Patterns of /e/-Lowering in Turkish Emphatic Reduplication

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e-lowering

/e/ is realized as [æ] in closed syllables where the coda is a sonorant cons. [m,n,l,r] in TR (Göksel & Kerslake 2005, Gopal 2018, Dadan et al. 2024)

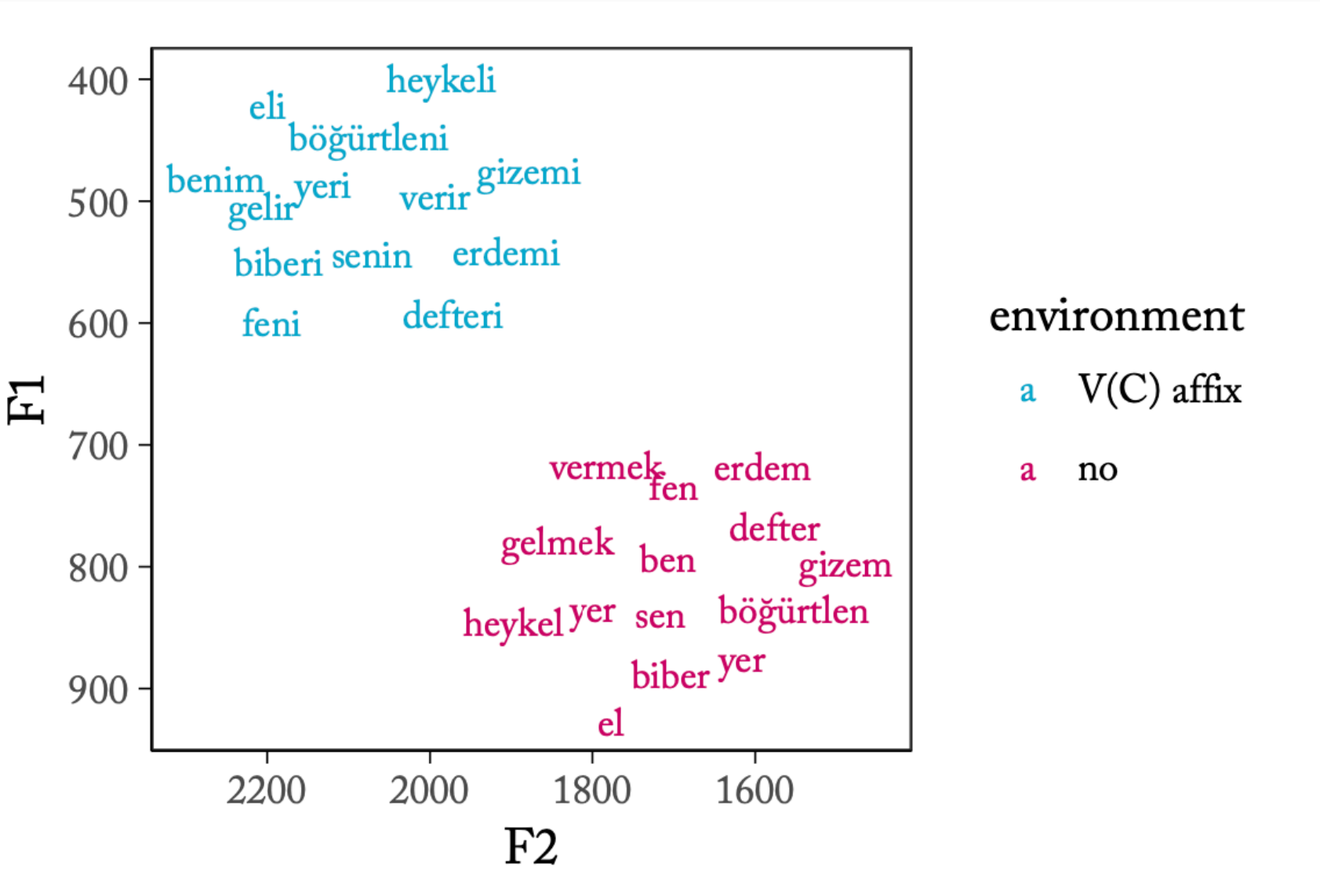
(1) a. bæn → be.ni
'I' 'I.ACC'

b. bæn → bæn.de
'I' 'I.LOC'

(2) a. de.de → de.dæm
'grandpa' 'my grandpa'

b. de.de → de.de.si
'grandpa' 'his grandpa'

e-lowering



Gopal (2018:196)

Emphatic Partial Reduplication

A $(C_1)VC_2$- prefix is added to an adjectival or adverbial base to intensify its meaning in Turkish (Kelepir 1999, Tang & Akkuş 2023).

