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## Hybrid affixation and reduplication in Bilingual Aphasia: A case study of Sundanese-Indonesian speech deficits

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## ABSTRACT

This study explores the morphological deficits in a bilingual Sundanese-Indonesian patient diagnosed with mixed aphasia following typhoid meningitis. While previous research on aphasia has primarily focused on monolingual cases, this study addresses the complexities of bilingual language impairment, particularly in a language pair with typologically distinct morphological structures. The primary aim is to examine how aphasia affects the application of derivational and inflectional morphology, shedding light on cross-linguistic interference and compensatory strategies. This study employs a qualitative intrinsic case study approach analyzing speech samples elicited through spontaneous speech recording, observations, and indepth interviews. The findings reveal two major patterns of morphological deviation: (1) misapplication of Indonesian and Sundanese affixation rules, resulting in hybrid morphological structures, and (2) systematic overgeneralization of reduplication patterns, leading to the emergence of novel linguistic formations. These errors highlight the impact of bilingual language competition on morphological processing in aphasia. The study concludes that bilingual aphasia induces a restructuring of morphological systems rather than mere attrition, with patients actively reconstructing linguistic forms through rule-based blending. These findings have significant implications for clinical linguistics and speech therapy, emphasizing the need for rehabilitation approaches tailored to bilingual aphasia.

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## **INTRODUCTION**

Language is a fundamental cognitive function that enables humans to articulate thoughts and engage in social communication. The production of language, however, relies on complex neural mechanisms that integrate phonological, morphosyntactic, semantic, and pragmatic processes (Cummings, 2008). Neurological impairments, such as aphasia, disrupt these processes, leading to deficits in speech production and comprehension. Aphasia is typically classified based on lesion location and the nature of language impairment, with Broca's aphasia and mixed transcortical aphasia being among the most severe due to their impact on both expressive and receptive language abilities (Kirshner & Wilson, 2021).

Mixed aphasia, specifically mixed transcortical aphasia (MTA), is a rare language disorder that spans features of both fluent and nonfluent aphasia, typically presenting with deficits in speech comprehension (Saadatpour et al., 2018), reduced output, challenges in morphological and syntactic processing (Rosca & Simu, 2015), and yet, they preserve the language abilities to repeat language forms (Tariq et al., 2017). Linguistic profiling of mixed aphasia aims to characterize impairments in word morphology, sentence structure, and their interactive mechanisms, offering critical insights into the nature of language breakdown and potential recovery pathways. Morphological impairments refer to deficits in forming word parts like inflections and derivations, whereas syntactic impairments affect grammatical dependencies and sentence organization. Understanding the interaction and independence of these deficits is particularly relevant in mixed aphasia, where cascading impairments across linguistic levels are common. Comparative analyses with other aphasia forms (e.g., Broca's & Wernicke's) also help distinguish the unique linguistic profile of mixed aphasia.

Prior research has partially addressed these questions across several lines of investigation. Studies examining both morphology and syntax in emphasize their interdependence, aphasia demonstrating that deficits in one domain frequently modulate the other. For instance, Thompson and colleagues (2013) compared syntactic and morphosyntactic deficits across types of strokeinduced and primary progressive aphasia, finding more severe impairments in noncanonical (complex) sentence structures and tense marking, highlighting resource-sharing between syntax and morphology. Similar integrated approaches have been adopted in case studies, such as those by Dickey and Thompson (2007), who investigated recovery patterns in patients with compromised syntax and morphology. Findings suggest partially independent recovery trajectories, with morphological production not fully restored by therapies targeting syntactic structures like Wh-movement, underscoring the nuanced interaction between these domains.

Previous studies on agrammatic aphasia indicate that individuals exhibit errors in verb inflection, noun phrase agreement, and tense marking due to impaired morphosyntactic encoding (Dickey et al., 2008). In addition, morphological impairments in aphasia have been studied in both production and comprehension contexts, with a focus on inflectional errors and their contributions to broader syntactic deficits (Auclair-Ouellet et al., 2019; de Blesser et al., 2005). Notably, Szupica-Pyrzanowska et al. (2017) demonstrated that morpho-syntactic complexity, rather than phonological challenges, is the predominant factor behind affixation errors in agrammatic aphasia. These deficits become more pronounced in languages with richer morphological systems, as shown in cross-linguistic work on Slovak-speaking patients (Marková & Cséfalvay, 2010). This suggests that language typology significantly influences both morphological and syntactic breakdowns.

