



A different path to [f]: labiodentalization in Faifi Arabic

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Abstract

This paper documents historical labiodentalization to [f] in one subvariety of Faifi Arabic (FA), which has not been previously detailed. In this subvariety, spoken in southwestern Saudi Arabia, the sound cognate with the Classical Arabic voiced emphatic (i.e. pharyngealized) dental stop *d^ʕ (typically realized as [ð^ʕ] in many Saudi varieties) has the voiceless labiodental reflex [f], but only in root-initial position. Crucial to the understanding of this labiodentalization is that in areas adjacent to where FA is spoken, the pronunciation of historic /d^ʕ/ is a voiced emphatic lateral fricative [ʕ^ʕ]. We posit that in older FA, *d^ʕ was pronounced as [ʕ^ʕ]. A general dialect-specific root-initial devoicing (and depharyngealization) process then transformed [ʕ^ʕ] to voiceless [ʕ̥], which was subsequently perceived as [f] by FA speakers due to perceptual similarity. This misperception of voiceless [ʕ̥] as [f] is made plausible by the fact that a voiceless lateral fricative was not part of the FA phoneme inventory, and, because of depharyngealization, it was susceptible to being reanalyzed as an allophone of a phoneme that was not pharyngealized. Referencing Honeybone (2016), we maintain that FA labiodentalization instantiates an endogenous (i.e. internally-motivated) regular (i.e. non-sporadic) sound change specific to root-initial position resulting from misperception.

1 Introduction

The sound change of interdental to labiodental is not common but has been attested in various languages and dialects. This process of labiodentalization, which affects interdentals such as [θ] > [f], is found in English and Scots dialects and various other languages. Both Blevins (2006) and Honeybone (2016) discuss this type of sound change and provide examples where interdentals have become /f/. As Honeybone reports, the sound change of interdentals to labiodentals has been attested in some Arabic dialects as both a sporadic change and an unconditioned change. An example of a sporadic change noted by

Honeybone (2016, 349 and see references cited therein) is Tunis Arabic which preserves the historical interdentalals of Arabic except in isolated lexical items such as [famma] ‘there/ there is’ (from historical *θamma) where labiodentalization is witnessed. Examples of labiodentalization as an unconditioned sound change can be found in the Siirt subgroup of Anatolian Arabic dialects spoken in southeastern Turkey. In this subgroup all interdentalals have become labiodentalals while maintaining the underlying voicing feature. This is shown by the representative data items in (1a) and (1b) from Jastrow (2006) where the historical forms in the left-hand column (and elsewhere in this paper) are assumed to be consistent with Classical Arabic (CA) unless otherwise noted; the Siirt Arabic (SA) dialectal forms are in the middle, with the English glosses given on the right.

(1) Siirt Anatolian Arabic (Jastrow 2006, 88)

| CA | | SA | Gloss |
|-------|---|-------|-----------|
| baʃaθ | > | baʃaf | ‘he sent’ |
| ðahab | > | vahab | ‘gold’ |

With unconditioned sound changes like that shown in (1), an important issue that is discussed by Honeybone (2016) is whether an unconditioned change is endogenous (i.e. internally motivated by system-internal pressures within the language itself) or exogenous (i.e. externally motivated typically through contact with other languages or dialects). Honeybone (2016, 334) suggests that there is no reason to assume that the change witnessed in Siirt Anatolian Arabic need be externally-motivated just because of the long history of language contact with Turkish, given that there are other cases, discussed by Honeybone, of the unconditioned change of interdentalals to labiodentalals that are endogenous. However, we suggest that the unconditioned change witnessed in Siirt Anatolian Arabic may have strong exogenous motivation given that speakers are bilingual or trilingual with Turkish and/or Kurdish, both languages lacking interdentalals but possessing labiodentalals, and the period of language contact among these languages is centuries old.

