

## A corpus-based approach to Cebuano verb accent

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### Abstract

This paper uses a corpus-based approach to re-examine verb accent in Cebuano, an Austronesian language spoken in the Central Philippines. This paper establishes a corpus based on Luzares's (1979) wordlist of Cebuano verbs and analyzes the accent and syllable types of 1185 words without affixation. The results show that the accent falls on the penultimate syllable in 74% of the corpus data and on the final syllable in 26%. The accents vary depending on the structures of the penultimate syllable: the accent remains on the penultimate syllable when it has a CVC structure; meanwhile, when the penultimate syllable has a CV structure, vowel height of the final syllable might show gradient correlation in accent shift.

**Keywords:** *Cebuano, accent, corpus-based approach, default position, accent shift*

### 1. Introduction

Cebuano, an Austronesian language spoken in the Central Philippines, has two positions for accent: penultimate stress and final stress.\* Researchers have attributed the accents in Cebuano to the phonological factor that determines the position of accent to different syllable structures/weights (Wolff 1962, Zorc 1977, 1993, Newton 1991, Shryock 1993, Blust 2013).<sup>1</sup> Wolff (1962) proposes two accentual patterns (penultimate vs. final) for disyllabic words in the different sequences of open and closed syllables, as shown in Table 1 below.

First, when the penultimate syllable has a CV syllable type and the final syllable is CVC (CV + CVC sequence), the accent falls on the final syllable, as in *samút* 'worsen' and *tisúk* 'sow'. In the second pattern, when the two syllables are CV, the accent falls on the final syllable, as in *daní* 'attract'. In the third pattern, when the penultimate syllable is CV and the final syllable is CVC, the accent falls on penultimate syllable, as in *tapus* 'finish', where the vowel in the accented syllable phonetically long [a:]. In the fourth pattern, the penultimate syllable is CVC and the final is CV, the accent falls on the penultimate syllable, as in *gústu* 'like' and *píldi* 'lose'. In Cebuano, long vowels are not phonetically attested in word final positions (cf. Samejon's (2019) emphatic vowel length) and therefore sequences like CVC + CVV sequence are not attested.<sup>2</sup>

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<sup>1</sup> Other accentual patterns in Philippine languages are also discussed as in French (1988, 1991) and Kaufman (2007) for Tagalog and in Rubino (1997) and Yamamoto (2017) for Ilocano.

<sup>2</sup> The author selected the examples in Table 1 based on Wolff's (1962) formulations. The corpus created by the author includes no long vowel in final syllable.

Table 1

*Accents and sequences in Cebuano*

	Accents	Sequences <sup>3</sup>	Example	Gloss
a.	Final	CV + CVC	<i>samít</i>	‘worsen’
			<i>tisúk</i>	‘sow’
b.		CV + CV	<i>dani</i>	‘attract’
c.	Penultimate	CV+CVC	<i>tápus</i>	‘finish’
			[ta:pus]	
d.		CVC + CV	<i>gústu</i>	‘like’
			<i>pildi</i>	‘lose’
e.	Final	CVC + CVV	?	

Similar patterns are discussed in Zorc (1977, 1993), who proposes that the vowel in an accented open penult is long, as in *bátaq* [bá:taʔ] ‘young’. The vowel in an unaccented or closed syllable is short, as in *maník* ‘chicken’. The vowel in the final syllable is longer when there is a sequence of two identical vowels, as in the variants of *daá* [da:] ‘bring’.<sup>4</sup> In CVC + CV(C) sequence, the accent falls on the penultimate syllable, as in *pángpang* ‘riverbank’ and *pildi* ‘lose’.

Newton (1991) contends that accentual patterns in Cebuano are predictable. The accent falls on the penultimate syllable when it is closed (CVC). If the penultimate syllable is open, the accent falls on the penultimate or final syllable. Shryock (1993: 108) suggests that Cebuano is a quantity-sensitive language in which CVV and CVC are heavy syllables, and CV is light. The weight of the penultimate syllable determines the accent. The accent falls on the penultimate syllable when it is heavy. When the penultimate syllable is open, the accent becomes unpredictable. Moreover, the weight of the final syllable does not influence the accent. Both Newton’s (1991) accentual patterns and Shryock’s (1993) generalization conform to Wolff’s (1962) observations, shown in Table 1.