Comparative approaches across aphasia subtypes provide additional insights into the mixed aphasia profile. For example, Thompson et al. (2013) reported overlap between mixed and other aphasia types, such as Broca's (difficulty with syntax and morphology) and Wernicke's (deficits in grammatical comprehension). However, mixed aphasia presents unique challenges in integrating fluency and grammatical accuracy, combining traits from both fluent and nonfluent aphasia while exhibiting distinct dual impairments. Studies like those by Manouilidou et al. (2021) further emphasize the role of shared cognitive frameworks in morphological and syntactic processing, indicating that deficits in mixed aphasia reflect both lexical and grammatical vulnerabilities.

Despite this progress, gaps remain in understanding real-time interactions between morphology and syntax, particularly in mixed aphasia, where temporal delays may reveal compensatory mechanisms (Baum. 1996). Furthermore, many findings are generalizations based on studies of isolated forms of aphasia (e.g., nonfluent or fluent), leaving mixed aphasia cases in the multilingual context of Indonesia underexplored. This study employs a qualitative case study methodology to analyze the speech production of a bilingual Sundanese-Indonesian speaker with postencephalitic aphasia. Data were collected through spontaneous speech samples, elicitation tasks, and structured interviews. The analysis follows Booij's (2018) word-and-paradigm model to identify patterns of morphological deficits, particularly in the domain of reduplication.

## Mixed Aphasia

Mixed aphasia, characterized by combined deficits in both fluent and nonfluent language features, represents a linguistically complex subtype of aphasia. It commonly manifests with impairments in morphological processing (e.g., verb inflection, derivation) and syntactic structures (e.g., sentence formation, hierarchical dependencies), both of which interact dynamically within the language system. These deficits often transcend domainspecific boundaries, with syntactic challenges influencing morphological operations and vice versa (Dickey & Thompson, 2007; Thompson et al., 2013). Linguistic profiling of mixed aphasia aims to disentangle these impairments at both the independent and interactive levels, offering insight into their underlying cognitive mechanisms. Additionally, cross-linguistic and comparative investigations with other aphasia subtypes (e.g., Broca's, Wernicke's) contextualize the hybrid deficits observed in mixed aphasia against broader taxonomies of language breakdown.

Many studies have highlighted how bilingual aphasics exhibit distinct morphosyntactic deficits across their languages, with these impairments often driven by typological distinctions. For example, in Spanish-Basque bilinguals, selective deficits in object questions and subject relatives in Basque reveal the non-transferability of morphosyntactic cues across typologically distant languages (Thompson et al., 2013). Similar dissociations have been reported for typologically distinct language pairs like Cantonese-English (Yiu & Worrall, 1996) and Turkish-German (Arslan & Felser, 2018), with impaired structures varying according to languagespecific syntactic and morphological rules. Morphologically rich languages (e.g., Basque, Turkish) have been shown to elicit greater difficulty in processing features such as agreement dependencies and hierarchical clause structures compared to morphologically simpler ones (Arantzeta et al., 2017; Maviş et al., 2020; Thompson et al., 2013).

Syntactic processing, particularly for noncanonical structures (e.g., passive constructions, object-relative clauses), is disproportionately affected in bilingual aphasics across languages. Evidence from Basque-Spanish bilinguals using eye-tracking and behavioral methods reveals processing deficits for non-canonical word orders, with impairments exacerbated in the less dominant or typologically more complex language (Arantzeta et al., 2017; Dickey & Thompson, 2007; Manouilidou et al., 2021). Similarly, bilinguals with Turkish-German aphasia show selective comprehension impairments in wh-questions, which appear modulated by language-specific strategies like wh-in-situ structures versus wh-fronting (Arslan & Felser, 2018). These findings highlight how typological contrasts can shape error profiles and impairments in bilingual aphasia.

Comparative analyses of mixed aphasia with other aphasia types, such as Broca's or Wernicke's aphasia, underscore both shared and distinctive features. While mixed aphasia in bilinguals often mirrors agrammatic profiles seen in non-fluent aphasia (e.g., omission of bound morphology), it is distinguished by its asymmetrical impairments and recovery patterns across the two languages (Thompson et al., 2013; Yiu & Worrall, 1996). For instance, verbs and non-canonical syntactic structures are consistently more impaired in weaker or less dominant languages, reflecting the interplay between linguistic dominance, typology, and morphosyntactic processing demands (Kendall et al., 2015; Miozzo et al., 2010).