The origins of labiodentalization of interdentalals are still a topic of discussion but they are generally attributed to a listener-based phonological change due to listener misperception resulting from the perceptual similarity between labiodentalals and interdentalals (e.g. Ohala 1981). As Blevins (2006:12) states, referencing Miller & Nicely (1955), “...the highest confusion rates for English adults are found between [θ] and [f] and [ð] and [v]...”. While this perceptual basis of labiodentalization of interdentalals seems clear, Honeybone (2016) suggests

that the explanation for labiodentalization as rooted in misperception is inconsistent with labiodentalization as an unconditioned (non-sporadic) change. As Honeybone notes, the change of interdentals to labiodentals is unidirectional: $\theta > f$ as an unconditioned change (or “N-change” in Honeybone’s terminology) is attested, but the reverse whereby labiodentals become interdentals is not attested as an N-change. This can be considered unexpected on the misperception account since if listeners can confuse $[\theta]$ with $[f]$ they should just as likely confuse $[f]$ with $[\theta]$. On the other hand, as discussed by Honeybone, the change of $f > \theta$ is indeed observed as a sporadic sound change (or “A-change” in Honeybone’s terminology) in such varieties as Whitwell English and New Castile Spanish, just as $\theta > f$ can be detected as an A-change as seen in the Tunis Arabic example $[\text{famma}] > *[\theta\text{amma}]$ ‘there/there is’ mentioned above. This difference between labiodentalization as an unconditioned N-change and as a sporadic A-change leads Honeybone (2016, 351) to conclude the following:

“... N-changes and A-changes are fundamentally different things: as sporadic, lexically specific changes, A-changes are good candidates for misperception models of changes, but that kind of model does not predict the properties of N-changes.”

With this as background, we focus in this paper on labiodentalization to $[f]$ in one subvariety of Faiifi Arabic (FA), a rural mountain dialect spoken in a small area of southwestern Saudi Arabia, which has not been previously detailed. In this subvariety, the labiodentalization occurs regularly, but only in root-initial position (where ‘root’ specifically refers to the three root consonants that are traditionally viewed as being the basis for word formation in Arabic). In the subvariety of FA under consideration, the sound that has undergone diachronic labiodentalization is cognate with the Classical Arabic voiced emphatic (i.e. pharyngealized) dental stop $*d^{\text{f}}$,¹ which is typically realized as the voiced emphatic interdental $[\delta^{\text{f}}]$ in most other rural varieties of Saudi Arabic. While we will maintain that this labiodentalization is an N-change specific to root-initial position, we argue that the resulting $[f]$ comes from an original voiced emphatic lateral fricative, $*\text{ɮ}^{\text{f}}$, that underwent devoicing (and depharyngealization) before being lost in the dialect. We posit that the change from a voiceless lateral fricative to $[f]$ results from the perceptual confusion of the two segments and thus represents a new source for labiodentalization that does not directly come from an interdental. Moreover, we suggest that in the terminology of Honeybone (2016), the Faiifi Arabic labiodentalization to be detailed in this paper

¹ We discuss our assumption of $*d^{\text{f}}$ as the value of this segment (CA ḍād) in section 5.

represents an endogenous (i.e. internally motivated) N-change specific to root-initial position. This would then represent an example of an N-change based on misperception.

The remainder of this paper is organized as follows: in section 2 we briefly give background on Faifi Arabic, including its phonemic inventory, where we indicate that Faifi Arabic preserves the labiodental and interdental phonemes that are typically reconstructed for older Arabic. In section 3 we detail the reflex of Classical Arabic *ð^ʕ in the FA subvariety under consideration. While this voiced emphatic interdental does not undergo labiodentalization it does undergo both devoicing and depharyngealization when in root-initial position; this reflects a general pattern in the dialect for emphatic (pharyngealized) phonemes to be devoiced in root-initial position and provides the language-internal underpinning of our labiodentalization proposal. In section 4 we detail the reflex of Classical Arabic *d^ʕ in this FA subvariety. Specifically, its reflex is [ð^ʕ] when in non-root-initial position but shows labiodentalization to [f] in root-initial position. In section 5 we develop our proposal that the resulting [f] that is cognate with Classical Arabic *d^ʕ comes from an original voiced emphatic lateral fricative *ɮ^ʕ that has been recently observed to occur in some surrounding rural varieties (e.g. Watson & Al-Azraqi 2011; Al-Wer & Al-Qahtani 2016). This underwent devoicing (and depharyngealization) in root-initial position and is the source of the subsequent labiodentalization of the root-initial segment. Section 6 relates our proposal regarding Faifi Arabic labiodentalization to the general literature on labiodentalization, but specifically focusing on the work of Honeybone (2016). Section 7 concludes the paper.

