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Fluent Aphasia and Bilingualism: Impaired Comprehension and Expression in Languages

Afasia Fluente y Bilingüismo: Alteración de la comprensión y expresión en las Lenguas

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ABSTRACT

Introduction: The aim of this research was to establish a connection between linguistic comprehension and expression in fluent bilingual aphasic patients, in order to understand the alterations that occur in languages and how their use and management are affected. Methodology: A descriptive and systematic literature review was conducted, compiling studies published in the last 10 years in specialized databases (PubMed, SciELO, Cochrane Library, BEIC, Google Scholar). Articles in Spanish and English were selected, focusing on bilingual adults (aged 18-75) with fluent aphasia. Rigorous inclusion and exclusion criteria were applied to ensure the relevance and methodological quality of the studies analyzed. Results: The findings show that bilinguals with fluent aphasia have significant impairments in language comprehension and production, especially in the non-dominant language. It was observed that the severity and pattern of impairment vary according to the type of bilingualism, the age of language acquisition, and the executive control required to switch between languages. In addition, the usual diagnostic tools for monolinguals are insufficient for evaluating bilinguals. Discussion/Conclusion: It is concluded that fluent aphasia in bilingual patients requires a differentiated approach that considers sociolinguistic contexts and individual cognitive mechanisms. It is essential to adapt

evaluation and rehabilitation strategies to optimize the recovery and communicative wellness of this group.

RESUMEN

Palabras clave:
Bilingüismo, Afasia fluente, Cerebro, Afasia y Lenguaje interno.

El objetivo de esta investigación fue establecer alguna relación entre la comprensión y expresión lingüística en pacientes afásicos fluentes bilingües, para así comprender las alteraciones que se producen en las lenguas y cómo se ve afectado el uso y manejo de estas. Se realizó una revisión bibliográfica descriptiva y sistemática, recopilando estudios publicados en los últimos 10 años en bases de datos especializadas (PubMed, SciELO, Cochrane Library, BEIC, Google Académico). Se seleccionaron artículos en español e inglés, centrados en adultos bilingües (18-75 años) con afasia fluente. Se aplicaron criterios de inclusión y exclusión rigurosos para asegurar la relevancia y calidad metodológica de los trabajos analizados. Los hallazgos evidencian que los bilingües con afasia fluente presentan alteraciones significativas en la comprensión y producción del lenguaje, especialmente en la lengua no dominante. Se observó que la severidad y el patrón de afectación varían según el tipo de bilingüismo, la edad de adquisición de las lenguas y el control ejecutivo requerido para alternar entre ellas. Además, las herramientas diagnósticas habituales para monolingües resultan insuficientes para evaluar a bilingües. Se concluye que la afasia fluente en pacientes bilingües requiere un abordaje diferenciado que considere los contextos sociolingüísticos y los mecanismos cognitivos individuales. Es fundamental adaptar las estrategias de evaluación y rehabilitación para optimizar la recuperación y el bienestar comunicativo de este grupo.

Introduction

Imagine for a moment waking up one morning and not being able to find the words to say "good morning", neither in your native language nor in the one you painstakingly learned later in life. You try to speak, but what comes out of your mouth are disorganized sentences, words that don't mean what you meant to say, or worse, sounds that you can't recognize as your own. This is the daily reality for many people living with aphasia, and when it comes to bilingual people, the challenges multiply.

Aphasia is one of the most complex and challenging language disorders, both for those who experience it first-hand and for the professionals who accompany them in their recovery process. It is an alteration in the ability to understand or express language, caused by lesions in specific areas of the brain. This condition can affect the way a person speaks, writes or understands what he or she hears. Among the different forms in which it presents itself, fluent aphasia becomes particularly important when it occurs in bilingual individuals (Abreu et al., 2019). In these cases, the challenge is even greater, since not only one language is affected, but two linguistic systems coexist in an injured brain.