Recovery patterns in bilingual aphasia further support the hypothesized division between language-specific and shared neural substrates for language. Studies demonstrate asymmetrical recovery across morphosyntactic components, with dominant languages often recovering faster and typologically distant features showing minimal cross-linguistic transfer (Fabbro et al., 2000; Gitterman et al., 2012; Khachatryan et al., 2016). However, shared morphosyntactic substrates have also been implicated in cases where parallel recovery occurs across languages, pointing to partially overlapping networks for grammatical structures (Li & Kiran, 2024; Miozzo et al., 2010).

Methodologically, research in this area has evolved from traditional behavioral assessments to more advanced techniques such as error analysis, eye-tracking, and mixed-effects modeling, allowing for deeper insights into real-time sentence comprehension and morphosyntactic impairments (Arantzeta et al., 2017; Dickey & Thompson, 2007; Manouilidou et al., 2021; Maviş et al., 2020). Scoping reviews have further synthesized findings across multiple studies, offering broader frameworks for analyzing the interaction of linguistic and cognitive deficits in bilingual aphasia (Khachatryan et al., 2016; Norhan et al., 2023).

This body of research collectively advances our understanding of morphosyntactic deficits in bilingual aphasia and highlights the influence of typology, neural reorganization, and cross-language dynamics. These findings underscore the need for further comparative studies that refine linguistic profiling methods and investigate morphologysyntax interactions in bilingual populations.

# Affixation and Reduplication in Indonesian and Sundanese

Indonesian (IND) and Sundanese (SUN) belong to the Western Malayo-Polynesian branch of the Austronesian language family (Eberhard et al., 2024), and share many typological features, including agglutinative morphology, relatively simple phoneme inventories, and extensive use of reduplication. However, the affixation systems of both languages display notable similarities and differences, particularly in the use of prefixes to mark voice and aspect.

One of the most significant similarities between Indonesian and Sundanese is the use of the nasal prefix {meN-} in Indonesian and its nasal equivalent {N-} in Sundanese, both of which function as active markers. In Indonesian, {meN-} attaches to verb roots to indicate an active voice, often triggering nasal assimilation depending on the initial phoneme of the root (Sneddon et al., 2012). Similarly, Sundanese employs {N-} as an active prefix, with a similar degree of phonological assimilation seen in Indonesian (See Kurniawan, 2013). For example:

- (1) Indonesian: meN- + tulis  $\rightarrow$  menulis (to write)
- (2) Sundanese: N- + tulis  $\rightarrow$  nulis (to write)

In contrast, passive voice marking differs between the two languages. Indonesian utilizes the prefix {di-} to mark passive constructions, such as ditulis (written). Sundanese also employs {di-} for passivization, but it frequently co-occurs with suffixes like {-keun} to emphasize the affected object or patient of the action (Kuswari & Hernawan, 2022). For example:

(3) Indonesian: di- + baca + -kan  $\rightarrow$  *dibacakan* (to be read)

## (4) Sundanese: di- + baca + -keun $\rightarrow$ *dibacakeun* (to be read)

Additionally, Indonesian affixation is characterized by a more productive derivational morphology compared to Sundanese. Affixes such as {ber-} (to indicate a state or habitual action, typically co-occurs with intransitive verbs) and {ter-} (to indicate accidental or unintentional action) have no direct equivalents in Sundanese. Instead, Sundanese often relies on periphrastic constructions or reduplication to achieve similar meanings (Kurniawan, 2013).

Reduplication is a central morphological process in both languages, serving functions such as plurality, intensification, and nominalization. The most common type in both Indonesian and Sundanese is full nominal reduplication for expressing plurality, as seen in the following examples:

(5)	Standard Indonesian	(Senddon et al., 2012)
	rumah	b. <i>rumah-rumah</i>
	house	RED-house
	'house/houses'	'(types of)
	houses'	

(6) Standard Sundanese (Müller-Gotama, 2001)
 carita
 b. carita-carita
 story
 rstory'
 RED-carita
 rstories'

Beyond nominal plurality, reduplication in Indonesian also applies to adjectives, where it functions adverbially:

 (7) Standard Indonesian (Sneddon et al., 2012) Anak itu berteriak keras-keras child that BER.scream RED-hard 'The child screamed loudly.'

