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The variable deletion of unstressed vowels in Faialense Portuguese

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ABSTRACT

To verify anecdotal claims regarding the nature of unstressed vowel deletion in Azorean (European) Portuguese, conversational data from a native speaker of the island of Faial have been analyzed to determine the segmental and prosodic contexts favoring elision. Results of a quantitative analysis indicate that unstressed [u] and schwa are the most likely vowels to be deleted; moreover, deletion is highly favored when the unstressed vowel occurs in word-final position at the end of an utterance. Factors such as rhythmic preservation, syllable structure, and functional load are discounted in the analysis, suggesting that vowel deletion is essentially a word-based variable process in the language.

European varieties of Portuguese exhibit a process whereby unstressed vowels, particularly schwa, are variably deleted. For example, a lexical item such as *idade* 'idea' is often realized as [idád_], and a phrase such as *para Maria* 'for Maria' may surface as [p_rɐmɾíɐ] (where _ represents the position of a deleted vowel). Previous research in the study of phonological variation of this sort has typically focused on syntactic, morphological, functional, and segmental factors as the primary linguistic conditions for accurately characterizing variable processes (Guy, 1980; Poplack & Walker, 1986, among others). Less work has investigated the role of prosodic factors (but see, e.g., Cedergren, Levac, Perreault, & Sosa, 1991). Yet if one believes that prosodic structure—which includes levels of representation such as the phonological word, the phonological phrase, and the intonational phrase—plays a significant role in the organization of phonological units, then one may reasonably argue that such structure should provide insight into phonological variation.

The research presented here evaluates such an argument by examining a number of linguistic factors influencing the variable deletion of unstressed vowels in the speech of a female speaker of European Portuguese (EP), as spoken on the Azorean island of Faial. It is shown that, for this one speaker, the levels of prosodic constituency relevant for characterizing variable deletion are the word and the utterance, thus establishing the process as essentially a word-based phenomenon, for which the likelihood of application is further enhanced in utterance-final position.

First I give a brief outline of the issues in prosodic phonology that are relevant for the analysis, focusing on how syntactic structure may play a role in determin-

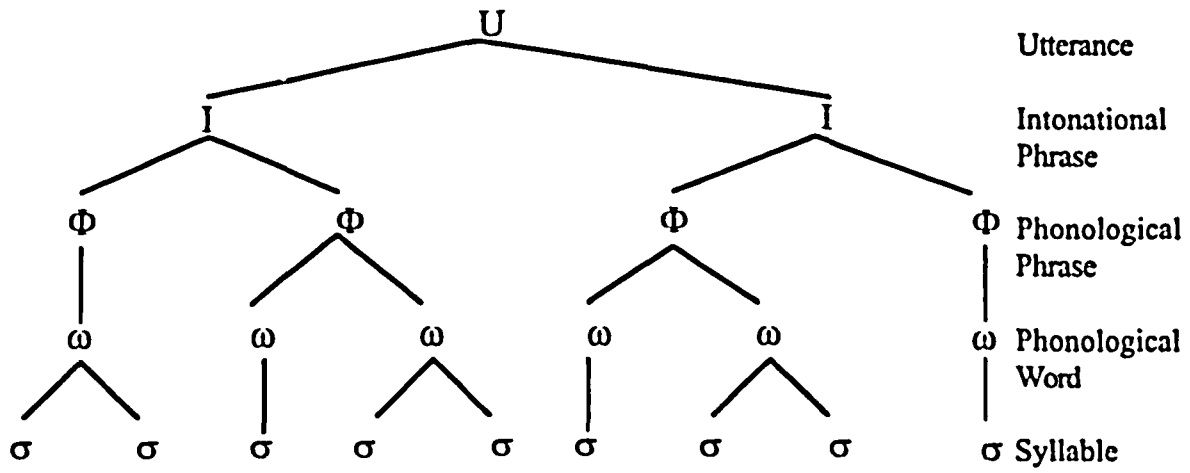


FIGURE 1. The prosodic hierarchy (as assumed herein).

ing prosodic structure. I then provide background on the vocalic phonology of EP, paying particular attention to the status of unstressed vowels. Next I present a case study of conversational speech produced by a 42-year-old female speaker of EP from the Azorean island of Faial. Statistical analysis of these data reveals that conditions promoting vowel elision involve both segmental and prosodic factors, chief among the latter being the notion of domain edge.