Today, being bilingual is commonplace in an increasingly connected and multicultural world. Many people grow up speaking two languages, while others learn them later in life for family, educational or work reasons. This ability requires the brain to constantly manage, select and switch between two languages, which requires a high level of coordination and cognitive control. When a brain injury, such as a stroke, occurs, these mechanisms are profoundly altered, and the way aphasia symptoms are expressed can vary greatly from person to person. Thus, researchers have paid increasing attention to how aphasia manifests itself in bilingual individuals, since unlike those who speak only one language, bilinguals may experience different impairment in each language, because some retain their mother tongue better, others the second, and in some cases, both are compromised to varying degrees. This variability is influenced by factors such as the age at which the languages were learned, how much they are used in everyday life, and the cultural context in which the person lives.

From a neurological point of view, fluent aphasia is usually due to damage in areas of the left hemisphere of the brain, such as Wernicke's area. These regions are essential for understanding the meaning of words and constructing coherent discourse (Le et al., 2025; Toledo Rodríguez & Tobar Fredez, 2021).. When they are affected, people can speak fluently, but their speech loses meaning, invented or misused words appear, and it is very difficult to find the correct terms, something that stands out in bilingual contexts (Córdova Gastiaburu, 2024) (Córdova Gastiaburu, 2024).

The numbers are also important, as the American Speech-Language-Hearing Association (ASHA) reports that between 100,000 and 180,000 people develop aphasia each year in the United States, and nearly half of those who have suffered a stroke have some degree of the disorder. In adults over 85 years of age, the prevalence exceeds 40%, representing a major challenge for evaluation and therapy, since the interaction between two possibly unequally affected languages must be considered (*Aphasia*n. d.).

Therefore, addressing fluent aphasia in bilingual individuals involves much more than just assessing their language abilities, but understanding how their brains work, how their languages interact, and how their personal and cultural history influences them. There are different types of fluent aphasia such as Wernicke's aphasia, sensory transcortical aphasia, conduction aphasia and anomic aphasia, each with unique

characteristics that guide diagnosis and intervention strategies. But beyond the clinical aspect, affected bilingual people tend to present profound changes in their daily lives, as they have difficulty finding the right word, mix languages unintentionally, or feel frustrated for not being able to communicate what they think, impacting their self-esteem, identity and the way in which the person relates to his or her environment. The impossibility of choosing which language to use in each situation or keeping the two languages separate can lead to frequent errors and a greater emotional burden during the recovery process.

For this reason, the present work seeks to understand in depth how fluent aphasia affects bilingual people, specifically to know how their comprehension and expression is altered, what brain mechanisms are involved, and what are the best strategies to evaluate and accompany their rehabilitation. Through a systematic review of the most recent literature, the aim is to build a solid foundation to guide both researchers and clinicians in addressing this complex reality.