While both languages employ full reduplication, only Sundanese exhibits productive partial reduplication, as seen below.

(8) a. lumpat (run)  $\rightarrow lu-lumpat-an$  (run around)

b. *imah* (house)  $\rightarrow$  *i-imah-an* (doll house)

These facts demonstrate that being typologically the same, Indonesian and Sundanese exhibit noticeable similarities and differences in morphology.

## METHOD

## **Research Design**

This study employs a qualitative case study approach to examine the morphological production of a Sundanese-Indonesian bilingual patient with mixed aphasia following typhoid meningitis. A case study method was chosen to capture the unique linguistic patterns and compensatory strategies exhibited by the patient in speech production (following Croot et al., 2019; De Leon et al., 2019; Tariq et al., 2017). The research focuses on the morphological impairments and the emergence of nonce and paraphasic forms as a result of grammatical interference.

Data were collected through voice recordings, interviews, and direct observations, ensuring a comprehensive analysis of the patient's speech. The linguistic data were analyzed using Booij's (2018) word-and-paradigm model, which examines the construction of derivational and inflectional morphology in relation to linguistic competence.

#### **Research Respondent**

The participant in this study is a male who was born in Garut (West Java, Indonesia), 8 July 1997. He acquired mixed aphasia at the age of 14 following a typhoid meningitis infection. Medically, he suffered damage in several brain regions, namely infarction in the right temporal lobe and infarction in the cortical and subcortical regions of the left temporal, parietal, and occipital lobes, accompanied by signs of encephalomalacia and mucocele of the left maxillary sinus. He is a bilingual speaker of Sundanese and Indonesian, with Sundanese being his dominant language in daily communication. At the onset of his condition, he exhibited severe expressive deficits, initially producing only a single word ("mother") to convey all intended meanings. Over time, his language abilities improved, although his speech remains characterized by grammatical errors, inflectional distortions, and nonce formations.

The participant's aphasia was classified as mixed aphasia, as he experiences deficits in both speech production and comprehension. While he can produce grammatically structured utterances, they often contain morphological anomalies and creative recombination of affixes from Indonesian and Sundanese. His aphasia is classified as fluent aphasia, characterized by relatively effortless speech production with significant deficits in grammatical structure and word selection.

#### **Data Collection Procedures**

To capture the participant's speech production patterns, data were collected using multiple elicitation techniques, including voice recordings, structured and unstructured interviews, and direct observation. Data collection took place from 18 September 2021 to 10 Maret 2023. The primary data source was naturalistic speech samples, gathered through spontaneous conversations with the participant.

Interviews were conducted over several sessions in various settings, including the participant's home, the researcher's residence, and the participant's grandmother's house. A recorder

was used to capture naturalistic speech. Moreover, the participant's mother was interviewed to provide insights into the participant's typical speech patterns and to clarify unintelligible utterances.

Another key data collection instrument was a researcher's diary, in which the participant's spontaneous speech was documented. Since the participant exhibited a high degree of verbal spontaneity, recording conversations in a structured manner was sometimes challenging. As an alternative, the first author engaged in participant observation, allowing for the collection of additional language data in natural interactions. To supplement these methods, the participant's mother also assisted in recording speech samples during daily interactions.

#### Data Analysis

The collected data were analyzed using a qualitative descriptive approach, focusing on inflectional morphology and grammatical interference in the participant's speech. Analysis followed Booij's (2018) word-and-paradigm model, which provides a framework for understanding morphological constructions in language processing. The participant's speech errors were classified into three primary categories: (1) derivational and inflectional morphology errors in verbs, nouns, and adjectives, (2) nonce and paraphasic formations created as compensatory linguistic strategies, and (3) grammatical interference involving the blending of Sundanese and Indonesian morphemes.

Following Miles et al., (2014)'s approach to qualitative data analysis, the study involved three key analytical stages: data reduction, data display, and conclusion drawing. First, the recorded speech samples were transcribed, and irrelevant or ambiguous utterances were excluded. Next, transcribed data were categorized based on morphological patterns and analyzed in relation to standard Indonesian and Sundanese grammatical rules. Finally, findings were synthesized to identify the underlying linguistic mechanisms contributing to the participant's speech errors.

To ensure data validity and reliability, triangulation techniques were employed. Speech data were cross-verified with multiple sources, including recordings from different contexts, transcripts from multiple interviews, and insights provided by the participant's mother. Additionally, repeated elicitation sessions helped confirm patterns of morphological errors, ensuring that the observed speech phenomena were consistent across different time points.