Blust (2013) suggests that accent in Cebuano is predictable in three conditions. First, when the sequence is CVC + CVC sequence, either from reduplication, as in *súksuk* ‘insert’, or from two different syllables, as in *bádlis* ‘line’, the accent is penult. In the third condition, which occurs when the final two syllables contain two sequential vowels, the accent falls on the penultimate syllable, as in *bitúun* ‘star’.<sup>5</sup>

Previous studies have generally assumed that accent in Cebuano falls on the CVC syllable, which is a heavy syllable phonologically. When a sequence of two identical syllable types occurs—CV + CV sequence or CVC + CVC sequence for example—the accent follows the iamb, falling on the right syllable within a foot, which is formed from right to left if the final syllable does not involve the assignment of accent (Shryock 1993). Nevertheless, counterexamples such as *búrut* ‘inflate, swell’, and *káli* ‘gather root crops by digging’ challenge the predictability of accent based on syllable weight. In *búrut* ‘inflate, swell’, the final syllable *rut* is closed, and the accent is predicted to fall on the final syllable. The actual accent, however, falls on the light syllable *bu*. On the other hand, the accent of *káli* ‘gather root crops by digging’ is predicted to fall on the final

<sup>3</sup> C = consonant, V = vowel.

<sup>4</sup> The original form of this word is *dala* ‘bring’, which undergoes -l- deletion (Lin 2020).

<sup>5</sup> In Blust’s (2013) third condition, the sequence should be CVCVCVC with a glottal stop between the sequential vowel *uu*. The phonetic representation of the word *bitúun* is [bituʔun].

syllable *li* because this word consists of a sequence of two CV syllables. Such counterexamples undermine the assumption that accent in Cebuano is determined by syllable weight, or that accent falls on the final syllable in sequential syllables.

To gain a better understanding of the accentual patterns in Cebuano, this paper focuses on the accent of Cebuano verbs. This paper also adopts a corpus-based approach and uses data from Luzares's (1979) wordlist of Cebuano verbs, which is introduced in Section 2. Section 2 also discusses the data selection criteria. Section 3 reports the distribution of the accentual patterns according to syllable types in the corpus. Section 4 reports the results of *Chi*-square tests conducted to check the significance of the relationships between accentual patterns and syllable types (sections 4.1 and 4.2), discusses Shryock's (1993) generalization (section 4.3), and proposes accentual patterns based on the corpus data and statistical analyses (section 4.4). Section 5 discusses the implications of the findings and concludes this paper.

## 2. Corpus and data selection

The corpus in this paper is based on Luzares's (1979) wordlist of Cebuano verbs.<sup>6</sup> This paper uses disyllabic words, trisyllabic words, and words with more than three syllables.<sup>7</sup> In total, 1284 words are scrutinized and classified according to the positions of accent and syllable types.<sup>8</sup> In the wordlist, accent is marked by ´, as in *gústu* 'like'. The potential positions of the accent include the antepenultimate (third syllable from the right), penultimate (second syllable from the right), and final syllables. The syllable types refer to the combination of consonants and vowels (CVC vs. CV). Cebuano has three vowels, /a, i, u/, and the back vowel /u/ has an allophone [o], which is positionally restricted. According to Tanangkingsing (2011: 17), the back high vowel [u] often appears in the word-initial position, while the allophone [o] is limited to the word-final syllable. For instance, the word for 'brain' is *utuk* [u.tok], where the first vowel is [u] and the second vowel is [o]. Thus, the data in the corpus are divided into three vocalic groups.

Regarding coda types, Cebuano has eighteen consonants (Wolff 1972, 2001; Tanangkingsing 2011), as shown in Table 2 below. Of these eighteen consonants, only sixteen appear in the coda position. The consonants /j/ and /h/ seldom appear in the coda position, and the consonants /r/ and /c/ only appear in the coda position in loanwords, as in *kárga* [kar.ga] 'cargo' and *sípir* [zi.pir] 'zipper'. The remaining fourteen consonants can appear in the coda position.

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<sup>6</sup> There are two potential dictionaries for the corpus, such as English to Binisaya - Cebuano Dictionary and Thesaurus (<https://www.binisaya.com/cebuano>) and Cebuano dictionary (<https://cebuano.pinoydictionary.com/>), which is an online version of Wolff's (1972) dictionary. Although the two online dictionaries include entries as many as possible, stress is not consistently marked in the entries. For example, the word *kiskis* 'rub' is marked with final stress in Luzares's wordlist, while it lacks stress marker in the two online dictionaries. As Luzares's wordlist shows clear stress markers, it is adopted as the major source for the corpus in this paper.