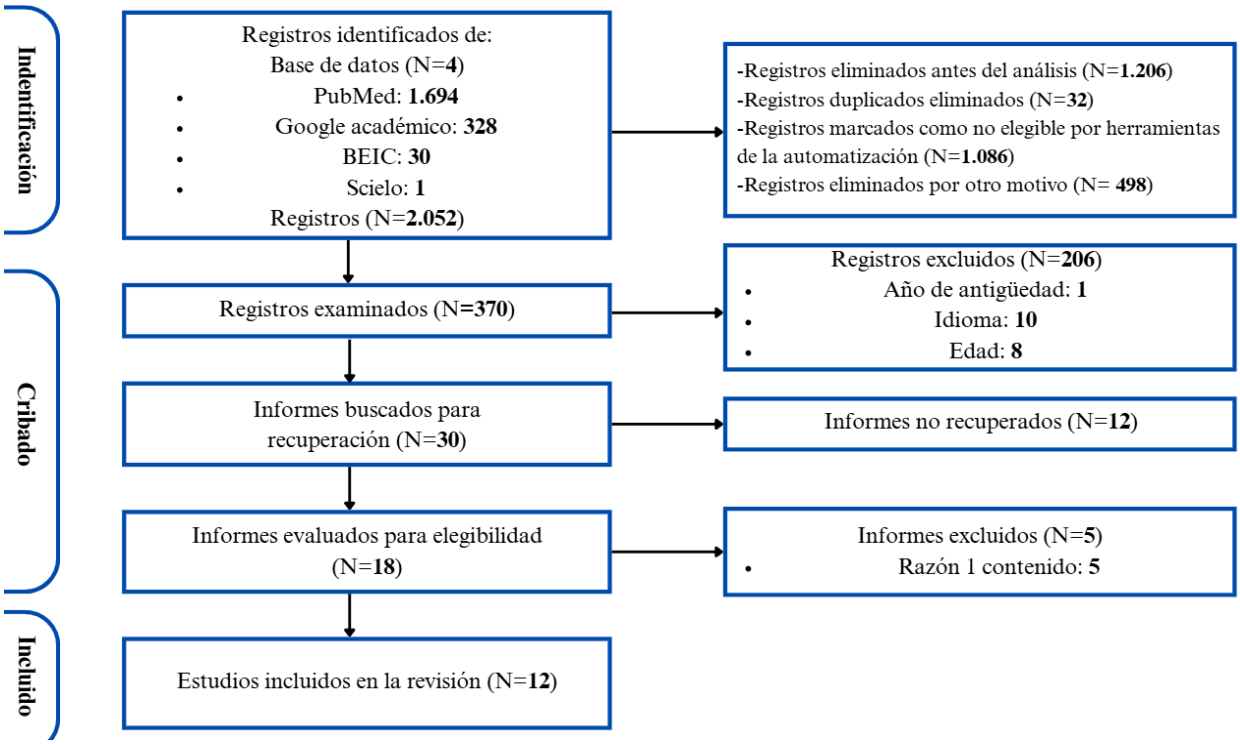
Method

This work corresponds to a descriptive bibliographic review, whose objective was to compile, analyze and synthesize the scientific evidence available on the topic addressed. To this end, a systematic search of scientific literature was carried out in various databases and specialized search engines, such as PubMed, SciELO, Cochrane Library, Electronic Library of Scientific Information (BEIC) and Google Scholar.

Document filtering was carried out using specific keywords related to the topic of study, such as "Bilingualism, Aphasia, Brain, Inner Language and Fluent Aphasia", which were combined using operators (AND, OR) to optimize the search and improve the results.

The inclusion criteria established for the choice of studies included: articles 10 years old to date, in Spanish or English, dealing directly and explicitly with the topic of interest, originating in scientific journals, and providing concrete evidence or systematic reviews relevant to the field of study. In addition, the age of the users in the selected studies was included as a criterion, considering exclusively adults between 18 years of age (young adult) and 75 years of age (older adult). Finally, articles without full access to the text, and documents that lacked methodological rigor or whose subject matter was not directly related to the research topic were discarded (Figure 1).

FIGURE 1
Systematic review PRISMA flowchart



Note: Own elaboration (2025)

Theoretical Framework

1. AFASIA

1.1 DEFINITION

Aphasia is a cognitive disorder characterized by a decrease or impairment in language comprehension and production, resulting from damage to the primary linguistic areas of the brain. This disorder can manifest itself in a receptive, expressive or combined manner, which will affect various dimensions of language such as listening comprehension, oral expression, reading and writing. Generally, it is due to the consequence of focal brain damage, such as occurs in cerebrovascular events, trauma or neurodegenerative diseases, significantly impacting the individual's ability to communicate clearly, accurately, and effectively (Abreu et al., 2019; *Aphasia - MeSH - NCBI*, n. d.).

In addition to the above, anomia is an initial symptom of aphasia and is one of the last symptoms to appear in patients recovering from aphasic brain damage. It is related to memory alterations, a drop in synaesthesia and is caused by the interruption of connections between neurons (Azcoaga, 2003).

