech production, leaving us somewhere in the middle between the inner use of language and its audible and overt vocalised dimension.

#### **4. Silent reading**

When children learn to read they normally start by reading out aloud; it is only after a long learning curve that they can inhibit the audible expression of language and read silently. In fact, some adults who read only rarely may never fully interiorize this activity and will always resort to vocalising, i.e. reading out loud softly or as if whispering. Of interest here is examining whether the patient has the ability to totally or partially inhibit audible reading, which is indicative of access to inner language. To establish whether this silent reading has been effective, subjects are required to answer questions to assess the degree of reading comprehension.

#### **5. Deferred use of language (deferred answer)**

When we are asked a question, we can respond rapidly or with some delay, i.e. inhibiting our answer for a certain time. Delaying our response gives us extra time to prepare it, to carry out mental searches should we, for example, forget the right word to answer correctly. Depending on how complex or pre-patterned the task may be, subjects can take advantage of a delayed response. The advantages of response delay are more significant in tasks requiring higher levels of elaboration, more demanding of working memory activity. When patients manifest working memory problems, this extra time may not be beneficial and may even increase the difficulty in producing a response.

#### **6. Deferred use of language (deferred description)**

Making use of extra time prior to an audible verbal response is usually necessary in linguistic tasks that are more complex and less automatic as is the case when we are asked to describe scenes with different elements (for example, a landscape), when we are asked to explain how certain tasks are carried out in a series of steps (for example, preparing a meal), when we are asked to speak about our plans, etc. Our interest in this area focuses on the patient's ability to organise the information he or she wants to transmit and the effects that inhibition of immediate response may have on improving the task outcome.

## Section II. Control of concurrent semiotic procedures

The fundamental objective of the items making up this section is to establish to what extent the subject accompanies and supports his or her verbal formulation with complementary semiotic procedures. i.e. if the subject can make a functional use of the multi-level and/or multi-canal nature of communication in natural contexts. The first item in this section focuses on the multi-level nature intrinsic to verbal activity; we can distinguish between the basic level of what we are saying and a level of concurrent verbal activity that has only a qualifying or organising function over this basic level. A concurrent verbal activity is carried out, for example, by means of the so-called *discursive markers*, such as: “fine”, “OK”, “well, we’ll see”, “well, then”, etc. The remaining items focus on the use of phonic or kinesic gesture, denoting semiotic components that serve, as well, to qualify and organise what is being said. When we use language in natural situations, we accompany it with subjective changes in intonation, in phonic intensity or in the rhythm of expression; all of these qualify or reinforce our verbal expression. These changes can be called phonic gesture, i.e. gesturing which focuses on the speaker’s own voice; this should not be confused with conventional grammatical intonation, as when asking a neutral question. Similarly, in natural language use, words are accompanied by kinesic gestures that imply bodily movement and which also play a role in organising and qualifying what is being said. Discursive markers, phonic and kinesic gestures share the function of a semiotic *meta-level* that qualifies and organises what is being said. This shared feature enables us to group the three semiotic procedures within the same section of the *MetAphAs* test. There are, moreover, transitional domains between these semiotic procedures that justify treating them jointly. Let us consider, for example, interjections that may serve as oral pauses, such as “Umm...” They may be understood as a transitional domain between discourse markers and phonic gesture (to say for example “Umm! That was a hard test!”). The orofacial semiotic domain can also be considered as an intersection between phonic gesture and kinesis.

The three semiotic procedures referred to have been studied in traditional aphasiology, though under differentiated approaches. Let us recall the recent interest of examining discursive markers to assess aphasia in the proposals put forward by Simmons-Mackie, Elman, Holland, & Damico (2007), Pietrosemoli, Vera, Gonzalez Valera, & Coutín Churchman (2005), Gallardo Paúls, & Marín Jordà (2005). Phonic gesture and kinesis have attracted attention for a long time yet there has been a renewed interest in this area in relation to

aphasia evaluation and treatment. The communicative significance of kinesic gesture in natural situations has led it to becoming one of the therapy instruments in aphasia rehabilitation (Rose, 2006). Helm-Estrabrooks, Fitzpatrick, & Barresi (1982) developed the *Visual Action Therapy* (VAT), the ultimate objective of which is to ensure that the patient can represent, through gesturing, objects that are hidden or not present. We also know that phonic gesturing or emotive intonation is useful in making verbal language more accessible. In fact, when we communicate young toddlers or children we tend to use higher tonal pitches than when we speak to adult subjects (baby-talk). Subjects with serious difficulties in language comprehension due to brain damage are able, nonetheless, to differentiate between an interlocutor admonishing them or the opposite, another talking to them sweetly, thanks to the phonic gesture being used as well as other aspects of non-verbal communication. In aphasiology, the use of phonic gesturing as a firm basis for rehabilitation is quite well known. This approach is at the core of therapies such as *Melodic Intonation Therapy* (M.I.T.) (Albert, Sparks & Helm, 1973), where an attempt is made to recover verbal expression with an initial fragment that is hummed or sung as a support mechanism.

The following items have been selected to represent the use of the abovementioned concurrent semiotic procedures.

## **7. Discursive markers**

Sometimes we accompany discourse with expressions which may: qualify what we are saying, give us some time to reflect before saying something, indicate that we are approaching the end of our conversational turn, etc. For example, when we wish to explain to somebody how to get to a shop or how to find an address and we are conscious of how complicated our explanation is or how difficult it may be to follow our instructions, we may use expressions such as “well, let’s see”, “right” and “well, then”, among others; we redirect our own verbal production in using them.

## **8. Gesturing which is concurrent with verbal activity**

In natural communication situations, apart from verbal language, we use other types of resources which accompany words; one of the most important and most frequently used are facial and hand-based gestures.

## **9. Melodic intonation**

Melodic intonation is a supportive technique in language production in subjects with aphasia. In this item we seek to assess the patient's ability to hum tunes, a common initial activity during melodic intonation therapy.

## **10. Phonic gesture and emotional content expressions**

Our speech is modulated with changes in quality, rhythm and intensity of our expression, and through the management of pauses. These types of procedures are meaning-generating mechanisms, which are here labelled as phonic gesture. Phonic gesture has been usually referred to as emotive intonation. Phonic gesture or emotive intonation has proven to be a therapeutic resource in the rehabilitation of people with aphasia.

## **11. Conventional intonation (with subjective modulation)**

We use intonation in a conventional way to differentiate, for example, between interrogative and exclamatory uses in language. The conventional tonal curve can, however, be modified, intensified or otherwise adapted to the speaker's communicative intentionality. In this case phonic gesture modulates conventional intonation. For example, we can pose a question with special emphasis to show surprise (What? He hasn't arrived? PETER? [where it would be expected that Peter would have arrived by a given time]).

## **Section III. Paraphrastic abilities and associated phenomena**

To reformulate what has been previously said, that is, to paraphrase, is a very common operation where we use language to explain, clarify or comment on what has been said. This is a clear example of reflexivity in language use. The range of manifestations of paraphrastic activity is very broad; it can span an extensive range of language uses. Paraphrastic activity is crucial to the language development of a child and assists in the accomplishment of all speech functions in the adult. The definition of a lexical unit can be considered the primary manifestation of paraphrastic activity. Paraphrastic

activity enables the expression of the same sense in many ways, i.e. to express a given idea, need, purpose, etc. in linguistic versions that are formally distinct. Evidently, the degrees of complexity under which this ability comes into play vary as a function of: the complexity of the content that the subject seeks to communicate, the situation, the receptor or receptors of the message, the objective of the communication, the physical presence or absence of what is being referred to, the possibility of using other resources, etc. This section includes the assessment of some phenomena that are not strictly paraphrastic, but which nonetheless are somewhat linked to paraphrastic ability such as tip-of-the-tongue phenomena (we make mental formulations of words surrounding the very word which is the objective of our search) or paraphasias, to the extent that we are sometimes aware of them (in other words, self-awareness with respect to erroneous searches for the desired word).

## **12. Definition of terms naming particular objects**

We often have the need to explain to somebody the meaning of a given word that represents a particular object; to do so, we offer more or less formal definitions that allude in some way the shape, use or typical characteristics of the given object. These definitions are paraphrastic approximations to the terms we wish to explain.

## **13. Definition of abstract terms**

The difficulty of defining words can increase with conceptual complexity. It is not as easy to explain words that refer to abstract notions, as it is to do the same with objects encountered in everyday life.

## **14. Circumlocutions**

When at times we are unable to find the word we need, we resort to a roundabout explanation or *circumlocution*. For example, we “cannot produce” the word for protractor and we replace it with a phrase which indicates the use or shape of the object whose name escapes us: “What do you call that device used for measuring angles?” Or otherwise: “What do call that semi-circular measuring template divided into sectors from one end to the other?” Circumlocutions are common phenomena in language use and cater for all kinds of subjects and situations; they are also particularly indicative of the compensatory strategy characteristic of anomia, i.e. a generical difficulty of accessing lexicon, both in the task of naming objects in a test, as well as in spontaneous talk.

## 15. Tip-of-the-tongue phenomenon

Sometimes we have a word at the tip of one's tongue: we have a TOT. We are unable to access the word we are looking for, but in this case, we feel that it is very close to us and, "metaphorically", at the tip of the tongue. An explicatory circumlocution is however not initiated. Instead we mentally go over options in the search task. On occasions we believe that we are almost able to utter the word in question as we think with which letter the word may start or end with, or the number of letters it may have, or we feel that we have a grasp on other attributes of the word, but despite these approximations, we fail to identify the word as such. This mental search is also therefore quite indicative of the role of an inner language activity. Additionally, kinesic gesture is closely associated with a TOT. A subject with TOT normally demonstrates to listeners through orofacial gestures or other kinesic gestures his or her mental state (For example, we tightly close our lips and produce a nasal sound, symbolising time spent searching, and we wave our hands in a complementary way to the same symbolising effect). Of particular interest is establishing to what extent patients with aphasia who generally have lexicon access problems, may engage in their own experience of the TOT phenomenon. We wish to establish, among other things: if they have the capacity of mentally listing lexical units in attempts to search for the target word, if they offer search clues, if they make use of symptomatic gesturing, etc. See the scoring system that is proposed herein.

## 16. Paraphasias

We have all had the experience at times of using another word that is related to the word we really want to use. For example, instead of asking someone for a "ballpoint pen", we actually say "pencil" (a semantic or verbal paraphasia) or even for a "ball" (phonologic or phonemic paraphasia, also termed a formal phonologic paraphasia in cognitive neuropsychology). On other occasions, instead of saying a given word, we utter a pseudo-word taking the form of a sequence of sounds that follows the phonologic rules of the language, but does not make sense; these are *invented words*. An example of this would be to ask for a "bolipoint" instead of a "ballpoint". This item seeks to establish to what extent patients are aware of these situations and whether they activate any correction or approximation mechanism for the target word. See how this has been approached in the scoring system.

## Section IV. Reported speech and associated phenomena

Reported speech (or referred discourse) is understood that activity through which use is made of language to refer words expressed by another by directly citing them (“Louis said: «I’m going on a trip tomorrow»”), doing so indirectly (“Louis said he was going on a trip today”) or by way of another technique or referencing style. Reported speech is possibly the clearest example of *reflexivity* (Hockett, 1960; Lucy, 1993). In everyday language use, *to refer to the words of another* often amounts to *paraphrasing those words*. Moreover, natural use of reported speech is often associated to voice imitation or to the imitation of the kinesic gestures of the other. The following items have been selected to illustrate what is in fact a key small portion of an extensive range of modes that may account for the general technique of reported speech.

### 17. Reported speech

In daily life we often need to tell a person what a third party has said, transmit a request, pass on information, talk about what has been discussed on a TV programme, how a job interview went, the content of an exam or what happened in a film. Common to these tasks are a series of abilities that enable the transmission of what has been previously been said by another person; it calls for a sufficiently preserved monitoring ability to focus our attention to the verbal message, together with its semantic and pragmatic significance. Reported speech requires a sufficiently preserved verbal memory that may retain the message content, together with the control of linguistic resources for reproducing this content by means of the same or different words.

### 18. Reported speech and phonic gesturing

This item evaluates a situation inherent to reporting the words of another in direct style. It is not unusual to find in this case that reproduction in natural situations often includes the way of speaking, i.e. the phonic gesture and even the kinesic gesture of the person whose message is reproduced.

## 19. Voice imitation

This item looks at the ability to imitate the voice of another person in a dramatized narration or simply in a playful manner by remembering or simply imagining their words. Special attention will be given to characteristics such as speech rhythm, vocal tone, intensity and pauses in speech, among others.

## 20. Reporting a story

At times we may be asked, or we may desire to inform others about what happened on a TV programme, the plot of a film, how a debate was conducted on a current affairs show, etc. Reported speech can be a more complex activity in these situations; synthesis is usually required, i.e. selecting the most relevant information, and deciding in which order to transmit this information. This entails an implicit communication plan.

## Section V. Monitoring abilities and contextualisation cues

When we are having a conversation with somebody, we always maintain a certain degree of perceptive control over what we say and how we say it; simultaneously we are also sensitive to the reactions we detect in our interlocutors, both verbal reactions (what they say) and non-verbal ones (gestures, posture, distance). If their reactions are not the expected ones or we notice insufficient understanding of our message, we make changes to enable our interlocutor to correctly understand what we wish to express. When we make a mistake, and pronounce a word with phonological errors or we say a word different to the one intended, we usually realise our error and quickly correct ourselves; such corrective feedback is necessary to ensure that what is said corresponds to what we had intended to say. We apply as well this monitoring activity to the words formulated by our interlocutor. In people with aphasia this monitoring ability may be affected in various degrees and is referred to as *anosognosia* or the lack of awareness of errors in verbal production. The following items illustrate general monitoring abilities associated with particular linguistic tasks or communicative contexts.



## **21. Monitoring syllables: separating syllables in a word**

In natural situations, to make ourselves better understood or to emphasize a word, we syllabise, in other words, we pronounce a word by separating the syllables from each other and take care to vocalise them with additional clarity and intensity. An example of this may be when a teacher mildly reprimands a pupil who won't stop talking in class: "I told you to stop talking and to *LIST - EN*". At other times we break down a word or words into syllables so that our interlocutors may focus their attention on the sounds that make up a word, in order to facilitate their learning and pronunciation of it. An example of this may be when a word is difficult or quite new for our audience.

