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# Loanword adaptation in Makkan Arabic

Honaidah Ahyad

Stony Brook University

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# Makkan Arabic

- Makkan does not allow complex onsets.
- In borrowed words, complex onsets are repaired by vowel epenthesis (Kabrah 1995).

# Generalizations

- s-stop (sT) clusters trigger external epenthesis with a default vowel [i].
  - (1) skaɪp → ʔis.kaɪb ‘Skype’
  - (2) skul → ʔis.kuul ‘school’
- Because onsets are obligatory in Makkan, a glottal stop is inserted before the epenthetic vowel.

- Obstruent (other than s)+sonorant (OR) clusters trigger internal epenthesis.
- A default [i] is used with OR clusters followed by [-round].

(3) tʃi → ti.rii ‘tree’

(4) tʃeɪn → ti.ren ‘train’

(5) tʃaɪ → ti.raɪ ‘try’

- A harmonic epenthetic [u] is used with OR clusters followed by [+round].

(6) dʌoʊv → du.roʊf ‘drove’  
(7) bʌʊk → bu.ruk ‘brook’  
(8) ɡʌʊp → ɡu.ruub ‘group’

- Consonant+glide (CJ) clusters trigger internal epenthesis.
- The epenthetic vowel assimilates [round] features from a following glide.

(9) kjut → ki.juut ‘cute’

(10) kwin → ku.wiin ‘queen’

# Hypothesis 1: Position of epenthetic vowel

- The site of the epenthetic vowel is determined by the sonority of the second member of a given cluster.
- sT onsets have external epenthesis.
- OR and CJ onsets have internal epenthesis.
- This pattern is attested in the loanword adaptation of many languages (Broselow, to appear; Flieshacker, 2005; Zuraw, 2007).

## Hypothesis2: Epenthetic vowel quality

- If an sT cluster is followed by a [+round] or [-round], the epenthetic vowel is context free (i.e. a default [i] is inserted).
- If an OR cluster is followed by a [+round], the epenthetic vowel is context sensitive (i.e. a harmonic [u] is inserted).
- If an OR cluster is followed by a [-round], the epenthetic vowel is context free.



- If the second member of an OJ cluster is [j], the epenthetic vowel is [i].
- If the second member of an OJ cluster is [w], the epenthetic vowel is [u].

# Design

## Participants

- 63 native speakers of Makkani Arabic.
- 43 females and 20 males
- Age average: 26

# Materials

- A word list (n= 59) with English words or nonce words read by a native English speaker.
- For each word, four possible pronunciations by a native Makkan speaker.
- [glu]: [gu.lu] [gi.lu] [ʔig.lu] [ʔug.lu]

# Task

- Experigen
- A forced choice task: Choose the pronunciation closest to your dialect.