1.2 CLASSIFICATION OF APHASIA

In 1720 Paul Broca and Karl Wernicke through a study distinguished some areas of the left hemisphere that play an important role in the expression and comprehension of language (Toledo Rodríguez & Tobar Fredez, 2021). Defining several categories, but being those of Luria and the Boston School Group the most important, since Luria perceives language as a functioning system, suggesting seven types of aphasia based on the level of altered language (Table 1) (Toledo Rodríguez & Tobar Fredez, 2021). While

the Boston School Group proposes two points of view: one focused on the location of the lesion (cortical or subcortical) and the other on language fluency (fluent, semifluent or non-fluent) (Table 2) (Toledo Rodríguez & Tobar Fredez, 2021). Currently, this last proposal is the one used to categorize the different types of aphasia.

TABLE 1
Classification of aphasias according to Luria

Type of aphasia	Language Level
Acoustic - Agnosica	Phonemic discrimination
Acoustic - Amnesica	Verbal memory
Amnesia	Semantic structure of words
Semantics	Understanding of logical-grammatical relationships and quasi-spatial structures
Motor Afferent	Discrimination
Efferent Motor	Speech kinesthetic melody disorder
Dynamics	Verbal initiative

Note: Book "Phonoaudiological management of the person with aphasia"

TABLE 2
Classification and typology of aphasia, according to the Boston School Group

Fluent aphasias (cortical)	Non-fluent aphasias (cortical)	Semifluent aphasia (subcortical)
- Wernicke's aphasia - Sensory transcortical aphasia - Conduction aphasia - Anomic aphasia	- Broca's aphasia - Transcortical motor aphasia - Mixed transcortical aphasia - Mixed non-fluent aphasia - Global aphasia	- Striato-capsular aphasia - Thalamic aphasia - Aphasia due to paraventricular white matter injury

Note: Book "Phonoaudiological management of the person with aphasia"

1.2.1 Fluent cortical aphasias

- *Wernicke's aphasia:* It usually originates from a lesion in the Wernicke's area (Toledo Rodríguez & Tobar Fredez, 2021). This condition severely affects comprehension and naming, and is manifested by paraphasias (literal, phonemic, neologisms or slang). Patients have difficulty finding and repeating words, resulting in speech with little meaningful content. In addition, users are often unaware of their errors, this as a consequence of damage to the brain areas responsible for semantic processing (Le et al., 2025; Toledo Rodríguez & Tobar Fredez, 2021).
- *Sensory transcortical aphasia:* The lesion occurs at the temporoparietal junction, without affecting Wernicke's area (Toledo Rodríguez & Tobar Fredez, 2021). It causes fluent speech with impaired verbal comprehension, but repetition will be relatively preserved. Patients present anomia, slang and various types of paraphasias (phonemic, neological and semantic). Although

they usually retain the phonological level, semantic processing is severely impaired, allowing the repetition of words but without understanding their meaning. In addition, it is common to use echolalia and circumlocutions to maintain an appearance of verbal fluency (Jiménez de la Peña et al., 2018; Le et al., 2025).

- *Conduction aphasia:* The lesion will be reflected in the supramarginal gyrus and in the underlying white matter affecting the arcuate fasciculus. It is characterized by a fluent language and good comprehension, however, its main feature is the alteration in repetition and the presence of phonemic paraphasias (errors in speech sounds) (Toledo Rodriguez & Tobar Fredez, 2021) in addition to presenting marked difficulties in repeating words or phrases, problems in naming, reading, writing and, in some cases, ideomotor apraxia (Jiménez de la Peña et al., 2018).
- *Anomic aphasia:* The lesion may be located in the angular gyrus (AB 39) or second and third temporal gyri (AB 21 and 20). It is distinguished by having a fluent and correct language, but those who manifest it emit ambiguous words and circumlocutions, increasing frustration because they express "having the word on the tip of their tongue" (Toledo Rodríguez & Tobar Fredez, 2021) (Toledo Rodríguez & Tobar Fredez, 2021).

