

The acquisition of final consonant clusters in Cairene Arabic

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3rd Annual IU Linguistics Department Graduate Student Conference
27 March, 2009

I. Introduction

- Consonant clusters are problematic in early stages of L1 acquisition.
- Most studies have focused on Western languages (e.g. Goad & Rose, 2004).
- Cairene Arabic (CA) has word-final CC clusters that can be of any sonority sequence combination (Kiparsky, 2002).
 - falling sonority: [bint] 'girl'
 - level sonority: [miʃtʰ] 'comb'
 - rising sonority: [naml] 'ants'
- This presentation reports the results from a phonological study of a child's acquisition of final consonant clusters in Cairene Arabic.
 - child: MG (male, 2;8 years; months)
 - Data elicitation: spontaneous picture-naming task / conversation.
 - MG's productions were phonetically transcribed.
- Results : MG's different repairs for consonant clusters can be seen in (1-3).
 - (1) Final consonant of cluster geminates independent of sonority profile
 - a. Falling sonority
 - /bint/ > [bitt] 'girl'
 - /kalb/ > [kabb] 'dog'
 - b. Level sonority
 - /miʃtʰ / > [ʔitt] 'comb'
 - /ʃuft/ > [ʔutt] 'I saw'
 - c. Rising sonority
 - /ʔism/ > [ʔimm] 'name'
 - /naml/ > [ʔall] 'ants'
 - (2) Geminate pharyngeals disallowed
 - /ʔamh/ > [ʔamm] 'wheat'
 - /malh/ > [ʔall] 'salt'
 - (3) Heterorganic clusters permitted when pharyngeal is the initial member of cluster
 - /bahr/ > [bahl] 'sea'
 - /taht/ > [taht] 'under'

II. Data Analysis

(4) Constraint Definitions:

- *COMPLEXCODA: *Complex codas are banned.*
- MAX MORA: *Input moras must be preserved in the output.*
- MAX: *Segments in the input must have correspondents in the output . No deletion.*

(5) MAX MORA and *COMPLEXCODA ranked above MAX :

μ μ	MAX MORA	*COMPLEXCODA	MAX
/b i n t/			
1. μ μ bi nt [bint]		*!	
2. μ μ bi t [bitt]			*
3. μ bi t [bit]	*!		*

(6) Constraint Definition:

- ANCHOR RT : *The right edge of the grammatical word must correspond with the right edge of the prosodic word.*

(7) ANCHOR RT and MAX:

μ μ	ANCHOR RT	MAX
/b i n t/ 'girl'		
1. μ μ bi n [binn]	*!	*
2. μ μ bi t [bitt]		*

(8) Tentative ranking based on examples in (1):

/bint/ 'girl'	MAX MORA	*COMPLEXCODA	ANCHOR RT	MAX
1.bint		*!		
☞ 2.bitt				*
3. binn			*!	*
4.bit	*!			*

As we see in (2) and (3), when pharyngeals are a member of the cluster, the child employs different repairs, which indicates the involvement of more constraints.

(9) Constraint Definition:

- *GEMPHARYNG : *Geminate pharyngeals are banned.*

(10) *GEMPHARYNG ranked above ANCHOR RT:

/malh/ 'salt'	*GEMPHARYNG	ANCHOR RT
1. mahh	*!	
☞ 2. ?all		*

when the pharyngeal is in C1 position, as in (3), a heterorganic cluster emerges.

(11) *COMPLEXCODA cannot be undominated:

/taht/ 'under'	MAX MORA	*GEMPHARYNG	ANCHOR RT	*COMPLEXCODA	MAX
☞ 1.taht				*	
2.tahh		*!	*		*
3.tah	*!		*		*

But why don't we get [tatt], where C2 is geminated?

(12) Constraint Definition:

- MAXPHARYNGEAL : *Input pharyngeals must be preserved in the output.*

(13) Pharyngeals must be preserved (except when the resulting output would be a geminate pharyngeal):

/taht/ 'under'	MAX MORA	*GEMPHARYNG	MAXPHARYG	ANCHOR RT	*COMPLEXCODA	MAX
☞ 1.taht					*	
2.tahh		*!		*		*
3.tah	*!			*		*
4. tatt			*!			*

(14) Tentative ranking:

MAX MORA, *GEMPHARYNG >> MAXPHARYNG, ANCHOR RT >> *COMPLEXCODA >> MAX

(15) Wrong prediction made by ranking in (14):

/malh/ 'salt'	MAX MORA	*GEMPHARYNG	MAXPHARYG	ANCHOR RT	*COMPLEXCODA	MAX
☞ 1.malh					*	
2.mahh		*!				*
3. ?all			*!	*		*
4. ?al	*!		*	*		*

(16) Constraint Definition:

- *RISING : *Rising sonority slopes are banned in coda clusters.*

(17) *RISING must be undominated:

/malh/ 'salt'	MAX MORA	*GEMPHARYNG	*RISING	MAXPHARYG	ANCHOR RT	*COMPLEXCODA	MAX
1.malh			*!			*	
2.mahh		*!					*
☞ 3. ?all				*	*		*
4. ?al	*!			*	*		*

(18) Final Ranking:

MAX MORA, *GEMPHARYNG, *RISING >> MAXPHARYNG, ANCHOR RT >> *COMPLEXCODA >> MAX

(19) Regular gemination : /naml/ -> [ʔall]:

/naml/ 'ants'	MAX MORA	*GEMPHARYNG	*RISING	MAXPHARYG	ANCHOR RT	*COMPLEXCODA	MAX
1.naml			*!			*	
2. ʔall							*
3. ʔamm					*!		*
4. ʔal	*!						*

(20) Heterogeneous cluster retained: / baħr / -> [baħl]:

/ baħr / 'sea'	MAX MORA	*GEMPHARYNG	*RISING	MAXPHARYG	ANCHOR RT	*COMPLEXCODA	MAX
1.baħl						*	
2.baħħ		*!			*		*
3. ball				*!			*
4. bal	*!			*			*

(21) Alternative Analysis (work in progress) :

The split margin hierarchy (Baertsch & Davis, 2003) w.r.t coda clusters and in the case of Arabic. This would account for the phenomenon by replacing the constraints *RISING, *COMPLEXCODA and MAXPHARYNGEAL.

III. Conclusion

- Child in the study (2;8/ L1=Cairene Arabic) employed multiple strategies for dealing with word-final CCs (in the adult TL, all sonority profiles are permissible).
 - gemination of 2nd consonant (regardless of sonority slope)
 - avoidance of pharyngeal gemination when in C2 position.
 - heterorganic cluster emerges when pharyngeal is in C1 position
- Those strategies reveal the following points:
 - child is sensitive to underlying weight of target cluster.
 - sonority may not be the main factor behind child's repairs (cf. Ohala 1999).
 - The pharyngeals being highly sonorous, are first recognized in child's output when in a cluster (either in C1 or C2 position).
 - developmental stage of acquisition of MG is in line with language universals
 - languages such as Hebrew and Tigre ban geminate pharyngeals (McCarthy, 1994)
 - markedness >> faithfulness as a default ranking for initial state of L1 acquisition. In order to approximate adult TL, MG will have to demote *RISING and *GEMPHARYNGEAL
 - the first clusters to emerge are of a falling sonority, which is the least marked cluster type.

IV. Selected References

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