PROSODIC PHONOLOGY

Theories of metrical and prosodic phonology are founded on the notion that the phonological units of a language are rhythmically and/or hierarchically organized (Liberman & Prince, 1977; Nespor & Vogel, 1986; Selkirk, 1984, 1986, 1987). At each level of the hierarchy, it is assumed that only one daughter of each n-ary branching node receives prominence; thus, one branch emanating from each node is labeled strong, while all remaining branches are labeled weak. It is further assumed that the levels of the prosodic hierarchy are constrained by the Strict Layer Hypothesis (Selkirk, 1984) such that each level p is dominated exclusively by units on the next higher level p + 1 and dominates exclusively units on level p − 1. An example of such a hierarchy is given in Figure 1.

Despite the structural similarities between syntactic phrase structure markers and prosodic constituency trees, research has indicated that the two are not necessarily identical. For example, the constraint on strict layering in the phonology prohibits the recursive structures characteristic of syntactic phrase structure markers. All the same, it has been well documented that syntactic structure plays a role in determining prosodic constituency. As Selkirk wrote, "[the] prosodic hierarchy, while not isomorphic to syntactic structure, is claimed to be defined, at least partially, in relevance to it" (1986:383–384).

Among the theories proposed to account for the relationship between surface syntactic structure and phonological (prosodic) structure, that advanced by Chen (1987) and Selkirk (1986, 1987) argues in favor of the notion that prosodic struc-

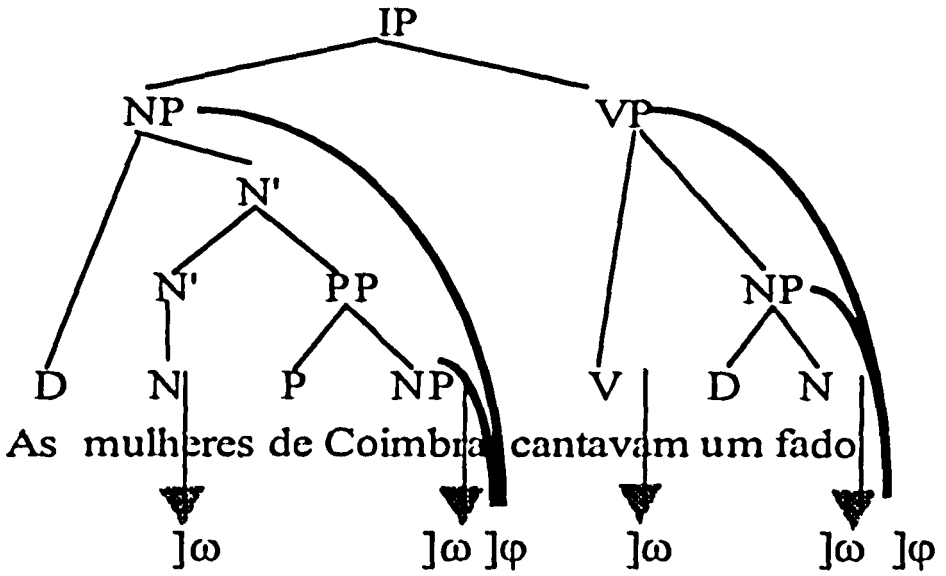


FIGURE 2. An end-based analysis of Portuguese. Prosodic words (ω) and phonological phrases (Φ) are determined with respect to the right edges of X^{lex} and X^{max}, respectively. (Constructed example; not from the corpus.)

ture (as in Figure 1) defines the domain of rules such as sandhi and claims that this structure is derived in part by reference to the syntax of the utterance. (See Kaisse, 1985, for a different approach to the syntax-phonology interface.) In adopting a tree approach to prosody, Selkirk (1987:4) proposed that the syntax-to-phonology mapping can be accomplished via two parameters:

(1) a. Designated Category Parameter: each p_i (prosodic) level has a designated category (DC_i) in the syntax with respect to which p_i is defined.
b. End Parameter: only one end of the DC_i is relevant for defining p_i.

