



REVIEW ARTICLE

Assessment of aphasia: dialectal and cultural considerations in neurology[☆]

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Received 15 June 2019; accepted 31 July 2019

KEYWORDS

Aphasia;
Assessment;
Dialects;
Culture

Abstract

Introduction: In the context of neurological disorders, language assessment is traditionally based on the use of the standard language of the community in which the assessment is performed. Dialectal variables constitute a “forgotten” topic. This review aims to provide resources and working guidelines to overcome this limitation.

Development: The study was conducted as follows: 1) review of basic concepts of dialectology (language, dialect, isogloss line, idiolect, register, “standard variant,” bilingualism); 2) characterisation of Spanish and Catalan dialectologies and search for online resources for the development of neurological assessment tools; 3) ad hoc search on the PubMed database (keywords: “dialect,” “aphasia,” and “multilingual”).

Conclusions: We provide online resources to promote adequate development of assessment tools in Spanish and Catalan, accounting for dialectal considerations. We propose a set of working guidelines for the introduction of dialectal variables in language tests to ensure their ultimate objective: to evaluate the real use of the language, and not cultural knowledge of the standard language.

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[☆] Please cite this article as: Peña-Casanova J, Vinaixa L, Diéguez-Vide F, Gramunt-Fombuena N, Soler-Campillo A. Evaluación de las afasias: consideraciones dialectales y culturales en neurología. Neurología. 2022;37:596–603.

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PALABRAS CLAVE

Afasia;
Evaluación;
Dialectos;
Cultura

Evaluación de las afasias: consideraciones dialectales y culturales en neurología**Resumen**

Introducción: La evaluación del lenguaje en el contexto de las alteraciones neurológicas se fundamenta, tradicionalmente, en el uso de la lengua estándar de la comunidad en la que tiene lugar. Las variables dialectales constituyen un tema «olvidado». El objetivo de esta revisión es aportar recursos y guías de trabajo para superar esta limitación.

Desarrollo: (1) Revisión de conceptos propios de la dialectología (*lengua, dialecto, líneas isoglosas, idiolecto, registro, «variante estándar», bilingüismo*). (2) Caracterización fundamental de las dialectologías española y catalana y búsqueda de recursos online para el desarrollo de instrumentos en neurología. (3) Búsqueda *ad hoc* en PubMed (palabras clave: *dialect, aphasia, multilingual*).

Conclusiones: (1) Se aportan recursos *online* para promover un adecuado desarrollo de instrumentos de evaluación en lenguas castellana y catalana, considerando aspectos dialectales. (2) Se aportan unas guías de trabajo orientadas a la introducción de variables dialectales en los test de lenguaje para asegurar su objetivo último: evaluar el uso real de la lengua, y no el conocimiento cultural de la lengua estándar.

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Introduction

In aphasiology, language tests are traditionally based on what is known as “standard language”.^{1–5} This approach should be clarified, as in clinical practice we assess individuals whose language may differ greatly from normative concepts. This brief review addresses a subject that has largely been overlooked in neuropsychology, neurolinguistics,^{6,7} and aphasiology treatises: the relevance of dialect-related and transcultural aspects of language.

As a paradigm, we should mention that the first Spanish-language edition of the Boston Diagnostic Aphasia Examination (BDAE),⁸ developed in Buenos Aires, included the word *garúa* (drizzle), which is not generally recognised in Spain. Furthermore, the Boston Naming Test (BNT)⁹ presents such items as “igloo” (snow house or snow hut) or “pretzel” (salted cracker in the shape of a knot), whose names are conflictive, culturally speaking. In this context, a recent study has shown significant differences in the basic terms for colours in 3 Spanish dialects: European, Mexican, and Uruguayan Spanish¹⁰.

This study aims to review some essential concepts of dialectology and transcultural neuropsychology in order to provide resources and working guidelines to overcome the problems of the dialectal variants of the Spanish and Catalan languages, due to the sociocultural contexts where they were developed.