Listen



Option 1



Option 2



Option 3



Option 4

# Results

## External epenthesis

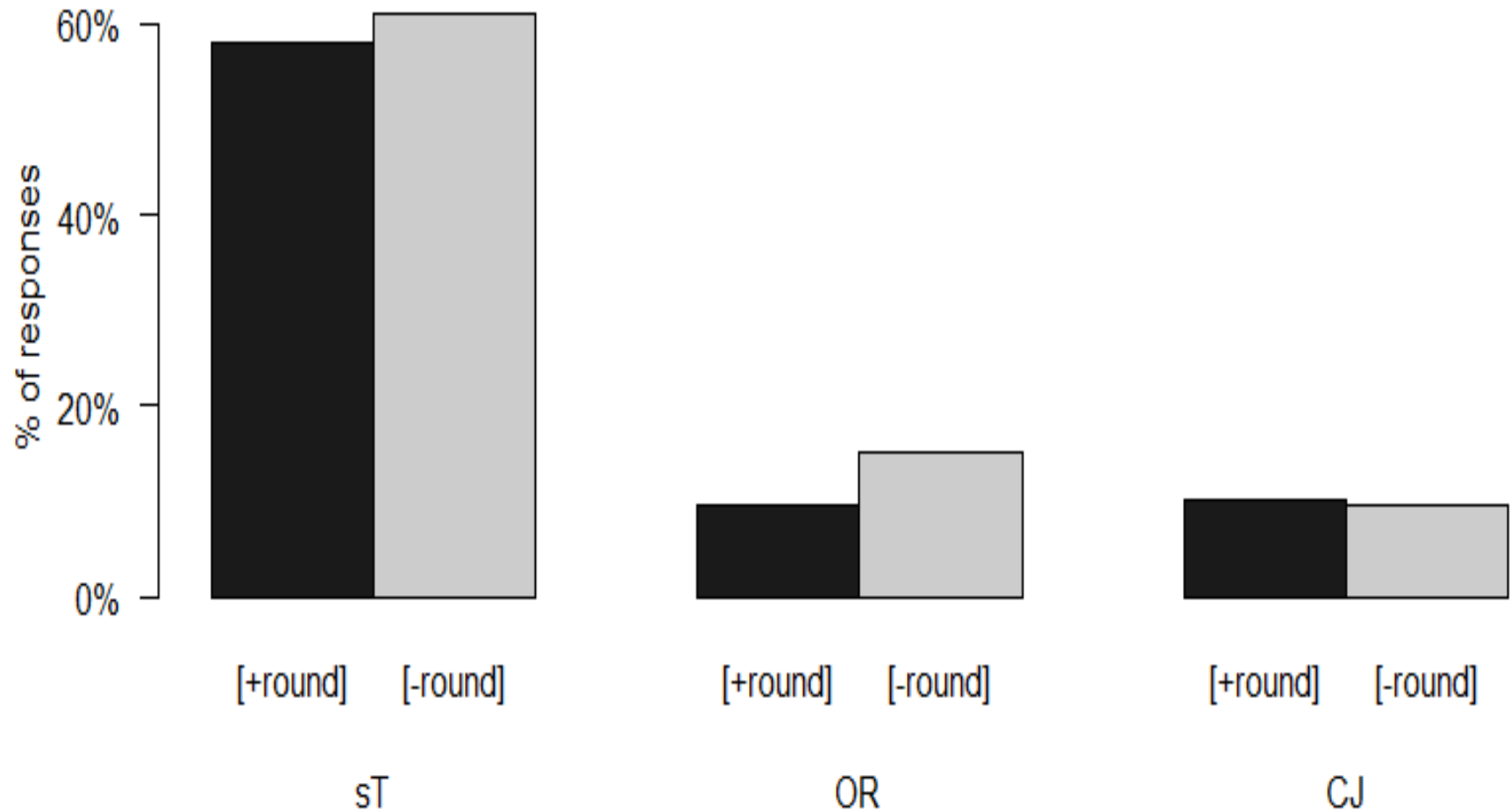


Figure 1: Percentage of external epenthesis by cluster type and roundness of the stem vowel

# External epenthesis

<b>Predictor</b>	<b>Estimate</b>	<b>SE</b>	<b>Z value</b>	<b>Pr(&gt;  z )</b>
Intercept	-1.6695	0.1789	-9.330	<0.001
sT.vs.OR.CJ	3.2235	0.3127	10.309	<0.001