#### **Ethical Consideration**

Informed consent was secured from both the participant and his family. Given the participant's neurological condition, special care was taken to ensure his comfort and willingness to participate. The research adhered to ethical guidelines for working with individuals with language disorders, ensuring that data collection did not cause distress or discomfort.

### FINDINGS

This section delineates the morphological deviations observed in the speech of a bilingual Indonesian-Sundanese patient with mixed aphasia secondary to typhoid meningitis. The analysis reveals systematic errors across derivational/inflectional morphology, nonce formations, and grammatical interference, reflecting compromised morphological rule application and lexical retrieval. These patterns are contextualized within frameworks of bilingual aphasia and clinical linguistics, underscoring the interplay between language-specific structures and cognitive-linguistic deficits.

## **Morphological Production**

The participant demonstrated marked difficulties in adhering to the morphological conventions of Indonesian or Sundanese, frequently producing hybrid forms that conflated affixation rules across both languages. These errors spanned verb, noun, adjective, and numeral inflections, characterized by overgeneralization, misapplication of affixes, and cross-linguistic interference.

#### Production of Affixed Verbal Forms

Verbal forms exhibited systematic mispairing of Sundanese roots with Indonesian affixes, violating target language norms, as is exemplified in Table 1.

Table 1
Verbal production

<b>Base Form (Sundanese)</b>	Indonesian Affix	<b>Target Form</b>	Participant's Output	
<i>cokot</i> (take)	meN-	nyokot	menyokot	
hurung (burn)	meN-	nga-hurung	meng-hurung	
<i>baledog</i> (throw)	di-in	di-baledog-an	di-baledog-in	

In verbal inflection, the participant frequently misapplied the Indonesian affix {MeN-} and the confix {di-in}, often integrating them with Sundanese root words. For instance, the participant produced *menyokot* (MeN- + cokot [Sundanese: 'take']), which is a nonce formation that does not exist in either Indonesian or Sundanese. Similarly, the participant used *dibledogin* (di- + bledog + -in), where the Sundanese root bledog ('throw') was incorrectly inflected with a slang suffix {-in}. These errors suggest impaired access to language-specific affixation schemas, a hallmark of agrammatism in bilingual aphasia (Avrutin, 2001).

#### Production of Affixed Nominal Forms Table 2 Nominal Production

Errors in nominal formation followed a similar pattern, where the participant misapplied the Sundanese suffix  $\{-na\}$  to Indonesian root words. The *na*-affixed Sundanese forms or the *nya*-affixed Indonesian equivalents commonly indicate definite or possessive meanings, depending on the situational context.

Nominal I Todaction			
Base Form (Indonesian)	Indonesian Affix	Target Form	Participant's Output
katak (frog)	-nya	katak-nya	katak-na
pagi (morning)	-nya	pagi-nya	pagi-na
uang (money)	-nya	uang-nya	uang-na

Table 2 shows that the participant produced *katakna* (katak + -na ['the frog']) instead of the standard Indonesian form *katak-nya* or the Sundanese equivalent *bangkong-na*. Likewise, the participant produced *uang-na* (uang + -na ['the money']) instead of the correct Indonesian *uang-nya* or Sundanese *duit-na*. This cross-linguistic overregularization indicates a deficit in selecting context-appropriate affixes, likely exacerbated by

competition between the participant's bilingual grammatical systems (Green, 1986).

#### Production of affixed adjectival forms

In adjective formation, the participant misused the Sundanese partial reduplication rule, where a part, typically a syllable, of a base is repeated, applying it to Sundanese or Indonesian base words.

full reduplication (where a base is repeated in its

entirety, e.g., buku-buku 'books'), partial

reduplication (where a part of the base is repeated, e.g., beja 'news'  $\rightarrow$  be-beja 'to tell news'),

intervocalic reduplication (where a different set of

vowels are used in repeated bases, e.g., *bulak-balik* 

'to come and go') and affixed reduplication (where

certain affixes are used with repeated bases, e.g.,

*lumpat* 'run'  $\rightarrow$  *lu-lumpat-an* 'to run around'.

