HW2: Consonant and vowel features in Turkish

This paper deals with consonant and vowel features in Turkish and their effects on alternations in nominative and accusative singular nouns.

1. Morphological rules and affix allomorphy

Accusative singular nouns are marked with one of four suffix vowels, {i, y, ɯ, u}. It seems like these suffix vowels occur in complementary distribution to each other based strictly on vowel harmony, and as such, I don't feel comfortable choosing an underlying form. But as far as I can tell, we don't seem to use features in morphological rules, so for now, I'll choose /i/ as the underlying form and use phonological rules to add and subtract features for vowel height and features then. As such, the morphological rule is:[1]

Accusative Singular Formation: X → Xi if X is [+accusative, +singular, +noun]

The nominative singular form is simply the root with no affixes added.[2]

2. Root allomorphy and underlying forms

Each root ends in the format VC]$_{word}$. The subset of final vowels is {e, i, ɯ, y, u, ɑ, ø, o}. The smallest feature matrix that can pick out this subset is [+syllabic]. The subset of final consonants is {v, p, z, ɬ, lʲ, p, j, n, r, ʃ, k̲, ķ}. The smallest feature matrix that can pick out this subset is [-syllabic].[3]

Certain accusative singulars show root allomorphy where the final vowel of the root is elongated in the accusative singular form in comparison to the nominative singular form.

To explain these allomorphs—

ɑ → ɑː
u → uː
i → iː

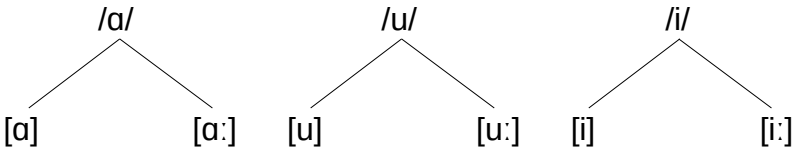
—the smallest set of feature changes needed is [+syllabic] → [+long] / __ [-syllabic].[4]

Because the only difference between these accusative singulars with root allomorphy and the accusative singulars without root allomorphy is vowel elongation of the final vowel of the root/nominative singular form, the observation that the morpheme boundary is the final consonant holds.[5]

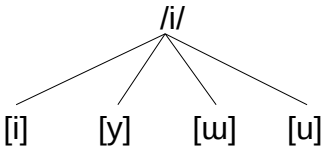
[1] 6.2 MorphologicalRule
[2] 6.1 MorphemeBoundaries
[3] 1.2 SubsetToFeatures
[4] 1.4 ChangeToFeatures
[5] 6.1 MorphemeBoundaries

3. Phonemicization

[+long] vowels seem to only occur in the final vowel position of roots in the accusative singular form, and they never occur anywhere else in the data. Furthermore, they never appear in the data for nominative singular forms. This suggests that [+long] vowels are not separate phonemes and are allophones[6] for the underlying[7] [-long] versions.



The alternation in the suffix shows that the /i/ suffix has four allophones:



4. Phonological rules

A Final Backing and Final Rounding rule account for the alternation seen in the suffixes.

> *Final Backing*: [+syllabic, +high] → [+back] / [+syllabic, +back][-syllabic] __]$_{word}$
> Final [+high] vowels gain the [+back] feature if the preceding VC cluster contains a [+back] vowel as well.

> *Final Rounding:* [+syllabic, +high] → [+round] / [+syllabic, +round][-syllabic] __]$_{word}$
> Final [+high] vowels gain the [+round] feature if the preceding VC cluster contains a [+round] vowel as well.

To account for the alternation in roots, there doesn't seem to be a unifying feature for the vowels {ɑ, u, I} other than [+syllabic], so vowel features can't explain the root allomorphy.[8] The root-final consonants shouldn't matter either, since that can't explain why [somunu] has no vowel lengthening but [zɑmɑːnɯ] does. However, if the underlying form of the root has a lengthened vowel, and a phonological rule adds the [-long] feature to the final vowel in a word, the rule explains all the data in the basic section. We'll call this the Final Shortening rule.

> *Final Shortening*: [+long] → [-long] / __]$_{word}$[9]

[6] 6.3 IdentifyAllomorphs
[7] 6.4 UnderlyingForm
[8] 1.2 SubsetToFeatures
[9] 1.4 ChangeToFeatures

[ɑː], [uː], and [iː] become [ɑ], [u], and [ɪ] ([+long] vowels become [-long]) at the end of words.[10]

5. Derivations

Here are some derivations to show how the morphological and phonological rules apply.[11]

house, nom. sg. /ev/ *N, +nom, -pl*	*house, acc. sg.* /ev/ *N, +acc, -pl*	*law, acc. sg.* /huk̲uːk̲/ *N, +acc, -pl*	*greetings, nom. sg.* /tebriːk̬/ *N, +nom, -pl*	Lexical entries of roots
				Morphology:
---	evi	huk̲uːk̲i	---	Acc. Sing. Formation
				Phonology:
---	---	huk̲uːk̲ɯ	---	Final Backing
---	---	huk̲uːk̲u	---	Final Rounding
---	---	---	tebrik̬	Final Shortening
[ev]	[evi]	[huk̲uːk̲u]	[tebrik̬]	**Surface Forms**

6. Advanced data

To explain the advanced data, two phonological rules need to be added to the list. To explain the discrepancies where the root ends with {lʲ, tʲ} and the extra challenge data where the roots end with {k̬}, we can make a new phonological rule since all these consonants have have the minimal shared feature matrix [+consonantal, +front].[12]

Final Vowel Harmony Fronting:
[+syllabic, +high] → [+front] / [+consonantal, +front] __]$_{word}$[13]
A [+high] vowel becomes [+front] when following a [+front] consonantal.

To explain the advanced data where the final consonant is {k̲}, the minimal feature matrix that solely describes the subset is [+consonantal, +back] for the given inventory of phonemes.[14] The corresponding phonological rule is:

Final Vowel Harmony Backing:
[+syllabic, +high] → [+back] / [+consonantal, +back] __]$_{word}$[15]
A [+high] vowel becomes [+back] when following a [+back] consonantal.

[10] 6.5 RulesForAlternation
[11] 7.1 GiveDerivation
[12] 1.2 SubsetToFeatures
[13] 1.4 ChangeToFeatures
[14] 1.2 SubsetToFeatures
[15] 1.4 ChangeToFeatures

Finally, for the extra challenge data, this phonological rule should explain it:

> *Final Consonant Vowel Harmony Backing*:
> [+DORSAL, -CORONAL] → [+back] / [+syllabic, +back] __]$_{word}$[16]
> A word-final [+DORSAL, -CORONAL] consonant becomes [+back] when following a [+back] vowel.

[16] 1.4 ChangeToFeatures

Please ignore the bottom footnotes for this page: it's some weird issue with LibreOffice Writer (open source word processor I use on my Linux install for outside of home)

[6] 6.3 IdentifyAllomorphs
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