# Vowel Lowering and Identity in Turkish Emphatic Reduplication

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# The puzzle

Distribution of /e/: [æ] before tautosyllabic sonorant codas; [e] elsewhere (Gopal 2018; Dadan et al. 2024; Börtlü 2025).

(1) a. te.miz
'clean'

b. be.jaz
'white'

c. pæm.be
'pink'

In emphatic reduplication contexts...

(2) a. bem-be.jaz
'extremely white'

b. pæs-pæm.be
'extremely pink'

c. tær-te.miz
'extremely clean'

Over-/under-application shows up when RED and BASE vowels match.

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# Research questions

**Description**: When does /e/-lowering under-/over-apply in emphatic reduplication?

Over-/under-application shows up when RED-BASE vowels match.

**Analysis**: At which level(s) do copying, syllabification, and lowering interact, and how should we model it?

Copy CV from UR; use a feature-filling rule with a judicious amount of (pre)specification.

# Road map

1. Background
    - /e/-lowering
    - Emphatic partial reduplication
2. Data: /e/-lowering in emphatic partial reduplication
3. Analysis
    - /e/-lowering as feature-filling
    - Alternative: Classic OT
4. Discussion & Conclusion
5. Future Directions

# 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)

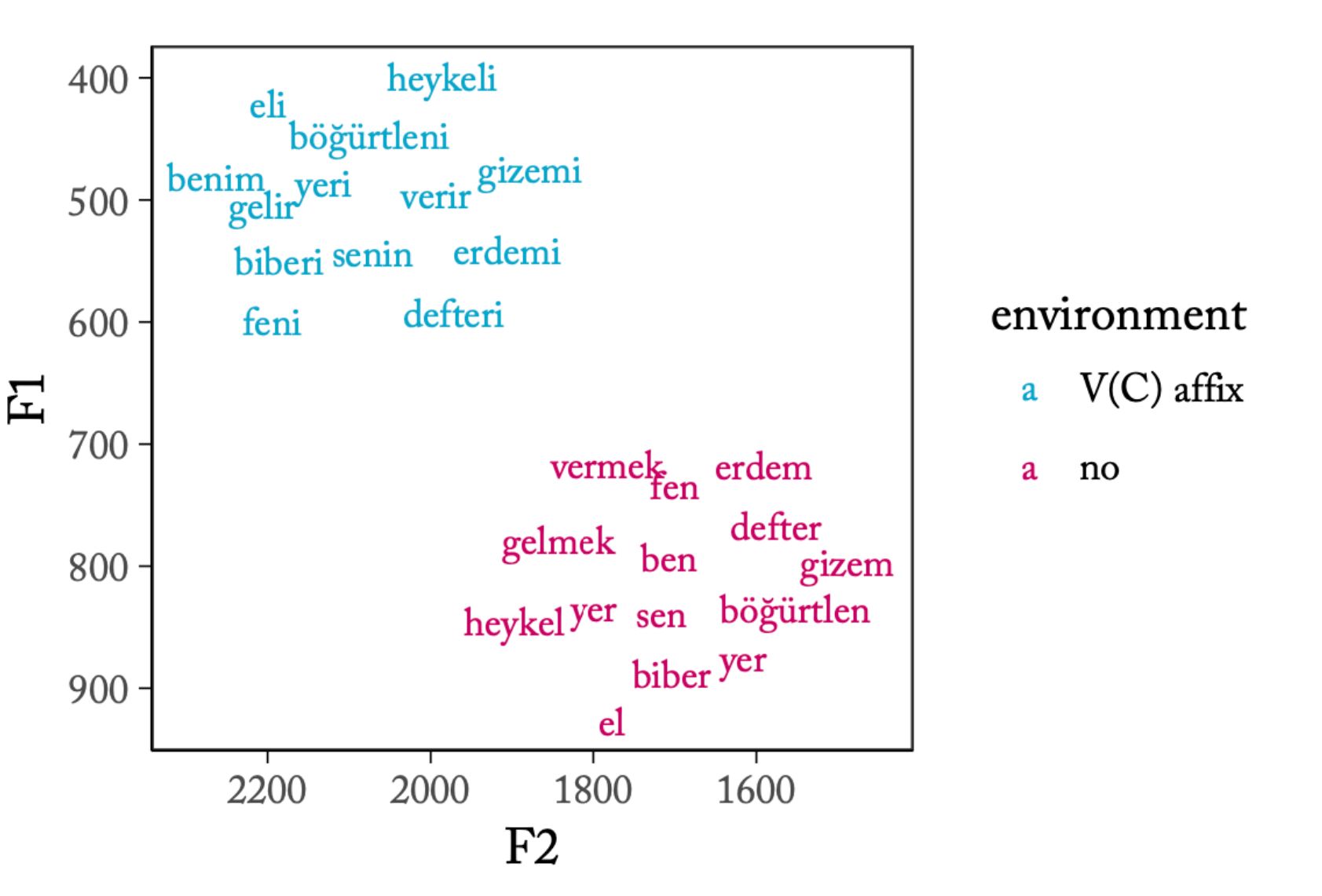
(3) a. bæn → be.ni
'I' 'I.ACC'

b. bæn → bæn.de
'I' 'I.LOC'

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

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

# e-lowering




Gopal (2018:196)

# e-lowering: Productive with exceptions

Both over- and under-application of e-lowering are attested (Dadan et al. 2024, Börtlü 2025).