#### Table 3

Adjectival Production

Base Form	Partial reduplication+an	<b>Target Form</b>	Participant's Output
sudah (Indonesian-already)	Part RED-an	sudah	su-sudah-eun (completed)
betul (Indonesian-correct)	Part RED-an	betul	be-betul-an (correct)
harese (Sundanese-difficult)	Part RED-an	harese	harerese-an (difficult)
Lami (Sundanese-long)	Part RED-an	lami	la-lami-an (long)

As seen in Table 3, the participant illicitly applies affixed partial reduplication to Indonesian or Sundanese base forms. Again, this phenomenon suggests the participant's difficulties in retrieving the licit lexical forms.

#### Reduplication

Reduplication is one of the most productive morphological processes in Sundanese and Indonesian languages. It comes with various types:

Table 3

**Reduplicated Forms** 

Base Form	Affix	<b>Target Form</b>	Participant's Output
tenang (Indonesian/Sundanese-calm)	-	tenang	<i>te-tenang-an</i> (to be calm)
tarung (Indonesian-fight)	ber- (Indonesian)		Be-ber-tarung-an (to fight)
indit (Sundanese-leave)	-an	indit	ke-indit-an ke-indit-an (to leave)
beas (Sundanese-rice)	-an	beas	be-beas-an-na be-beas-an-na (rice)

As you can see in Table 3, the participant demonstrates a relatively full mastery of different types of reduplication (full, partial, and affixed), but he appears to overapply the reduplication rules in the language to generate anomalous forms.

Of particular interest is the active production of licit reduplicated forms for illicit meanings. As **Table 4** 

Table 4 shows, the participant produces affixed partial reduplication with a rich varitety of bases. However, his outputs denote meanings that are different from what he intends to convey. The template partial reduplication with the suffix -an generates new words whose meaning is unoriginal or inauthentic.

<b>Base Form</b>	Language	<b>Target Form</b>	Participant's Output
rumput (grass)	Indonesian	rumput	ru-rumput-an (fake grass)
jaket (jacket)	Indonesian	jaket	<i>ja-jaket-an</i> (jacket replica)
ngantuk (feel sleepy)	Indonesian	ngantuk	nga-ngantuk-an (pretend to be sleepy)
acuk (cloth)	Sundanese	acuk	a-acuk-an (cloth replica)
solat (pray)	Sundanese	solat	so-solat-an (pretend to pray)
jempe (quiet)	Sundanese	jempe	<i>je-jempe-an</i> (pretend to be quiet)

Nonceforms

structured words.

#### Affixed Partial Reduplication

The participant can invoke the correct affixed partial reduplication rule in Sundanese and apply it to Indonesian and Sundanese bases to generate unnecessary reduplication. The resulting meanings of the reduplicated forms are not the same as what he intended to say. This phenomenon mirrors findings in Broca's aphasia, where reduplication rules are extended beyond licit contexts due to impaired morphosyntactic monitoring.

#### Table 5

Nonce Production

Base Form (Sundanese)	Indonesian Affix	Target Form	Participant's Output
hilap (forget)	ke-an	ka-hilap-keun	ke-hilap-an (to be forgotten)
<i>baledog</i> (throw)	di-in	di-baledog-an	di-baledog-in (to be thrown at)

The participant produced *ke-hilap-an* instead of the expected Sundanese form *kahilapkeun* or the Indonesian form *kelupaan*. Another form of nonce is illustrated in Table 6, where the participant applies a confix *ke-an*, whose function is to generate nouns, to noun bases. A similar case occurs to verbal bases such as *indit* (leave) and *ibak* (shower), where both undergo affixation. This can constitute overgeneralization or overregularization of morphological rules.

A key finding of this study is the emergence of

nonce forms in the participant's speech. These novel

linguistic constructions appear to be the result of

cognitive adaptation, where the participant attempts to fill lexical gaps by generating morphologically

#### Table 6

**Overregularization Nonceforms** 

U				
<b>Base Form (Sundanese)</b>	Indonesian Affix	Target Form	Participant's Output	
beas (rice)	-	beas	ke-beas-an (rice)	
cai (water)	-	cai	ke-cai-an (water)	
indit (leave)	-	indit	ke-indit-an (to leave)	
<i>ibak</i> (shower)	-	ibak	ke-ibak-an (to shower)	

This overregularization of the confix *ke-an* to nominal and verbal bases reflects a breakdown in distinguishing derivational and inflectional morphology.

#### Paraphasic forms

Aside from nonce production, the participant uses a word to denote a meaning beyond its literal sense.