Development

We will address different related topics: 1) concepts of language evolution¹¹ and dialectology, especially the concepts of “language”, “dialect”, and “idiolect”; 2) standard variant and cultural factors; 3) bilingualism and polyglotism; 4) Spanish- and Catalan-language dialectology and online resources for the development of assessment tools. For each topic, we performed an ad hoc search of PubMed using the following keywords: dialect, aphasia, and multilingual.

Dialectology concepts**Language and dialect**

Although the semantical distinction between the concepts “language” and “dialect” is complicated, all criteria consider “language” to be an abstract concept; therefore, what truly exists is the individual speaker. According to one criterion, we can speak about 2 dialects when there is no structural distance between them, ie, when the language of speaker A is not significantly different from the language of speaker B at the phonetic, morphological, lexical, or syntactic level. If there are no clear differences, we may speak about a dialect; if such differences do exist, we may speak about languages. Although a language can be considered “standard language,” in reality the result is a “standard dialect.”

Another more frequently used criterion is “intercomprehension” or “mutual intelligibility,” absolute or relative,¹² according to which we will refer to dialect when intercomprehension exists between 2 speakers. This criterion clearly recognises the existence of degrees of continuity.

When differences are observed, especially between dialects, they can be geographically marked with isogloss lines that delimit the extension of various linguistic phenomena (phonetics, syntax, lexis, etc). Therefore, for example, an isogloss line in Spain separates the zones where there is a phonetic distinction between words with the letters s or z (eg, *casa* and *caza*) and zones where no such distinction exists.

The concept of idiolect, a key concept in pathology

Although numerous sociolinguistics concepts exist (such as “sociolect” to refer to group variants or “chronolect” to

refer to variants related to age or historical times), the key concept from a pathological perspective is that of idiolect. Idiolect is the language of a specific individual, especially manifested in their use of lexis, grammar, or phonetics. Idiolect may be considered as the linguistic representation of the “self”.¹²

From a pathological perspective, idiolect must always be taken into account; for example, when an individual says *cocreta* (incorrect but widespread variant) to refer to a *croqueta* (from the French *croquette*), this should not be considered a lexical error.

The concept of register

Registers refer to social variants of a language, involving the adaptation of the system to the actual circumstances of use and, more specifically, are determined by such factors as the subject matter, participants, and the context. Registers may be formal (eg, a scientific lecture) or informal (eg, a conversation between friends), depending on the characteristics of the communication acts.

Standard variant and cultural factors

Neuropsychological tests are frequently based on the “standard variant,” the language variant used in formal and public situations. In addition to considering the “standard variant”, tests inevitably incorporate historical and cultural elements, and the social values of the context where they were developed.^{13–15}

We should stress that the term “standard variant” is used instead of “standard language,” as the majority of languages encompass a set of dialects, one of which will be the “standard variant.” In some languages, there may be more than one standard variant, as in the case of geographically distant dialects: for example, there are specific spelling norms and standard vocabularies in British, American, and Australian English (variants of the same language). In these cases, we speak about “pluricentric languages.”

Furthermore, neuropsychological studies, and particularly those addressing language impairment, present clear biases as they have included limited sample sizes of Western, frequently urban, middle-class, and literate populations.^{13,14,16}

It is essential to consider the multiple dimensions of language,^{17,18} as well as all the social and cultural aspects included in different branches of linguistics, such as sociolinguistics or ethnolinguistics.^{19,20}

Bilingualism and polyglotism

Another important case in language evaluation is bilingualism and polyglotism.²¹ A bilingual person is defined as someone who is able to use, indistinctively and on a daily basis, 2 languages or dialects, regardless the context. The same definition is applied to a polyglot, who uses 3 or more languages.