1.3 ETIOLOGY AND NEUROPATHOLOGY

The main cause of the appearance of aphasia will be due to lesions in the brain structures that are fundamental for language, the main ones being Broca's area (AB 44 and 45), Wernicke's (AB 22 and 44) and the arcuate fasciculus. Among which, the most common is due to stroke, although it can also occur due to traumatic brain injury, brain tumors and neurodegenerative disorders such as Alzheimer's disease (Le et al., 2025).

Now, the type of aphasia that a person presents will depend on the location of the brain damage: if it occurs in the dorsal frontotemporal cortex, a non-fluent and forced aphasia is produced; if the damage is in the ventral temporal cortex, it results in a fluent aphasia with cognitive deficits. Lesions in the gray matter generate conduction aphasia, while alterations in the cerebral connections - due to infarcts in the hippocampus caused by hypoxemia, severe hypotension or ischemic stroke in the left middle zone - cause transcortical aphasia (Le et al., 2025).

2. BILINGUALISM

2.1 DEFINITION

It is the ability of a person to communicate fluently in two different languages, either simultaneously or alternately (Quispe et al., 2021). But, which people do we consider as "bilingual", we will consider as "bilingual" those who are fluent in two languages; however, this will depend on the experience of each individual in the acquisition and use of these languages, since some people acquire the second language from "birth", that is, according to the surrounding environment, and others through immersion programs or living in a foreign country (Signoret Dorcasberro, 2003a).

2.2 TYPES OF BILINGUALISM

The most frequent and widely used classification is the one that differentiates between coordinated and compound bilingualism (Rosselli, 2021).

2.2.1 Coordinated bilingualism

It is understood when a person develops two linguistic systems independent of each other. It will be characterized because this individual speaks these two languages as if he/she were monolingual, using different linguistic structures, where words and languages do not interfere or mix with each other {Updating}.

2.2.2 Compound bilingualism

It is when a person uses both languages simultaneously. The individual has a single meaning for two signifiers, i.e., he/she is unable to perceive the conceptual differences between both languages, so he/she would combine linguistic elements of both languages, simultaneously needing both languages to be able to communicate, given that when making this combination, the person would not know how to communicate in only one language (Rosselli & Ardila, s. f.; Signoret Dorcasberro, 2003a).

Of the composite bilingualism, we have two additional subcategories, which would be (Signoret Dorcasberro, 2003a):

- *Subordinate bilingualism:* It will be understood when a person learns a second language mediated by his or her first mother tongue. In this case, it is understood that the L1 ("mother tongue") functions as a bridge that facilitates the comprehension and production of the L2 ("acquired language") (Signoret Dorcasberro, 2003a).
- *Balanced bilingualism:* In this type of bilingualism, the individual who uses both languages has similar skills. However, it is difficult to identify, as people always tend to prefer one language over the other, so it would not be as common to observe or hear (Signoret Dorcasberro, 2003a).

To classify the types of bilingualism, it is also necessary to consider the moment when the acquisition takes place, differentiating between early bilingualism, which refers to when a person learns two languages at an early age, and late bilingualism, where the second language is incorporated after the age of 12 (Rosselli, 2021).

2.3 BILINGUALISM IN THE BRAIN

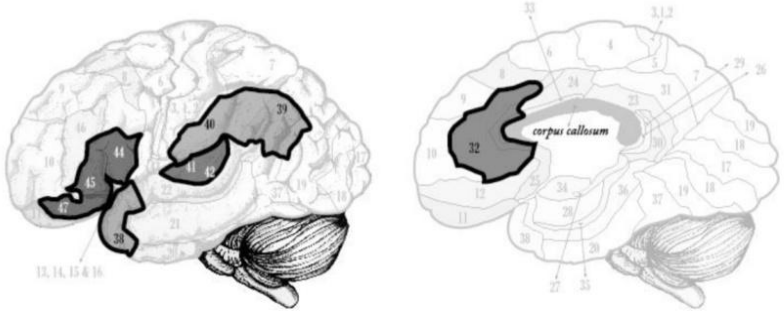
There are certain differences in brain structure and functioning between bilinguals and monolinguals. These changes are more noticeable in active bilinguals, i.e., those who use both languages persistently in their daily life (Rosselli, 2021). The constant use of two languages in a person allows him/her to develop a greater capacity for cognitive control, thus improving the management of selective attention, problem solving, planning, decision making and working memory (Rosselli, 2021).