Based on the hypothesis that the End Parameter appears to be set to the opposite value of the syntactic head parameter for a given language (Selkirk, 1986), it is assumed here that the End Parameter for Portuguese (a predominantly left-headed language) will be set to "right." [1] In determining phonological words, the designated categories are taken to be lexical heads (X^{lex} or X^0): nouns, adjectives, adverbs, and verbs. Consequently, prepositions, determiners, and complementizers (all of which are typically unstressed in Portuguese) are analyzed as belonging to the immediately following lexical item. For determining phonological phrases, maximal projections of these lexical categories (X^{max} or XP) are used as the designated categories. In both cases, the delineation of the relevant prosodic constituent is achieved by referencing the right edge of the appropriate designated category. With these parameter settings, the Portuguese utterance *As mulheres de Coimbra cantavam um fado* 'The women from Coimbra sang a *fado*' would be assigned word- and phrase-level structure, as shown in Figure 2.

Evidence in support of such an analysis of the word-level constituents comes from Camara (1972:27–28), according to whom proclitic and enclitic elements

such as pronominal objects, articles, and prepositions form a phonological word with the element with which they are associated:

(2) a. [ω o menino] [ω se feriu]
the boy self hurt
'The boy hurt himself.' (*se* as proclitic)
b. [ω o menino] [ω feriu- se]
the boy hurt self
'The boy hurt himself.' (*se* as enclitic)

With regard to the status of the phonological phrases, Mateus (1982:203) suggested that Portuguese employs a rule of nuclear accent which "determines the position of the accent in a syntagmatic sequence." Although she did not explicitly posit an independent prosodic constituent that acts as the domain for the nuclear accent rule, her syntagmatic sequences can be interpreted as phonological phrases. Such a position becomes all the more viable when one considers that the example in Figure 2 contains two instances of nuclear stress, on *Coimbra* and *fado*, the final stressed elements in each phonological phrase. In all, the proposal that phonological words and phrases in Portuguese are formed by referencing the right edges of X^{lex} and X^{max}, respectively, is assumed here.

THE PHONOLOGY OF EP VOWELS

EP has traditionally been classified as a stress-timed language (Parkinson, 1988:141–142). Like American English (which is also stress-timed), EP is characterized by the following properties: (a) stress marked by an increase in pitch and volume; (b) a significant number of vowel reduction processes; and (c) a tolerance of complex syllable onsets and codas.[2]

The system of stressed vowels in all dialects of EP includes both oral and nasal phonemes. An inventory of stressed vowels for the standard language (after Mateus, 1982) is given in (3). The same inventory of vowel phonemes is also found in most Azorean varieties of the language, including that spoken on the island of Faial.[3]

(3)

oral	nasal
i u	ĩ ũ
e o	ẽ õ
ɛ ɐ ɔ	ɐ̃
a	

As might be expected, the inventory of unstressed vowels in standard EP (as well as Faialense EP) is smaller than that of the stressed vowels, with minor differences in the realization of unstressed vowels depending on their relationship with the tonic (stressed) vowel. In posttonic position, there is a neutralization of vowels such that rounded vowels are realized as the high rounded [u], non-high front vowels are realized as [ə], and the low vowel [a] is realized as [ɐ].

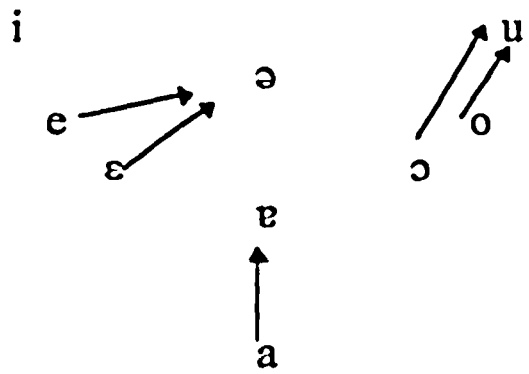


FIGURE 3. Vowel reduction in EP. The low vowel is raised to [ɐ], the non-low front vowels are centralized to [ə], and the non-low back vowels are raised to [u]. (After Mateus, Brito, Duarte, & Faria, 1983:534.)

For posttonic nasal vowels, not only does one find neutralization, but also diphthongization, such that word-final unstressed nasals are followed by a nasalized glide, either [j̃] or [w̃] (Mateus, 1982:49ff.). One noteworthy characteristic of Azorean Portuguese varieties (including that of Faial) is a tendency to omit the final glide in both oral and nasal diphthongs.

In pretonic position, the reduction process is almost the same except that the high front vowel [i] is not reduced. However, any nasal vowel may appear in pretonic. A schematic indicating the nature of vowel reduction is provided in Figure 3, and the inventory of unstressed vowels appears in (4).