2 Background on Faifi Arabic

Faifi Arabic (FA) is a group of dialects of Arabic spoken in Jibāl Fayfa (Faifa Mountains) in the eastern part of Jizan Province in the southwestern border area of Saudi Arabia adjacent to Yemen. FA dialects have been categorized into two main groups; upper mountain dialects and lower mountain dialects (Alfaifi & Behnstedt 2010 and Alfaife 2018), although the central mountain area may constitute a third group. The dialects of FA are understudied, with almost no previous literature focusing on its phonology. The data presented in this paper, unless otherwise noted, are based on the intuitions of the second author, a native speaker of a Faifi variety spoken in the upper part of Faifa, near Naid Al D'aali', in consultation with other native speakers of this variety. We will refer to this variety as Upper Faifi Arabic.

Faifi Arabic in general displays unusual morphological, syntactic, and phonological features not found in nearby dialects, some of which have

been reported on by the few previous studies. Despite these works, little is known about the specific details of the Faiifi varieties. The presence of these unusual features can be attributed in part to the fact that the region where FA is spoken was isolated from other communities until almost the very end of the 20th century. Given the mountainous nature of the region and the fact that the community itself consisted of farmers who were self-sufficient, FA speakers did not have the need to travel to other communities in far areas, which possibly limited the linguistic effects on it of other dialects in the Arabian Peninsula. Most of FA's unusual features can be traced to two sources: preservation of archaic Arabic features (some of which are also preserved in Classical Arabic) and substrate features reflecting other languages of the Arabian Peninsula. While we do not detail the unusual features here, one that we will mention since it will appear in the presented data is that FA obligatorily marks definiteness/indefiniteness on almost all nouns and adjectives. The definite marker is a prefixal /m-/, which is different than the prefixal /l-/ that occurs in almost all Arabic dialects; this prefixal /m-/ probably reflects a substrate feature according to Watson (2018). Obligatory indefiniteness marking, which is highly unusual in the modern spoken Arabic dialects, is indicated in FA by the suffix /-in/, which is cognate with the indefinite genitive suffix of Classical Arabic, although unlike CA, the FA indefinite suffix is invariable and does not inflect for case.

In (2) below we present the consonant inventory of Faiifi Arabic. In observing the consonant inventory in (2), we note that FA, like most non-urban dialects of Saudi Arabia, preserves the historical interdentalals that are found in Classical Arabic as well as the labiodental /f/, the latter of which is unremarkable given that the labiodental is diachronically stable in almost all varieties of Arabic. In the context of the current paper, the preservation of these sounds in the contemporary dialect is important since it shows that there has never been a diachronic change that involves the confusion of the plain (i.e. nonpharyngealized) interdentalals with the labiodental. With respect to the emphatic (pharyngealized) consonants of FA, as can be seen in (2), the consonant inventory of FA possesses the three emphatic phonemes /t^ʕ/, /s^ʕ/, and /ð^ʕ/, the latter of which is cognate with both the /ð^ʕ/ and /d^ʕ/ of CA. The emphatic stop /t^ʕ/ of FA is realized very similarly to what is found in other dialects, while the allophones of /s^ʕ/ and /ð^ʕ/ (shown in the double-lined box in (2) below) are unique and include the allophonic pronunciations of [st] and [s^ʕ] for /s^ʕ/ (not discussed in this paper) and [ð^ʕ], [θ^ʕ], [θ], and [f] for what is /ð^ʕ/ in many other dialects of Saudi Arabia.