In the context of cultural diversity and considering the current social mobility, bilingualism and polyglotism are an increasingly common reality. Both phenomena are estimated

to be present in almost half of the worldwide population.²² Consequently, this fact must be reflected in the study of language impairment. Any specific community may include a considerable number of migrant members who speak other (allochthonous) languages. For example, 308 languages are spoken in Catalonia, in addition to Catalan and Spanish.²³

In Hispanic America, there is a relatively large number of speakers of indigenous languages, including Guarani, Quechua, Aymara, Nahuatl, Mayan language, and Mapudungun (Mapuche or Araucan language). A significant percentage of these populations are monolingual (indigenous language) or bilingual (indigenous language/local Spanish dialect).²⁴

The main element to consider in the correct assessment of aphasia in bilingual patients is not only the translation of an instrument designed in another language, but the drafting of psycholinguistically and culturally equivalent instruments to study the functional characteristics of each language.²¹ This is why it is important to consider other dialectal variants in addition to the standard variant.

In this area, we can highlight the following online resources:

- Bilingual Aphasia Test (BAT). <https://www.mcgill.ca/linguistics/research/bat>^{22,25}.
- Languages in which BAT is available (72). <https://www.mcgill.ca/linguistics/research/bat#specific>.
- Ethnologue. <https://www.ethnologue.com/>. Resource on languages of the world.

Spanish and Catalan dialects and online resources available for the development for neurological assessment tools

Below, we analyse the main characteristics of Spanish and Catalan dialects. In this section, we highlight again the relevance of dialectal variants.

Dialectology of the Spanish language

The dialectology of the Spanish language is highly complex in terms of phonetics, lexis, and syntax.²⁶ While it is not possible to provide a systematic description of all Spanish dialects in this article, numerous works describe their linguistic characteristics.²⁷

Spanish dialects can be divided into 2 large groups: Spanish dialects in Spain (European Spanish) and in the Americas (American Spanish). American Spanish includes a set of Spanish-language variants spoken in the American continent from the beginning of the Spanish colonies (late 15th century) to today. An exhaustive analysis should include other Spanish variants, such as that spoken in the Philippines.

In Spain. Regarding European Spanish, 2 geographical areas are typically established²⁶: the Northern and the Southern dialects. These 2 dialects mainly differ in the pronunciation of consonants at the end of words and syllables in general. For example, the /s/ sound at the end of syllables is pronounced [s] in the Northern variant whereas in the Southern area, it is pronounced as an aspirate [h], which is lost in some cases when located at the end of a word. In the Northern dialect, there is a clear distinction between

Table 1 Simplified summary of the dialectal varieties of American Spanish and the countries where they are spoken. Note that interactions at borders are multiple and complex.

| Dialectal variant | Countries |
|-------------------|--|
| Mexican | Mexico |
| Caribbean | Cuba, Dominican Republic, Puerto Rico, Panama ^a |
| Central American | Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica |
| Andean | Venezuela, Colombia, Ecuador, Peru, Bolivia |
| Rioplatense | Paraguay, Uruguay, Argentina |
| Chilean | Chile |

^a Although Panama belongs to the geographical region of Central America, its dialect is classified within the Caribbean group.

“s” and “z”, as in *casa* (/kasa/) and *caza* (/kaθa/). Lack of distinction between “s” and “z” (*seseo* phenomenon) is typical of Southern and American Spanish.

At a more global level, including American territories, we may distinguish between 2 large areas: Peninsular Spanish, including the Central and Northern Spain areas (Northern dialects), and Atlantic Spanish, including the south of Spain, the Canary Islands, and the Americas.²⁸

The main Northern dialects are: Northern or Castilian Spanish, Aragonese Spanish, Riojan Spanish, Valencian Spanish (*churro*), and Leonese Spanish. The main Southern Spanish dialects include: Andalusian Spanish (Western and Eastern), Extremaduran Spanish, Murcian Spanish, Canarian Spanish, and dialects from Castile-La Mancha and Madrid. We should also mention the particular forms of Spanish language in areas in contact with other Peninsular languages.

With the exception of some problematic lexical characteristics and some expressions, all Spanish dialects in Spain are mutually intelligible. In neuropsychology, language assessments in clinical trials use “standard Spanish,” although they also frequently include features of local dialects.