## **22. Monitoring phrase structure. Sense stress for emphasis**

In the previous item we have discussed the use that is made of breaking down words into syllables when we want to emphasize or focus on a given word. It is worth analysing henceforth the ability of stressing a particular word within the utterance it appears in, by means of the intensity and clarity of its pronunciation, without resorting to syllabication but using pauses that frame or separate it from its syntactic setting. In printed text it would be equivalent to underlining it or using bold type.

## **23. Monitoring syllables with the support of gesturing**

Speakers usually produce spatially-based gestures which provide an imaginary structure mirroring the speech structure. For example, a speaker announces that a topic will be debated according to two different points of view. The speaker may use a hand with the palm facing horizontally downwards and depict two imaginary levels in the air. This mirror effect between bodily movement and discourse constitutes a specific manifestation of reflexivity. Bodily movement has a role in monitoring speech. A very basic task that can be used to assess this kind of effect in people with aphasia is asking them to tap on a table as they reproduce the syllabic structure of a word.

## **24. Ways of saying in context**

It is quite well known that the way we express ourselves, our choice of words and even our voice tone, are variables as a function of the communicative context we find ourselves. Let us consider, for example, the way we select our tone, words and expressive mode when a very young child is addressed. The ability of adaptation to the context in our way of speaking is normally made patent in this situation.

## **25. Monochannel communication activity**

We carry out a specific adaptation of our way of saying when our interlocutor is not directly facing us in the communicative situation, for example, when we are speaking on the telephone (without the technical complement of an associated video image). In these kinds of situations, we cannot see our interlocutor's gestures and our communicative possibilities are necessarily limited to the auditive-vocal channel. Without the support of kinesic gestures oral communication becomes a more challenging task, requiring an additional attentional control on language production and comprehension. This circumstance is the reason why many people with communication difficulties refrain from using the telephone and prefer not to answer an incoming telephone call as their difficulties are augmented with the elimination of visual and non-verbal communicative support.

## **26. Communication ability with absent addressee**

An added difficulty in telephone-based communication can be observed when the person we are calling does not pick up the receiver and an automatic answering device is activated. The task of leaving a recorded message implies an additional cognitive effort. The fact that no feedback of a supportive nature can be obtained for the interlocutor requires a strictly self-regulated practice of language, as is the case in written language (Cf. Hernández-Sacristán, & Rosell-Clari, 2009; Hernández-Sacristán, Rosell-Clari, & MacDonald, 2011).

## **27. Self-correction ability**

By means of our auditory feedback we can follow our own oral productions and can immediately modify them when we observe errors in our words. Self-corrections are very common in the conversational practice of language. Also, people with aphasia demonstrate this self-correcting ability, although it may be limited to different degrees, depending on the severity of anosognosia.

## **28. Hetero-correction ability**

Hetero-correction is the ability to monitor oral language that comes into play when we correct errors we observe in our interlocutor. Hetero-correction can manifest itself as a compulsive practice. In fact, we make a mental correction of the error observed in our interlocutor, although we sometimes avoid doing so explicitly out of courtesy or to comply with social norms. The implications relative to social image are clearly more significant when semantic or pragmatic errors are corrected.

## **29. Assessing another's words**

Another more complex way of calling into play our metalinguistic ability occurs when we value the words of another person. To carry this out correctly we should at the very least have listened to and understood what the other person has said, be conscious of the lexicon, of the structure of the phrase and of the verbal and non-verbal resources used in each situation. Examples of this include comments we may make on what was said on a TV programme, on a politician's affirmations at a meeting or on what a mother might claim about the virtues of her child.

## **30. Ability to fill in lexical gaps**

In natural communication settings, at times we fail to complete phrases with the word or words needed to express a whole idea. There are times when others leave their phrases unfinished and we step in to finish them ourselves. For that, monitoring of the expression of our interlocutor with special attention both to the content and the syntactic structure is something required. Only in this way can we guess the corresponding word filling an empty syntactic slot.

## **Section VI. Displaced use of language and Theory of Mind (TOM)**

When people with aphasia manifest severe comprehension problems, family members are recommended to use language with them to refer to persons, objects or situations present at the moment of speaking. Aphasic speakers with production deficits take also advantage of this kind of context maximizing the communicative effect of their limited linguistic resources (Goodwin, 1995). Referring to things not present in the actual moment or place of speaking is a more demanding task with respect to both the cognitive and linguistic resources that we must put into play. Hockett (1960) designated this ability as that of the “displaced use” of language (Cf. Hernández-Sacristán, Rosell-Clari & MacDonald, 2011). In Hockett’s (1960:90) words, a displaced use of language means ‘to talk about things that are remote in space or time (or both) from where the talking goes on’. Displaced use of language always entails a spatio-temporal movement (or fictional construction) of the subjective perspective on the referred facts, which is normally required for abstraction. This movement of the subjective perspective can be specifically manifested as entering the listener’s perspective, or at least trying to imagine that perspective, by so developing what has been known as a Theory of Mind (TOM) (Premack, & Woodruff, 1978). The verbal manifestation of Theory of Mind abilities involves, in any case, displaced uses of language. The following items assess displacement and changes of subjective perspective in language use.

### **31. Describing an object or situation not present**

Language enables us to describe or discuss events or scenes that are not present at the moment of referring to them. This ability to refer in absence implies a certain degree of abstraction in language use and greater cognitive complexity compared to making reference to things or situations present.

### **32. Remembering recent past events**

Assessment is carried out in this item relative to a specific displaced use of language with which we refer to actions or states in the recent past.

### **33. Remembering remote past events**

People do not equally remember the different situations they may go through; some things are perceived as being more important than others. Some events have a greater impact on us; other activities are carried out more frequently, and are imbued with greater familiarity or interest. There are many variables that influence memories and one of them is the time elapsed between a given event and the present moment, i.e. the moment in which we speak of a given past event. Referring to remote past events is the assessment objective of this item.

### **34. Anticipating future events**

Language allows us to speak of events that have still not taken place, ones that we are planning for, or that we hope will happen in the future. To speak of future events or accomplishments is cognitively more complex than to speak of things that have happened; implicated herein are many variables that refer to our personal experience, our planning abilities and our ability to formulate hypotheses and make decisions.

### **35. Describing a scene**

This item and the subsequent ones in this section are concerned with tasks inherent in Theory of Mind (TOM). In this item, people with aphasia are asked to describe a mute scene, by guessing what characters may be feeling, or what they may be saying to each other or even what they may be thinking about the situation they are in.

### **36. Ability to find antonyms**

Antonyms are pairs of words with opposite meanings in a given dimension. This item focuses on converse antonyms such as: *buy/sell*, *go/come*, *father/son*, which identify two different perspectives on the same fact. These two perspectives normally correspond to the positions of speaker and listener. For example, if I call someone “nephew”, I would expect, in my case, to be called “uncle” by this person. For other types of antonyms (for example, terms of contrast such as *big/small* or contradictory ones such as *full/empty*), it can be argued that they largely represent

opposing perspectives or positions on the same facts. Exploring patients' ability to suggest antonyms can therefore be considered a task intrinsically linked to the assessment of Theory of Mind (TOM) abilities.

### **37. Emotion reading**

Oral language is normally accompanied by gestures and other non-verbal communication means; they help us understand what is being said and what the other may be thinking. Emotional states also leave their mark, above all in facial expressions. In order to empathically coordinate communicative exchanges, it is very relevant to adequately interpret the emotional significance of a particular facial expression manifested by our interlocutor.

### **38. Fictional use of language**

Language does not just enable us to speak of people or things not present and also to talk about things that happened in the past, or to express our desires and plans; it also enables us to invent stories, to speak of things that have never happened and of things that will, in all likelihood, never happen. This is referred to as the fictional use of language. The use of fiction in language is an ability that appears very early in childhood and which continues into adult language to a greater or lesser extent.

### **39. Ability to lie**

In some daily life situations, and due to distinct reasons, (for example, to avoid hurting the feelings of others), we can also lie, i.e. intentionally affirm something that is untrue or goes against fact. Making up lies requires a specific metacognitive control of language in the communicative context and represents a cognitive task usually more complex than making truthful affirmations.

## **40. Expressing irony**

This language ability to refer to unreal or inexistent things is sometimes used to create irony, i.e. to say something that we know is false but nonetheless providing our interlocutor the keys to understanding that what we are saying is not in fact the reality. This is a rhetorical use of language that avoids literally saying what we really think. Irony is usually associated with a given intonation or phonic gesture. An example is saying on a very hot day: “Wow, it’s freezing today!” or when a person is wearing some very extravagant pants and we say “Hey, you really are a classical dresser!”





# Administration of the test

Ideally, the test should be administered in a single session lasting approximately one hour. However, the circumstances of the clinical data collection may require other possible criteria for the administration of the test, such as a partial administration, which focuses on a certain section, or a complete administration, but separated into different sessions. Instructions include examples that stimulate and ease the required task. *What is explicitly said to the patient is indicated in italics, although the clinician can adapt the formulation to the particular cases.* When necessary, additional material for the administration of the item is included. The scoring system follows a scale where 0 is the lowest score and 4 the highest. The way to score is described for each item. For this type of test, some degree of subjectivity in the assignment of scores is unavoidable, but high correlations have been observed in the inter-rater evaluation: inter-rater reliability of 0.890 in a sample of five subjects evaluated by two clinicians (Hernández-Sacristán, Rosell-Clari, Serra Alegre & Quiles-Climent, 2012: 209).

Scoring sheet Test MetAphAs						
(Rosell-Clari & Hernández-Sacristán, 2017)						
<b>Section I: Inner, inhibited, and deferred speech</b>						
1.	Monological activity	0	1	2	3	4
2.	Verbalisations supporting everyday activities	0	1	2	3	4
3.	Whispering	0	1	2	3	4
4.	Silent reading	0	1	2	3	4
5.	Deferred use of language (deferred answer)	0	1	2	3	4
6.	Deferred use of language (deferred description)	0	1	2	3	4
<b>Section II: Control of concurrent semiotic procedures</b>						
7.	Discursive markers	0	1	2	3	4
8.	Gesturing concurrent with verbal activity	0	1	2	3	4
9.	Melodic intonation	0	1	2	3	4
10.	Phonic gesture and emotional content expressions	0	1	2	3	4
11.	Conventional intonation	0	1	2	3	4
<b>Section III: Paraphrastic abilities and associated phenomena</b>						
12.	Definition of terms naming particular objects	0	1	2	3	4
13.	Definition of abstract terms	0	1	2	3	4
14.	Circumlocutions	0	1	2	3	4
15.	Tip-of-the-tongue phenomenon	0	1	2	3	4
16.	Paraphasias	0	1	2	3	4
<b>Section IV: Reported speech and associated phenomena</b>						
17.	Reported speech	0	1	2	3	4
18.	Reported speech and phonic gesturing	0	1	2	3	4
19.	Voice imitation	0	1	2	3	4
20.	Reporting a story	0	1	2	3	4
<b>Section V: Monitoring abilities and contextualisation cues</b>						
21.	Monitoring syllables: Separating syllables in a word	0	1	2	3	4
22.	Monitoring phrase structure: Sense stress for emphasis	0	1	2	3	4
23.	Monitoring syllables with the support of gesturing	0	1	2	3	4
24.	Ways of saying in context	0	1	2	3	4
25.	Monochannel communication ability	0	1	2	3	4
26.	Communication ability with absent addressee	0	1	2	3	4
27.	Self-correction ability	0	1	2	3	4
28.	Hetero-correction ability	0	1	2	3	4
29.	Assessing another's words	0	1	2	3	4
30.	Ability to fill in lexical gaps	0	1	2	3	4
<b>Section VI: Displaced use of language and Theory of Mind (TOM)</b>						
31.	Describing an object or situation not present	0	1	2	3	4
32.	Remembering recent past events	0	1	2	3	4
33.	Remembering remote past events	0	1	2	3	4
34.	Anticipating future events	0	1	2	3	4
35.	Describing a scene	0	1	2	3	4
36.	Ability to find antonyms	0	1	2	3	4
37.	Emotion reading	0	1	2	3	4
38.	Fictional use of language	0	1	2	3	4
39.	Ability to lie	0	1	2	3	4
40.	Expressing irony	0	1	2	3	4
TOTAL SCORE						

## Section I. Inhibited, inner, and deferred speech

### 1. Monological activity

#### Instructions

We have all at some time seen or heard somebody talk to themselves, in other words, vocalising their own thoughts. At times it may be worthwhile to illustrate this with a previous example. (For example: *I could be both thinking and saying out loud the following: "I need to do go out and buy some groceries. There isn't much food left in the fridge and kitchen pantry. If I finish work early tomorrow afternoon I'll go shopping to stock up on food again"*). Imagine now a situation where you are speaking out loud to yourself. Let's see how you do it. Patients are asked to give two examples in this activity.

#### Scoring

- 0 if the patient is unable to complete the task and not a single example is given;
- 1 if the patient is able to complete the task, but with hesitation, and it is obvious that they proceed with considerable difficulty;
- 2 if the patient is able to complete the task, but with a moderate degree of difficulty;
- 3 if the patient completes the task without any apparent difficulty, but is unable to produce a second example;
- 4 If the patient completes the task without any apparent difficulty and gives two examples without any hesitation.

### 2. Verbalisations supporting everyday activities

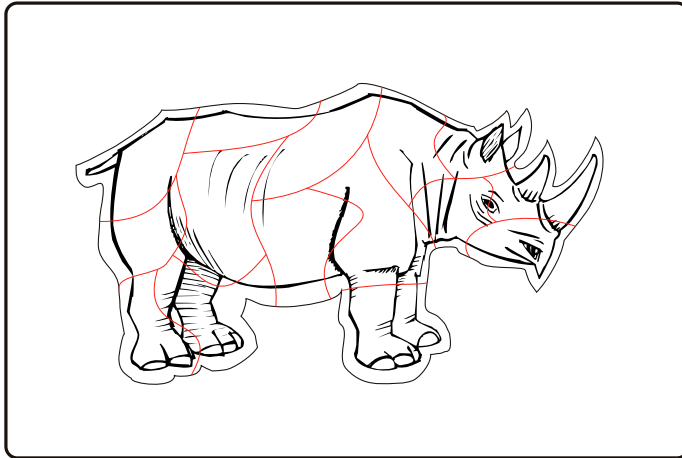
#### Required material

To complete this activity, patients need to have the jumbled-up pieces of the rhinoceros puzzle below (or a similar puzzle) placed in front of them. An image of the assembled puzzle is also shown.