(4)

oral	nasal
i* u	ĩ ũ
ə	ẽ õ
ɐ	ɐ̃

*pretonic only

Stress in Portuguese is assigned in a very straightforward fashion. (See Mateus, 1982, and Walters, 1994, for more detailed discussions of stress in Portuguese; cf. Camara, 1972:24, for an alternative characterization of the regularity of Portuguese stress.) If the final syllable of a word contains an underlying high vowel, an underlying nasal vowel, or a vowel + sonorant coda (e.g., /er/, /al/, /ãw̃/, /ãỹ/), then the final syllable receives stress. Otherwise, the penultimate receives stress. Exceptions are marked as such in the lexicon. These categories are summarized in (5).

(5)

Final stress		Penultimate stress		Exceptions	
[ɐ'sĩ]	'thus'	['bolu]	'cake'	[ɐ'mavəl]	'friendly'
[pɐ'pɛl]	'paper'	['sabə]	's/he knows'	['orfɐ̃(w̃)]	'orphan'
[ɐ'ki]	'here'	[ʃɐ'padɐ]	'slap' (n)		

As noted both anecdotally and in the literature (Mateus, 1982:200–201; Teyssier, 1980:73), EP weakens unstressed vowels, particularly schwa. Historically, the transition from Latin to Portuguese included a number of such elisions.

As Coutinho (1958:159) demonstrated, unstressed medial and final vowels were often deleted.

(6) Latin	Portuguese	
lépore	lébɪe	'hare'
mánica	mánga	'sleeve'
ópera	óbra	'work'
amáre	amár	'to love'

One can also find similar processes at work in later stages of the language's history. Of particular interest is the elision of vowels in V–V sequences. This process of *sinalefa* has given rise to forms such as *planalto* < *plano-alto* 'plain', *outrora* < *outra-hora* 'formerly', and *aguardente* < *água-ardente* 'grain alcohol' (see Coutinho, 1958:141).

One can also see the effects of such a process in a number of prepositional collocations in the modern language. For example, the sequence *em* (/ẽ/) 'in' + *a* 'the (fem. sing.)' is obligatorily rendered as *na*; de 'of' + *os* 'the (masc. pl.)' becomes *dos*, typically realized as [duʃ]; *a* 'to' + *a* 'the (fem. sing.)' becomes *à*, pronounced as [ɐ].

Superficial examination of synchronic conversational data indicates that vowel elision continues to play an active role in the grammar. Data from the corpus under investigation include forms such as [temp] 'time' (cf. [tempu]), [tev] 'he has' (cf. [tevə]), and [ĩtəʀɛs] '(they) interest' (cf. [ĩtəʀɛsɐ̃(w̃)]). In attempting to determine the factors that contribute to the operation of the elision rule, one needs to consider each of the potentially relevant aspects of the phonology of the target segment: its inherent featural properties, its position in the prosodic hierarchy, its position relative to other stressed elements, and its influence on the formation of viable syllables after elision. Each of these factors is considered in the following analysis.

As regards phonological characteristics particular to the island of Faial, there is little to note; the variety spoken on the island is in all respects very similar to standard EP and has been considered the Azorean dialect most like the standard language (Rogers, 1949:61). There are two minor phonological differences worth noting. First, there is a propensity to omit nasalized glides in unstressed final syllables. Second, there is a phonological process whereby the (stressed) diphthong /ej/ (> [aj] in standard EP) is rendered with a rounded nucleus: standard EP [kɐ'dɐjrɐ] versus Faialense [kɐ'dojrɐ] 'chair'.

THE CASE STUDY

Methodology

The data for this study are taken from a sample of speech produced by a speaker of EP from the Azorean island of Faial. The subject is a 42-year-old female who was born and raised on the island, but then immigrated to the United States in her teens. She is fluent in her native variety and is identifiable as a speaker of Faialense Portuguese by other Azoreans. She is proficient in English (speaking with a no-

TABLE 1. *Deletion of unstressed vowels by type*

Vowel	Total Occurrences	Total Deletions	Deletion Rate (%)
ə	168	73	43
u	195	77	39
i	76	5	7
ɐ	378	21	6
Nasal	67	2	3
Total	884	178	20

ticeable eastern New England accent) and speaks both English and Portuguese regularly.