2 parts: $(C_1)V$, copied from base & linking consonant C_2: {p, s, m, r}

(3) a. mavi → mas-mavi
'blue' 'completely blue'

b. eski → ep-eski
'old' 'very old'

Selection of linking consonants masking vowel alternations

Previous studies focused on LC selection, assuming identity between (C_1)V of RED and BASE (Demircan 1987, Kelepir 2000, Wedel 1999 a.o.).

"The initial C_1V are identical to the word-initial CV of the base."

(Tang & Akkuş 2023:5)

In sum: Gradient identity avoidance between LC and base consonants

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In sum: Gradient identity avoidance between LC and base consonants

However, identity is not always the case:

(4) a. te.miz 'clean' $\longrightarrow$ b. tær.te.miz 'extremely clean'

In this study

Focus on the interaction of e-lowering and emphatic reduplication.

Investigate possible combinations of [æ] and [e] in the BASE and RED

Show that the under/over-application of e-lowering is attested only when it leads to identity between the BASE and RED.

Although this is reminiscent of Correspondence Theory (McCarthy & Prince 1995), we argue that the data can be better explained with a rule-based account allowing different degrees of specification and a feature-filling e-lowering rule (e.g. Inkelas & Orgun 1995).

e-lowering: productive with exceptions

Both over- and under-application of e-lowering are attested outside reduplication.

Overapplication of e-lowering (i.e. pre-obstruent [æ]) is rare, but attested in a few morphemes (Gopal 2018).

-*mæz*, the negative aorist morpheme:

(5) a. sev-mæz
like-NEG.AOR

b. bil-mæz
know-NEG.AOR

And two other morphemes (cf. Dadan et al. 2024):

(6) a. pek.mæz
'molasses'

b. mær.kæz
'center'

e-lowering: productive with exceptions

Underapplication is attested much more widely (with significant variation).

(7)

a.	den.ge	‘balance’	c.	el.bet	‘certainly’
b.	mem.le.ket	‘country’	d.	my-ber.ra	‘Müberra’

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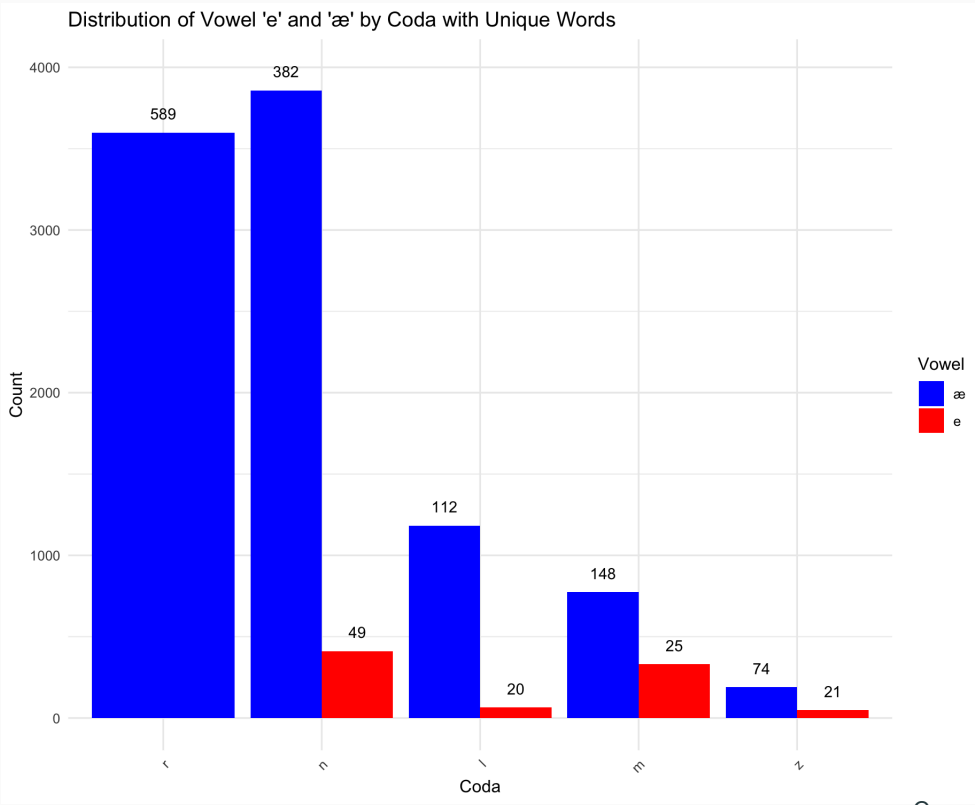
Type/token frequencies of syllables ending in [r,n,l,m,z] (by word) in Altınkamış and Aksu corpora at CHILDES



The emerging picture

We need to account for under- (e.g. *el.bet* 'certainly'), over- (e.g. *-mæz* 'NEG.AOR'), and normal application of e-lowering.