The phenomena above are analyzed as semantic paraphasia, where a word is used to refer to or substitute another word whose meanings are relatively related. In Table 7, *bertarung*, literally meaning 'to fight', is used to replace or to mean 'to leave or to depart'.

#### Table 7

Paraphasic Production of a Prefixed Form

-	an apriable 1 realienten ef a 1 r	ejiitea i eriit		
	<b>Base Form (Indonesian)</b>	Indonesian Affix	Target Form	Participant's Output
	tarung (fight)	ber-	ber-tarung	<i>ber-tarung</i> (to fight)
			Ber-tarung ka Sa	marang.
Utterance context		To fight to Sa	marang	
	Literal: '(I) fought in Samarang.'			
	Intended: '(I) am going to Samarang.'			
	Situational context	The participant witness	sed a heated argument betw	ween his father and mother in the house
Situational context		making him want to leave the house and go to Samarang.		

The same is true of a confixed verbal form, kediukan, a combination of the Indonesian confix ke-an and the Sundanese base diuk (sit), literally meaning 'somebody accidentally sat on something'. This form is used to indicate existence, as seen in Table 8.

Aside from verbal forms, a cardinal numeral is also employed to convey amount. The word kesatu

#### Table 8

Paraphasic Production of	a Confixed Form
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(first) is used to indicate 'a single/one', as seen in Table 9.

The final example, which is of special interest, is a reduplicated nominal form. In this context, bebensinan-bebensinan literally means 'fake gasoline', but it is used here to indicate 'gas station', as is clear from Table 10.

Paraphasic Production of a Confixed Form						
Base Form (Sundanese)	Indonesian Affix	<b>Target Form</b>	Participant's Output			
diuk (sit)	ke-an	ka-diuk-an	<i>ke-diuk-an</i> (to be sat at)			
Utterance context	Bala-balapupuluhan ke-diuk-an di mangkok.vegetable fritters tensto be sat at in bowlLiteral: 'Tens of vegetable fritters are sitting in the bowl.'Intended: 'There are dozens of vegetable fritters in the bowl.'					

### Table 9

Paraphasic Production of a Ni	ımeral				
<b>Base Form (Indonesian)</b>	Indonesian Affix	Target Form	Participant's Output		
satu (one)	ke-	ke-satu	<i>ke-satu</i> (first)		
Utterance context	Buku gambar ke-satu, buku PR ke-satu. drawing book first homework book first Literal: 'First is a drawing book; first is a homework book.' Intended: 'There are a drawing book and a homework book.'				
Situational context	The participant wanted to describe his school supplies where he has one for each item.				

#### Table 10

Paraphasic Production of a Nominal Form					
Base Form (Indonesian/Sundanese)	Indonesian Affix	Target Form	Participant's Output		
bensin (gasoline)	-	pom (gas station)	be-bensin-an be-bensin-an		
Utterance context	Be-bensin-an be-bensin-an te-tenang-an.				
		Gasoline	calm		
	Literal: 'Gasoline is calm.'				
	Intended: 'It is comfortable that we have a mini gas station.'				
Situational context	The participant wanted to tell that his father now has a mini gas station in place of the store.				

While the participant has successfully retrieved grammatical forms in Sundanese and/or Indonesian, he utilizes them to refer to something else, a typical challenge an aphasic patient is facing. This paraphasic phenomenon aligns with neologistic jargon aphasia, where lexical retrieval deficits drive metaphorical extensions (Butterworth, 1979).

#### DISCUSSION

The findings from this study indicate that bilingualism plays a significant role in aphasia recovery, as evidenced by the participant's systematic substitution of affixes from one language with those of another (Sundanese and Indonesian languages). The overgeneralization of Sundanese suffixes suggests a reliance on the participant's first language (L1) morphological system, aligning with neurolinguistic theories that posit stronger neurological preservation of L1 structures over those of a second language (L2) (Paradis, 2009).

This pattern supports the premise that aphasia recovery in bilinguals involves a differential activation of linguistic systems, resulting in crosslinguistic morphological adaptation rather than a simple reduction in linguistic complexity. These results align with the research finding that bilingual individuals under neurological stress exhibit hybrid linguistic forms as a compensatory strategy (Goral et al., 2019; Hameau et al., 2023). Unlike aphasia, where simplification monolingual dominates (e.g., omission of affixes) (see Ahlsén, 2005), this study demonstrates overgeneralization of certain morphological rules and complexification strategies through cross-linguistic blending. This observation is consistent with previous research on bilingual aphasia, which suggests that bilingual patients often retain morphological knowledge but struggle with affix selection due to competing linguistic structures (Kuzmina et al., 2019). The present findings extend this notion by illustrating how Sundanese-Indonesian bilinguals navigate

affixation errors differently from bilinguals of typologically distinct language pairs.