<sup>7</sup> In most cases, onsets do not involve syllable weight, unless it is a geminate CC (Topintzi 2014). Since geminate does not appear at the onset in Cebuano, this paper does not include this onset CC-.

<sup>8</sup> According to Gay, Mills, and Airasian (2012: 139), at least 30 samples are needed for correlational, causal-comparative, and true experimental research. Thus, the total size of 1185 words would be sufficient to show the accentual patterns in Cebuano.

Table 2

*Cebuano consonants*

Manner	Place	Bilabial	Dental	Palatal	Velar	Glottal
	Stops	Voiceless	<i>p</i>	<i>t</i>	<i>c</i>	<i>k</i>
Voiced		<i>b</i>	<i>d</i>	<i>j</i>	<i>g</i>	
Fricatives			<i>s</i>			<i>h</i>
Nasals		<i>m</i>	<i>n</i>		<i>ŋ</i>	
Liquids			<i>l, r</i>			
Glides				<i>y</i>	<i>w</i>	

In Luzares’s (1979) wordlist, examples are divided into words without accentual markers and words with accentual markers. Words without accentual markers are not analyzed in this paper. Words with accentual markers are further divided into general words, reduplication, and loanwords. The corpus includes 62 words without accentual markers, including *takud* ‘infect with disease’ and *bùbù* ‘pour something’, and given that there is no way to determine the actual stress in these examples, words without stress are not used.<sup>9</sup> In total, Luzares’s (1979) wordlist contains 90 such words. For example, *angu-angu* ‘be senile’ is in full reduplication, and *agik-ik* ‘laugh but not openly’ features partial reduplication. As reduplication involves morphological processes and sometimes causes accent shifts in Cebuano, words with reduplication are considered separately from words without reduplication in the corpus. Finally, loanwords are also specifically selected; Luzares’s (1979) wordlist contains 37 loanwords. Examples include *kárga* [kar.ga] ‘cargo’ and *diktár* [dik.tar] ‘dictate’. Therefore, the words in the corpus are divided into three categories for further discussion: general type, reduplication, and loanwords.

### 3. Distribution of the accentual patterns in Cebuano

In this paper, 1185 words are analyzed—1095 general type words and 90 words for reduplication—and results regarding positions of stress (3.1) and the syllable types (3.2) are reported.

#### 3.1 The positions of accent

The analysis of the corpus identifies three positions of accent: antepenultimate, penultimate, and final. Table 3 below shows the distribution of the 1095 general type words.

Table 3

*Distribution of general type words*

Position of accent	Antepenultimate	Penultimate	Final	Total
Number of tokens	2	811	282	1095
Percentage	0.2%	74.0%	25.8%	100.0%

<sup>9</sup> In Luzares (1979), the symbol ` is used to mark glottal stop, not for secondary stress.

As Table 3 shows, the positions of accent are not evenly distributed. The accent falls on the penultimate syllable in most of the corpus data (74.0%), followed by final accent (25.8%). In the corpus, *límpiya* ‘polish shoes’ and *rimídiyu* ‘acquire something for one’s needs’ are the only two words marked with antepenultimate accent. Due to low frequency in the corpus, the two words are excluded from the following discussion. Thus, only 1093 words undergo analysis (section 3.2). Table 4 shows the distribution of words with reduplication.

Table 4

*Distribution of words with reduplication*

Position of accent	Penultimate	Final	Total
Number of tokens	68	22	90
Percentage	75.6%	24.4%	100.0%

The corpus includes 90 corpus examples of words with reduplication: 68 of these featuring penultimate accent, as in *dásdas* ‘invasion’, and 22 featuring final accent, as in *kiskís* ‘rub’. None of the words with reduplication are marked with antepenultimate accent.

