

## Notes on Monosyllabism in Turkish

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Various types of prosodic constraints on morpheme and word size have been uncovered in recent studies in Prosodic Morphology (see McCarthy and Prince 1986, 89, etc.). Here we take up two cases from Turkish. Besides offering a new perspective on the well-known allomorphy of the aorist suffix, we will focus on a hitherto unnoticed constraint on word size. Both cases crucially appeal to the monosyllabic/polysyllabic distinction, and it will be suggested that the aorist allomorphy may find a more satisfying explanation once the word-size constraint is taken into account.

1. The simple imperative in Turkish consists of a verb stem without tense, aspect, or agreement affixes. Such a stem may be a simple root (1a) or a derived stem involving one or more suffixes (1b).

- |     |    |                |                         |
|-----|----|----------------|-------------------------|
| (1) | a. | yürü           | 'walk!'                 |
|     |    | ye             | 'eat!'                  |
|     |    | yen            | 'conquer!'              |
|     |    | kon            | 'alight! (like a bird)' |
|     | b. | yaka-la        | 'catch!'                |
|     |    | collar-N>V     |                         |
|     |    | yaka-la-ma     | 'don't catch!'          |
|     |    | collar-N>V-NEG |                         |

Given this apparently straightforward mode of formation, it comes somewhat as a surprise that certain passive imperative forms are rejected by native consultants, as illustrated by (2b).<sup>1</sup>

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<sup>1</sup> Since passive imperatives are somewhat odd in normal circumstances, care was taken to avoid pragmatic infelicities. The speakers were asked to imagine themselves in the role of a stage director giving instructions to an actor who was to act out or pantomime various events. Embedded within such a context, our consultants readily accepted passive imperatives, but categorically rejected the passive imperative forms in (2b).

- (2) a. at-<sup>1</sup><sub>2</sub> 'be thrown!'  
 throw-PASS
- kovala-n 'be chased!'  
 chase-PASS
- yaka-la-n 'be caught!'  
 collar-N>V-PASS
- b. \*ye-n 'be eaten!'  
 eat-PASS
- \*ko-n 'be put!'  
 put-PASS

The criterion for acceptability is apparently the prosodic size of the word: It must exceed a certain minimal length. This constraint, formulated in (3), disallows monosyllabic words in Turkish.

- (3) \* [σ]  
 Word

The unacceptable passive imperatives \**ye-n* 'be eaten' and \**ko-n* 'be put' in (2b) are then correctly ruled out by (3). However, notice that the constraint incorrectly also rules out (homophonous) simple imperatives *yen* 'conquer' and *kon* 'alight (like a bird)' in (1a). This indicates that the size constraint is not enforced on forms without overt affixes. Monomorphemic words in (1a) are not subject to this constraint because no derivation is involved (see Itô 1989 for further discussion and exemplification of other size constraints on derived forms). Being restricted to derived environments, (3) correctly disallows all derived monosyllabic words in (2b), but has no effect on underived monosyllabic words in (1a).

The facts presented so far do not fully establish the validity of (3), in particular given the existence of two derived forms which are exceptions (*de-r* 'says' and *ye-r* 'eats', but see section 4 for a possible explanation). Independent evidence for (3) is therefore crucial.

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<sup>2</sup> /-ll/ is the general form of the passive suffix (the archiphoneme denoted by capital ll/ is subject to normal vowel harmony). The suffix appears as /-ln/ after / and vowels. (e.g. *bil-in-* 'be known', *çal-in-* 'be struck', *ara-n-* 'be sought'). The vowelless variant is derived by a general rule of postvocalic vowel deletion.

Derived monosyllabic CVC forms would result from combinations of CV-shaped roots with a VC-shaped suffix (via postvocalic vowel deletion). An initial obstacle here is the paucity of such roots in Turkish. We find only four candidates among native verbal and nominal roots (*ye* 'eat', *de* 'say', *ko* 'put' and *su* 'water'), two of which turn out to be morphophonemically heavy syllables (*koy-* and *suy-*).<sup>3</sup>

There are, however, at least two categories of relevant forms with the shape /CV/: the names of the notes on the musical scale (*do re mi fa so la ti*) and of the letters of the alphabet (*a be ce ce de e fe ge...*). These can be inflected as noun roots in a situation where the musical notes or the letters of the alphabet are a topic of discussion, such as might be the case in a singing or penmanship class. The examples in (4) illustrate the judgments collected from our consultants:

- (4)
- |    |           |           |           |                |
|----|-----------|-----------|-----------|----------------|
| a. | do        | re        | mi        |                |
|    | do-lar    | re-ler    | mi-ler    | (PL)           |
|    | do-lar-ım | re-ler-im | mi-ler-im | (PL-1sg POSS)  |
|    | *do-m     | *re-m     | *mi-m     | (1sg POSS)     |
|    | do-muz    | re-miz    | mi-miz    | (1pl POSS)     |
|    | do-m-u    | re-m-i    | mi-m-i    | (1sg POSS-ACC) |
|    | do-m-da   | re-m-de   | mi-m-de   | (1sg POSS-LOC) |
| b. | de        | se        | me        |                |
|    | de-ler    | se-ler    | me-ler    | (PL)           |
|    | de-ler-im | se-ler-im | me-ler-im | (PL-1sg POSS)  |
|    | *de-m     | *se-m     | *me-m     | (1sg POSS)     |
|    | de-miz    | se-miz    | me-miz    | (1pl POSS)     |
|    | de-m-i    | se-m-i    | me-m-i    | (1sg POSS-ACC) |
|    | de-m-de   | se-m-de   | me-m-de   | (1sg POSS-LOC) |

What is surprising here is the apparently arbitrary rejection of exactly one member of the paradigm: For example, there is no semantic or pragmatic reason for why the form *\*dom* 'my *do*' should be any worse than *domuz* 'our *do*'. The generalization is clear: When a monosyllabic form is derived by affixation (e.g. *\*de-m* 'my *d*'), it is ungrammatical. Both polysyllabic forms (e.g. *deler* 'd's') and underived monosyllabic forms (e.g. *de* 'd') are entirely acceptable.

<sup>3</sup> A number of minor category words of shape CV (*de* 'too', *mi* (question particle), *ki* 'that', *be* 'hey', *ya* 'so', *ne* 'neither...nor', etc.) do not take any suffixes and therefore are not subject in any way to the size constraint. Note that the scarcity of CV content words in Turkish in itself supports the existence of a size constraint. It is taken by Dobrovolsky 1987 as evidence for an obligatory closing consonant in Turkish monosyllabic words. We return to this point below.

Notice that the distribution of acceptability judgments in (4) is exactly the one predicted by our analysis: We are apparently dealing with a productive application of (3). This can therefore be taken as confirming evidence for the size constraint outlawing all and only derived monosyllabic forms.

Another type of argument supporting (3), more indirect but no less revealing, can be given on the basis of the principles regulating aorist allomorph selection, to which we now turn.

2. The Turkish aorist suffix has two basic variants, one exhibiting a high vowel and the other a nonhigh vowel, whose distribution is illustrated in (5). As the examples show, each variant is subject to normal vowel harmony.

(5)	geç-er	'passes'	süpür-ür	'sweeps'
	koş-ar	'runs'	çalış-ır	'works'
	gid-er	'goes'	otur-ur	'sits'
	kız-ar	'gets angry'	ayır-ır	'sets aside'
	um-ar	'hopes'	dolaş-ır	'wanders'
	sor-ar	'asks'	şaşır-ır	'is surprised'
	gir-er	'enters'	gönder-ir	'sends'
	sür-er	'lasts'	ısı-ır	'bites'
	bin-er	'mounts'	öğren-ir	'learns'
	çal-ar	'steals'	unut-ur	'forgets'

The nonhigh vowel variant is chosen after monosyllabic roots, the high vowel variant after polysyllabic roots.

Similarly, it is the high vowel variant that systematically appears whenever a stem is formed by suffixation, which can be quite extensive:

(6)	anla-ş-ıl-ır	(* -ar)
	understand-RECIP-PASS-AOR	'it is (mutually) understood'
	çalış-tır-ıl-ır	(* -ar)
	work-CAUS-PASS-AOR	'it is made to work'
	avrupa-lı-laş-tır-ıl-ır	(* -ar)
	Europe-an-ize-CAUS-PASS-AOR	'he is made to become European'

As shown in (7), this holds even when the root from which the stem is formed requires the nonhigh variant if affixed directly.

