

Intricacy in assimilation in atypical phonological development in Farsi

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The objective of the present study is to observe assimilation patterns in typical and atypical phonological development in Farsi and explain the observed differences in the two groups in terms of complexity reduction. To attain this aim, the phonological productions of 5 typically developing (TD) children and 5 functionally phonologically disordered (PD) children acquiring Farsi as their first language have been examined regarding their assimilation patterns, and explained in terms of intricacy, where ‘intricacy’ means complexity of articulatory detail. The data are collected through a picture-naming task using 132 pictures of different items generally found in children’s environments designed to elicit the production of 132 different words.

Close examination of the data indicates different assimilation behaviors between adjacent segments in the TD and PD groups. The results (see examples in Table 1) indicate that in the TD group the assimilation pattern is straightforward: *after coronals of any kind (whether obstruents or nasals), dorsal plosives become coronal*. In addition, *coronal nasals may sometimes lose their nasality before a plosive*. These assimilation cases can be easily explained through the Articulatory Ease Principle (AEP) (e.g. Archangeli and Pulleyblank, 1994; Smit 1993; Locke, 1983) because in all of them the more marked segment assimilates to the less marked segment. However, PD children, unlike the TD group, display intricate assimilation behavior in that they produce two opposing assimilation patterns in the same contexts: (a) *after coronal obstruents, dorsal plosives become coronal* (b) *nasal coronal segments assimilate to the place of the following dorsal plosive* (and consequently to its plosive manner of articulation; note: there is no dorsal nasal in Farsi).

The observed assimilation patterns in the PD group are contradictory, and differ from those in the TD group. While the PD place assimilation pattern in (a) results in the assimilation of a more marked place feature to a less marked one and conforms to AEP, the pattern in (b) results in the assimilation of a less marked place feature to a more marked one, which contradicts AEP, requiring a complex explanation. Also, the assimilation of nasals to plosives in both groups (in TD, optionally) is contrary to results from similar studies (e.g. Dinnsen, 1997; Stoel-Gammon & Stemberger, 1994).

Optimality Theory describes the assimilation pattern in (b) through the markedness constraint *NASAL that dominates the constraints AGREE(manner), and AGREE(place). However, this is not yet an explanation. To explain the complex motivation behind the observed assimilation patterns, the results are discussed in terms of both OT and functional articulation-perception interaction approaches. Articulatory approaches (e.g. Winters, 2002) assume the difficulty in the production of nasal-plosive clusters as the main motivation for the observed assimilations, while perceptual approaches (e.g. Jun 2004, 1995; Boersma, 1998) claim that perceptual factors like weakness of nasals before plosives are the main motivation for coronal nasals to assimilate to the place of articulation of dorsal plosives. Articulatory factors apparently apply to both groups, while perceptual factors relate more closely to the PD results.

Appendix

Table 1: Examples of different assimilation patterns in TD and PD groups.

Group	Type	Target word	Child production
TD	Non-Nasal	/badkonæk/	[badtonæk]
	Nasal	/sæng/	[sænt]
PD	Non-Nasal	/biskujit/	[biztuji]
	Nasal	/ʔængɔft/	[ʔæqgot]

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