These storage "changes" that occur in bilingualism at the brain level are basically structural and functional modifications. One of these changes, which is the most notable, is the increase in gray matter (GM) density in the left inferior parietal cortex in bilinguals compared to monolinguals, this increase in gray matter (GM) is also observed in the anterior cingulate gyrus, the left inferior frontal gyrus and the left anterior temporal lobe (Rosselli, 2021). Likewise, it was found that the increase in gray matter is related to the growth of second language proficiency, and it was also observed that changes in the white matter of the left parietal regions and the left Heschl's gyrus of the temporal lobe were related to the growth of second language proficiency (Rosselli, 2021) (Rosselli, 2021) (Rosselli, 2021). The areas involved in these modifications can be easily recognized in the brain, as detailed in (Figure 2).

FIGURE 2

Figura 1

Áreas Corticales Asociadas al Bilingüilismo



Nota. Las áreas de Brodmann (BA) que muestran un aumento de materia gris o grosor cortical en bilingües en comparación con monolingües. En ambos hemisferios, la circunvolución del cíngulo anterior (BA 32); En el hemisferio izquierdo, la circunvolución frontal inferior (BAs 44, 45 y 47), el lóbulo temporal anterior (BA 38), el lóbulo parietal inferior (BAs 39 y 40) y la circunvolución de Heschl (BAs 41 y 42) (Rosselli y Ardila, 2018).

Note: Bilingualism, cognition and brain plasticity.

Thus, the left inferior fronto-occipital fasciculus is larger in simultaneous bilinguals than in sequential bilinguals and monolinguals, with semantic data transfer being faster in simultaneous bilinguals (Rosselli, 2021) (Rosselli, 2021). The bundle that begins to appear from the anterior corpus callosum proceeds to the orbitofrontal lobe, and is smaller in simultaneous bilinguals than in monolinguals (Rosselli, 2021).

There is an increase in the subcortical structure found in the putamen and bilateral thalami, as well as in the left globus pallidus and the right caudate nucleus (Rosselli, 2021).

It was also recognized that the left inferior frontal gyrus in bilinguals is of greater magnitude. However, other authors have suggested that functional connectivity may change according to the type of bilingualism that the person presents (Rosselli, 2021).

3. APHASIA AND BILINGUALISM

As is well known aphasia is a language disorder caused by brain lesions that affect comprehension, expression and language processing (Abreu et al., 2019). The key brain areas involved are Broca's area, Wernicke's area and the arcuate fasciculus, which are affected differently depending on the type and severity of aphasia. In cases such as conduction aphasia, the gray matter, which is involved in information processing and cognitive functions, is also compromised (Le et al., 2025).

The mastery of two languages causes slight structural and functional modifications in the brain, such as an increase in the density of the gray matter and cortical dimension in bilingual people, in addition there will be changes in functional connectivity, particularly in the dominant hemisphere, which is generally the left one (Rosselli, 2021) (Rosselli, 2021).

From bilingual aphasia, observable characteristics of alteration of these languages in patients are exposed, which can be (Agurto, 2019):

- *Parallel:* This will result in the affectation in both languages.
- *Differential:* Unequal impact of languages.
- *Successive:* It happens that one language does not recover until the other has partially recovered.
- *Selective*: Restoration of one language over the other.

- *Antagonist*: One language progresses and the other declines.
- *Mixed*: A "fusion" of languages takes place.

These brain modifications linked to bilingualism, such as the improvement of cognitive control and the increase of density in some areas, could have an influence on comprehension and expression in bilingual patients with an aphasic condition (Agurto, 2019).

Thus, aphasia in bilingual patients has unique features due to the different representation of the two languages in the brain. Lesions can unevenly affect the two languages depending on their proficiency, the environment of acquisition or use (Agurto, 2019). It is generally assumed that languages that are more integrated into everyday life and those acquired at an early age tend to be less compromised (Quispe et al., 2021; Signoret Dorcasberro, 2003a).