#### Instructions

Patients are asked to assemble a puzzle and to comment on their actions, on what they are doing, one step at a time. We start the task by giving them an example of what is required in order to facilitate the comprehension of the task. *First, I'm going to place this piece here... now next to it, maybe this one... etc. As you have seen, I have started the task by stating with words, step by step, how I will complete the*

task. Now you must do the same. Thereafter, all the pieces of the puzzle are handed over to patients and we ask them to complete the puzzle by verbally reporting the steps they are actually taking.



Rhinoceros puzzle

### Scoring

- 0 if there is no verbalisation;
- 1 if some verbalisation occurs, but without correctly completing the task;
- 2 if some supporting verbalisation occurs but no consistency in the task is shown;
- 3 if the patient coherently produces more than one support verbalisation, but with some hesitation or difficulty;
- 4 if the patient completes the task without any difficulty.

## 3. Whispering

### Instructions

We are now going to softly utter a few phrases. In fact, we will whisper them to the patients. For example, we whisper to them: *I don't know your age; tell me, how old are you?* Afterwards, we ask: *By pronouncing in this way, can you repeat the following phrases?* (Important: the therapist in that instance utters the phrases, speaking out loud with a normal voice, not whispering):

1. *This is a nice room.*
2. *I'm very happy to be going on holiday next week.*

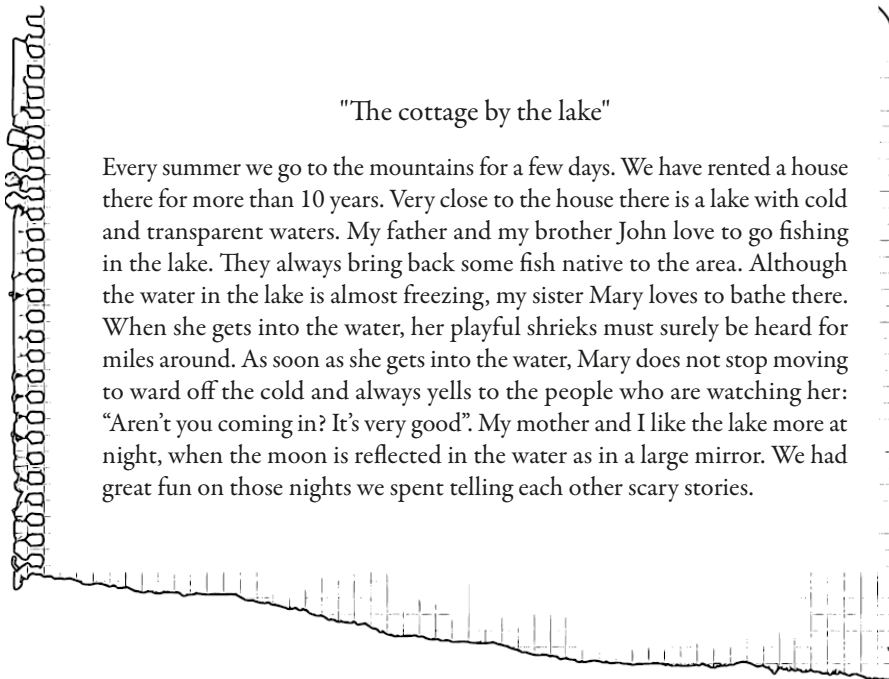
### Scoring

- 0 if the patient does not utter a single phrase with a whisper;
- 1 If the patient utters at least 1 phrase by whispering, even if only partially or with certain difficulty;
- 2 if the patient utters at least 1 phrase by whispering without any hesitation and with fluency;
- 3 if the patient utters 2 phrases, even if only partially or with hesitation;
- 4 if the patient utters 2 phrases without hesitation and with fluency.

## 4. Silent reading

### Required material

To complete this activity the patient needs to silently read the following text (or a similar text).



"The cottage by the lake"

Every summer we go to the mountains for a few days. We have rented a house there for more than 10 years. Very close to the house there is a lake with cold and transparent waters. My father and my brother John love to go fishing in the lake. They always bring back some fish native to the area. Although the water in the lake is almost freezing, my sister Mary loves to bathe there. When she gets into the water, her playful shrieks must surely be heard for miles around. As soon as she gets into the water, Mary does not stop moving to ward off the cold and always yells to the people who are watching her: "Aren't you coming in? It's very good". My mother and I like the lake more at night, when the moon is reflected in the water as in a large mirror. We had great fun on those nights we spent telling each other scary stories.

To assess reading comprehension the following questionnaire is proposed:

Reading comprehension

1. Where is the vacation destination for the character narrating this story?
2. Who loves to go bathing?
3. What does the lake look like when the moon is reflected on it?
4. What stories were they telling each other at night?

Correct answers:

1. The mountains. Staying in a cottage by a lake.
2. Mary, the sister of the character narrating the story.
3. A mirror.
4. Horror, scary stories.

### Instructions

*I'm going to give you a short text that I want you to read, but read it to yourself, without us hearing it, that is, read it silently. Give it a try! If you can't do it, just try reading the text in a very low voice, only whispering in a very low or whispered voice.* The text is handed over to the patient. Four questions to evaluate comprehension will be asked after reading.

### Scoring (based in the reading comprehension questionnaire)

Note: The scoring of this item requires that, approximately, at least the half of the reading was done silently or combined with a whispered reading. Otherwise, the score will be 0.

- 0 if the patient fails to respond correctly to any question;
- 1 if the patient correctly answers 1 question;
- 2 if the patient correctly answers 2 questions;
- 3 if the patient correctly answers 3 questions;
- 4 if the patient correctly answers all 4 questions.

## 5. Deferred use of language (deferred answer)

### Instructions

*I would like to know the date of your birth and where you were born, but you don't have to answer until I say: What is your date of birth and where were you born? Wait, don't respond yet. The clinician waits 20 seconds. OK - Now please answer the question I just asked you.*

**Scoring**

- 0 if the patient fails to answer correctly to either of the two questions;
- 1 if the patient correctly answers 1 of the two questions, but with obvious hesitation or difficulty;
- 2 if the patient correctly answers 1 of the 2 questions without any hesitation and without obvious difficulty;
- 3 if the patient answers the 2 questions correctly, but with hesitation or obvious difficulty;
- 4 if the patient answers correctly the 2 questions without hesitation nor difficulty.

**6. Deferred use of language (deferred description)****Instructions**

*Think a little and tell me what your favourite dish is? Wait for the patient to respond and ask: Do you know how to prepare it? Insist if necessary: Think of a dish that you like and know how it is made. Wait for the answer. Okay, now I want you to think a little before explaining to me just how that dish is prepared. But don't explain it to me until I ask for your answer. Wait 20 seconds. Right! Now please, I want you to tell me how it is prepared.*

**Scoring**

- 0 if the patient is unable to explain how the dish chosen is made, even with verbal help;
- 1 if the patient explains, with much hesitation, how the dish is prepared when given verbal assistance, but the greatest weight falls on the interviewer;
- 2 if the patient correctly explains how the dish chosen is prepared when given verbal assistance, and the task is shared equally between the patient and the interviewer;
- 3 if the patient correctly explains, almost without verbal assistance, but with hesitations;
- 4 if the patient correctly explains how the dish is prepared, without hesitation nor assistance from the interviewer.

## **Section II. Control of concurrent semiotic procedures**

### **7. Discursive markers**

#### **Instructions**

In this specific case, no stimulus or situation is provided from which the subject must perform a task, but we should observe during the interview if the patients use, or accompany their verbal productions, with expressions such as “Good!”, “Let’s see”, “in short”, “look”, “well then!”, etc.

The scoring for this item will be left to the end of the test.

#### **Scoring**

- 0 if the patient does not use any of the indicated expressions, or other similar expressions;
- 1 if the patient uses them rarely;
- 2 if the patient uses them sometimes;
- 3 if the patient uses them often enough;
- 4 if the patient uses them as expected in normal speakers.

### **8. Gesturing concurrent with verbal activity**

#### **Instructions**

This item will be examined globally throughout the interview and will assess whether the patient accompanied oral language with gesture, in a coherent, credible and effective fashion, or failed to use this resource, or did so in an incongruent way.

The scoring of this item, as with the previous one, should be done at the end of the test.

#### **Scoring**

- 0 if the patient does not accompany in any case oral expressions with facial gestures, or with hand and/or arm movements;
- 1 if the patient accompanies oral language with gesture, in a coherent and effective way, but only rarely;
- 2 if the patient is able to accompany oral language with gesture, in a coherent and effective way, on several occasions;



- 3 if the patient is able to accompany oral language with gesture, in a coherent and effective way, on many occasions.
- 4 if the patient accompanies oral language with gesture, consistently and effectively, during most of the interview.

## 9. Melodic intonation

### Instructions

*Sometimes we hum songs. Haven't you ever done it? - Surely yes! Right now, I want you to hum these songs along with me. We begin the humming of the song "Happy birthday to you" and wait for the patient to join and follow. We continue for a little longer together and then allow the patient to continue on their own, and to repeat the humming again from the beginning without any help. Later the same procedure is followed with the song "Merry Christmas". Obviously, we can - and we must - adapt the humming to those musical themes that the patient is presumed to know, asking the patient directly, if deemed appropriate, for favourite or familiar songs.*

### Scoring

- 0 if the patient is unable to hum a song, or follow the hum of the evaluator;
- 1 if the patient is able to accompany the evaluator's hum on at least 1 of the 2 songs, but unable to continue humming alone.
- 2 if the patient is able to accompany the humming of the evaluator, in at least 1 of the 2 songs, and able to continue hum alone, even though hesitantly;
- 3 if the patient is able to correctly accompany the humming of the evaluator and, in 1 of the 2 songs, able to continue humming correctly and without hesitation;
- 4 if the patient hums the 2 suggested songs correctly, and without difficulty.

## 10. Phonic gesture and emotional content expressions

### Instructions

*Imagine that you meet a friend on the street who you haven't seen for a long time. Seeing your friend makes you really happy. Imagine that's happening right here and now; as if I were that friend and you are feeling so happy to see me; now tell me how happy you are to see me: "It's been such a long time since I've seen you! How are you?" Now please, repeat or say something similar. Now imagine that a neighbour of yours is saying very bad things*

about you – none are true, and you feel very hurt and angry. Imagine that person is right here front of you, you are very angry, and you show it by shouting: “It is not true what you are saying about me!” Now please, repeat or say something similar.

### Scoring

- 0 if the patient is unable to express emotionally any of the two sentences;
- 1 if the patient is able to express emotionally at least 1 of the 2 sentences, but with hesitation or errors;
- 2 if the patient is able to emotionally express 1 of the 2 sentences correctly and without hesitation or errors;
- 3 if the patient is able to emotionally express 1 of the 2 sentences correctly and without hesitation, and the other phrase is expressed emotionally, but with hesitations or errors;
- 4 if the patient is able to emotionally express the 2 sentences without difficulty or mistakes.

## 11. Conventional intonation (with subjective modulation)

### Instructions

When speaking we often make changes in our tone of voice, in the intensity, or in the rhythm of our expression, we use pauses for a variety of purposes, and so on. Changes in intonation become necessary when we ask questions. Imagine that you have lost your keys. Repeat with me ‘Where on earth can my keys be?’ We ask the question with an emphatic but credible querying intonation, then await the patient’s response, i.e. a repetition of the question with this emphatic intonation. Afterwards, we ask the patient to repeat with us “What a wonderful day it is!” (pronounced by the clinician with an emphatic intonation) waiting for the patient to repeat it. Thereafter, the clinician suggests that the patient asks for the time by giving the question a token of urgency: *If you need to know the time it’s because you think you are late to catch your train, how would you ask? Go on – do it!* Then the patient is asked to utter a sentence just as before, emphasizing with admiration: *Now, please repeat by exaggerating exclamatory intonation that ‘today is a holiday’* (pronounced by the clinician in this case with normal intonation)

### Scoring

- 0 if the patient is unable to repeat adequately (with the emphatic modulation demonstrated by the clinician) any of the 2 sentences suggested, nor to

pronounce emphatically the other 2, for which there is no previous demonstration;

- 1 if the patient is able only to repeat adequately 1 of the 2 sentences suggested;
- 2 if the patient is able to repeat the 2 sentences suggested adequately, but unable to emphasize autonomously the other 2;
- 3 if the patient is able to repeat the 2 sentences suggested adequately, and emphasize autonomously 1 of the other 2
- 4 if the patient is able to repeat the 2 sentences suggested adequately and emphasize autonomously the other 2.

## Section III. Paraphrastic abilities and associated phenomena

### 12. Definition of terms naming particular objects

#### Instructions

*People sometimes feel the need to explain to other people, whether children or adults, the meaning of words that identify certain objects. This happens when we explain to a child what something is, what it is for, or how an object that has never been seen is used. For example, when the teacher explains to the class what a triangle is, or a mother explains what a car or a canary is to her child. Now I want you to explain to a small child or a foreigner (with little knowledge of our language) what these words mean: "horse", "clock" "door" and "book". Let's see, first explain what the word "horse" means. Allow time for the patient to think and produce the definition of this term, before moving on to the next. Let's try now with the word "clock" (...) Now with the word "door" (...) Now with the word "book".*

#### Scoring

- 0 if the patient is unable to define any of the 4 words proposed;
- 1 if the patient is able to define 1 of the 4 words proposed;
- 2 if the patient is able to define 2 of the 4 words proposed;
- 3 if the patient is able to define 3 of the 4 words proposed;
- 4 if the patient is able to define the 4 words proposed.

Note: Any paraphrastic version related with the meaning of the word counts as a valid answer. No technical lexicographic definition is required.