In the Americas. American Spanish is very diverse, with multiple dialects and subdialects. We cannot establish a single specific characteristic that defines American Spanish, as some characteristics are also present in European Spanish, especially in the Southern variant. Rojas²⁸ provides a summary of the development of the Spanish language, from its Latin and Indo-European origins to its current situation in the Americas.

In extremely simplified terms, the main dialectal variants of American Spanish include: Mexican Spanish, Central American Spanish, Caribbean Spanish, Andean Spanish, Rioplatense Spanish, and Chilean Spanish (Table 1). Each dialectal variant presents numerous subdialects. Although a detailed discussion of American dialects is clearly beyond the scope of this review, it is important to underscore that, regardless of dialect classifications, each country has established its own standard.

Table 2 Non-exhaustive list of dialectal forms of saying “hitchhiking” in Spanish.

| Expression | Main areas where the expression is used |
|--|--|
| Pedir aventón | Mexico, Guatemala, Honduras, Nicaragua, Costa Rica, Panama, Colombia, Ecuador, Peru, Chile |
| Pedir ton | Mexico |
| Pedir (un) raité, ray, rai, raid | Mexico, Guatemala, El Salvador |
| Coger botella | Cuba |
| Pedir bola | Dominican Republic |
| Pedir bote | Panama |
| Pedir cola, pedir la cola, pedir la colita | Venezuela |
| Hacer linche | Colombia |
| Jalar dedo | Ecuador |
| Una jalada | Peru |
| (Viajar) al dedo | Bolivia |
| Hacer dedo | Paraguay, Chile, Argentina |

American Spanish presents multiple characteristic features²⁸: *seseo*; weak pronunciation of the final /s/ (aspiration or omission); weak pronunciation of /r/ and /l/ (especially at the end of the syllable and word, and rhotacism [r/ replaced by /l/] and lambdacism [l/ replaced by /r/], together with other features); weak pronunciation of intervocalic and final /d/, *yeísmo* (“ll” and “y” represent the same sound); aspirate /x/ (“Juan” becomes “huan”); differentiation between *ustedes* and *vosotros* (formal and informal second-person plural pronouns); *voseo* (use of “vos” as a second-person singular pronoun); and *leísmo* (use of the indirect object pronoun “le” instead of the direct object pronouns “lo” or “la”). In addition to differences in pronunciation, different vocabularies are observed in different regions.

These lexical differences may have different origins, distinguishing between American Spanish words originating from indigenous languages and words “created in the Americas.” As an example, it is interesting to analyse the different origin of the words *maní/cacahuete* (peanut) and *aguacate/palta* (avocado), together with the differentiated regional use (data from the online *Diccionario de Americanismos*, Table 3). Whereas *maní* originates from the Taino language (Antilles), *cacahuete* originates from Nahuatl (Mexico). *Maní* is used in Guatemala, Honduras, Nicaragua, Costa Rica, Panama, Cuba, the Dominican Republic, Puerto Rico, Colombia, Venezuela, Ecuador, Peru, Bolivia, Chile, Argentina, and Uruguay. The word *cacahuete* is used in Mexico, Honduras, and Nicaragua. The most frequent term in Spain is *cacahuete*. Whereas *aguacate* originates from Nahuatl, *palta* originates from Quechua. *Aguacate* is used in Mexico, Honduras, Nicaragua, Spain, Costa Rica, Panama, Cuba, the Dominican Republic, Puerto Rico, Venezuela, and Paraguay, whereas *palta* is used in Guatemala, Ecuador, Peru, Bolivia, Chile, Argentina, and Uruguay.