### 3.2 Syllable types and accent

The second factor to consider when analyzing Cebuano accentual patterns is syllable types. Since words can contain CV syllables and CVC syllables, the sequences can include two CV syllables (CV + CV sequence), one CV syllable + one CVC syllable (CV + CVC sequence), one CVC syllable + one CV syllable (CVC + CV sequence) and two CVC syllables (CVC + CVC sequence). Table 5 provides a detailed breakdown of syllable types and accentual patterns in the corpus.<sup>10</sup>

Table 5

*Syllable types and accent in general type words*

Accent \ Syllables	CV + CV	CV + CVC	CVC + CV	CVC + CVC	Total
	Penultimate	66	408	69	268
Final	35	240	0	7	282
Total	101	648	69	275	1093

The distribution in Table 5 shows a clear tendency. First, the majority of the 811 corpus examples that feature penultimate accent fall into the CV + CVC sequence (408 corpus examples), as in *bálus* ‘do back to someone what he did to the agent’. The second most frequently occurring category is CVC + CVC sequence, with 268 corpus examples. An example of this category is *dúgsak* ‘thrust with force’. The third and fourth most frequently occurring categories are the CVC

<sup>10</sup> The corpus examples in Table 3 are not limited to disyllabic words. The table includes trisyllabic and longer word, but only the structures of the final two syllables are analyzed.

+ CV sequence (78 examples) and CV + CV sequence (66 examples) sequences, as in *lábni* ‘snatch, grab’ and *kiha* ‘file a case in court’, respectively.

The corpus includes 282 words that feature final accent, but the distribution is skewed. The majority of corpus instances (240 examples) feature the CV + CVC sequence, followed by the CV + CV sequence (35 examples), as in *gisá* ‘fry’. Meanwhile, the corpus includes 7 examples of the CVC + CVC sequence, as in *laktáw* ‘omit, miss’ and no examples of CVC + CV sequence.

Table 6 shows the distribution of the syllable types of the words of reduplication. The 90 corpus examples only feature three sequences, CV + CV, CV + CVC, and CVC + CVC. There is no example of CVC + CV sequence.

Table 6

*Syllable types and accent in words with reduplication*

Syllables Accent	CV + CV	CV + CVC	CVC + CV	CVC + CVC	Total
Penultimate	3	8	0	57	68
Final	7	7	0	8	22
Total	10	15	0	65	90

Among words featuring penultimate stress, the corpus includes three examples of CV + CV sequence, as in *abiábi* ‘show hospitality to’, eight examples of CV + CVC sequence, as in *sulugsúlug* ‘tease’, and 57 examples of CVC + CVC sequence, as in *bádbad* ‘untie’. Meanwhile, among words featuring final accent, the corpus includes seven examples of CV + CV sequence, as in *bulubulú* ‘bubble’, seven examples of CV + CVC sequence, as in *kuruskurús* ‘make crisscross marks’, and eight examples of CVC + CVC sequence, as in *kiskís* ‘rub’.

Clearly, the number of words featuring penultimate accent outnumbers that of words featuring final accent in Tables 5 and 6. The analysis of syllable types also shows that the CV + CVC sequence outnumbers other sequences. Table 7 displays the sums for both general type words and words with reduplication.

Table 7

*Accentual patterns in general type words and words with reduplication*

Position of accent	Penultimate	Final	Total
Number of tokens	879	304	1183
Percentage	74.3%	25.7%	100.0%

As Table 7 suggests, the corpus data reveal that about three-fourths of examples feature penultimate accent, and one-fourth feature final accent.

Shryock (1993) claimed that the accentual patterns are related to syllable weight: CV as a light syllable and CVC as a heavy syllable. As shown in Table 8, adding the tokens of words with

reduplication to the general type words provides a clear picture of how accentual patterns interact with syllable types, and it is necessary to re-consider Shryock's (1993) proposal.

Table 8

*Syllable types and accent in general type words and words with reduplication*

Syllables Accent	CV + CV	CV + CVC	CVC + CV	CVC + CVC	Total
Penultimate	69	416	69	325	879
Final	42	247	0	15	304
Total	111	663	69	340	1183

The majority of the words in Table 8 are in the CV + CVC sequence (56.0%), followed by the CVC + CVC sequence (28.7%). The CV + CV sequence accounts for 9.4% of the corpus examples, while the CVC + CV sequence is relatively rare in the corpus (5.8%).

### 3.3 Summary of results

This section has reported the distributions of the corpus examples in terms of positions of the accent and the syllable types. The results have shown that penultimate accent outnumbers final accent both in general type (74% vs. 26%) and in reduplication type (76% vs. 24%). The syllable types also interact with the assignment of accent in the corpus. About 96% of the corpus examples have penultimate accent when the penultimate syllable is CVC; 63% of the corpus examples show penultimate accent when the penultimate syllable is CV.

To examine the interactions between the positions and syllable types, section 4 continues to discuss vowels in the syllables and propose a new generalization for Cebuano stress assignment.