### 13. Definition of abstract terms

#### Instructions

*In the previous section I asked you to explain the meaning of four specific words but we're not going to repeat those. On this occasion I want you to tell me what these words mean: "courage", "love", "justice" and "fear". Let's see, first tell me what the word "courage" means. We give the patient time to produce the definition as previously. Let's try now with the word "love" (...) Now with the word "justice" (...) Now with the word "fear".*

#### Scoring

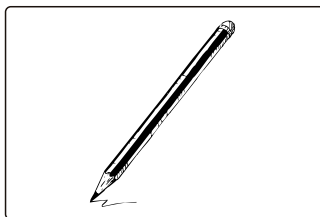
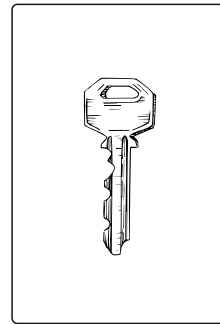
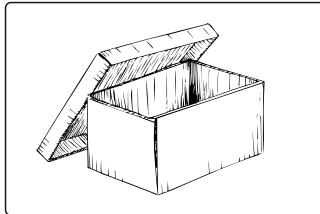
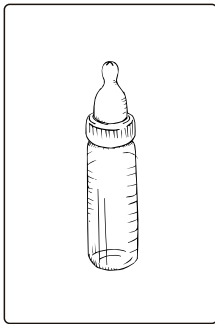
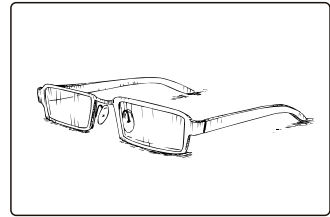
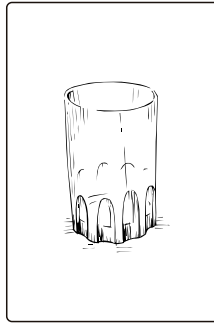
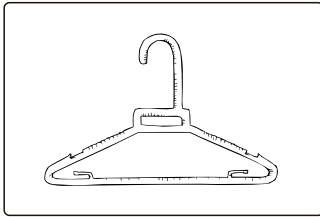
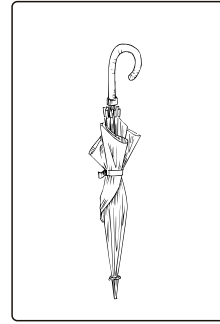
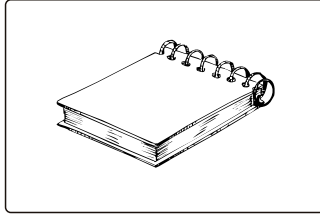
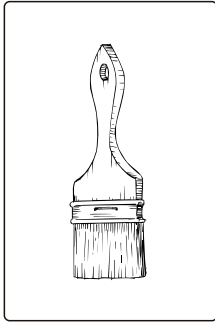
- 0 if the patient is unable to define any of the 4 words proposed;
- 1 if the patient is able to define 1 of the 4 words proposed;
- 2 if the patient is able to define 2 of the 4 words proposed;
- 3 if the patient is able to define 3 of the 4 words proposed;
- 4 if the patient is able to define the 4 words proposed.

Note: Any paraphrastic version related with the meaning of the word counts as a valid answer. No technical lexicographic definition is required.

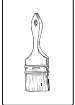
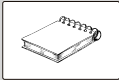



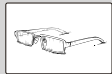




### 14. Circumlocutions

#### Instructions

*When we want to say the name of an object, and at that moment we cannot find the word, we usually resort to phrases that refer to some characteristic of this object: i.e. what it is used for, who uses it, and so on. Now I want you to tell me the name of the objects that appear in these drawings I am going to show you. IF YOU DON'T REMEMBER ITS NAME TRY TO EXPLAIN WHAT IT IS. Producing circumlocutions is particularly prompted in this item. The card below is shown, and we wait for the patient to say the name of the objects represented or to produce circumlocutions that allow to identify them. The patient is shown the CARD FOR A NAMING TASK AND ASSOCIATED CIRCUMLOCUTIONS: wait for the patient to name each object and note the patient's response.*



Naming task and associated circumlocutions

NAMING TASK AND ASSOCIATED CIRCUMLOCUTIONS		
STIMULI	PATIENT'S OUTPUT	SUCCESS OR TYPE OF ERROR.
	<b>BRUSH</b>	
	<b>NOTEBOOK</b>	
	<b>UMBRELLA</b>	
	<b>COAT HANGER</b>	
	<b>GLASS</b>	
	<b>GLASSES</b>	
	<b>FEEDING BOTTLE</b>	
	<b>BOX</b>	
	<b>KEY</b>	
	<b>PENCIL</b>	

### Scoring

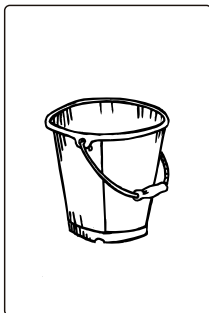
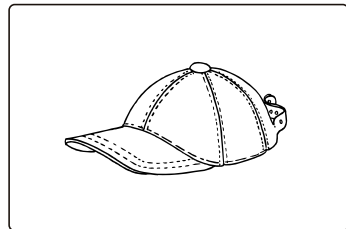
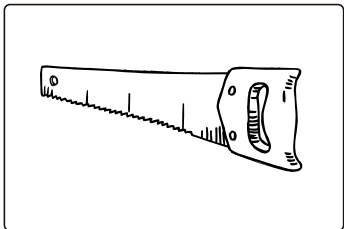
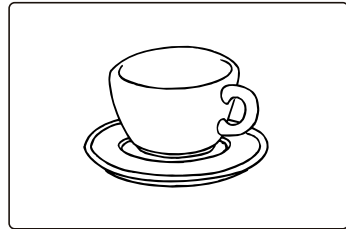
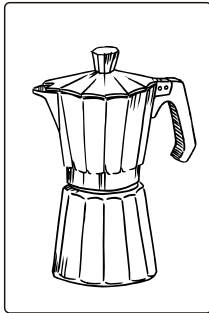
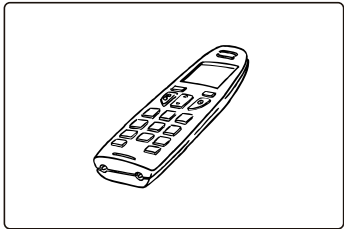
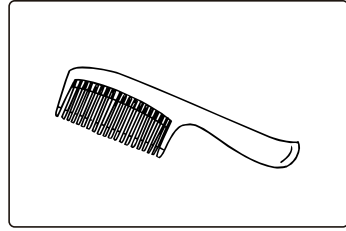
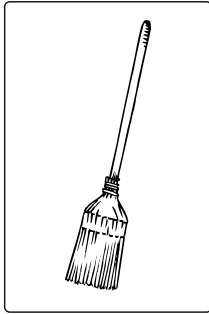
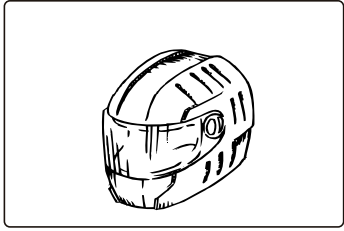
Scoring procedure: Responses can be 1) correct denominations, 2) failures in denomination (no denominations, unfruitful audible or mental searches, paraphasias, inadequate circumlocutions), or 3) adequate circumlocutions, which are considered in this item as valid responses with a half weighting. By naming “x” the number of correct denominations and “y” the number of adequate circumlocutions, direct scoring, DS, is obtained with the formula:  $DS = x + y/2$ . Given that we have 10 stimuli, DS moves between a maximum of 10 (10 cases of correct denomination) and 0 (10 cases of failure). For example, a DS of 8 can be obtained with 8 correct denominations and 2 failures, or with 6 correct denominations and 4 adequate circumlocutions ( $8 = 6 + 4/2$ ). DS is transformed into a 0-4 scale as follows:

- 0 / DS of 0;
- 1 / DS between 0.5 and 3;
- 2 / DS between 3.5 and 6.5;
- 3 / DS between 7 and 9;
- 4 / DS 9.5 and 10.

## 15. Tip-of-the-tongue phenomenon











### Instructions

*Sometimes, when we want to say the name of an object, and just at that moment it doesn't come out, we can feel that the word is on 'the tip of the tongue'; it happens to us all. We seek or imagine potential candidates for filling this empty space in our mind, but without any success. Now I want you to tell me the name of the objects drawn on this card. IF ANY NAME IS HARD TO FIND, TELL ME, ANYWAY, IF YOU THINK YOU NEARLY HAVE IT, GIVE ME A CLUE.* Revealing “tip of the tongue” phenomena is particularly prompted in this item. The patient is shown the CARD FOR A NAMING TASK AND ASSOCIATED “TIP OF THE TONGUE” PHENOMENA: wait for the patient to name each object and note the patient response.



Naming task and associated "tip of the tongue" phenomena



<b>NAMING TASK AND ASSOCIATED “TIP OF THE TONGUE” PHENOMENA</b>		
<b>STIMULI</b>	<b>PATIENT’S OUTPUT</b>	<b>SUCCESS OR TYPE OF ERROR</b>
	<b>HELMET</b>	
	<b>BROOM</b>	
	<b>COMB</b>	
	<b>TELEPHONE</b>	
	<b>COFFEE MAKER</b>	
	<b>CUP</b>	
	<b>SAW</b>	
	<b>WATCH</b>	
	<b>CAP</b>	
	<b>BUCKET</b>	

## Scoring

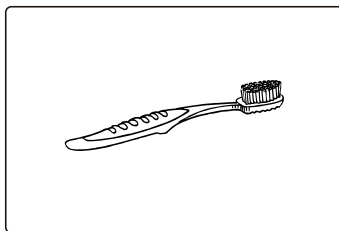
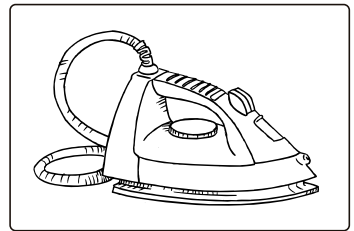
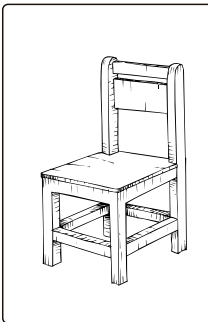
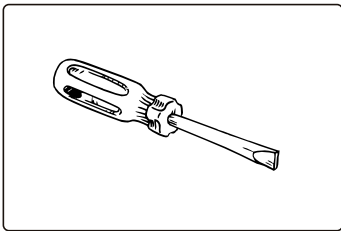
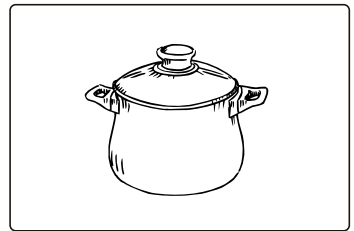
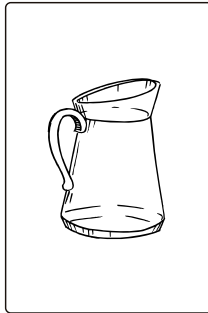
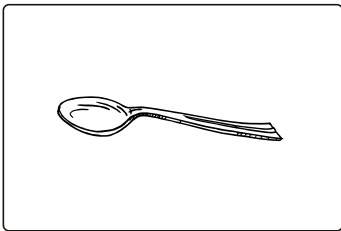
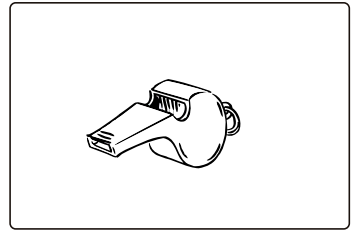
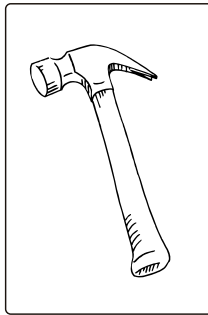
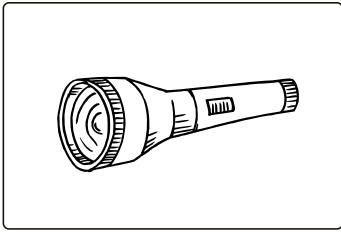
Scoring procedure: Responses can be 1) correct denominations, 2) failures in denomination (all kinds of failures, including adequate circumlocutions in this case), or 3) tip of the tongue phenomena, which are considered in this item as valid responses with a half weighting. Tip of the tongue phenomena include: “verbal reports on this mental state, audible verbal searches, and orofacial or kinesic gestures revealing a mental search. By naming “x” the number of correct denominations and “y” the number of tip of the tongue phenomena, direct scoring “DS” is obtained with the formula:  $DS = x + y/2$ . Given that we have 10 stimuli, DS moves between a maximum of 10 (10 cases of correct denomination) and 0 (10 cases of failure). For example, a DS of 8 can be obtained with 8 correct denominations and 2 failures, or with 6 correct denominations and 4 tip of the tongue phenomena ( $8 = 6 + 4/2$ ). DS is transformed into a 0-4 scale as follows:

- 0 / DS of 0;
- 1 / DS between 0.5 and 3;
- 2 / DS between 3.5 and 6.5;
- 3 / DS between 7 and 9;
- 4 / DS 9.5 and 10.

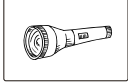









## 16. Paraphasias

### Instructions

*Sometimes, when we want to say the name of an object, we say a word related to its meaning (for example, instead of saying “bottle” we say “glass”), or a word similar to the word we want to say (for example, instead of saying “bottle” we say “battle”), or we say a new word that has no meaning and that just “comes out” at that moment (for example, say “bitolla” instead of “bottle”). Right now, I would like you to tell me the names of the different drawings in this card. IF YOU HAVE ANY DOUBT ABOUT THE PROPOSED NAME LET ME KNOW, OR YOU CAN ALSO PROVIDE AN ALTERNATIVE.* Revealing awareness of paraphasias is particularly prompted in this item. The patient is shown the CARD FOR A NAMING TASK AND MONITORING PARAPHASIAS PHENOMENA: wait for the patient to name each object and note the patient response.