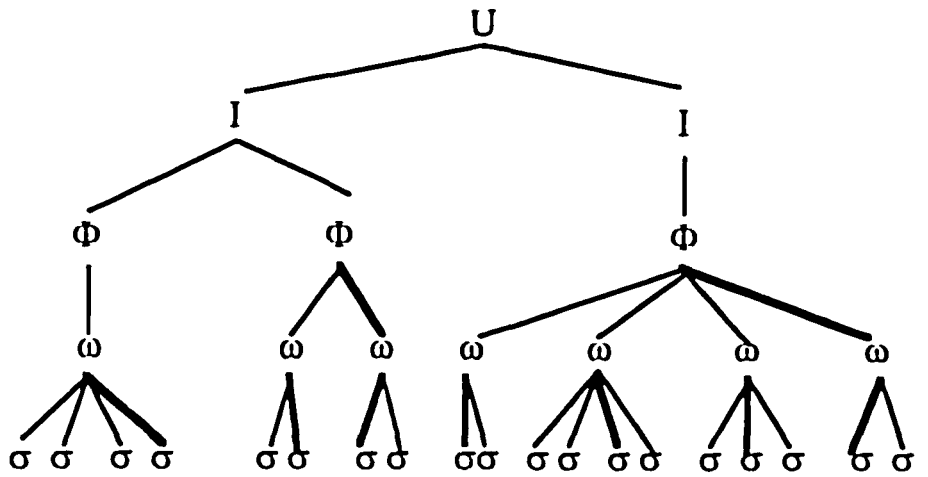
The speech under analysis comes from a conversation between the subject and her mother, a monolingual native speaker of the Faial variety. The conversation, which consisted of family-related matters, took place in the subject's kitchen with the author present but not participating. Approximately 35 minutes of speech were recorded with the aid of a lapel microphone (attached to the subject's shirt). Of this sample, a continuous block of approximately 22 minutes was selected for transcription. This block was transcribed by the author on two separate occasions; a three month interval separated the two transcriptions. The vowels in the corpus were then tagged as [+stress] or [−stress], and all instances of weakening were noted. Determining + versus − stress was done impressionistically, with no differentiation for stress level (e.g., lexical vs. nuclear; primary vs. secondary) among the [+stress] elements; [−stress] elements were those with zero stress. The two transcripts were then compared for consistency; in those instances where the assessments of vowel deletion were in conflict, I returned to the tape to make a third and final judgment. In all but one instance, vowel weakening was manifest as deletion, the odd case being a devoicing.

Initial data

Of 884 potential sites for the deletion rule to operate, 178 (20%) applications were noted. The breakdown by vowel appears in Table 1. As can be seen, nasal vowels experience the lowest rate of deletion; grouping the nasals together yields 2 out of 67 applications (3%). The next lowest rates are for the low vowel [ɐ] and the high front vowel [i]. In terms of raw percentages, [ə] and [u] are deleted the most.

Variable rule analysis coding

Turning to a variable rule analysis (GOLDVARB 1.6; Sankoff & Rand, 1988), we begin by positing a rule whereby unstressed vowels are deleted:



uma mulher /] bateu / nela /] era / uma casa / de gente / velha /]
ø ø

a woman beat on-her was a house of people old

'a woman hit her, it was an old-folks home'

/ = phonological word boundary
] = phonological phrase boundary

FIGURE 4. Determining prosodic structure. (Example from the corpus.)

$$(7)\quad \overset{V}{[-\text{stress}]} \rightarrow \varnothing$$

Given the rule in (7), the factor groups discussed next were taken into consideration for the analysis. The examples cited in the discussion refer to Figure 4, a sample from the corpus.

Each [−stress] vowel in the corpus was coded 1 if deleted (indicating an application of the deletion rule) and 0 if present. In Figure 4, the [u] of *mulher* and the [ə] of *gente* were coded as 1, whereas the [u] and [ɐ] of the word *uma* were coded as 0.

Each unstressed oral vowel (i, ə, ɐ, u) was coded separately as a factor, while the nasal vowels were grouped together as a single factor.

The syllables adjacent to each token (and within the same utterance) were coded as either [+stress], [−stress], or null. In Figure 4, the [u] in the first occurrence of *uma* was coded as having a null previous syllable and a [−stress] following syllable. The [u] of *mulher* was coded as having a [−stress] previous syllable and a [+stress] following syllable.