Furthermore, the participant's errors reflect a morphological awareness persistent despite impairments in proper affix selection. This supports the concept of morphological resilience in bilingual aphasia, wherein patients engage in creative compensatory strategies rather than experiencing wholesale morphological loss (Goral et al., 2006). The pattern of inflectional errors observed in this study suggests that grammatical interference between languages is not arbitrary but follows systematic patterns, reinforcing the idea that bilingual aphasics exhibit structured, rather than erratic, linguistic deficits (Kroll et al., 2014). These findings provide empirical support for theories suggesting that bilingual aphasia is governed by rule-based, rather than stochastic, linguistic reorganizations.

The competition between Indonesian and Sundanese morphological systems observed in this study mirrors the bilingual interactive activation model, which proposes that linguistic competition during lexical retrieval results in the prioritization of one language's grammatical rules over another (Green & Abutalebi, 2013). The participant's tendency to apply Indonesian affixation rules despite Sundanese lexical dominance indicates that post-aphasia linguistic restructuring does not merely reflect passive retention of stronger linguistic structures but involves active reconstruction based on accessibility and linguistic economy. This observation parallels findings from bilingual aphasia studies on Spanish-Catalan speakers, where lexical access difficulties led to similar morphological blending rather than affix omission (Faroqi-Shah et al., 2010).

The presence of cross-linguistic morphological blending highlights the participant's ongoing neurological adaptation following brain damage. The substitution of standard Indonesian possessive markers with Sundanese equivalents suggests a dynamic restructuring of the participant's morphological system rather than a straightforward loss of L2 affixation competence. This observation supports recent research emphasizing that bilingual aphasia recovery involves reorganization rather than mere attrition of linguistic components (Peñaloza et al., 2019). The observed inconsistencies in suffix application further underscore the notion that postaphasia bilingual grammatical reconstruction is governed by underlying linguistic principles rather than arbitrary errors.

Overall, the study's findings contribute to a growing body of evidence suggesting that bilingual aphasia recovery is characterized by systematic, rather than random, linguistic reorganization. The hybrid structures observed in the participant's speech indicate that bilingual aphasics actively engage in compensatory morphological production rather than passive linguistic deterioration. These insights have important implications for aphasia rehabilitation, particularly for bilingual individuals, as they highlight the need for therapy approaches that acknowledge and leverage bilingual patients' capacity for linguistic adaptation rather than merely attempting to restore pre-aphasia linguistic structures.

## CONCLUSION

The present study highlights the impact of bilingualism on aphasia recovery, particularly through the phenomenon of cross-linguistic morphological blending. Findings suggest that bilingual individuals with aphasia may exhibit hybrid affixation and reduplication patterns, indicating an active reconstruction of linguistic structures rather than mere language loss. This supports the notion that bilingual aphasia involves complex linguistic interactions rather than straightforward impairments.

Despite its contributions, the study has limitations. The small sample size restricts the generalizability of the findings, and the reliance on a single case study limits the ability to draw broader conclusions about bilingual aphasia recovery. Future research should incorporate a larger, more diverse group of participants to strengthen the validity of these observations. Additionally, neuroimaging techniques could provide more precise insights into the neural mechanisms underlying bilingual aphasia.

The implications of this study extend to both clinical linguistics and language rehabilitation. Clinicians working with bilingual aphasia patients should consider cross-linguistic influences in treatment planning, as interventions focusing on one language alone may not fully capture the complexities of bilingual recovery. This study also contributes to theoretical discussions on bilingual cognition, emphasizing the adaptive nature of bilingual language processing in (mixed) aphasic individuals.

Future research should explore the role of cognitive control mechanisms in bilingual aphasia recovery, particularly in relation to language switching and inhibition. Comparative studies involving monolingual and bilingual patients (e.g., in the multilingual Indonesian context) could further clarify the unique recovery trajectories observed in bilinguals. Additionally, experimental interventions incorporating bilingual lexical training could provide practical applications for therapy and rehabilitation, ultimately improving clinical outcomes for bilingual aphasia patients.

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