## 4. Discussion

Section 3 reported the distribution of the accentual patterns in general type words and words with reduplication. It is certain that accent in Cebuano is phonemic, accent on the penultimate syllable being the default. Nevertheless, a question arises as to why final accent is attested in the corpus. According to Kenstowicz (1997), the lower a vowel is, the more likely it is to bear the accent. In other words, the corresponding scale for Cebuano is low vowel *a* > high vowel *i, u*. De Lacy's (2004) sonority-driven theory provides a more detailed analysis, where the ranking is low vowel *a* > high vowel *i, u*. Since Cebuano has only three vowels and only features a low vs. non-low distinction, this paper uses *quality-sensitive* to refer to vowel-based theories (Kenstowicz 1997, De Lacy 2004).

In addition to examining the factors that determine accentual patterns in Cebuano, this section discusses Shryock's (1993) metrical phonology and three controversies (section 4.3) and concludes with an analysis of the corpus distribution of accentual patterns in Cebuano.

### 4.1 Quantity-sensitive accent in Cebuano?

The fact that there is no final accent in CVC + CV sequence might suggest that syllable weight attracts accent in Cebuano (Shryock 1993). When the penultimate syllable (CVC) is heavier than the final syllable (CV), the accent falls on the heavy syllable. However, the CV + CVC sequence

challenges this pattern. If Cebuano were a quantity-sensitive language, the accent in the examples would be assigned to the final syllable, which is obviously heavier than the penultimate syllable, CV. Nevertheless, instances of penultimate accent outnumber those of final accent in the corpus (63 % vs. 37%).

The sequences with two similar syllable types, CV + CV sequence and CVC + CVC sequence, also fail to suggest that accent in Cebuano is assigned according to syllable weight. The ratios of the two sequences in Table 7 are different. 62% of the corpus examples of CV + CV sequence feature penultimate accent and 38% feature final accent. However, 96% of the corpus examples of CVC + CVC sequence feature penultimate accent, and 4% feature final accent. If the accent in Cebuano were quantity-sensitive, there would be no dominant accentual patterns, as both the syllables in the sequences would be equal in weight. Consequently, this paper assumes that syllable weight does not play crucial roles in the assignment of accent in Cebuano phonology.

#### 4.2 Quality-sensitive accent in Cebuano?

If quantity is not critical to the assignment of accent in Cebuano, is the quality of syllable significant to the assignment of accent? Notice that 75% of the corpus examples in Table 7 feature penultimate accent and 25% feature final accent. The default accent, regardless of a sequence's syllable type, falls on the penultimate syllable. Except for CVC + CV sequence, the other three sequences with final accent require further analyses.

When the penultimate syllable is CV, there is no significant difference between the CV + CV sequence and the CV + CVC sequence, as they show quite similar accentual pattern ratios, 62% vs. 38% in CV + CV sequence and 63% vs. 37% in CV + CVC sequence. If the penultimate accent as a default is on the right track, the final accent in the two sequences should be treated as deviations. One of the possible causes is that the vowel influences the assignment of accent. Here, the qualities of the two syllables in the two sequences are examined. The following four tables show the vowels in CV + CV sequence and CV + CVC sequence with two accentual patterns. First, Table 9 shows the vowels in CV + CV sequence with final accent.

Table 9

*Vowels in CV + CV sequence with final accent*

V1 \ V2	a	i	u	Total
a	11	2	4	17
i	5	1	1	7
u	9	1	8	18
Total	25	4	13	42

Among the corpus examples of CV + CV sequence with final accent, 17 examples have low vowels as V1 and 25 examples have high vowels as V1, while 25 examples have low vowels as V2 and 17 examples have high vowels as V2.

Table 10 shows the vowels in CV + CV sequence with penultimate accent.



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Table 10

*Vowels in CV + CV sequence with penultimate accent*

V1 \ V2	a	i	u	Total
a	13	10	10	33
i	4	6	6	16
u	9	5	6	20
Total	26	21	22	69

Among the corpus examples of CV + CV sequence with penultimate accent, 33 examples have a low vowel as V1 and 36 examples have high vowels as V1, while 26 examples have low vowels as V2 and 43 examples have high vowels as V2.

Table 11 shows the vowels in CV + CVC sequence with final accent. Among the corpus examples following this pattern, 99 examples have low vowels as V1 and 148 examples have high vowels as V1, while 103 examples have low vowels as V2 and 142 examples have high vowels as V2.