# Vowel quality: Epenthetic [u]

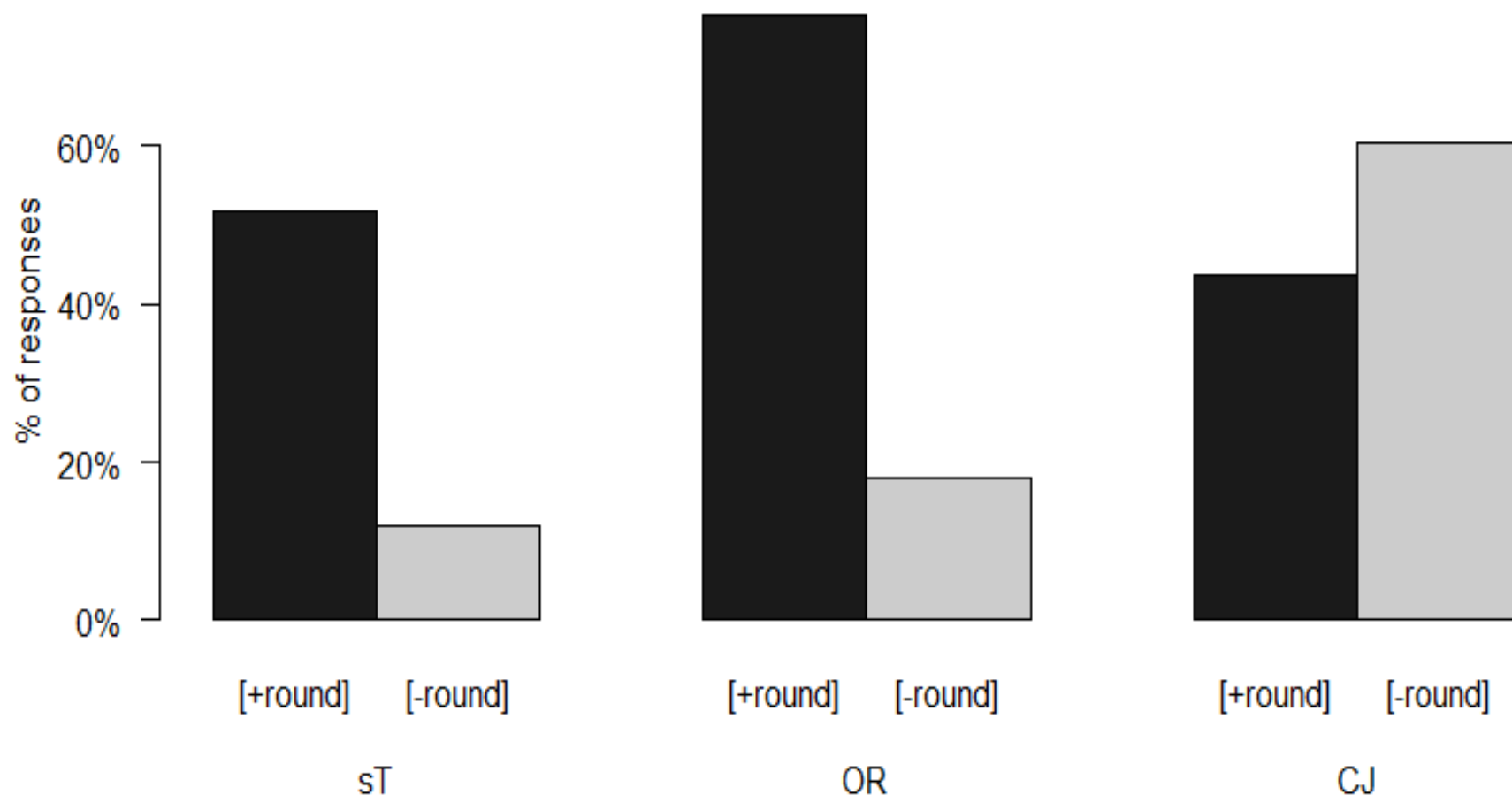


Figure 2: Percentage of epenthetic [u] by cluster type and roundness of the stem vowel

# Vowel quality: Epenthetic [u]

<b>Predictor</b>	<b>Estimate</b>	<b>SE</b>	<b>Z value</b>	<b>Pr(&gt;  z )</b>
Intercept	-0.544124	0.218159	-2.494	<0.05
sT.vs.OR.CJ	-1.092053	0.394278	-2.770	<0.01
SV.roundness	2.669242	0.227491	11.733	<0.001



# Analysis

## External epenthesis


- \*MAP( $s^T, s^V$ ) (Zuraw 2007)

Do not map an [s] followed by a stop to an [s] followed by a vowel.

- ANCHOR

The leftmost segment of the borrowed form must correspond to the leftmost segment of the source form.

# External epenthesis


spik 'speak'	*MAP( $s^T, s^V$ )	ANCHOR
a. si.biik	*!	
 b. ʔis.biik		*

# Internal epenthesis

- \*MAP( $T^R, T^V$ ) (Zuraw 2007)

Do not map a stop followed by a sonorant to a stop followed by a vowel.

# Internal epenthesis

tʃi 'tree'	ANCHOR	*MAP( $T^R, T^V$ )
 a. ti.rii		*
b. ʔit.rii	*!	

# Vowel quality: Default


- \*LINK(C,V)COR (Uffmann 2001)

Assign one violation mark for every place feature linked to both a C-Place and a V-Place node (no place feature spreading)

- DEP(F)

Output features must have corresponding features in the input (no insertion of features)

# Vowel quality: Default


spik 'speak'	*LINK(C,V)COR	DEP(F)
a. ? <b>i</b> s.biik	*!	
 b. ? <b>i</b> s.biik		*

# Vowel quality: Harmony

- \*ROUND(V) (Lombardi 2003)

Assign a violation mark for every round vowel in the output.

# Vowel quality: Harmony

tʃu 'true'	DEP(F)	*ROUND(V)
a. t <u>u</u> .ruu	*!	**
 b. t <u>u</u> .ru <u>u</u>		**




# Vowel quality: Local assimilation

- \*SKIP(glide) (Uffmann 2001)

Assign a violation mark for every segment skipping an intervening glide.

# Vowel quality: Local assimilation

kjut 'cute'	<b>*SKIP(glide)</b>	<b>DEP(F)</b>
a. ki <u>juut</u>		*!
b. ku <u>.juut</u>	*!	
 c. ki <u>.juut</u>		

# Conclusion

- The pattern of insertion of a vowel before sT clusters (external epenthesis) and a harmonic vowel within OR and CJ clusters (internal epenthesis) is consistent with the loanword patterns found in a large number of languages.
- The results of the study confirms the first generalization with high significance, as assessed by a mixed-effects logistic regression model.
- \*MAP( $S^T, S^V$ ), \*LINK(C, V)COR, \*SKIP(glide) » ANCHOR, DEP(F) » \*MAP( $T^R, T^V$ ), \*ROUND(V) .

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**Thank you!**