To this end, I hypothesize:

- e-lowering is a **feature-filling rule** (Inkelas & Orgun 1995; see also Reiss 2021) that inserts [+low] to a non-high front (unrounded) vowel only before sonorants.

- Over-/under-application is due to **prespecification** in UR.

- The default [±low] feature is [-low].

- Surface-true forms are due to either inserting [+low] to a pre-sonorant non-high front (unrounded) vowel that lacks [±low], or default [-low] being inserted elsewhere.

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Can this be extended to reduplication contexts?

e-lowering patterns in emphatic reduplication

Based on 2 speakers' productions judged by 4 speakers

RED	BASE	Attested?	Example	Surface-true
[e]	[æ]	Yes	*pes-pæm.be*	✓
		No	**sem-sært*	under-appl.
[æ]	[æ]	Yes	*sæm-sært*	✓
		Yes	*pæs-pæm.be*	over-appl.
[æ]	[e]	Yes	*tær-te.miz*	✓
		No	**sæp-se.rin*	over-appl.
[e]	[e]	Yes	*zep-zen.gin*	✓
		Yes	*bem-be.jaz*	under-appl.

Accounting for patterns: Surface-true forms

Assumptions:

- emphatic reduplication copies the underlying $(C_1)V$ of the base
- syllabification applies before feature filling [±low]-insertion

Surface-true forms	pespæmbe	sæmsært	tærtemiz	zepzengin
Base (UR)	pEmbE	sErt	tEmiz	zengin
Reduplication	pEs-pEmbE	sEm-sErt	tEr-tEmiz	zep-zengin
Syllabification	pEs.pEm.bE	sEm.sErt	tEr.tE.miz	zep.zen.gin
[±low]-insertion	pes.pæm.be	sæm.sært	tær.te.miz	NA

Accounting for patterns: Under-application

/bejaz/ needs to be **prespecified for [-low]**.

Correct predictions for **semsært*: we derive only *sæmsært* even with prespecification.

	bembejaz	***semsært**
UR	bejaz	sært
Reduplication	bem-bejaz	sæm-sært
Syllabification	bem.be.jaz	sæm.sært
[±low] Insertion	NA	NA

Accounting for patterns: Over-application

/pæmbE/ is **prespecified for [+low]** for speakers accepting *pæspæmbæ*.

***sæpserin* is correctly ruled out**: /e/ in *serin* can be either prespecified for [-low] or underspecified.

	pæspæmbe	***sæpserin**	***sæpserin**
UR	pæmbE	sErin	serin
Reduplication	pæs-pæmbE	sEp-sErin	sep-serin
Syllabification	pæs.pæm.bE	sEp.sE.rin	sep.se.rin
[±low] Insertion	pæs.pæm.be	sep.se.rin	NA

Revisiting e-lowering patterns in emphatic reduplication

RED	BASE	Attested?	Example	Surface-true
[e]	[æ]	Yes	*pes-pæm.be*	✓
		No	**sem-sært*	under-appl.
[æ]	[æ]	Yes	*sæm-sært*	✓
		Yes	*pæs-pæm.be*	over-appl.
[æ]	[e]	Yes	*tær-te.miz*	✓
		No	**sæp-se.rin*	over-appl.
[e]	[e]	Yes	*zep-zen.gin*	✓
		Yes	*bem-be.jaz*	under-appl.

Crucially, over-/under-application is attested only if they lead to the same surface vowel in the base and the reduplicant. What about Correspondence Theory (McCarthy & Prince 1995)?

BR-Correspondence is not a viable alternative

The crucial data for evaluating the viability of a BR-correspondence account come from *bembejaz* and *tærtemiz*.

bembejaz requires that ID-BR be ranked **higher** than *eSON.

(9)

/RED + bejaz/	ID-BR	*æOBS	*eSON	ID-IO
☞ a. bem-be.yaz			*	
b. bæm-be.yaz	!*			*
c. bæm-bæ.yaz		!*	*	*
d. bem-bæ.yaz	!*	*	*	*

tærtemiz requires that ID-BR be ranked **lower** than *eSON.