Table 11

*Vowels in CV + CVC sequence with final accent*

V1 \ V2	a	i	u	Total
a	36	21	42	99
i	21	9	13	43
u	46	5	54	105
Total	103	35	109	247

Table 12 shows the vowels in CV + CVC sequence with penultimate accent.

Table 12

*Vowels in CV + CVC sequence with penultimate accent*

V1 \ V2	a	i	u	Total
a	94	33	69	196
i	38	16	40	94
u	39	13	74	126
Total	171	62	183	416

Among the corpus examples of CV + CVC sequence with penultimate accent, 196 examples have low vowels as V1 and 220 examples have high vowels as V1, while 171 examples have low vowels as V2 and 245 examples have high vowels V2.

There are two possible comparisons for CV + CV sequence and CV + CVC sequence. One comparison focuses on different accentual patterns, and the other comparison focuses on different sequences. *Chi-square* tests are conducted to examine the data shown in Table 13 below (a = [+low] vowel; *i* and *u* = [-low] vowels).

Table 13

*Vowel height and accentual patterns (CV + CVC sequence vs. CV + CV sequence)*

CV	CVC	A Penultimate	B Final	CV	CV	C Penultimate	D Final
[+a]	[+a]	94	36	[+a]	[+a]	13	11
[+a]	[-a]	102	63	[+a]	[-a]	20	6
[-a]	[+a]	77	67	[-a]	[+a]	13	14
[-a]	[-a]	143	81	[-a]	[-a]	23	11

The first comparison in Table 13 considers the different accentual patterns in the same sequence—namely, A vs. B and C vs. D, and *Chi-squared* tests are conducted. The results show a significant difference between the accentual patterns in the CV + CVC sequence ( $p < 0.05$ ) (see Table 14 below for more details) but no significant difference in the accentual patterns in the CV + CV sequence ( $p = 0.1244$ ). The results also show that when the accentual patterns are the same, the sequences do not differ significantly:  $p = 0.8327$  for the comparison between A and C, and  $p = 0.1186$  for the comparison between B and D. Since the only significant difference is found between different accentual patterns in the CV + CVC sequence, the details in A and B pair need further consideration, as shown in Table 14.

Table 14

*Ratios in CV + CVC sequence with different accentual patterns*

CV	CVC	Penultimate	Final
[+a]	[+a]	72%	28%
[-a]	[-a]	64%	36%
[+a]	[-a]	62%	38%
[-a]	[+a]	53%	47%

Clearly, the ratios are quite close when the CVC syllable has a non-low vowel (62% vs. 38% and 64% vs. 36%). When the CVC syllable has a low vowel, the ratios vary. If the CV syllable also has a low vowel, the likelihood that the accent falls on the penultimate syllable is high. On the other hand, if the CV syllable has a non-low vowel, it is more likely to have final accent. This suggests that vowel height might influence the assignment of accent in the CV + CVC sequence. The default accent for CV<sub>[-a]</sub> + CV<sub>[+a]</sub>C sequence is the penultimate syllable, but low vowels in the CVC syllable attract accent.



b.	$\mu\mu$    ting.	$\mu\mu$    ad.	$\mu\mu$    la<w>	Final consonant Extrametricality
c.	( x ) $\mu\mu$    ting.	( x ) $\mu\mu$    ad.	$\mu\mu$    la<w>	Foot Construction
d.	$\mu\mu$    ting.	( x ) $\mu\mu$    ad.	$\mu\mu$    la<w>	Destressing in Clash
e.	$\mu$ ^ ting.	( x ) $\mu\mu$    ad.	$\mu\mu$    la<w>	Deweighting in Clash
f.	$\mu$ ^ ting.	( . x ) $\mu\mu$    ad.	$\mu\mu$    la<w>	Reparsing of initial stray syllable
g.	( x ) ( . x ) $\mu$ ^ ting.	$\mu\mu$    ad.	$\mu\mu$    la<w>	End Rule Right

In (2a), the syllable weight of the word *tingadlaw* [tiŋ.ʔad.law] ‘dry season’ is first marked, and the three CVC syllables are heavy with two moras. The coda *w* of *law* is extrametrical (2b). The next step (2c) is to form the foot for the two syllables *ting* and *ad*. When a stress clash occurs, the left stress is deleted. In this case, the stress on the syllable *ting* is removed, as in (2d). After the stress is deleted, the syllable weight is adjusted by deweighting the syllable *ting* (2e). The initial syllable is reparsed with the second syllable (2f) and then undergoes End Rule Right with the syllable *ad* (2g).