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(7)	gid-er go-AOR	gid-il-ir go-PASS-AOR
	çal-ar steal-AOR	çal-in-ır steal-PASS-AOR
	sev-er love-AOR	sev-iş-tir-il-ir love-RECIP-CAUS-PASS-AOR

The distributional criterion here is clearly prosodic. An informal preliminary statement is given in (8).

(8) /-Er/ attaches to monosyllables, /-Ir/ to polysyllables.

Before we can proceed to a more formal development of this analysis, two classes of fairly systematic exceptions to this prosodic generalization require our attention.

The first case arises with the passive stems in (9); even though monosyllabic, they take the high-vowel variant. Note in particular the contrasting behavior of the homophonous roots in (10), which take the expected /-Er/.

(9)	ye-n-ir eat-PASS-AOR	'is eaten'
	ko-n-ur put-PASS-AOR	'is put'
	de-n-ir say-PASS-AOR	'is said'
(10)	yen-er conquer-AOR	'conquers'
	kon-ar alight-AOR	'alights'

It would be possible to formulate a further restriction overriding (8) and requiring that derived stems always take /-Ir/. But such a complication is unnecessary, since a straightforward phonological solution is at hand. The underlying form of the passive suffix here is /-In/ (see footnote 2 above). At the relevant stage of the derivation, the passive stem is bisyllabic, e.g. *de-in-* 'be said'. The high vowel variant is chosen to make *de-in-ir*, and subsequent postvocalic vowel deletion derives the surface form *denir*. The morphological complexity of the stem is thus irrelevant, and the purely prosodic criterion in (8) can be maintained.

This leaves us with the second class of exceptions, exhaustively listed in (11) (from Underhill 1976, 146): twelve monosyllabic liquid-final roots which take */-Ir/* instead of */-Er/*.<sup>4</sup>

(11)	al-ır	'takes'
	bil-ır	'knows'
	bul-ur	'finds'
	dur-ur	'stands'
	gel-ır	'comes'
	gör-ür	'sees'
	kal-ır	'stays'
	ol-ur	'becomes'
	öl-ür	'dies'
	var-ır	'arrives'
	ver-ır	'gives'
	vur-ur	'hits'

Since there are other liquid-final monosyllabic roots that take the expected */-Er/* (e.g. *gir-er* 'enters' and *sür-er* 'lasts'), some form of lexical marking is necessary for the cases in (11) in order to bring them into conformity with (8). (A prosodically motivated way of capturing the special status of the forms in (11) is discussed in section 4.)

Note that the two types of surface exceptions are cases with */-Ir/* attaching to monosyllabic stems; there are no exceptions of the opposite kind (with */-Er/* attaching to polysyllabic stems). This indicates that */-Er/* is the distributionally more restricted variant. The same asymmetry is found in the basic pattern recorded in (8): */-Er/* is restricted to monosyllabic stems, whereas */-Ir/* appears after polysyllabic stems of any length.

3. Our task now is to capture these generalizations within a formal framework. One possibility, following McCarthy and Prince (1986, 89), is to directly encode the observations about the aorist allomorphy by means of prosodic subcategorization (Inkelas 1989).

- (12) a.    -*Er* / [σ] \_\_\_\_  
       b.    -*Ir*

Whereas */-Er/* subcategorizes for a monosyllabic stem, */-Ir/* is unrestricted. Since the two are in an elsewhere relationship, */-Er/* takes precedence on all monosyllabic forms.

<sup>4</sup> Lewis (1967) lists */san-/* 'think' as also taking */-Ir/*. But according to Underhill (1976, 146), the usual shape of the suffix after this root is */-Er/*.

The statement in (12) correctly captures the facts, but note that subcategorizing the affix variants merely stipulates the correlations: /-r/ could just as easily appear on monosyllables, with /-Er/ serving as the elsewhere variant. Such arbitrariness, inherent to any subcategorization account, is in this case worrisome because the allomorph asymmetry is paralleled by another asymmetry within Turkish phonology, where // is the unmarked vowel and is used in epenthesis (see e.g. Clements and Keyser 1983, 59-61.)