(2) FA Consonant Inventory

| | Bilabial | Labio-dental | Inter-dental | Alveolar | Alveo-palatal | Palatal | Velar | Pharyngeal | Glottal |
|---|----------|--------------|--|---|---------------|---------|-------------|------------|---------|
| Stop non-emphatic allophones emphatic | b | | | t d t ^ʕ | | | k g [ḳ] | | ʔ |
| Fricative non-emphatic | | f | θ ð | s z | ʃ | | x ɣ | ħ ʕ | h |
| Emphatic allophones | | | ð ^ʕ [ð ^ʕ , θ, θ ^ʕ , f] | s ^ʕ [s ^ʕ , st] | | | | | |
| Affricate allophones | | | | | ḏʒ [ʒ] | | | | |
| Nasal | m | | | n | | | | | |
| Liquid | | | | l, r | | | | | |
| Glide | w | | | | | j | | | |

It is the labiodentalization of a historic voiced emphatic to [f] that is the focus of this paper (discussed in sections 4 and 5). As mentioned in the section 1, the reflex of [f] for a historical emphatic only occurs in root-initial position and is cognate with Classical Arabic /d^ʕ/. In non-root-initial position the cognate of CA /d^ʕ/ in FA is [ð^ʕ]. First, though, we consider in the following section the FA reflexes of the other voiced emphatic fricative of CA, namely *ð^ʕ. The reflexes of *ð^ʕ appear as devoiced in root-initial position and also as depharyngealized depending on the nature of the following vowels; an examination of this will help us understand the path to labiodentalization to be presented and discussed in sections 4 and 5.

3 The reflexes of *ð^ʕ in Faifi Arabic

In almost all varieties of rural Saudi Arabic, the distinction that is found in Classical Arabic between the voiced emphatic (i.e. pharyngealized) interdental fricative /ð^ʕ/ and the voiced emphatic dental stop /d^ʕ/ has merged to [ð^ʕ]. This is also true of the Upper FA subvariety considered in this paper when these sounds were in non-root-initial position. However, in root-initial position the distinction is maintained by their different reflexes in Upper FA. In FA words that are cognate with CA words with root-initial /ð^ʕ/ the reflex in FA either appears as the devoiced emphatic [θ^ʕ] or the plain voiceless interdental [θ]. But in FA words where the root-initial consonant is cognate with CA /d^ʕ/ the reflex is the plain labiodental fricative [f]. Thus, the distinction between CA /ð^ʕ/ and /d^ʕ/ in root-initial position is maintained in Upper Faifi Arabic

through the labiodentalization of the latter. In this section we focus on the reflex of *ḏ^ʕ that shows devoicing in root-initial position before turning to the matter of labiodentalization in the next section.

The Faiḫi Arabic emphatic fricative /ḏ^ʕ/, cognate with CA /ḏ^ʕ/, is realized as [ḏ^ʕ] when it is not in root-initial position, but when it is the first consonant of the Arabic consonantal root it is pronounced in FA as a devoiced emphatic [θ^ʕ] in some cases, and as voiceless, depharyngealized [θ] in other cases. The realization of the root-initial /ḏ^ʕ/ as the voiceless emphatic [θ^ʕ] occurs only when the root-initial emphatic /ḏ^ʕ/ is in a word where the first two syllables contain low vowels. This is exemplified by the data in (3). In (3) and subsequent examples in this section, the Classical Arabic root is shown in the leftmost column, followed by a posited FA underlying representation ('UR'), then the FA phonetic representation ('PR'), and the English gloss in the rightmost column. (A period indicates a syllable boundary.) We assume that /ḏ^ʕ/ is the underlying root-initial consonant in (3) since the pattern of devoicing is predictable from it.