Naming task and monitoring paraphasias phenomena

<b>NAMING TASK AND MONITORING PARAPHASIA PHENOMENA</b>		
<b>STIMULI</b>	<b>PATIENT'S OUTPUT</b>	<b>SUCCESS OR TYPE OF ERROR</b>
	<b>TORCH</b>	
	<b>HAMMER</b>	
	<b>WHISTLE</b>	
	<b>SPOON</b>	
	<b>JUG</b>	
	<b>POT</b>	
	<b>SCREW-DRIVER</b>	
	<b>CHAIR</b>	
	<b>IRON</b>	
	<b>TOOTH-BRUSH</b>	

## Scoring

Scoring procedure: Responses can be 1) correct denominations, 2) failures in denomination (all kind of failures, including no denominations, unnoticed paraphasias, circumlocutions), or 3) monitoring paraphasias phenomena, which are considered in this item as valid responses with a half weighting. Monitoring paraphasias phenomena include: “verbal reports on a noticed error in denomination, expressions of doubt on the proposed denomination, providing alternatives. By naming “x” the number of correct denominations and “y” the number of monitoring paraphasias phenomena, direct scoring “DS” is obtained with the formula:  $DS = x + y/2$ . Given that we have 10 stimuli, DS moves between a maximum of 10 (10 cases of correct denomination) and 0 (10 cases of failure). For example, a DS of 8 can be obtained with 8 correct denominations and 2 failures, or with 6 correct denominations and 4 monitoring paraphasias phenomena ( $8 = 6 + 4/2$ ). DS is transformed into a 0-4 scale as follows:

- 0 / DS of 0;
- 1 / DS between 0.5 and 3;
- 2 / DS between 3.5 and 6.5;
- 3 / DS between 7 and 9;
- 4 / DS 9.5 and 10.

## Section IV. Reported speech and associated phenomena

### 17. Reported speech

#### Instructions

*On many occasions in daily life we are asked to say something to somebody else, that is, to transmit a message. This happens to us in many ways, with a variety of people, message contents, and situations, etc. An example of this is when a friend, called Peter, tells us: “Remind your wife/husband that on Saturday you have to come to dinner at our house” and, when we pass on the message, we say: “Peter asked me to remind you that this Saturday we’re invited to have dinner at their house.” As you can see, we don’t repeat the message in a literal way, but we adapt it to the current situation when our friend is no longer present, but our spouse is. A role-playing activity will*

be now proposed by the clinician including the spouse of the patient (or another person accompanying the patient) into the scene, if this is the case. Otherwise the patient should imagine a third person. The clinician can also propose alternative ways of performance. *Now I would like you to tell your spouse:* (the clinician asks the patient's spouse to leave the room, or whispers the message into the patient's ear, so that the spouse can't hear) "*On Tuesday of next week, you have to come back here at 10 in the morning.*" If the spouse is outside, the clinician asks him/her to return, and then asks the patient to pass on the message.

### Scoring

- 0 if the patient is unable to understand at all the role-playing situation proposed;
- 1 if the patient understands the role-playing situation, but is unable to pass on the information;
- 2 if the patient passes on the information, but incompletely;
- 3 if the patient passes on the information in full, but with hesitation or not adapting the message to an indirect style (i.e. without correctly adapting the message to the current communicative situation);
- 4 if the patient correctly passes on all the information, without hesitation and in an indirect style.

## 18. Reported speech and phonic gesturing

### Instructions

*When we pass on the message we have been asked to communicate, on some occasions we use the exact same words as the person who spoke, and we may EVEN IMITATE THEIR WAY OF SPEAKING. Imagine that John, a little boy, says to his mother: (the clinician will use a small child's voice) "Mummy, where's my snack? I'm so hungry" I want you to convey to me now John's question, with the very same words I used, and with the same childish voice. John said to his mother: ...*

### Scoring

- 0 if the patient is unable to report the other person's words, nor imitate the phonic gesturing;
- 1 if the patient is able to report the other person's words, but without any attempt to imitate phonic gesturing;

- 2 if the patient is able to report the other person's words, and tries to imitate in part, or in an approximate way, the phonic gesturing;
- 3 if the patient imitates the phonic gesturing well, but fails to reproduce exactly the literalness of what had been said;
- 4 if the patient literally repeats what has been said, and clearly imitates the phonic gesturing.

## 19. Voice imitation

### Instructions

*Sometimes, when we tell a story, we put on the voices of the characters, imagining what their tone or way of speaking might be like. Imagine you are telling a child a story where it is written: (the clinician will use a voice corresponding to that of "a giant", with a very deep tone, special emphasis and clear vocalisation): "And then the giant told the child: DO NOT HIDE, CHILD, BECAUSE SOONER OR LATER, I'LL CATCH YOU". Now I want you to tell me using the same words as I did, and with the same voice (repeat the phrase in the same way): "AND THEN THE GIANT TOLD THE CHILD: DO NOT HIDE, CHILD, BECAUSE SOONER OR LATER, I'LL CATCH YOU". Now you do it, imitating me.*

### Scoring

- 0 if the patient is unable to reproduce the words, or to imitate the voice;
- 1 if the patient is able to reproduce the words, but without any attempt to imitate the voice;
- 2 if the patient is able to reproduce the words, but imitates the voice only in part or in an approximate way;
- 3 if the patient imitates the voice well, but fails to reproduce the exact words;
- 4 if the patient literally reproduces what has been said, and how it was voiced.

## 20. Reporting a story

### Instructions

*On many occasions during daily life we are asked, or we spontaneously refer to a film's theme, or to comment on the arguments given on a televised debate, or the most relevant happenings at a given event. Tell me now if you like cinema. We wait for the patients' response and, if they say "Yes", we ask them: Do you remember the last*

film you have seen. Can you tell me something about it? If that's not possible, the clinician tries to do something similar with a television programme in the first instance, or perhaps with a traditional story if there is no positive response to the television prompt.

### Scoring

- 0 if the patient is unable to narrate any story, nor to mention a character or argument belonging to it;
- 1 if the patient is able to mention a character or an argument, but without providing a proper narration of facts;
- 2 if the patient provides an obvious partial or unfinished narration of facts;
- 3 if the patient provides a complete story with regard to content, but narration is unclear or not well organized;
- 4 if the patient provides a clear and well-organized story.

## Section V. Monitoring abilities and contextualisation cues

### 21. Monitoring syllables: separating syllables in a word

#### Instructions

Sometimes, to emphasise or clearly distinguish the sounds that make up a certain word we can break it down into syllables. This is usually done by the teacher when he or she produces a new and complex term, or when a parent wants to emphasise a decision he or she has made for the child, for example, "We have agreed that we are going to the CIN - E - MA." Now I'm going to suggest that you say a few words stressing each syllable, such as "UM - BREL - LA." Can you do that for me with the word "mansion"? We should allow a few seconds to let the patient respond. If this doesn't happen within a reasonable time, we can give further encouragement. Come on! try it, say the word "mansion". After registering answer, clinician continues with the next word. Can you say now the word "salty" in syllables? Try it, say the word "salty". Clinician should act identically as with the previous word, and continue with two more: Now say the word "wonderful" in syllables. Finally, say the word "telephone" in syllables.



**Scoring**

- 0 if the patient is unable to pronounce any of the 4 proposed words in syllables;
- 1 if the patient correctly pronounces in syllables, 1 of the 4 words proposed;
- 2 if the patient correctly pronounces in syllables, 2 of the 4 words proposed;
- 3 if the patient correctly pronounces in syllables, 3 of the 4 words proposed;
- 4 if the patient correctly pronounces in syllables all 4 words proposed;

**22. Monitoring phrase structure: sense stress for emphasis****Instructions**

*In addition to splitting words into syllables to emphasise or highlight a particular word, another technique used is to separate the word that we want to emphasize from the rest of the words of the phrase by a pause, and especially increasing the intensity or clarity in the pronunciation of the highlighted word. An example of this is when it is very hot, and a person expresses it in the following way:*

*- "Today is a really # HOT # day".*

*The task that I'm suggesting right now, is that you separate the words in a way that stresses, that emphasizes, the word in each phrase that you think should be emphasized or stressed. For example: "It's so # HOT # today!". Now try to do the same with the following sentence: "You are very intelligent". The clinician utters the sentence without any selective emphasis on any of its words; it is the patient's task to make that selection. Await the patient's response and, if none is forthcoming, encourage the patient to try again. The clinician continues in the same way with two further sentences. Now try with the sentence: "How horrible!". Now do the same with the sentence: "Messi and Cristiano are magnificent players".*

**Scoring**

- 0 if the patient is unable to emphasise any of the 3 proposed sentences;
- 1 if the patient can emphasise at least one sentence or a fragment of one sentence, but does not clearly separate a particular word for emphasis;
- 2 if the patient separates a word for emphasis in 1 of the 3 sentences;
- 3 if the patient separates a word for emphasis in 2 of the 3 sentences;
- 4 if the patient separates a word for emphasis in the 3 sentences.

## 23. Monitoring syllables with the support of gesture

### Instructions

*I am going to ask you now to pronounce as you just did when splitting syllables in a word, but this time, as you say each syllable, tap on the table with your hand or fingers. For example, let's say the word "pencil". We do it like this: "PEN – CIL". We accompany each syllable with a light tap with the hand on the table. Now, do it yourself like this. We repeat "PEN - CIL" in the same way. We await the imitation of the patient. Now I want you to say the word "slowly" by hitting the table. We await the patient's response and if there is no response, endeavour to encourage. After registering the patient's answer, clinician continues with the following words. Now I want you to say the word "window". We proceed in the same way as for the previous word. Try with the word "tomorrow" now. Try with the word "commentator" now.*

### Scoring

- 0 if the patient is unable to split into syllables any of the 4 proposed words with gestural support;
- 1 if the patient correctly splits into syllables 1 of the 4 words proposed with gestural support;
- 2 if the patient correctly splits into syllables 2 of the 4 words proposed with gestural support;
- 3 if the patient correctly splits into syllables 3 of the 4 words proposed with gestural support;
- 4 if the patient correctly splits into syllables the 4 words proposed with gestural support.

## 24. Ways of saying in context

### Instructions

*When we speak we change our words and our way of speaking so that the message is understood and has the effects that we expect on our listener. We do not speak the same way when we are in a job interview, as with friends or relatives; again, when we try to explain the location of a street or square to a foreigner who has little fluency in our language, etc. we speak differently. Now I'm going to ask you to imagine yourself at home, and a very close friend, you have not seen for a long time, knocks on the door. Imagine how you would greet him or her,*

*what would your friend say and how you would respond? We await the patient's response. Now I want you to imagine that you are going to see your doctor at the hospital. How do you greet each other? What do you say to each other? Reproduce a brief dialogue between your doctor and yourself as soon as you begin the visit. Then a third communication context can be suggested to finish off. Now I want you to imagine that you are going down the street and see a woman, you know, with her 2-year old child. This is the first time you see her child. Greet her and imagine a small dialogue.*

### Scoring

- 0 if the patient is unable to represent any of the 3 situations proposed;
- 1 if the patient is only able to represent 1 of the 3 proposed situations;
- 2 if the patient is capable of representing 2 of the 3 proposed situations, but without significant changes in the way of speaking;
- 3 if the patient is able to represent 2 of the 3 proposed situations, with significant changes in the way of speaking.
- 4 if the patient is able to represent the 3 situations proposed, with significant changes in the way of speaking.

## 25. Monochannel communication ability

### Instructions

*In some everyday situations we have to talk to someone on the telephone. It is not the same to speak on the telephone as face to face, because when talking on the telephone we cannot see the other person, and this can limit our ability to communicate. We will try to reproduce this situation here. Let's pretend we're talking on the phone. The clinician tries to make the patient imagine the scene. The clinician can also talk to the patient through a mobile phone, leaving the room, turning the fictional situation into a real one. But let's not forget that there is added value in the patient's own ability to fictionalise the scenario. Even sitting face to face, the role-playing for a telephone encounter can be proposed. The clinician makes the gesture with the thumb (handset earpiece) and pinkie finger (handset microphone) to be talking on the phone. The clinician waits for the patient to start imitating and then says: 1) *Hello, good morning (or evening)*. The clinician awaits the patient's response. Then clinician continues: 2) *Is (name of the patient) there? (...)* What are you doing this afternoon? Can I meet you? (...) *Very good - Goodbye! See you soon! (...)**

### Scoring

- 0 if the patient does not understand the proposed role-playing
- 1 if the patient requires additional help for performing the dialogue;
- 2 if the patient interacts but with irrelevant or inadequate contributions;
- 3 if the patient interacts in an acceptable way;
- 4 if the patient interacts very well, for example, when taking the conversational initiative.

## 26. Communication ability with absent addressee

### Instructions

*When we call someone on the telephone, that person may be able to speak, or maybe not, which is when sometimes an answering machine activates. Imagine that you are calling me on the telephone and the answering machine comes on. Usually it tells us to leave a message after hearing a signal. Imagine yourself in that situation, call me on the telephone and respond to my answering machine (the clinician imitates the voice of a telephone answering machine): "Leave your message after the signal (...beep...)". We await the patient's endeavour to leave a message. If there's no response, we insist by repeating the above formulation.*

### Scoring

- 0 if the patient does not understand the proposed role-playing;
- 1 if the patient requires additional help for performing the task;
- 2 if the patient leaves a partial or incomplete message;
- 3 if the patient leaves a complete message, but hesitantly or with self-corrections;
- 4 if the patient leaves a complete message, fully and correctly, and without hesitation.

## 27. Self-correction ability

### Instructions

*It is well known that we all make mistakes when speaking. When we make these mistakes, most of the times we realise and self-correct, although mistakes can sometimes go unnoticed. An example of self-correction is when a person says, "I have a pain in my uncle ... I meant ankle!" Now I want you to tell me three sentences like the one in the previous example, first give me a sentence with an error (for example, "I have a*

*pain in my uncle") and then correct one ("I have a pain in my ankle"). Come on, try! Give me a sentence with an error. We wait for the patient to produce a sentence and then ask him to correct it. If there is no response, or the patient says he doesn't know how to do it, we can give another example. Now imagine a lady going into the bakery who says,*

*"I want four puns, I meant, four buns."*

*Now try it, produce a sentence with an error and then correct it. If the patient does not respond or says he/she does not know how to do it, we finish the task and give a score of 0. If the patient can produce a sentence and then correct it, we can use this first self-corrected sentence as an example when we ask for the second and third sentences, should the patient have a mental block.*

### Scoring

- 0 if the patient is unable to create sentences with errors;
- 1 if the patient creates sentences with errors, but without correcting them;
- 2 if the patient creates 1 sentence with errors and then corrects them;
- 3 if the patient creates 2 sentences with errors and then corrects them;
- 4 if the patient creates 3 sentences with errors, and then corrects them.