As a first step towards a more satisfactory account, it is reasonable to assume that the allomorphs are underlyingly not /-r/ and /-Er/, but rather /-r/ and /-Er/. The general process of *I*-epenthesis is called upon whenever required by syllable structure. If this view can be maintained, then a very simple explanation to the allomorphy suggests itself, connecting the aorist allomorphy to the independently established word size constraint (3).

Roughly, the idea is the following: The basic variant is /-r/, but when the root is monosyllabic, the word-size constraint (3) blocks /-r/, because adding it to a monosyllable still leaves a monosyllable. This opens the way for the secondary variant /-Er/, which always results in bisyllabicity. Note that we are here crucially dealing with underlying syllable count; eventually, *I*-epenthesis will supply a vowel to /-r/ after consonant-final stems, but this is irrelevant at the level of allomorph selection, which is guided by the word size constraint.

This means that the aorist affix needs no specific prosodic subcategorization frame (since it would only recapitulate part of the content of the independently necessary (3)). A simple ordering of the variants, as in (13), will suffice.

- (13) a. -r  
b. -Er

The variant /-r/ has priority; only when lexical insertion of /-r/ is blocked by the word size constraint, the secondary variant /-Er/ gets inserted.

This approach then appears superior to the subcategorization account in that it eliminates the monosyllabic environment stipulation in (12), subsuming its effects under the general constraint (3). In turn, this analysis of the aorist allomorphy provides independent evidence for the Turkish word size constraint argued for in this paper.

4. In this section, we take up some alternative formulations of the word size constraint (3) (repeated here in (14)) and consider their implications.

- (14) \* [σ]  
Word

A straightforward reformulation as a minimal word template is found in (15), a positive condition requiring Turkish words to be minimally bisyllabic (see McCarthy and Prince

1986,89 for exemplification and discussion of minimal word templates in other languages).

- (15) [σ σ]  
MinWd

The wellformedness judgments in (2) and (4), for example, are now accounted for by (15), which rules out monosyllabic forms as subminimal. While the direct empirical consequences of (15) are the same as before (including the aorist allomorphy), the reformulation as a minimal word template raises an entirely different issue.

On the basis of evidence from reduplication and lexical statistics (cf. the notable scarcity of CV roots, see footnote 3 above), Dobrovolsky 1987 argues that the minimal word in Turkish is a CVC syllable. Armin Mester has suggested to us a possible way of reconciling our evidence with Dobrovolsky's proposal.

First, the CVC template can arguably be interpreted as a bimoraic minimal word template given in (16). Note that in terms of Barker (1989, this volume), a heavy syllable can be identified as the minimal (iambic) stress foot of Turkish.

- (16) [μ μ]  
MinWd

Second, if final consonants are systematically extraprosodic during the derivation, then the unacceptable forms in (2) and (4) are correctly ruled out by (16). Even with affixation, they remain monomoraic since final Cs, being extraprosodic, don't count as second moras.

The aorist allomorphy can be treated in a similar fashion. If final consonants are extraprosodic, all monosyllabic roots would be monomoraic (hence subminimal). */-Er/* attaches to monomoraic (subminimal) forms, and */-r/* to full prosodic words.

This analysis also allows a straightforward way of marking exceptional forms by means of (non)extraprosodicity. Recall that the second set of systematic exceptions to the aorist allomorphy involves the monosyllabic roots in (11), which share the phonological characteristic of ending in a sonorous liquid. In terms of (16), their exceptionality reduces to the fact that their final consonants are not extraprosodic. As a consequence, the final liquids are moraic, making the whole root bimoraic and thus a licit recipient of the */-r/* suffix.

The liquid-final characteristic of these roots is also reminiscent of the noted exceptions to the word size constraint (*de-r* 'says', *ye-r* 'eats'). Again, these forms would satisfy the minimal word template (16) if the final liquid here counts as moraic.



Note that this line of analysis finds support in considerations of phonological naturalness: Both cases of exceptional prosodic weight involve highly sonorous segments in coda position, which are typical mora-bearing units.

Albeit with the complication of having to invoke extraprosodicity, the analysis with the bimoraic template (16) appears to be superior in that it connects our minimality evidence with other areas of phonology and morphology. These considerations, however, lie beyond the scope of this paper, and the ultimate choice between the alternatives must await future investigation.

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