OCP Effects in Turkish Partial Reduplication: Locality and Feature Specificity

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Introduction

Turkish Partial Reduplication

- The *partial reduplication* (or *emphatic reduplication*) in Turkish is found with modifiers, namely adverbs and adjectives.
  - Emphatic variants are derived by prefixing a CVC syllable
  - The initial CV are identical to the word-initial CV of the base
  - The reduplicant C ends in one of the four consonants: *-p, -m, -s, -r* (Lewis 1967), call it *linking consonants (LC)*.

(1)

Base	Gloss	Reduplication	Gloss
kara	'black'	*kap-kara*	'very black'
beyaz	'white'	*bem-beyaz*	'very white'
ma:vi	'blue'	*mas-ma:vi*	'fully blue'
temiz	'clean'	*ter-temiz*	'completely clean'

- This study re-examines the LOCALITY and FEATURE SPECIFICITY of the OCP effects.

Background

Previous Analyses

- A number of studies have examined this phenomenon:
  - Hatiboğlu (1973), Demircan (1987), Dobrovolsky (1987), Taneri (1990), Wedel (1999), Yu (1999), Kelepir (2000), Sofu (2005), Sofu and Altan (2008) and Kaufman (2014)
- **General points**
  - The choice of the LC is not arbitrary or lexicalized
  - It is subject to several dissimilation constraints or OCP (Leben 1973, McCarthy 1986, a.o.)
- **Issues with the previous studies**
  - The studies converge on the importance of C_1 and C_2, but the rest of the base is usually disregarded.
    - Wedel (1999, 2000) explicitly mentions that there should be a cut-off after C_2 (see also Kelepir 2000).
  - The choice of the relevant features is usually heuristic.
  - The judgements are often based on the researcher's intuitions only.
  - The experiments are exclusively designed for Forced-Choice.

Experiment Design

Rating Task: Design

- 162 items were tested (evenly divided into 5 lists).
- Each participant was asked to perform both a rating task and a forced-choice task (not reported here). The order of the tasks was randomized.
- For each base form, all four of its reduplicated forms (each with a different LC) were shown on the same screen. The order of these forms was randomized per participant.
- Items were presented orthographically.
- Each reduplicated form was rated on a scale of naturalness: DOĞAL DEĞİL 'not natural' [1 to 7] DOĞAL 'natural'
- Data was collected using Experigen (Becker 2010).
- 209 participants were analysed (out of the 283 participants tested).
  - Filters: Turkish as L1; born in Turkey; no language-related disorders; reported their gender, education level and whether or not they have linguistic training.
- Each item was rated by at least 40 participants.

Selected References

Özgür Demircan. "Emphatic reduplication in Turkish". In: *Studies on modern Turkish: Proceedings of the 3rd conference on Turkish linguistics*. 1987, pp. 24–41

Alan Yu. "Dissimilation and allomorphy: The case of Turkish emphatic reduplication". In: *UC-Berkeley ms* (1999)

Meltem Kelepir. "To be or not to be faithful". In: *Studies on Turkish and Turkic Languages: Proceedings of the Ninth International Conference on Turkish Linguistics*. 2000, pp. 11–18

Hatice Sofu. "Acquisition of reduplication in Turkish". In: *Studies on Reduplication*. Mouton de Gruyter, 2005, pp. 493–509

Peter Graff and T Jaeger. "Locality and feature specificity in OCP effects: Evidence from Aymara, Dutch, and Javanese". In: *Proceedings from the annual meeting of the Chicago linguistic society*. Vol. 45. 1. Chicago Linguistic Society. 2009, pp. 127–141

Present Study

Re-examined the nature of (i) similarity and (ii) proximity of OCP

- Feature – by quantitatively examining all features, rather than heuristically.
- Locality – all consonants in the base, not just C_1 and C_2

Employed both the forced-choice task and the rating task

- Many bases have alternative LCs across participants in the forced-choice task, namely, quite a bit of variation (see also Wedel 1999, 2000)
- Most studies did not utilize the rating task

Modelled the OCP effects using regression following Graff and Jaeger (2009) which analysed the effect of OCP on the generative potential of syllable types of Javanese, Dutch and Aymara.

- Allowing us to statistically examine a number of competiting OCP factors as well as nuisance factors

Analyses: Feature Specificity of OCP

Feature Specificity: At what level of granularity do we expect OCP to operate over?

- Focused on CONSONANT INITIAL items into three groups by the number of consonants they contain in the base form. (42 x C_1C_2, 57 x $C_1C_2C_3$, 30 x $C_1C_2C_3C_4$)
- Compared multiple mixed effects models with different combinations of: Total identity, Individual Features: OCP-[+feature]$_i$, Sum Feature: $\sum$ OCP-[+feature]$_i$
- Model comparison using AIC (same results with BIC, and likelihood χ^2-test)

	C_1C_2	$C_1C_2C_3$	$C_1C_2C_3C_4$
Model$_{ID}$	17025.01	23551.39	12173.19
Model$_{SF}$	16709.70	22911.93	12039.80
Model$_{IF}$	16157.00	22150.26	11392.33
Model$_{ID+SF}$	16564.84	22550.91	11712.59
Model$_{ID+IF}$	16074.27	21869.73	11156.53

Table 1: Model comparison for feature specificity: AIC

Model$_{ID+IF}$ consistently yielded best fit across item groups (C_1C_2, $C_1C_2C_3$, $C_1C_2C_3C_4$)

- This indicates that both total identity and partial identity played a role (Gallagher and Coon 2009).
- Crucially OCP of individual features are weighted differently.
- This is consistent with Graff and Jaeger (2009)'s findings.