## 28. Hetero-correction ability

### Instructions

*The task that we are going to undertake now is that you detect the errors that I am producing when speaking and correct them for me. For example, if I say: "The story was WINDERFUL", you should say: "wonderful", not "WINDERFUL". If the patient seems to understand the proposal we continue with the task. Otherwise, we can use another example to illustrate what we want. Let's get on with it! This is the first sentence: 1) "We are in a DERFFICULT economic situation". We await the patient's response. If there is no response or an incorrect one, we can say: Look carefully, I said "DERFFICULT" instead of "difficult". We continue with another sentence. Let's see if you can correct my mistake: 2) "I often see a small FLYBUTTER flying in the garden". We wait for the patient's response and then continue with the following sentence. 3) Let's see if you can now detect the error in this sentence: "It was TEN QUARTERS TO ONE". We continue with the next and last sentence. And now here is the last sentence I want you to correct: 4) "Did you putted the things in their place?"*

### Scoring

- 0 if the patient is unable to detect and correct any of the proposed errors;
- 1 if the patient is capable of correctly detecting and correcting 1 of the 4 proposed errors;
- 2 if the patient is capable of correctly detecting and correcting 2 of the 4 proposed errors;
- 3 if the patient is capable of correctly detecting and correcting 3 of the 4 proposed errors;
- 4 if the patient is capable of correctly detecting and correcting all 4 errors.

## 29. Assessing another's words

### Instructions

*On some occasions we make comments about the words that someone else has said, particularly when we want manifest total agreement or strong disagreement. I will now ask you to tell me what you think about the following issues. In a television program, a politician said: "In my opinion, the economic crisis is only being suffered by the rich." What do you think? We await the patient's opinion or to make the appropriate comments. If nothing is said nor understood, we explicitly ask for the patient to express an opinion, and what he/she thinks about that politician (the same sentence can be repeated). We turn now to another subject. In a televised debate there was a group of people who argued that gays and lesbians can better educate their children than those in a traditional family. What do you think? Clinician can obviously propose here alternative situations for exam, tailored according to the patient's background.*

### Scoring

- 0 if the patient is unable to comment or his/her answers are very poor or inadequate;
- 1 if the patient is able to answer with a commentary on 1 of the 2 situations proposed;
- 2 if the patient is able to answer with a commentary on the 2 proposed situations;
- 3 if the patient is able to comment with additional arguments and/or emphatic intonation on 1 of the 2 situations proposed;
- 4 if the patient is able to comment with additional arguments and/or emphatic intonation the 2 situations proposed.

### 30. Ability to fill in lexical gaps

#### Instructions

*When we talk, sometimes we fail to finish the sentence. This fact can be due to many circumstances, like, for example, when a word fails to come to mind that will complete the phrase. When this happens, others can finish our sentence for us, or we could finish theirs. An example of this is when a child says to the mother: "Mummy, today I made a circle with a ..." (the boy makes the gesture of using a compass) ...and his mother responds: "Good! You've made a circle with a compass!" Now I am going to ask you to act like the mother in that example, that is, to finish the incomplete sentences that I am going to say next. Are you ready? Have you understood the task? We wait for the patient's response and if it is negative we will explain it again using the same or another example. Then we start the task. Complete the following sentence: "I am very tired this afternoon and I would like to go out to get some fresh...". If the patient gives an adequate response we continue with the following items. If the patient fails to answer or gives a wrong one, we should repeat the previous sentence by completing it correctly ourselves, in order to serve as a new example to the patient. Then we continue with the following items. Now complete the following sentence for me: "The tailor has made me a ...". We continue with the following sentence: "We walk with our feet and grasp with our ...". And, finally, complete the following sentence: "Children grow up to become ...".*

#### Scoring

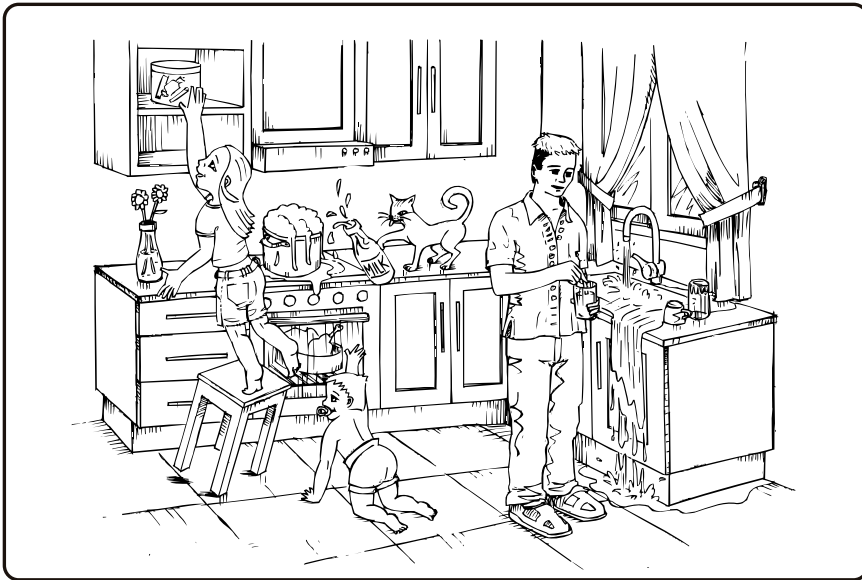
- 0 if the patient is unable to adequately complete any of the proposed phrases;
- 1 if the patient adequately completes 1 of the 4 proposed phrases;
- 2 if the patient adequately completes 2 of the 4 proposed phrases;
- 3 if the patient adequately completes 3 of the 4 proposed phrases;
- 4 if the patient adequately completes the 4 proposed phrases.

## Section VI. Displaced use of language and Theory of Mind (TOM)

### 31. Describing an object or situation not present

#### Instructions

Language allows us to talk about things, people or situations that are not present; for example, we talk at home about a car that's in the workshop. I'm going to show you a drawing for a while and then take it away, then I shall ask you to tell me what was in the drawing. We show the patient the "TRIBUTE TO THE THEFT OF THE COOKIES" card and ask the patient to concentrate on it carefully for a whole minute. After removing the sheet, we ask the patient to tell us what was depicted on it.



Tribute to the theft of the cookies

#### Scoring

- 0 if the patient fails to correctly express any sentence regarding the proposed stimulus;
- 1 if the patient produces 1 single sentence, but hesitantly;
- 2 if the patient correctly completes 1 sentence without hesitation, and 1 sentence correctly but hesitantly;
- 3 if the patient produces 2 sentences, but with hesitation or errors;
- 4 if the patient produces at least 2 sentences, without errors or hesitation.



## 32. Remembering recent past events

### Instructions

*Often, we talk or comment on things that have happened not long ago. I want you to tell me now what you did last weekend, starting on Saturday morning and ending on Sunday afternoon.*

### Scoring

- 0 if the patient is unable to comment anything about the proposed situation;
- 1 if the patient produces only a very brief commentary, i.e. including no more than one verb;
- 2 if the patient produces a brief commentary, i.e. by using two verbs with lexical content;
- 3 if the patient approaches a comprehensive commentary, i.e. by using three verbs with lexical content;
- 4 if the patient produces a highly comprehensive commentary, i.e. by using four or more verbs with lexical content.

## 33. Remembering remote past events

### Instructions

*We often talk or comment on things that happened some time ago, or even many years ago. Right now, I want you to tell me about your first job, and explain what it was, and what you did.*

### Scoring

- 0 if the patient is unable to comment anything about the proposed situation;
- 1 if the patient produces only a very brief commentary, i.e. including no more than one verb;
- 2 if the patient produces a brief commentary, i.e. by using two verbs with lexical content;
- 3 if the patient approaches a comprehensive commentary, i.e. by using three verbs with lexical content;
- 4 if the patient produces a highly comprehensive commentary, i.e. by using four or more verbs with lexical content.

## 34. Anticipating future events

### Instructions

*On many occasions we talk about situations or things that have not yet happened, that will happen in the future. Right now, I want you to tell me what you plan to do next weekend or on your next holiday. If the patient does not respond, we ask him to tell us what he will do tomorrow.*

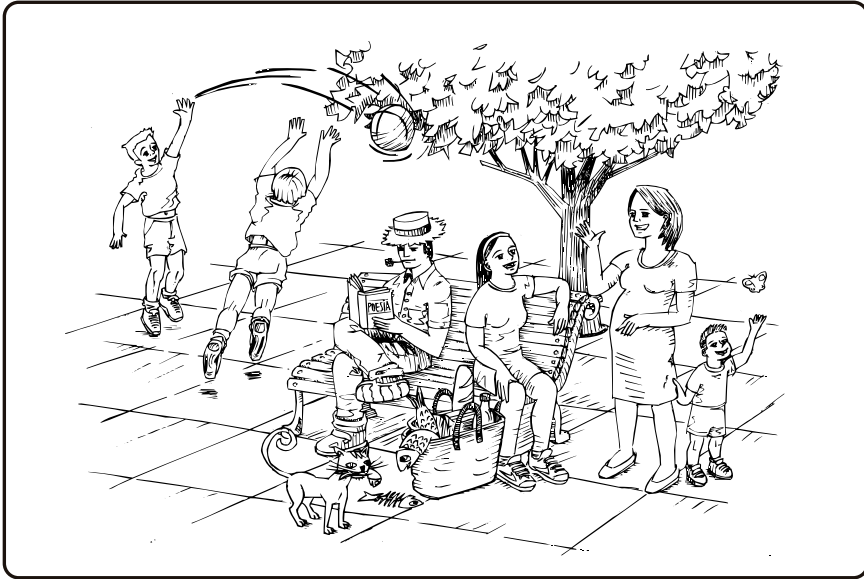
### Scoring

- 0 if the patient is unable to comment anything about the proposed situation;
- 1 if the patient produces only a very brief commentary, i.e. including no more than one verb;
- 2 if the patient produces a brief commentary, i.e. by using two verbs with lexical content;
- 3 if the patient approaches a comprehensive commentary, i.e. by using three verbs with lexical content;
- 4 if the patient produces a highly comprehensive commentary, i.e. by using four or more verbs with lexical content.

## 35. Describing a scene

### Instructions

*I want you to look closely at the picture IN THE PARK I'm going to show you. Look carefully at the different people and what is happening. We leave a minute so that the patient can observe the card carefully, and then ask the patient to describe the situation. What's happening here? Where are these people? What are these people doing? Can you guess, for example, what the woman who is standing is saying to the woman sitting beside her. Let's imagine that the ball hits the man who is reading - what will he say to the children?*



*In the park*

**Scoring**

- 0 if the patient is unable to suggest anything, nor to express any comment for any of the characters of the scene;
- 1 if the patient produces a very brief commentary, i.e. including one verb with lexical content;
- 2 if the patient produces a brief commentary, i.e. including at least two verbs with lexical content;
- 3 if the patient produces a comprehensive commentary, being able to suggest the words of one character of the scene;
- 4 if the patient produces a comprehensive commentary, being able to suggest the words of at least two characters of the scene.

## 36. Ability to find antonyms

### Instructions

When we talk to someone we play a variety of complementary or interchangeable roles, such as being a speaker or hearer, being a parent or child, being a teacher or student. I am going to ask you now to complete the following sentences illustrating these situations, are you ready? Complete these sentences:

If I am your grandfather, then you are my...

If you are my wife, then I am your...

If I am selling you something, then you are...

If you are younger than I, then I am ...

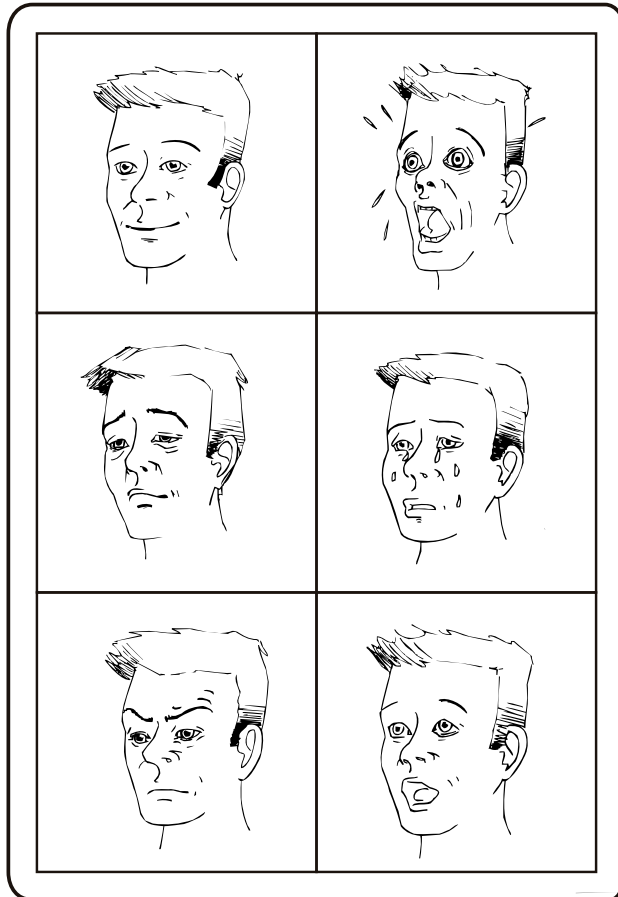
### Scoring

- 0 if the patient is unable to complete a sentence correctly;
- 1 if the patient completes 1 of the 4 sentences correctly;
- 2 if the patient completes 2 of the 4 sentences correctly;
- 3 if the patient completes 3 of the 4 sentences correctly;
- 4 if the patient completes the 4 sentences correctly.

## 37. Emotion reading

### Instructions

Interpreting correctly the gestures of the person we speak with helps understand what he/she thinks. The expression on his/her face tells us many things. Can you interpret which kind of emotion is expressed on each of the following faces? The patient is shown the card FACES FOR THE EMOTION READING TASK. Can you tell me which of the faces shows anger? Can you tell me which face shows distress? Which shows joy? Finally, can you tell me which face shows astonishment?