Results

In relation to the results reviewed in the literature, it was determined that bilingual individuals with fluent aphasia usually present difficulties in understanding and expressing themselves. However, these difficulties do not have similarities among themselves; they depend on the type of fluent aphasia, the daily use and structure of the language and the related cognitive skills. As an example, those with Wernicke's aphasia often have problems maintaining coherence and repeating words or phrases, while patients with sensory transcortical aphasia can repeat words and utterances without problems, even if they have failures in the precise words. In the case of bilingual individuals, performance may change depending on which language predominates, their prior skills and their ability to control the language they use. There are also different patterns of impairment in how they process the meaning and sounds of words, which affects their comprehension. The way they produce speech varies according to the type of aphasia, and standardized tests do not always reflect how they usually communicate in real life, so it is much more useful to analyze their speech in natural, everyday situations. In addition, techniques such as noninvasive brain stimulation (such as TMS and tDCS) have been shown to be useful in reorganizing language in the brain, and some patients maintain some flexibility in understanding and language switching, depending on the type of aphasia and the therapy they receive (Table 3).

TABLE 3

Author(s)	Focus of the study	Type of aphasia / population	Methodology	Main findings
(Córdova Gastiaburu, 2024)	Discourse and pragmatic analysis	Fluent aphasia (Wernicke and transcortical) - Quechua-Spanish monolinguals and bilinguals	Boston test + spontaneous conversation	Wernicke: more monologic and with agrammatisms; transcortical: they repeat better but with lexical errors. Bilinguals richer in speech acts.

(Khachatryan et al., 2016)	Bilingual aphasia processing	Bilinguals with aphasia	Review of cases and patterns	Bilingual aphasia is unique, not the sum of two monolinguals. Language interaction and cognitive control.
(Calabria et al., 2019)	Semantic control and bilingualism	Bilinguals with aphasia (Catalan-Spanish)	Name, pairing, flanker task	More interference in non-dominant language; relationship between semantic and executive control.
(Robson et al., 2017)	Semantic and phonological processing	Wernicke's aphasia	ERP study (N400 and PMN)	Reduced N400 and PMN; impaired comprehension due to phonological and semantic deficits.
(Hazamy & Obermeyer, 2020)	Coherence and information in the speech	Fluent vs. non-fluent aphasia	Description of images	Fluent: more coherent and informative but with thematic errors; non-fluent: incomplete sentences.
(Pérez Naranjo et al., 2023)	Predictors of descriptive discourse	Fluent aphasia and control group	Image description + cognitive tasks	Naming and semantics predict speech; attention not meaningful.
(Hartwigse, 2015)	Brain stimulation and recovery	Screening in healthy brains (applicable to aphasia)	Review of TMS and tDCS	NIBS allows observation of brain reorganization; useful for post-stroke recovery models.
(Salmons & Muntané-Sánchez, 2023)	Bilingual patient evaluation	Bilingual Catalan/Spanish with fluent aphasia	CAT in both languages	Better performance in the dominant language (Spanish); the structure of the language has an influence.
(Grunden et al., 2020)	Voluntary language change	Bilinguals with aphasia vs. controls	Image naming in blocks	Partial preservation of reactive control; impaired proactive control. Facilitating cognate effect.
(Bose et al., 2022)	Verbal fluency and executive control	People with aphasia vs. control group	Phonemic and semantic fluency + Stroop, TMT	Deficits in fluency due to a combination of lexical and executive failures.
(Vigliecca, 2019)	Severity in fluent vs. non-fluent aphasia	Persons in the acute phase of aphasia	Brief Assessment of Aphasia (BAE)	Fluent aphasia is no less severe; it may have greater discursive disorganization.
(Reißner et al., 2024)	Semantic flexibility with quantifiers	Fluent vs. non-fluent aphasia	Computerized tasks with feedback	Only fluent speakers adapt their semantics with feedback. Non-fluent do not achieve fit.