Analyses: Positional Specificity of OCP

Positional Specificity: To examine the importance of consonants beyond C_2 (namely C_3 and C_4)

- Drop OCP predictors that are associated with each consonant position in bulk

	C_1C_2	$C_1C_2C_3$	$C_1C_2C_3C_4$
Drop C_1	812.55	1674.94	639.81
Drop C_2	870.18	1190.65	390.95
Drop C_3	–	552.42	190.50
Drop C_4	–	–	383.67

Table 2: Model comparison: AIC$_{subset}$ - AIC$_{superset}$

Surprisingly, DISTANCE DECAY does not *always* play a role

- ΔAIC does not necessarily drop as distance increases.
- With C_1C_2 items, there is an increase in importance from C_1 to C_2.
- With $C_1C_2C_3C_4$, C_4 is more important than C_3.
- Perhaps the OCP effect interacts with syllable structures?

Jesse Zymet. "Distance-based decay in long-distance phonological processes". In: *The Proceedings of the 32nd West Coast Conference on Formal Linguistics*. 2014, pp. 72–81

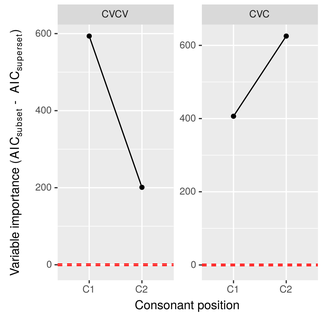
Gillian Gallagher and Jessica Coon. "Distinguishing total and partial identity: Evidence from Chol". In: *Natural Language & Linguistic Theory* 27.3 (2009), pp. 545–582

Analyses: Positional Effects by Syllable Structure

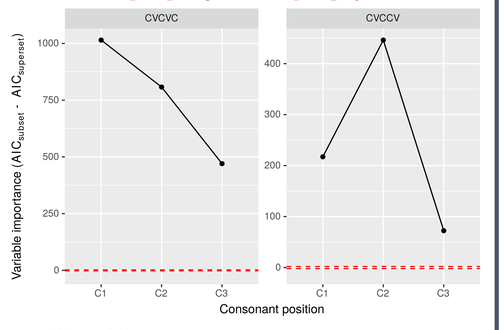
Syllable Structure: Focused on a subset of frequent syllable structures and examined their positional effects separately.

C_1C_2	$C_1C_2C_3$	$C_1C_2C_3C_4$	$C_1C_2C_3C_4C_5$
C_1VC_2 (23)	$C_1VC_2VC_3$ (37)	$C_1VC_2C_3VC_4$ (20)	$C_1VC_2VC_3C_4VC_5$ (5)
C_1VC_2V (19)	$C_1VC_2C_3V$ (14)	$C_1VC_2VC_3VC_4$ (8)	$C_1VC_2VC_3VC_4C_5$ (1)
	$C_1VC_2C_3$ (4)	$C_1VC_2VC_3C_4V$ (1)	
	$C_1VC_2VC_3V$ (4)	$C_1VC_2C_3VC_4V$ (1)	

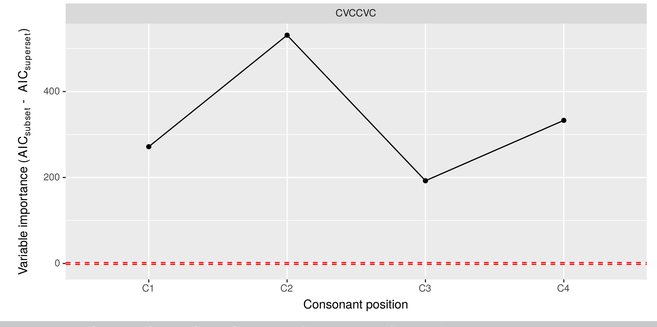
C_1VC_2V versus C_1VC_2



$C_1VC_2VC_3$ versus $C_1VC_2C_3V$



$C_1VC_2C_3VC_4$



The patterns can be explained with a combination of two factors: DISTANCE DECAY and CODA VS. ONSET

Why Coda > Onset? LC itself is also a coda consonant.
An example: *sık* 'tight' vs. *sıkı* 'frequent'

- C_2 /k/ should disprefer LC [p]
- C_2 /k/ in *sık* should disprefer LC [p] more than that in *sıkı*.
- *sıp* + *sık* (0.1023) is less acceptable than *sıp* + *sıkı* (0.7715) (Averaged z-norm. rating)

Conclusions

- The choice of LC is indeed motivated by OCP effects
- OCP constraints are more graded than they have been previously proposed
- The OCP constraints need to treat individual features as free parameters in the similarity computation across all consonants in the base
- Position in syllable structures interact conditions the OCP effects
- The strength of OCP is a function of both the proximity from LC and whether the consonant is a coda or not
- Methodologically, we demonstrated that the precise nature of OCP effects can be revealled using statistical model comparisons on goodness ratings (Graff and Jaeger, 2009).

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