Faces for the emotion reading task

Scoring procedure: the face on the bottom left is a valid answer for “anger”; the faces left and right in the middle row can both be valid answers for “distress”; the face on the top left is a valid answer for “joy”; and the faces on the top right and on the bottom right can both be valid answers for “astonishment”.

### Scoring

- 0 if there are no correct answers
- 1 if there is 1 correct answer;
- 2 if there are 2 correct answers;
- 3 if there are 3 correct answers;
- 4 if there are 4 correct answers.

## 38. Fictional use of language

### Instructions

*Language allows us to create stories, characters or things that have never existed but that one simply imagines. I am going to ask you now to invent a sentence with the following words: 1. "John-ball". The clinician waits for the patient to produce a sentence including these two words. Otherwise, the patient is asked to try again by repeating the instruction. The clinician gives the patient time to respond and then continues. Now I want you to make a phrase with the words "children-cinema". Now I want you to make a phrase with the words "family-summer". Now I want to make a phrase with the words "horse-field".*

### Scoring

- 0 if the patient is unable to create a sentence correctly with the proposed words;
- 1 if the patient invents 1 correct sentence with the words proposed;
- 2 if 2 correct sentences are invented with the proposed words;
- 3 if 3 correct sentences are invented with the proposed words;
- 4 if the patient correctly produces the 4 sentences with the proposed words.

## 39. Ability to lie

### Instructions

*Language also allows us to intentionally say things that not correspond with the facts, that is, we can lie when using language. If I say: "this table is purple," when the table is in fact green, I'm lying! Just for a silly game, tell me a "lie"! We wait for the patient to express an untrue sentence. If the patient responds telling a lie, we ask for another lie. Can you tell me another "lie"? Try it. Should the patient fail to spontaneously express any "lies", we can use the following formula: Complete the following sentences: 1) I see with my ears and I hear with my ... 2) Two plus two are five, and three plus three are...*

### Scoring

- 0 if the patient is unable to express any "lies".
- 1 if the patient completes 1 of the 2 sentences with a "lie".
- 2 if the patient completes the 2 sentences with the corresponding "lies".
- 3 if the patient spontaneously produces 1 "lie" but is unable to formulate a second one.
- 4 if the patient spontaneously produces 2 "lies".

## 40. Expressing irony

### Instructions

*On some occasions, we use language to be ironical, and to say things indirectly. If I say, when it is really hot, (we try to imitate the ironic tone) "How cold it is today!" Is it true? No! Of course, it's not. I'm being ironical. Can you give me an example, using an ironic tone? If the patient does not respond, or has many difficulties, we can continue with another example. Imagine that we are going to see a football match and our team loses badly, and you say: "They are so good, they never lose"! Then you are being ironic. Give me another example in which irony is used.*

### Scoring

- 0 if the patient is unable to produce any phrase with an ironic tone.
- 1 if the patient creates 1 sentence approaching ironic tone, after repeating instruction.
- 2 if the patient creates 2 sentences approaching ironic tone, after repeating instruction.
- 3 if the patient creates 1 sentence with a clear ironic tone, including the corresponding facial gesture.
- 4 if the patient creates 2 sentences with a clear ironic tone, including the corresponding facial gesture.





# Different metalinguistic profiles of three patients with aphasia

The scoring sheets of three patients with aphasia will be now presented in order to illustrate different profiles in the answers to the *MetAphAs* test.

## **1. Patient with severe sensory aphasia (ASG)**

The first case was a 65-year-old male who suffered a left-sided perisylvian stroke in January 2004. This patient's neurological diagnosis referred to an atherothrombotic cerebral infarction in the middle cerebral artery area. This patient presented, according to the Boston test diagnostic criteria, a severe sensory aphasia, with a moderate alteration of oral comprehension, both in naming tasks and in the understanding of instructions. He shows difficulties in the comprehension of short stories. His language is fluent, but with paraphasias.

Scoring sheet Test MetAphAs (ASG)						
(Rosell-Clari & Hernández-Sacristán, 2017)						
Section I: Inner, inhibited, and deferred speech						
1.	Monological activity	0	<del>X</del>	2	3	4
2.	Verbalisations supporting everyday activities	<del>0</del>	1	2	3	4
3.	Whispering	<del>0</del>	1	2	3	4
4.	Silent reading	<del>0</del>	1	2	3	4
5.	Deferred use of language (deferred answer)	<del>0</del>	1	2	3	4
6.	Deferred use of language (deferred description)	<del>0</del>	1	2	3	4
Section II: Control of concurrent semiotic procedures						
7.	Discursive markers	<del>0</del>	1	2	3	4
8.	Gesturing concurrent with verbal activity	0	1	<del>2</del>	3	4
9.	Melodic intonation	0	1	<del>2</del>	3	4
10.	Phonic gesture and emotional content expressions	<del>0</del>	1	2	3	4
11.	Conventional intonation	<del>0</del>	1	2	3	4
Section III: Paraphrastic abilities and associated phenomena						
12.	Definition of terms naming particular objects	<del>0</del>	1	2	3	4
13.	Definition of abstract terms	<del>0</del>	1	2	3	4
14.	Circumlocutions	<del>0</del>	1	2	3	4
15.	Tip-of-the-tongue phenomenon	<del>0</del>	1	2	3	4
16.	Paraphasias	0	1	2	3	<del>4</del>
Section IV: Reported speech and associated phenomena						
17.	Reported speech	<del>0</del>	1	2	3	4
18.	Reported speech and phonic gesturing	0	1	<del>2</del>	3	4
19.	Voice imitation	<del>0</del>	1	2	3	4
20.	Reporting a story	<del>0</del>	1	2	3	4
Section V: Monitoring abilities and contextualisation cues						
21.	Monitoring syllables: Separating syllables in a word	<del>0</del>	1	2	3	4
22.	Monitoring phrase structure: Sense stress for emphasis	<del>0</del>	1	2	3	4
23.	Monitoring syllables with the support of gesturing	<del>0</del>	1	2	3	4
24.	Ways of saying in context	<del>0</del>	1	2	3	4
25.	Monochannel communication ability	0	1	<del>2</del>	3	4
26.	Communication ability with absent addressee	<del>0</del>	1	2	3	4
27.	Self-correction ability	<del>0</del>	1	2	3	4
28.	Hetero-correction ability	<del>0</del>	1	2	3	4
29.	Assessing another's words	<del>0</del>	1	2	3	4
30.	Ability to fill in lexical gaps	<del>0</del>	1	2	3	4
Section VI: Usos desplazados del lenguaje y teoría de la mente						
31.	Describing an object or situation not present	<del>0</del>	1	2	3	4
32.	Remembering recent past events	<del>0</del>	1	2	3	4
33.	Remembering remote past events	<del>0</del>	1	2	3	4
34.	Anticipating future events	<del>0</del>	1	2	3	4
35.	Describing a scene	0	<del>X</del>	2	3	4
36.	Ability to find antonyms	<del>0</del>	1	2	3	4
37.	Emotion reading	<del>0</del>	1	2	3	4
38.	Fictional use of language	<del>0</del>	1	2	3	4
39.	Ability to lie	<del>0</del>	1	2	3	4
40.	Expressing irony	<del>0</del>	1	2	3	4
TOTAL SCORE		14				

## **2. Patient with severe motor aphasia (SMA)**

The second case was a 69-year-old man who suffered a stroke in March 2005 (left perisylvian ictus). This patient's neurological diagnosis indicated left temporal intraparenchymal haemorrhage, secondary to arteriovenous malformations. This patient presented, according to the Boston test diagnostic criteria, severe aphasia with motor predominance (SMA), with evident loss of fluency, anomias, semantic paraphrasing, with moderate difficulty for understanding instructions.

<b>Scoring sheet Test MetAphAs (SMA)</b>						
(Rosell-Clari & Hernández-Sacristán, 2017)						
<b>Section I: Inner, inhibited, and deferred speech</b>						
1.	Monological activity	<del>0</del>	1	2	3	4
2.	Verbalisations supporting everyday activities	0	<del>1</del>	2	3	4
3.	Whispering	0	<del>1</del>	2	3	4
4.	Silent reading	<del>0</del>	1	2	3	4
5.	Deferred use of language (deferred answer)	0	<del>1</del>	2	3	4
6.	Deferred use of language (deferred description)	<del>0</del>	1	2	3	4
<b>Section II: Control of concurrent semiotic procedures</b>						
7.	Discursive markers	0	<del>1</del>	2	3	4
8.	Gesturing concurrent with verbal activity	0	1	<del>2</del>	3	4
9.	Melodic intonation	0	1	2	<del>3</del>	4
10.	Phonic gesture and emotional content expressions	0	1	2	<del>3</del>	4
11.	Conventional intonation	0	1	2	<del>3</del>	4
<b>Section III: Paraphrastic abilities and associated phenomena</b>						
12.	Definition of terms naming particular objects	0	<del>1</del>	2	3	4
13.	Definition of abstract terms	<del>0</del>	1	2	3	4
14.	Circumlocutions	<del>0</del>	1	2	3	4
15.	Tip-of-the-tongue phenomenon	<del>0</del>	1	2	3	4
16.	Paraphasias	0	1	<del>2</del>	3	4
<b>Section IV: Reported speech and associated phenomena</b>						
17.	Reported speech	0	<del>1</del>	2	3	4
18.	Reported speech and phonic gesturing	0	1	<del>2</del>	3	4
19.	Voice imitation	0	1	2	<del>3</del>	4
20.	Reporting a story	<del>0</del>	1	2	3	4
<b>Section V: Monitoring abilities and contextualisation cues</b>						
21.	Monitoring syllables: Separating syllables in a word	0	<del>1</del>	2	3	4
22.	Monitoring phrase structure: Sense stress for emphasis	0	1	<del>2</del>	3	4
23.	Monitoring syllables with the support of gesturing	0	1	<del>2</del>	3	4
24.	Ways of saying in context	0	<del>1</del>	2	3	4
25.	Monochannel communication ability	<del>0</del>	1	2	3	4
26.	Communication ability with absent addressee	<del>0</del>	1	2	3	4
27.	Self-correction ability	0	<del>1</del>	2	3	4
28.	Hetero-correction ability	0	<del>1</del>	2	3	4
29.	Assessing another's words	0	<del>1</del>	2	3	4
30.	Ability to fill in lexical gaps	0	1	<del>2</del>	3	4
<b>Section VI: Usos desplazados del lenguaje y teoría de la mente</b>						
31.	Describing an object or situation not present	0	<del>1</del>	2	3	4
32.	Remembering recent past events	0	<del>1</del>	2	3	4
33.	Remembering remote past events	0	<del>1</del>	2	3	4
34.	Anticipating future events	<del>0</del>	1	2	3	4
35.	Describing a scene	0	1	2	<del>3</del>	4
36.	Ability to find antonyms	0	1	2	<del>3</del>	4
37.	Emotion reading	0	1	2	3	<del>4</del>
38.	Fictional use of language	<del>0</del>	1	2	3	4
39.	Ability to lie	<del>0</del>	1	2	3	4
40.	Expressing irony	<del>0</del>	1	2	3	4
<b>TOTAL SCORE</b>		48				

### **3. Patient with residual anomic aphasia (RAA)**

The third case is a 50-year-old man who was admitted in 2006 due to an ischemic stroke. The main neurological diagnosis was left sylvian ischemic stroke (LIS). In the previous examination the patient presented a moderately severe residual anomic aphasia (RAA), with evident loss of fluency, anomias, paraphasias and difficulties in accessing lexicon. No difficulty in oral language comprehension was observed.

<b>Scoring sheet Test MetAphAs (RAA)</b>						
(Rosell-Clari & Hernández-Sacristán, 2017)						
<b>Section I: Inner, inhibited, and deferred speech</b>						
1.	Monological activity	0	1	2	<del>3</del>	<del>4</del>
2.	Verbalisations supporting everyday activities	0	1	2	3	<del>4</del>
3.	Whispering	0	1	2	3	<del>4</del>
4.	Silent reading	0	1	2	3	<del>4</del>
5.	Deferred use of language (deferred answer)	0	1	2	3	<del>4</del>
6.	Deferred use of language (deferred description)	0	1	2	<del>3</del>	4
<b>Section II: Control of concurrent semiotic procedures</b>						
7.	Discursive markers	0	1	2	<del>3</del>	4
8.	Gesturing concurrent with verbal activity	0	1	2	<del>3</del>	4
9.	Melodic intonation	0	1	2	3	<del>4</del>
10.	Phonic gesture and emotional content expressions	0	1	2	3	<del>4</del>
11.	Conventional intonation	0	1	2	3	<del>4</del>
<b>Section III: Paraphrastic abilities and associated phenomena</b>						
12.	Definition of terms naming particular objects	0	1	2	3	<del>4</del>
13.	Definition of abstract terms	0	1	2	<del>3</del>	4
14.	Circumlocutions	0	1	<del>2</del>	3	4
15.	Tip-of-the-tongue phenomenon	0	1	<del>2</del>	3	4
16.	Paraphasias	0	1	2	<del>3</del>	4
<b>Section IV: Reported speech and associated phenomena</b>						
17.	Reported speech	0	1	2	3	<del>4</del>
18.	Reported speech and phonic gesturing	0	1	2	3	<del>4</del>
19.	Voice imitation	0	1	2	3	<del>4</del>
20.	Reporting a story	0	1	2	<del>3</del>	4
<b>Section V: Monitoring abilities and contextualisation cues</b>						
21.	Monitoring syllables: Separating syllables in a word	0	1	2	3	<del>4</del>
22.	Monitoring phrase structure: Sense stress for emphasis	0	1	2	3	<del>4</del>
23.	Monitoring syllables with the support of gesturing	0	1	2	3	<del>4</del>
24.	Ways of saying in context	0	1	2	3	<del>4</del>
25.	Monochannel communication ability	0	1	2	3	<del>4</del>
26.	Communication ability with absent addressee	0	1	2	<del>3</del>	4
27.	Self-correction ability	0	1	2	<del>3</del>	4
28.	Hetero-correction ability	0	1	2	<del>3</del>	4
29.	Assessing another's words	0	1	2	<del>3</del>	4
30.	Ability to fill in lexical gaps	0	1	2	<del>3</del>	4
<b>Section VI: Usos desplazados del lenguaje y teoría de la mente</b>						
31.	Describing an object or situation not present	0	1	2	3	<del>4</del>
32.	Remembering recent past events	0	1	2	3	<del>4</del>
33.	Remembering remote past events	0	1	2	3	<del>4</del>
34.	Anticipating future events	0	1	2	3	<del>4</del>
35.	Describing a scene	0	1	2	3	<del>4</del>
36.	Ability to find antonyms	0	1	2	<del>3</del>	4
37.	Emotion reading	0	1	2	3	<del>4</del>
38.	Fictional use of language	0	1	2	3	<del>4</del>
39.	Ability to lie	0	1	2	3	<del>4</del>
40.	Expressing irony	0	1	2	3	<del>4</del>
<b>TOTAL SCORE</b>		143				

## **4. Conclusions**

These three cases confirm that the *MetAphAs* test shows up different profiles in the affectation of patients' metalinguistic abilities, which are sensitive to both type and severity of aphasia. On the other hand, as has been observed in these three examples, the administration of the *MetAphAs* test shows the most preserved and affected elements in each patient; this should be useful in speech therapy. *MetAphAs* can be used to plan the patient's communication rehabilitation, starting from precisely those more preserved elements, and suggesting support guidelines for communication in natural environments.