| (3) | CA Root | FA UR | FA PR | Gloss |
|-----|-------------------|----------------------------|-------------------------------|----------------------|
| (a) | ḏ ^ʕ mʔ | /ja-ḏ ^ʕ ma/ | → [jaθ ^ʕ .ma] | 'he becomes thirsty' |
| (b) | ḏ ^ʕ fr | /ʔa-ḏ ^ʕ faarin/ | → [ʔaθ ^ʕ .faa.rin] | 'fingernails' |
| (c) | ḏ ^ʕ lm | /ḏ ^ʕ alaamin/ | → [θ ^ʕ a.laa.min] | 'darkness' |

As we can observe in each of the examples in (3), the root-initial emphatic consonant undergoes devoicing whether it is initial in the word as in (3c) or the second consonant in the word as in (3a-b). In (3), both the first two syllables contain low vowels, but when there is a high vowel in one or both of the first two syllables then depharyngealization occurs along with devoicing. This is illustrated by the data items in (4).

| (4) | CA Root | FA UR | FA PR | Gloss |
|-----|-------------------|--------------------------|--------------|------------------|
| (a) | ḏ ^ʕ fr | /ḏ ^ʕ ifrin/ | → [θif.rin] | 'a fingernail' |
| | | /m-ḏ ^ʕ ifir/ | → [mθi.fir] | 'the fingernail' |
| (b) | ḏ ^ʕ hr | /ḏ ^ʕ ahrin/ | → [θah.rin] | 'a back' |
| | | /m-ḏ ^ʕ ahir/ | → [mθa.hir] | 'the back' |
| (c) | ḏ ^ʕ hr | /ḏ ^ʕ huurin/ | → [θhoo.rin] | 'backs' |
| | | /m-ḏ ^ʕ uhuur/ | → [mθu.huur] | 'the backs' |

As we can observe in each pair of examples in (4a-c), a root-initial emphatic consonant not only devoices as was seen in (3), but also depharyngealizes. The data in (4) suggest a process of depharyngealization triggered by the high vowel nucleus of the syllable containing the emphatic or by the high vowel of the following syllable.

The data in (3) and (4) show that devoicing (and depharyngealization) occurs when the underlying emphatic /ð^s/ is in root-initial position. When /ð^s/ is not the first root consonant it is resistant to these alternations and surfaces as [ð^s] regardless of the nature of the surrounding vowels. Some examples are provided in (5).

| (5) | CA Root | FA UR | FA PR | Gloss |
|-----|--------------------------------|---|--|------------|
| (a) | ʔð ^s m | /ʔað ^s ma/ | → [ʔað ^s .ma] *[ʔaθ ^s .ma] | 'a bone' |
| (b) | nð ^s f | /nað ^s iifin/ | → [na.ð ^s ii.fin] *[na.θii.fin] | 'clean' |
| (c) | ħð ^s | /maħfað ^s a/ | → [maħ.fa.ð ^s a] *[maħ.fa.θ ^s a] | 'a wallet' |
| (d) | ħð ^s ð ^s | /maħð ^s uuð ^s in/ | → [maħ.ð ^s uu.ð ^s in] *[maħ.θuu.θin] | 'lucky' |
| (e) | wð ^s f | /wað ^s iifa/ | → [wa.ð ^s ii.fa] *[wa.θii.fa] | 'a job' |

The data in (5) make clear that the devoicing (and depharyngealization) of /ð^s/ only affects the consonant when it is in root-initial position. That it is crucially root-initial position can be seen by the comparison of [ʔað^s.ma] 'a bone' in (5a) with [jaθ^s.ma] 'he becomes thirsty' in (3a). In both these words the underlying emphatic /ð^s/ is in the coda of the first syllable. In [jaθ^s.ma] it undergoes devoicing since it is a root-initial consonant even though it is the second consonant of the word given that the initial consonant [j] is part of an inflectional prefix. On the other hand, in [ʔað^s.ma], there is no devoicing since the /ð^s/ is the second root consonant given that the initial consonant [ʔ] is part of the root. While the data in (3)–(5) showing reflexes of the CA root consonant /ð^s/ does not illustrate labiodentalization, it does show a process of root-initial emphatic devoicing. This will be important in understanding the path to labiodentalization discussed in the next two sections.