I then recorded the number of unstressed syllables adjacent to the target vowels. Doing so was a means of testing the possible effects of rhythmic alternation, the strategy whereby languages tend to maximize the number of strong–weak (SW) and strong–weak–weak (SWW) patterns as idealized in poetic meter and consequently to avoid strings of three or more weak syllables. It was hypothesized that

the speaker deleted unstressed vowels as a strategy for promoting such rhythmic alternation. In Figure 4, the [u] of the first *uma* was coded as having 0 preceding unstressed vowels and 2 following unstressed vowels. The [u] of *mulher* was coded as having 2 preceding unstressed vowels and 0 unstressed following vowels.

Taking a cue from the accounts of elision mentioned in the literature, I coded each token with respect to its position within the phonological word: at the left edge of the word, the right edge of the word, or word-internal. In Figure 4, the [u] of the phonological word *uma casa* was coded as being at the left edge of a phonological word; the [ə] of *gente* was coded as a right-edge element; the [ə] of *de* was coded as a word-internal element. Later analyses indicated that these three positions could be collapsed into a simpler binary categorization—right edge of word versus elsewhere in word—without doing any harm to the integrity of the statistical model (i.e., the difference between a three-way and a two-way distinction was not statistically significant at the level $p = .05$).

It should be noted that, in the early stages of the analysis, I also coded for three other prosodic positions: position within phonological phrase (Φ) as determined by the algorithm schematized in Figure 2; position within the intonational phrase (I); and position with the utterance (U). Intonational phrases were defined by isolating continuous intonational contours as heard in the tape-recorded corpus; these contours were often accompanied by short pauses, often with a very short breath. Utterances were defined in terms of longer pauses, an end of a conversational turn, or topic shifts. Direct coding of and reference to these other prosodic constituents (Φ, I, U) did not prove to yield any significant contributions to the statistical model adopted in the final analysis.

Next I created a factor to evaluate potential effects between vowel elision and syllable structure by considering whether deletion of the target vowel resulted in phonologically permissible syllables in the language. In Figure 4, the [ɐ] of the verb *era* was coded as permissible, as the resulting structure [. . . er_umɐ . . .] does not violate any phonological syllable structure constraint of Portuguese. On the other hand, the [ɐ] of *bateu* was coded as impermissible, as the resulting cluster [. . . rb_tew . . .] cannot be optimally syllabified by the grammar. The issue under consideration here was whether elision would be disfavored if the results proved to violate the general syllable template of the language, which, for example, prohibits oral stops in syllable-coda position.

A final factor group, grammatical function, was included to test if function played a role in elision; this was done by encoding whether the target vowel carried grammatical information regarding tense, person, gender, or number. In Figure 4, the [ɐ] of *era* carries number and person information, whereas the [ɐ] of *bateu* is grammatically empty.

THE SPECIAL CASES OF *ele(s)* AND *para*

Before proceeding to a discussion of the results of the variable rule (VARBRUL) analysis, let us digress for a moment to consider the third person pronouns *ele/eles* and the preposition *para* 'for', as each presented a problem in the initial

stages of the analysis. In keeping with the assumptions put forth earlier, all occurrences of the word-final vowel in *ele* were coded as potential sites for deletion. However, early passes through VARBRUL showed unusually high chi-square error values, suggesting that there were interactions among the factors. Closer examination of the data revealed that *ele(s)* occurred 26 times in the corpus, but that the unstressed vowel was never realized. Upon questioning, the consultant revealed that, even in careful speech, *ele(s)* is pronounced as a monosyllable: [ɪl(ʃ)] or [el(ʃ)]. It was concluded that the pronoun was not, in fact, a disyllabic word, but an underlying monosyllable. Since this poses no problems for the phonotactics of the language (which allows syllables closed by [l]), it is perfectly plausible that the underlying representation of *ele* for this particular speaker is /el/. Accordingly, all cases of *ele(s)* were excluded from the analysis on the grounds that they did not provide potential sites for deletion.

Preliminary analysis of the data also indicated that a higher than expected number of unstressed low vowels was deleted in cases where the target was word-internal. Subsequent review of the raw data revealed that every instance of the preposition *para* had been reduced to [prɐ], a viable syllable shape in the language (cf. *praia* 'beach', *prego* 'nail'). As in the case of *ele*, I concluded that the preposition *para* had been relexicalized as /pra/ and therefore treated the word as a monosyllabic item.[4]

RESULTS AND DISCUSSION

The results of the VARBRUL analysis for the factors are summarized in Tables 2 and 3. The only groups found to be significant at the level $p = .05$ were position in phonological word, stress of following syllable, and vowel quality.