# Some statistical data<sup>\*</sup>

## ■ Subjects

30 aphasic Spanish-speaking subjects participated in the study (19 men and 11 women, age range 46–82). Participants were at least 6 months after stroke, with an ischaemic or haemorrhagic diagnosis. They were recruited from the stroke units of hospitals from the cities of Valencia and Alzira (Spain). All subjects completed the Spanish version of the Boston Diagnostic Aphasia Examination (BDAE; Goodglass & Kaplan, 1983, 1998) and the *MetAphAs* test. A variety of aphasia types was represented in our sample: 15 people with dominant motor aphasia, 9 with dominant sensitive aphasia and 6 with residual anomia. As regards severity, a variety of situations was also represented in our sample, although most of the participants, seventeen of them, were moderate cases. Patients with a very severe deficit in speech production or comprehension were excluded from our study, given their difficulties in completing the *MetAphAs* test.

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<sup>\*</sup> Study presented in the Science of Aphasia Conference, Geneva, 2017

**TABLE 1. People with Aphasia Participants**

Patient	Age	Sex (M/F)	Aphasia type	Sever.	Aetiology
ASSMG	67	M	Sensory aphasia	0	Left parietal occipital cerebral haematoma
ASSTM	74	F	Transcortical sensory aphasia	3	Left sylvian ischaemic stroke, due to left carotid thrombosis
ASSTS	71	M	Transcortical sensory aphasia	2	Extensive left temporal parietal ischaemic stroke
BPMMM	68	M	Motor-mixed aphasia	3	Left temporal ischaemic stroke
CSMMM	70	M	Motor-mixed aphasia	3	Left sylvian ischaemic thrombotic stroke of hypertensive origin
DTMMM	82	F	Motor-mixed aphasia	3	Left temporal parietal haematoma
EMMMS	75	M	Motor-mixed aphasia	2	Left anterior sylvian embolism
EASG	77	F	Sensory aphasia	1	Extensive left temporal parietal ischaemic stroke
FGMTM	72	F	Transcortical motor aphasia	3	Multiple sylvian ischaemic stroke
JHAL	46	M	Anomic aphasia	4	Left sylvian ischaemic stroke
JMMM	59	M	Motor-mixed aphasia	1	Left sylvian ischaemic thrombotic stroke
JVMMG	69	M	Motor aphasia	0	Left parietal intraparenchymal
MLAM	58	F	Anomic aphasia	3	Left sylvian ischemic thrombotic stroke of hypertensive origin
MMAL	48	F	Anomic aphasia	4	Left sylvian ischaemic stroke
MMMTS	51	M	Transcortical motor aphasia	2	Ischaemic stroke in left middle and anterior cerebral arteries
MSMMG	80	F	Motor aphasia	0	Left sylvian embolism
PPMMG	51	M	Motor-mixed aphasia	1	Left sylvian ischaemic stroke
RSMMM	75	M	Motor-mixed aphasia	3	Left frontal ischaemic stroke
VNMMS	65	M	Motor-mixed aphasia	2	Left frontal cerebral haematoma
VRAL	50	M	Anomic aphasia	4	Left sylvian ischaemic stroke
VRMSM	66	M	Sensory-mixed aphasia	3	Left middle artery ischaemic stroke
MCPA	68	F	Anomic aphasia	3	Ischemic stroke of the left middle cerebral artery
RMSM	81	M	Sensory aphasia	1	Multiple sylvian ischaemic stroke
JLMM	71	M	Motor-mixed aphasia	0	Extensive left temporal parietal ischaemic stroke

Patient	Age	Sex (M/F)	Aphasia type	Sever.	Aetiology
IGSM	61	F	Sensory-mixed aphasia	2	Left sylvian ischaemic thrombotic stroke
ASST	70	F	Transcortical sensory aphasia	3	Left sylvian ischaemic stroke
AGMT	59	F	Transcortical motor aphasia	3	Ischaemic stroke in left middle cerebral artery
GASA	68	M	Sensory aphasia	1	Left sylvian ischaemic stroke
GMPM	72	M	Anomic aphasia	3	Left anterior sylvian embolism
MMMA	64	M	Motor aphasia	1	Ischaemic stroke in left anterior cerebral artery

## Results

Internal consistency or reliability of *MetAphAs*, was proved by the high values of the Cronbach's alpha coefficient, applied to the *MetAphAs* scores obtained by all patients. Validity (concurrent validity) of *MetAphAs* was also proved by the high values of Pearson's coefficients measuring correlation between BDAE and *MetAphAs* global scores. There were, however, significant average differences between *MetAphAs* and the BDAE global scores ( $t_{29} = -8.712$ ;  $p = .000$ ), demonstrating that *MetAphAs* and BDAE were, as expected, different tools for assessing aphasia. *MetAphAs* test was high sensitivity to the aphasia type ( $F_{(6,71)} = 11.689$ ;  $p = .000$ ) and to the severity of aphasia ( $F_{(6,71)} = 40.378$ ;  $p = .000$ ).

**TABLE 2. Summary of Results**

	STATISTICAL	SIGNIFICANCE
Reliability <i>MetAphAs</i> Test	Cronbach's alpha coefficient = .926	From 0 and 1
Correlation <i>MetAphAs</i> & BDAE	$r_{xy} = .900$	$p = .000$
Average differences <i>MetAphAs</i> & BDAE	$t_{29} = -8.712$	$p = .000$
Aphasia Type & <i>MetAphAs</i>	$F_{(6,71)} = 11.689$	$p = .000$
Aphasia Severity & <i>MetAphAs</i>	$F_{(6,71)} = 40.378$	$p = .000$



# References

- ALBERT, M., SPARKS, R., & HELM (1973). Melodic Intonation Therapy for aphasia. *Archives of Neurology*, 29, 130-131.
- BICKERTON, D. (1990). *Language and Species*. Chicago: University of Chicago Press.
- BROWNSSETT, S. L. E., WARREN, J. E., GERANMAYEH, F., WOODHEAD, Z., LEECH, R., & WISE, R. J. (2014). Cognitive control and its impact on recovery from aphasic stroke. *Brain*, 137, 242–254.
- DEAN, M. P., DELLA SALA, S., BESCHIN, N. & COCCHINI, G. (2017). Anosognosia and self-correction of naming errors in aphasia. *Aphasiology*, 31 (7), 725-740.
- DOCKREE, P. M., TARLETON, Y. M., CARTON, S., & FITZGERALD, M. C. (2015). Connecting self-awareness and error-awareness in patients with traumatic brain injury. *Journal of the International Neuropsychological Society*, 21(7), 473–482.
- EL HACHIOUI, HANANE, VISCH-BRINK, EY, LINGSMA, HESTER F, VAN DE SANDT-KOENDERMAN, MIEKE W. M. E., DIPPEL, DIEDERIK W. J., KOUDSTAAL, PETER J. & MIDDELKOOP, HUUB A. M. (2014). Nonlinguistic Cognitive Impairment in Poststroke Aphasia: A Prospective Study, *Neurorehabilitation and Neural Repair*, 28(3), 273–281.
- FRANKEL, T.; PENN, C. & ORMOND-BROWN, D. (2007). Executive dysfunction as an explanatory basis for conversation symptoms of aphasia: A pilot study. *Aphasiology*, 21 (6/7/8), 814-828.

- GALLARDO PAÚLS, B., & MARÍN JORDÀ, M. J. (2005). Marcadores discursivos procedentes de verbos perceptivos en el discurso afásico. *Revista de Investigación Lingüística*, 8, 53-94.
- GOMBERT, J. E. (1992). *Metalinguistic Development*. Hertfordshire: Harvester Wheatsheaf.
- GOODWIN, C. (1995). Co-constructing Meaning in Conversations with an Aphasic Man. *Research on Language and Social Interaction*, 28 (39), 233-260.
- GOODGLASS, H., & KAPLAN, E. (1983). *Boston Diagnostic Aphasia Exam*. Philadelphia: Lea and Febiger.
- GOODGLASS, H., & KAPLAN, E. (1998). *Evaluación de la afasia y de los trastornos relacionados*. Madrid: Panamericana (Spanish adaptation of Goodglass, H., & Kaplan, E. (1983), by García Albea, J.E., & Sánchez Bernardos, M. L.).
- HARLEY, T. A., OLIVER, T. M., JESSIMAN, L. J. & MACANDREW, S.B.G. (2013) Ageing makes us dyslexic. *Aphasiology*, 27 (4), 490-505.
- HELM-ESTABROOKS, N., FITZPATRICK, P., & BARRESI, B. (1982). Visual Action Therapy for global aphasia. *Journal of Speech and Hearing Disorders*, 44, 385-389.
- HERNÁNDEZ SACRISTÁN, C. (2006). *Inhibición y Lenguaje. A propósito de la afasia y la experiencia del decir*. Madrid: Biblioteca Nueva.
- HERNÁNDEZ-SACRISTÁN, C., & ROSELL-CLARI, V. (2009). Syntax and conversation in aphasia. A strategic restrictive use of Spanish and Catalan connector QUE by aphasic speakers. *Clinical Linguistics & Phonetics*, 23 (10), 717-741.
- HERNÁNDEZ-SACRISTÁN, C., ROSELL-CLARI, V., & MACDONALD, J. E. (2011). Proximal and distal. Rethinking linguistic form and use for clinical purposes. *Clinical Linguistics & Phonetics*, 25 (1), 37-52.
- HERNÁNDEZ-SACRISTÁN, C., ROSELL-CLARI, V., SERRA ALEGRE, E., & QUILES-CLIMENT, J. (2012). On natural metalinguistic abilities in aphasia: A preliminary study. *Aphasiology*, 26 (2), 199-219.
- HOCKETT, C. F. (1960). The origin of speech. *Scientific American*, 203, 88-96.
- HURFORD, J. (2004). Language beyond our grasp: what mirror neurons can, and cannot do, for the evolution of language. In Oller, D.K., & Griebel, K. (eds.). *Evolution of communication systems: a comparative approach*. Cambridge, MA, & London: MIT Press, 297-313.

- KARMILOFF-SMITH, A. (1986). From meta-processes to conscious access: Evidence from children's metalinguistic and repair data. *Cognition*, 23, 95-147.
- KUZMINA, E., & WEEKES, B.S. (2017). Role of cognitive control in language deficits in different types of aphasia. *Aphasiology*, 31 (7), 765-792.
- LUCY, J.A. (ed.) (1993). *Reflexive Language. Reported Speech and Metapragmatics*. Cambridge: Cambridge University Press.
- MAYER, JAMIE F., MITCHINSON, SARA I. & MURRAY, LAURA L. (2017): Addressing concomitant executive dysfunction and aphasia: previous approaches and the new brain budget protocol. *Aphasiology*, 31 (7). 837-860.
- MURRAY, L. L. (2012). Attention and other cognitive deficits in aphasia: Presence and relation to language and communication measures. *American Journal of Speech-Language Pathology*, 21, 167-179.
- PENN, C.; FRANKEL, T.; WATERMEYER, J. Y RUSSELL, N. (2010). Executive function and conversational strategies in bilingual aphasia. *Aphasiology*, 24 (2), 288-308.
- PIETROSEMOLI, L., VERA, M., GONZALEZ VALERA, S., & COUTÍN CHURCHMAN, P. (2005). Marcadores discursivos en hablantes sanos y afásicos: el caso especial de "y". *Boletín de Lingüística*, 17, 25-30.
- PREMACK, D., & WOODRUFF, G. (1978). Does chimpanzee have a theory of mind? *Behavioral and Brain Sciences*, 1, 515-526.
- ROSE, M. (2006). The utility of arm and hand gestures in the treatment of aphasia. *Advances in Speech Language Pathology*, 8, 92-109.
- ROSELL-CLARI, V., & BERNICOT, J. (2012). Metalang. Protocolo franco-español de exploración de habilidades metalingüísticas en niños de 6 a 9 años: un estudio preliminar. *Boletín de AELFA (Asociación Española de Logopedia, Foniatria y Audiología)*, 12 (2), 61-66.
- ROSELL-CLARI, V., & HERNÁNDEZ-SACRISTÁN, C. (Coords) (2014). *MetAphAs. Protocolo de exploración de habilidades metalingüísticas en la afasia*. Valencia: Nau Llibres.
- ROSELL CLARI, V., & HERNÁNDEZ SACRISTÁN, C. (2014). La evaluación del déficit lingüístico adquirido en el adulto. La afasia como ejemplo. In Fernández Pérez, M. (coord.). *Lingüística y déficit comunicativos. ¿Cómo abordar las disfunciones verbales?* Madrid: Síntesis, 159-200.
- ROSELL-CLARI, V., & HERNÁNDEZ-SACRISTÁN, C. (2017). Anomia rehabilitation viewed from a pragmatic-functional paradigm. A case study. *Revista de Investigación en Logopedia*, 7 (1), 47-70.

SIMMONS-MACKIE, N., ELMAN, R. J., HOLLAND, A., & DAMICO, J. (2007).  
Management of discourse in group therapy for aphasia. *Topics in Language  
Disorders, 27 (1)*, 5-23.