Although Shryock (1993) proposes comprehensive metrical phonology for Cebuano, three controversies demand in-depth consideration. The first condition in (1a) suggests that CVC and CVV are heavy syllables and CV is a light syllable in Cebuano, but the final syllable does not participate in the assignment of accent due to the extrametricality of the final consonant (1b). If condition (1b) holds true for Cebuano phonology, condition (1a) becomes redundant because the codas of final CVC syllables are extrametrical, meaning they are light syllables at the phonological level similar to CV syllables (Shryock 1993: 113).

The second controversy in Shryock’s (1993) proposal involves the reparsing of the initial stray syllable (2d) and (2e). Since stress assignment calculation is based on mora in Shryock’s

(1993) metrical phonology, stress clashes lead to deletions of the stresses on the initial syllables, degenerating the initial syllables from two to one mora. This process, however, would also treat initial syllables as light syllables, which again violates the first condition (1a).

The third controversy involves the restriction of CVV syllables. According to condition (1a), CVV is restricted to the penult. CVV is not permitted to appear in the final syllable. Also, CV syllables are prolonged when they receive the accent. Since CV syllables can be in the final position, they become controversial in this situation. That is, if the accent fell on a final CV syllable, condition (1i) would be invalid.<sup>11</sup>

#### 4.4 Accentual patterns under corpus-based approach

This section suggests possible solutions to the three controversies in Shryock's (1993) nine conditions. First, syllable weight can clearly be set aside during the assignment of accent. The assignment is on the basis of the "position" rather than on the weight. If so, there is no need to propose final consonant extrametricality. Using positions for the assignment of accent also avoids the second controversy where initial CVC syllables become phonologically light when stress clashes occur. Take the word *tingadlaw* [tiŋ.ʔad.law] 'dry season' in (2) as an example. It is parsed into three syllables [tiŋ.ʔad.law], not into six moras. As the corpus data in Table 7 show, accent in Cebuano is assigned to the penultimate syllable as the primary position (74%) and to the final syllable as the secondary position (26%); thus, the assignment of accent according to the positions is on the right track. With regard to the third controversy, this paper assumes that CVV syllables should occur at the phonetic level rather than the phonological level. In other words, the accent prolongs the vowel, not the long vowel that attracts the accent.<sup>12</sup>

The corpus data suggest the actual distribution of accentual patterns in Cebuano and the exceptions. Section 4.1 suggested that syllable weight does not affect the assignment of accent in Cebuano because the accent is always assigned to the penultimate syllable. The notion of syllable weight becomes critical in the context of accent shifts. As shown in Table 7, more than 96% of the corpus examples with CVC syllables as the penultimate syllables undergo minimal accent shifts. It can be posited that when the accent is assigned to the penultimate syllable, and the syllable is heavy, CVC syllables for example, accent shifts might be blocked.

The corpus data shown in Table 8 reveal that accent shifts are more likely to occur when the penultimate syllables are CV syllables. While some might argue that such accent shifts are triggered by the final CVC syllable in the CV + CVC sequence, this is invalid because a similar ratio is also observed in the CV + CV sequence (62% vs. 38% for CV + CV sequence; 63% vs. 37% for CV + CVC sequence). Moreover, the results of this paper's statistical analyses reveal that the vowel height of final vowels would be probably related to accent shifts. Table 15 shows the ranking for CV + CV(C) sequence.

When the vowels in the two syllables are low, CV<sub>[+a]</sub> + CV<sub>[+a]</sub>C sequence, about 70% of the corpus examples have penultimate accent. This ratio decreases slightly in CV<sub>[-a]</sub> + CV<sub>[-a]</sub>C

<sup>11</sup> Special thanks go to one of the reviewers for pointing out whether the rules in (1) are serial or not. The applications of the rules in (1) are serial. For example, syllable weight identification (1a) should precede the extrametricality of the final consonant (1b) and then foot formation takes place (1c). After this process, degenerate foot extrametricality (1e) occurs. Besides, destressing in class also has to take place before dewatering in clash (1f). Vowel lengthening in (1i) is the final step when all the preceding steps are done.