The group that was consistently chosen first in the step-up procedure of VARBRUL was that which coded the target's position within the phonological word. As the statistics indicate, the elision rule is favored at the right edge of phonological words ($p = .763$) and inhibited elsewhere in the word ($p = .355$). The fact that this factor group is of the highest significance in the analysis suggests that the elision rule might be characterized as a word-edge variable process (see Nespor & Vogel, 1986), as suggested by the more anecdotal claims in the literature.

One possible account for this observation may lie in an appeal to extrametricality (à la Hayes, 1982). If one assumes that underlying open final syllables in Portuguese are extrametrical (a position consistent with certain analyses of Portuguese stress assignment, such as Walters, 1994), one can posit a variable rule that desyllabifies the extrametrical syllable and stray-erases the former nucleus. The onset material of the ill-fated syllable is subsequently incorporated into the coda of the preceding syllable, which in the vast number of cases bears stress. (Recall that Portuguese stress more often than not falls on the penultimate.) In this context it is worth noting that elision does not appear to be structure-preserving with respect to phonetic syllables: as initial VARBRUL analyses indicated, the process is as likely to create syllables that conform to the language's phonological syllable template ($p = .51$) as ones that do not ($p = .49$). The fact that the

TABLE 2. *Results of the variable rule analysis: Percent application per cell*

	Following Syllable						
	Stressed		Unstressed		Null		
	Right Edge	Other	Right Edge	Other	Right Edge	Other	Total
ə	63% 12/19	27% 23/86	77% 20/26	41% 13/32	100% 5/5		43% 73/168
u	66% 23/35	11% 7/65	71% 25/35	19% 9/47	92% 11/12	100% 2/2	39% 77/196
i	0% 0/10	8% 5/65	—	—	—	0% 0/1	7% 5/76
ɐ	1% 1/75	2% 3/147	2% 1/58	4% 2/51	0% 0/14	11% 1/9	2% 8/354
Nasal	0% 0/5	0% 0/43	0% 0/3	8% 1/12	25% 1/4		3% 2/67
Total	25% 36/144	9% 38/406	38% 46/122	18% 25/142	49% 17/35	25% 3/12	19% 165/861

factor group encoding syllabic permissibility was never selected as significant further indicates that vowel elision is free to create surface strings that are not licensed by the phonology. While such a claim might appear to belabor the obvious, it is noteworthy inasmuch as an analysis of a different Azorean variety (São Miguel) has indicated that the deletion of word-final vowels is conditioned by some degree of syllabic structure preservation (Silva, 1997).[5]

In addition to being sensitive to position in phonological word, deletion is most favored when there is no following syllable, indirectly suggesting that I- and U-final vowels are also likely candidates for deletion. In those cases when there was a syllable to the right of the target, elision was slightly favored when the following syllable was weak and somewhat disfavored when the following syllable was stressed. Of related interest is the fact that the other stress-related factor groups—stress of preceding syllable and number of adjacent unstressed syllables—did not contribute to the final analysis.

As for the effects of vowel quality, we find that [u] and [ə] most highly favor deletion, [i] somewhat disfavors it, and nasal vowels and [ɐ] very strongly disfavor the process. These findings partially corroborate the results of a study of Montréal French by Cedergren and Simoneau (1985) in which [−low] (or [+high]) vowels are the most likely to syncopate. Moreover, the similar behavior of low vowels and nasal vowels parallels a claim by Krakow, Beddor, Goldstein, and Fowler (1988), who documented how the phonetic properties common to both low and nasal vowels (i.e., the rich formant structure at the bottom of the acoustic spectrum) provide an acoustic basis for their patterning together.

These findings are certainly not inconsistent with the literature, which has characterized schwa as the vowel most likely to elide. What the current study indicates, however, is that [u] is also a viable candidate for elision. This fact is

TABLE 3. *Results of the variable rule analysis: Weighted probabilities*

Order of Selection[a]	Factor Group	Factor	Probability
1	Position in phonological word	Right edge	.764
		Other	.355
2	Following syllable	Null	.839
		Unstressed	.554
		Stressed	.438
3	Vowel	ɔ	.915
		u	.857
		i	.653
		Nasal	.199
		ɐ	.120

Input probability = 0.075
Total χ^2 = 34.2480; χ^2/cell = 1.3699; log likelihood = −265.052

[a]The order in which each factor group was selected by the step-up procedure of GOLDVARB 1.6.