Discussion and conclusions

According to the systematic review conducted, it has been found that bilingual patients with fluent aphasia need to be evaluated and treated from a broader perspective. Robson et al. (2017) indicate that people with Wernicke's aphasia show significant problems in areas such as repetition, meaning comprehension, and speech organization. In addition, Córdova Gastiaburu (2012) points out that bilingual speakers tend to have greater variability in the way they express themselves, including alternating between different languages or codes, which can be beneficial for some aspects of verbal communication.

On the other hand, Salmons and Muntané (2015), together with Calabria et al. (2020), highlight that language performance in bilinguals is influenced by factors such as mother tongue, how each language is structured and how much it is used in daily life. Studies with Catalan and Spanish speakers show differences in their comprehension and in errors related to meaning in both languages, evidencing that learning and using two languages generates variability in their structure and functioning.

Khachatryan et al. (2016) argue that bilingual aphasia should not be understood as the simple sum of two monolingual aphasias, but as a complex condition, with its own characteristics, which depend on variables such as the age at which the languages were learned, the structural differences between them and the control exercised over each one. In turn, research by Hazamy and Obermeyer (2013), Bose et al. (2020) and Pérez Naranjo et al. (2021) show that people with fluent aphasia tend to have more difficulties in tasks such as describing images or maintaining verbal fluency, which is related to problems in word access and language production. On the other hand, they tend to perform better than those with non-fluent aphasia.

Regarding control mechanisms, Grunden et al. (2023) found that there is a relationship between the ability to control executive functions and the ability to switch languages, although performance in the non-dominant language is usually lower. Calabria et al. (2020) also mention that meaning processing may vary depending on the cognitive load involved in the tasks. In contrast, Reißner et al. (2021) suggest that the flexibility to understand different meanings can be maintained in patients with fluent aphasia, especially if they receive clear feedback, which has important implications for clinical therapy. Finally, Vigliecca (2011) challenges the idea that fluent aphasia is necessarily less severe than non-fluent aphasia, showing that, in some cases, aphasia of the fluent type may involve greater difficulties in the number of words that can be understood and produced. This highlights the importance of more specific and in-depth evaluations and treatments, especially in bilingual patients.

Therefore, fluent aphasia in bilingual individuals represents a complex clinical condition that profoundly impacts both language comprehension and expression. This impact varies significantly among patients, given that not all users will share fixed characteristics, depending on factors such as the age of language acquisition, the degree of mastery of each language, its use in daily life and the specific type of aphasia (fluent, non-fluent or semi-fluent). Unlike what happens in monolinguals, in bilinguals the symptomatology is not uniform, since different patterns of impairment may occur between languages, affecting the dominant or non-dominant language to a greater or lesser extent, which makes standard assessment and treatment difficult. It is concluded that fluent aphasia in bilingual individuals should be approached from a comprehensive perspective, considering not only the linguistic aspects, but also the neurocognitive,

sociocultural and personal aspects of each patient. The clinical approach must go beyond the use of traditional tests, integrating specific assessment instruments for bilinguals that contemplate the analysis of spontaneous speech and the particularities of both languages.

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The completion of this thesis represented a deeply enriching academic experience, marked by a continuous process of exploration, research and overcoming challenges, which contributed significantly to our personal and professional growth.

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We would also like to extend a special thank you to those who have given us their unconditional support along the way. Our deepest gratitude goes to our mothers, fathers, sisters and grandparents for being there for us in the most challenging moments, for encouraging us when we needed it most and for celebrating with us every little step forward. We also thank our friends who, with their words of encouragement and collaboration, contributed directly or indirectly to the development of this research.

Finally, we would like to express our appreciation to all those who value and promote the importance of scientific research, allowing the visibility of complex realities such as that of bilingual patients with aphasia, especially in a current context marked by increasing globalization.

Conflict of interest

The authors declare that they do not have any conflict of interest, whether economic, academic or personal, that has influenced the development of this research.

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