<sup>12</sup> It should be pointed out that if there is a phonological process that results in a monosyllabic word, as in *daa* [da:] < *dala* 'bring' due to *-l-* deletion (Lin 2020), the accent falls on the syllable itself, and the long vowel has to bear the accent.

sequence and CV<sub>[+a]</sub> + CV<sub>[-a]</sub>C sequence, and their ratios are quite close. The lowest ratio is in CV<sub>[-a]</sub> + CV<sub>[+a]</sub>C sequence. When the two vowels in a disyllabic word have different height, and the first vowel is higher than the second vowel, the accent tends to fall on the final syllable.

Table 15

*Comparisons of vowel height ratios in CV + CV(C) sequence*<sup>13</sup>

Vowels		Tokens		Percentage	
1	2	Penultimate	Final	Penultimate	Final
[+a]	[+a]	107	47	69%	31%
[-a]	[-a]	166	92	64%	36%
[+a]	[-a]	122	69	64%	36%
[-a]	[+a]	90	81	53%	47%

In sum, three processes shape the accentual patterns in Cebuano verbs, and this paper suggests that analyses of the accentual patterns in Cebuano verbs should take two levels into account, as shown in Figure 1.<sup>14</sup>

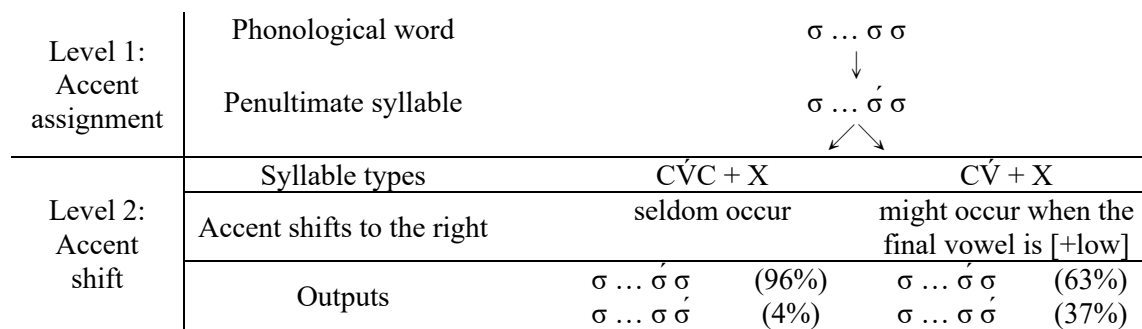


Figure 1. The assignment of accent and accent shifts in Cebuano verbs

First, the accent is initially assigned to the penultimate syllable, regardless of syllable type. Second, the accent might shift when the penultimate syllable is CV and the vowel in the CV is [+low]; otherwise, the accent remains on the penultimate syllable. Finally, the likelihood of accent shifts increases when the penultimate syllable is CV, and the first vowel is higher than the second vowel.

## 5. Conclusion

This paper has re-examined the accentual patterns in Cebuano verbs using a corpus-based approach and generated two noteworthy findings. First, it has found that about three quarters of the corpus examples featured penultimate stress and a quarter of the corpus examples features final accent.

<sup>13</sup> Table 15 is the sum of CV + CV sequence and CV + CVC sequence in Table 8.

<sup>14</sup> This paper does not specifically discuss accent shift in Cebuano, and Lin (2020) has explicitly discussed accent shift in Cebuano, the *-l ~ -an/un* construction in particular. In Lin's (2020) analysis, accent shift is triggered by affixation.

Second, it has shown that accent shifts occur and are probably associated with the vowel height of the final syllable.

These findings have a significant implication for Cebuano phonology. As proposed in Figure 1, Cebuano should be regarded as a language in which the default position, namely penultimate, determines the accent, and accent shifts when the penultimate syllable is CV. Two different accentual patterns in Cebuano (penultimate stress vs. final stress) are a consequence of the interaction between the position of accent, syllable type of the penultimate syllable (CVC vs. CV), and vowel height of the final syllable ([+low] vs. [-low]).

Finally, it is hoped that the corpus-based approach used in this paper has provided more insights into Cebuano phonology. Unlike the approach that uses only a few examples, the corpus-based approach uses abundant data and can therefore identify a greater number of tendencies. In the future, researchers examining accentual patterns in Cebuano should consider words belonging to other parts of speech. As this paper only discusses verb accent, nouns can be a good topic for the future. Zorc (1972) has investigated the nominal accent in Tagalog and Aklanon. Exploring nominal accent in Cebuano would be an exciting project, which not only makes the accentual patterns in Cebuano complete but also provides more data for the proto Tagalic accent (Zorc 1972).

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