General American Spanish words, ie those used in the majority of American countries, are relatively few.²⁸ Some

Table 3 Main online resources on the Spanish language and its dialects (accessed 31/10/2019).

| |
|--|
| <p>Royal Spanish Academy (RAE). http://www.rae.es/ Multiple resources</p> <p>RAE dictionary (DRAE). http://dle.rae.es/ Specifies geographical uses of words</p> <p>Association of Academies of the Spanish Language. http://www.asale.org/ Access to the resources of all associated academies. Specific dictionaries can be found on local pages, such as for example, the “Brief dictionary of Colombian expressions”²⁹ or the “Brief dictionary of Mexican expressions.”³⁰</p> <p>Dictionary of American Spanish expressions. http://lema.rae.es/damer/ Claims to collect all American Spanish words. It contains 70 000 entries with a total of 120 000 definitions.</p> <p>Panhispanic dictionary of doubts (DPD). http://www.rae.es/recursos/diccionarios/dpd Reference book including more than 7000 entries addressing the most frequent questions regarding use of Spanish language</p> <p>Spanish language grammar. http://www.rae.es/obras-academicas/gramatica</p> <p>New Spanish language grammar. http://aplica.rae.es/grweb/cgi-bin/buscar.cgi The <i>New Spanish language grammar</i> (2009–2011), the first academic grammar book since 1931, is a consensus work by all language academies</p> <p>Dictionary of Spanish language frequencies. http://corpus.rae.es/lfrecuencias.html Current Spanish Reference Corpus (CREA) - List of frequencies</p> <p>Spelling of the Spanish language. http://www.rae.es/recursos/ortografia/ortografia-2010 A work by the RAE and the Association of Academies of the Spanish Language</p> |
|--|

examples include: *pararse*, meaning to stand (whereas in Spain it means to stop); *apurarse*, meaning to hurry up (whereas in Spain the word used is *apresurarse*); *aeromoza* (stewardess, in Spain *azafata*); and *alcancia*, referring to the alms box in churches (whereas in Spain, the words used are *hucha* or *cepillo*). The European Spanish compound term *tienda de campaña* (tent) has the equivalents *carpa* (from the Quechua *karpa*), *toldo*, and *enramada* in American Spanish. Similarly, for the European Spanish words *gafas* or *lentes* (spectacles), the term *anteojos* is predominantly used in American Spanish; for *plátano* (banana), *banana* or *cambur* (Venezuela); for *grifo* (faucet), *llave* or *canilla*; for *peine* (comb), *peinilla*; and for *maceta* (plant pot), *macetero* or *matera*.

In tests assessing ideomotor praxis by performing conventional gestures, it is essential to provide clear commands (instructions) regarding the gesture to be performed by the patient. Some commands require dialectal adaptation: for example, the gesture of hitchhiking (Table 2).

Table 3 presents the main online resources for the study of the Spanish language.

Dialectology of the Catalan language

The dialectology of Catalan language may be simplified into 2 large dialects (Western and Eastern).³¹ The Eastern dialect is divided into the Algherese dialect (from the Italian city of Alghero [L’Alguer]), Balearic Catalan (Mallorquí, Menorquí, Eivissenc, and Formenteran Catalan), the central dialect (*salat* dialect [from the Costa Brava]; the Barcelona variant; and the Tarragona variant), and Northern Catalan (*capcinès* [from the Capcir area], *rossellonès*, and Transitional Northern Catalan). The Western dialect is divided into Northwestern (*pallarès*, Ribagorçan Catalan, and *lleidatà*), Transitional Western Catalan, and Valencià (Castelló dialect, *apitxat* [Central Valencian dialect], Southern Valencian, and Alicante dialect). Table 4 illustrates the lexical differences

of the main Catalan dialects using items from the Boston Naming Test.

Although the details provided in the previous paragraph may seem excessive in the context of this review, they underscore the great variety and complexity of a certain linguistic domain, as is the case of Catalan language. The vowel system may be considered an example. In Catalan, this system varies according to tonicity. Regarding stressed vowels, Rossellonès considers 5 vowels ([a], [e], [i], [o], and [u]), whereas all but one of the remaining dialects consider 7: the previous 5 plus an open ‘e’ and open ‘o’ ([ɛ], [ɔ]); in turn, Balearic Catalan includes an eighth vowel in addition to the previous 7, schwa ([ə]). However, regarding unstressed vowels, Western dialects have a system of 5 vowels ([a], [e], [i], [o], and [u]), whereas Eastern dialects have a system of 3 ([i], [u], and [ə] —[a] in Algherese dialect).