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

*-mæz*, the negative aorist morpheme (Gopal 2018, Dadan et al. 2024):

(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
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# 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’ |

# e-lowering: Productive with exceptions

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| a. | den.ge | ‘balance’ | c. | el.bet | ‘certainly’ |
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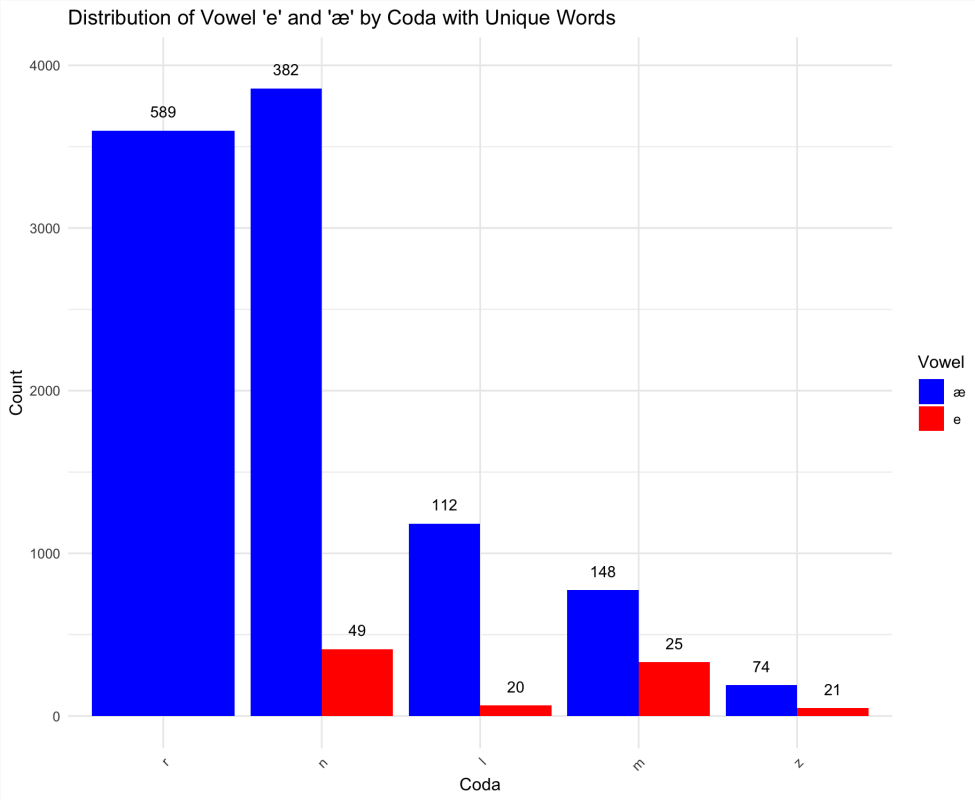
Type/token frequencies of syllables ending in [r,n,l,m,z] (by word) in Altınkamış and Aksu corpora at CHILDES



# e-lowering: Interim conclusion

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

# 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}

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

b. eski → ep-eski
'old' 'very old'

# Emphatic Partial Reduplication

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 $C_1$V are identical to the word-initial CV of the base."

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**Main finding:** Gradient identity avoidance between LC and base consonants

# Emphatic Partial Reduplication: Vowel alternations

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**Main finding:** Gradient identity avoidance between LC and base consonants

However, identity is not necessary:

(10) a. te.miz ‘clean’ $\longrightarrow$ b. tær.te.miz ‘extremely clean’

# Data: e-lowering in emphatic reduplication

Based on judgments of 8 native speakers living in Bursa or Eskisehir

| 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. |

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Descriptively,
Over- or under-application of e-lowering is attested when RED-BASE vowels match.

# 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 in both reduplication contexts and elsewhere.

To this end, I hypothesize:

- e-lowering is a **feature-filling rule** (Inkelas & Orgun 1995; 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 [-high, -back] (unrounded) vowel that is underspecified for LOW, or default [-low] being inserted elsewhere.

# Analysis: 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 in both reduplication contexts and elsewhere.

To this end, I hypothesize:

- e-lowering is a **feature-filling rule** (Inkelas & Orgun 1995; Reiss 2021) that inserts [+low] to a [-high, +front] (unrounded) vowel before a tautosyllabic sonorant.

- 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 [-high, -back] (unrounded) vowel that is underspecified for LOW, or default [-low] being inserted elsewhere.

# Motivation: Ternary voicing (Inkelas 1995)

Different degrees of specification has been offered to account for other patterns in Turkish, as well as other languages (Dabbous 2025).

| | nom.sg. | acc.sg. | nom.pl. | 1sg.poss. | |
|---|---|---|---|---|---|
| **a.** voiceless-/sanat/: | sanat | sanat-ı | sanat-lar | sanat-ım | ‘art’ |
| **b.** voiced-/etyd/: | ety**d** | ety**d**-y | ety**d**-ler | ety**d**-ym | ‘etude’ |
| **c.** alternating-/kanaD/: | kana**t** | kana**d**-ı | kana**t**-lar | kana**d**-ım | ‘wing’ |

# Analysis: Surface-true forms

Proposal:

- 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 |

# Analysis: Under-application

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

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

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

# Analysis: 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 |
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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.

(11)

| /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.

(12)

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

# Discussion

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)).

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# Discussion and Conclusion

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

However, as (Dabbous et al. 2025) discuss data from other languages (e.g., Baztan dialect of Basque (Hualde 1991)) is better modeled by various degrees of specification rather than different morphological strata.

# 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 well-attested.

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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