(10)

/RED + temiz/	*eSON	*æOBS	ID-IO	ID-BR
a. ter-te.miz	!*			
☞ b. tær-te.miz				*
c. tær-tæ.miz		!*	*	*
d. ter-tæ.miz	!*	*	*	*

Conclusion

Exceptions and (un-)attested patterns can be modeled with a rule-based account that employs under-/pre-specification in UR and feature-filling rules (Inkelas & Orgun 1995, Bale et al. 2014, Reiss 2021).

Despite Correspondence Theory's (McCarthy & Prince 1995) success in explaining many cross-linguistic red. patterns, under-/over-application of the same rule cannot be simply modeled within a single language.

This might be overcome with OT models that allow different rankings at different levels (e.g. Stratal OT (Kiparsky 2015, Bermúdez-Otero 2018)).

Future directions

e-lowering across word/phrase boundaries? Dadan et al. (2025) argue that e-lowering is a word-level process, but lowering across nouns in compounds (e.g. bæl ağrısı → be.lağ.rı.sı) is likely.

Bi-gram frequencies (e.g. French liaison (Bybee 2001)) and the existence of words created by resyllabification (e.g. [g]∼[ŋ] in Japanese compounds (Breiss et al. 2025)) may play a role.

(Sociolinguistic) variation and the learnability of e-lowering and reduplication.

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References i

Altinkamis, F. 2020. CHILDES Database Turkish Altinkamis Corpus. doi:10.21415/T5H89W.

Bale, A., M. Papillon, & C. Reiss. 2014. Targeting underspecified segments: A formal analysis of feature changing and feature filling rules. *Lingua* 148. 240–253. doi:10.1016/j.lingua.2014.05.015.

Breiss, C., H. Katsuda, & S. Kawahara. 2025 (resubmitted). Modeling frequency-conditioned paradigm uniformity in Japanese voiced velar nasalization. *Phonology*.

Bybee, J. L. 2001. Frequency effects on French liaison. In J. L. Bybee & P. J. Hopper (Eds.), *Frequency and the emergence of linguistic structure* (pp. 337–359). Amsterdam: John Benjamins. doi.org/10.1075/tsl.45.17byb.

Dadan, M. C., U. Erken, & S. Canalis. 2024. /e/ lowering in Turkish Negative Aorist, presented at TU+9. Cornell, Ithaca, NY.

Demircan, Ö. 1987. Emphatic reduplication in Turkish. In H. E. Boeschoten & L. T. Verhoeven (Eds.), Studies on modern Turkish: Proceedings of the third conference on Turkish linguistics (pp.24–41). Tilburg, Netherlands: Tilburg University Press.

References ii

Gopal, D. 2018. Similarity and representations in sonorant phonology. PhD thesis, Univ. of Manchester.

Gopal, D., & S. Nichols. 2022. Apparent-time change in Turkish front-mid-vowel allophony. Talk.

Göksel, A., & C. Kerslake. 2005. *Turkish: A Comprehensive Grammar*. New York: Routledge.

Inkelas, S., & O. Orgun. 1995. Level ordering and economy in the lexical phonology of Turkish. *Language* 71. 763–793. doi.org/10.2307/415744.

Kelepir, M. 2000. To be or not to be faithful. In A. Göksel & C. Kerslake (Eds.), *Studies on Turkish and Turkic languages: Proc. of the ninth int. conf. on Turkish linguistics* (pp. 11–18). Wiesbaden: Harrassowitz.

McCarthy, J., & A. Prince. 1995. Faithfulness and reduplicative identity. In J. N. Beckman et al. (Eds.), *Papers in Optimality Theory*. UMass Occasional Papers 18, pp. 249–384. GLSA, UMass Amherst.

Reiss, C. 2021. Towards a complete Logical Phonology model of intrasegmental changes. *Glossa* 6(1): 107. doi:10.16995/glossa.5886.

References iii

Slobin, D. 1982. Universal and particular in language acquisition. In E. Wanner & L. Gleitman (Eds.), *Language acquisition: The state of the art* (pp. 128–172). Cambridge Univ. Press.

Tang, K., & F. Akkuş. 2023. Identity Avoidance in Turkish Partial Reduplication: Feature Specificity and Locality. *Laboratory Phonology* 14(1).

Wedel, A. 1999. Turkish emphatic reduplication. *Phonology at Santa Cruz* (PASC) 6.

Wilbur, R. B. 1973. *The phonology of reduplication*. PhD dissertation, Univ. of Illinois at Urbana-Champaign.