From this complexity, we can conclude that it is difficult to develop protocols for neuropsychological examination in the Catalan language domain, although this complexity may be simplified to 4 dialectal regions: Central, Balearic, Northwestern, and Valencian Catalan. Table 5 includes the main online resources on the Catalan language.

Conclusions and working guidelines

We demonstrate above the relevance of cultural and dialectal variables in the evolution of language. Indeed, dialectal variants are rarely considered in treatises on language. However, cultural and dialectal issues go far beyond “strict” language tests. Acknowledging this demonstrates the error of applying such concepts as “universalism”.^{10,16}

Clearly, creating a test for each specific situation is not simple. Even when protocols are not available for each situation within a specific dialect, it is also true that test manuals should provide information on the differences between dialects. In other words, while customising protocols is implausible, manuals should provide information on this topic.

Language tests should not aim to study individuals’ ability to use the “standard language” (that of normative dictionaries and gram-

Table 4 Catalan dialectal variants exemplified by 6 words included in the Boston Naming Test. The words in English are: broom, acorn, mushroom, latch, comb, and muzzle.

| Eastern dialects | | | | Western dialects | | |
|------------------|-----------|-----------|-------------------|----------------------|----------------------|-------------------|
| Central Catalan | | | Balearic Catalan | Northeastern Catalan | Valencià | |
| Girona | Barcelona | Tarragona | Palma de Mallorca | Lleida | Castelló de la Plana | Valencia |
| Escombra | Escombra | Escombra | Granera | Escombra/Granera | Granera | Granera |
| Glà | Glà | Glà | Aglà | Aglà | Bellota | Bellota |
| Bolet | Bolet | Bolet | Esclatasangs | Bolet | Seta ^a | Seta ^a |
| Balda | Balda | Balda | Baula | Pestell | Pestell | Pestell |
| Pinta | Pinta | Pinta | Aclaridor | Pinte | Escarpidor | Escarpidor |
| Morrió | Morrió | Morrió | Morral | Boçal | Boç | Boç |

This classification of dialects is very simplified and is provided for illustrative purposes.

^a Spanish expressions in the Catalan language (according to the *Diccionari Català-Valencià-Balear* [Moll]).

Table 5 Main online resources on the Catalan language and its dialects (accessed 31/10/2019).

IEC (*Institut d'Estudis Catalans*). <https://www.iec.cat/>

Website of the Catalan Studies Institute

Llengua - Secció Filològica. <http://iec.cat/llengua/recursos.asp>

Language/philological section of the IEC

Diccionari de la Llengua Catalana-2. <http://dlc.iec.cat>

Dictionary of the Catalan language. Normative Dictionary

Diccionari descriptiu de la llengua catalana. <http://dcc.iec.cat/ddlci/scripts/index.html>

Descriptive dictionary of the Catalan language. Dictionary charactering lexical units from the perspective of their real use, without prescriptive restrictions

Diccionari Català-Valencià-Balear (DCVB) (Moll). <http://dcvb.iec.cat>

Catalan-Valencià-Balearic Catalan dictionary. A work specifying the different lexical uses in the territories of Catalonia, Valencia, and the Balearic Islands

Diccionari de sinònims (Jané). <http://sinonims.iec.cat>

Dictionary of synonyms (Jané)

Atlas Lingüístic del Domini Català (Veny i Pons). <http://aldc.espais.iec.cat>

Linguistic atlas of the Catalan linguistic domain. Lexical uses and isogloss lines of the Catalan linguistic domain

Flexió verbal en els dialectes catalans d'Antoni M. Alcover i Francesc de B. Moll. (Edited by M. Pilar Perea).