important because word-final [u] (as the phonetic reflex of underlying /-o/) often marks masculine gender on nouns and adjectives as well as first person singular in the present tense. Could it be that EP is moving in the direction of Catalán, where masculine forms are marked by -∅ and feminine forms are marked by the suffix [-ɐ]? Perhaps so. However, grammatical function was not a significant factor group in the analysis. Moreover, a one-level analysis of the data that included this factor group revealed that the weighted probabilities were virtually identical: when the target carries grammatical information, p = .52; when it does not, p = .48.[6] On the basis of these findings, it is hardly reasonable to speculate that the language is in the process of grammatical change to a system in which the masculine suffix /-o/ is moving towards zero.[7]

CONCLUSIONS

In attempting to characterize vowel elision in the speech of one speaker of Faialense EP, the notion of right edge appears to play an important role, particularly at the word level. Unstressed vowels at the rightmost end of a phonological word are prone to deletion, a process further enhanced when there is no following syllable. Moreover, it has been found that vowel quality plays a key role in the analysis. Low vowels and nasals are highly unlikely to undergo deletion, whereas the high vowel [u] and the central vowel [ɔ] are more prone to elision. The possible phonetic basis for the observed patterning aside, the present data indicate an extension of the schwa deletion rule found in the literature (Mateus & Delgado Martins, 1982). In the case of unstressed final [u], which often carries morphological meaning, one is led to the conclusion that grammatical function plays no significant role in the application of the deletion rule. Finally, this study (despite its methodological limitations as a case study) underscores the fact that future attempts to

understand a subtle and low-frequency variable process such as vowel elision in the context of a particular framework—here prosodic phonology—may be enhanced by the use of quantitative methods.

NOTES

1. This point may be compared to an end setting of left for right-headed languages such as Japanese (Selkirk & Tateishi, 1988, 1991) or Korean (Silva, 1989, 1992).
2. These characteristics differ significantly from the Portuguese of Brazil, a syllable-timed variety.
3. Varieties of EP with somewhat different vowel inventories include those spoken on the islands of São Miguel and (to a lesser extent) Santa Maria. For more on these varieties, see Rogers (1948, 1979) and Silva (1986, 1988, 1996).
4. As an aside, it is worth noting that a relexicalization of *para* to /pra/ could have consequences for the phonemic analysis of the vowel system; it might be that the only minimal pair demonstrating the phonemic status of [ɐ] is the pair *para* /pɐra/ 'for' ~ *para* /para/ 'stop'. Without the first member of the pair, [ɐ] potentially slips into stress-conditioned allophonic obscurity. Upon more careful thought, however, even the initial premise that the two items form a true minimal pair can be called into question. Given that the preposition *para* 'for' is obligatorily followed by a NP and the head of this NP generally attracts phrasal stress, *para* 'for' is left unstressed. It could then be argued that the underlying first vowel of *para* 'for' is actually /a/, and that this phonemic /a/ is realized as [ɐ] by virtue of the regular rule of vowel reduction. Under this scenario, *para* 'for' and *para* 'stop' are homophonous in the lexicon, and /ɐ/ is deprived of any phonemic status. As one reviewer pointed out, some speakers of EP maintain a phonemic distinction between /a/ and /ɐ/ in morphologically related pairs such as *cantamos* [kɐ̃'tamuʃ] 'we sing' and *cantámos* [kɐ̃'tɐmuʃ] 'we sang'. The social and educational factors that might distinguish such a group from the Azorean speakers I have encountered, who do not employ such a contrast, remain unexplored.
5. Another avenue to pursue here is the degree to which the subject's proficiency in English might have affected her tolerance for non-Portuguese syllable structures. This factor is well worth considering in future investigations.
6. A separate analysis of those forms containing only underlying /a/ and /o/ revealed that grammatical function did not play a significant role in the deletion process. In fact, this factor group was the first to be eliminated by the step-down procedure. A one-level run of the /a-o/ subset of the corpus yielded probability values for the grammatical information factors comparable to those given in the text.
7. The speculative nature of such an idea is all the more evident when one remembers that the present analysis is based on the data of a single speaker. Nevertheless, data from Silva (1997) indicate that, even in formal styles, some speakers delete word-final /-o/: *vestido* > [vʃtid] 'dress' (n); *queijo* > [keʃ] 'cheese'; *marreco* > [mɐχɐk] 'duck'. There is clearly a need for further research.

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