<http://ub.edu/lexdialgram/sintesi/>

Grammatical conjugation in Catalan dialects by Antoni M. Alcover and Francesc de B. Moll (including audio recordings)

Corpus Textual Informatitzat de la Llengua Catalana. <http://ctilc.iec.cat/>

Digital text corpus of the Catalan language. Psycholinguistic resources (digital text corpus). Reference corpus of modern Catalan language and lexicographical database (BDLex)

Dialectal stratigraphy. <http://www.ub.edu/lexdialgram/estratigrafia/html/pagina1.html>

Selection of words from the dialectal stratigraphy of Catalan language^{32–34}

Languages spoken in Catalonia. <http://www.gela.cat/doku.php?id=llengues>

Threatened Languages Study Group (GELA)

mar books); rather, they should target “real language.” Therefore, descriptive dictionaries are also very important. In fact, the appropriate tools for studying real language are *descriptive* grammar manuals, as opposed to *prescriptive* or *normative* manuals.³⁵

A descriptive dictionary reflects language as it is used, without assessing the possible correct or incorrect use of terms, as a normative dictionary does. In this sense, it should be stressed that there are no better or worse dialects, but that each territory has its own dialect. The same can be said about languages: there are no “good” or “bad” languages. Regarding this point, and citing Ferdinand de Saussure, Rojas²⁸ writes that: “Language is inherently variable, dynamic, and heterogeneous. Linguistic prejudices often conceal social, class-related, national, or racial prejudices; discussion of this topic cannot, therefore, neglect these elements” (p. 24).

In the future, it would be desirable to have a consolidated consortium for the transcultural and transdialectal adaptation of new tests. This would be a way to prevent professionals from making “online adaptations” of tests, informally translating tests at the time they are administered. As previously described, any adaptation must control for psycholinguistic, linguistic (dialects), and sociocultural variables.

Several publications have addressed standards for good translation and adaptation of neuropsychological instruments.^{36,37} Based on the generally accepted regulations,³⁸ we present the following procedures to which dialectal considerations are applicable:

- *Detailed analysis of the cultural content of the original test.* Verification of whether the stimuli correspond to the culture to which the test will be adapted and identification of the number

of elements that are very distant or non-existent. If the test is not adaptable, a new test should be developed.

- *Proposal of the essential cultural changes to be made.* An exemplary case in Spain is the replacement of *pretzel* with another stimulus from the same semantic category with a similar frequency of use. In any case, during the pilot normalisation, responses to the original and the replacement stimuli should be studied. The results should confirm and quantify the hypothesis that the change was essential.
- Whenever possible and relevant, a *first version in the "standard variant" of the dialect group* should be performed. From this first version in the "standard variant," the appropriate adaptations should be made for the remaining dialects. If applicable, this version may be created directly in the desired dialect.
- The *standard procedure for translations and adaptations* should be followed³⁸: 2 or 3 translations should be requested from 2 bilingual individuals with a high and comparable knowledge of both languages and, if possible, familiarity with the subject matter. Subsequently, the proposed cultural adaptations should be introduced and a consensus unification of the translations/adaptations should be conducted. A cognitive debriefing meeting should be held to discuss content, comprehensibility, and acceptability. If needed, back-translation may be requested to identify discrepancies between the original test and the translation. The test should be trialled in a sample group and any necessary corrections may subsequently be made to create the definitive test.
- Psycholinguistic adaptation should be performed in the required fields (words with the same length, frequency of use, etc).^{39,40} For this adaptation, and when required and available, dictionaries and data bases including these variables should be used (Tables 3 and 5).
- Stimuli that may affect test difficulty or comparability should not be replaced.

The previously described translation and transcultural adaptation procedures are generic. Clearly, translating and adapting a verbal repetition test is not the same as translating and adapting a geriatric assessment scale, or a depression assessment instrument. While psycholinguistic correspondence, lexical frequency, and cultural adaptation will be more important in some cases, in other cases the whole cultural context will be more relevant, with verbal aspects being less important. In any case, dialectal aspects will always be an essential consideration, especially when dialects are distant and, very specifically, in the evaluation of language.

Funding

This study has been partly funded by a grant from Fundació la Marató de TV3 (Ref. 2014-3010: *Adaptació catalana i normalització d'instruments neuropsicològics*. Lead researcher: Jordi Peña Casanova).

Conflicts of interest

The authors have no conflicts of interest to declare.

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