4 The reflex of *d^f in Faifi Arabic: Labiodentalization

In most varieties of Rural Saudi Arabic (RSA) the reflex of Classical Arabic /d^f/ is [ð^s] regardless of position in the root, exactly like the reflex of Classical Arabic /ð^s/. That is, the historical distinction between /d^f/ and /ð^s/ is no longer maintained in most varieties of Saudi Arabic. In the previous section we showed that in the Upper FA variety considered in this paper, *ð^s has the reflexes [θ^s] and [θ] in root-initial position, otherwise [ð^s]. With respect to the reflex of Classical Arabic /d^f/ in Upper FA, while in non-root-initial position it likewise has the reflex [ð^s], in root-initial position it has undergone labiodentalization being realized as the voiceless nonpharyngealized labiodental fricative [f], exactly like the [f] that is cognate with Classical Arabic /f/. In the small amount of previous research that exists on FA, such as Alfaifi & Behnstedt (2010) and Alfaife (2018), this innovative labiodental is considered to be

cognate with either CA /ð^ʕ/ or /d^ʕ/ and can appear in any position of the consonantal root, that is, root-initial, root-medial, or root-final. However, in the Upper FA subvariety native to the second author and the focus of this paper, the labiodental reflex that occurs is only cognate with Classical Arabic /d^ʕ/ and can only appear if the consonant is root-initial. This is illustrated by the examples in (6) where the Classical Arabic root is given in the leftmost column followed by a posited underlying representation based on Rural Saudi Arabic and then the FA phonetic representation followed by the English gloss.

| (6) | Root | RSA UR | FA PR | Gloss |
|-----|------------------------------------|--------------------------------------|--------------------------|--------------|
| | (a) d ^ʕ bɪ | /ð ^ʕ abɪ-in/ | [fab.ɪn] | 'a hyena' |
| | (b) d ^ʕ ħk | /ð ^ʕ aħka/ | [faħ.śa] | 'he laughed' |
| | (c) d ^ʕ fdɪ | /ð ^ʕ ifdaɪ-in/ | [fif.da.ɪn] | 'a frog' |
| | (d) d ^ʕ ɣt ^ʕ | /ð ^ʕ aɣat ^ʕ a/ | [fa.ɣa.t ^ʕ a] | 'he pressed' |
| | (e) d ^ʕ ɪɪ | /ð ^ʕ ilɪn/ | [fil.ɪn] | 'a rib' |
| | | /ʔ-að ^ʕ laaɪ-in/ | [ʔaf.laaɪn] | 'ribs' |

It should be noted that there are a few words where there is a root-initial /d^ʕ/ in CA in which the cognate word in Faiifi Arabic does not show labiodentalization but surfaces with the voiced interdental emphatic [ð^ʕ]. Such words might be borrowed from CA or did not undergo labiodentalization because of homophony avoidance. A clear example of the latter is FA [ð^ʕajf-in] 'a guest', cognate with CA [d^ʕajf]. Were labiodentalization to take place, then a form like [fajf-i] would have a possible contradictory homophony between 'my guest' and 'a Faiifi person'.

The main observation is that in Upper FA, labiodentalization exclusively occurs in forms where the CA reflex has a root-initial /d^ʕ/.²

² The data on the labiodentalization of emphatics in Upper Faiifi Arabic presented here is different from that in Alfaife (2018) as well as that in Alfaifi & Behnstedt (2010), which is the only other published paper with data on Upper Faiifi labiodentalization. In the data presented in this paper (the native variety of the second author) labiodentalization only happens with a root-initial emphatic that is cognate with Classical Arabic /d^ʕ/. In the subvariety of Upper FA discussed by Alfaifi & Behnstedt, labiodentalization can occur in non-root-initial position and when the consonant is cognate with CA /ð^ʕ/, as well. Although we do not discuss these data in this paper, we do not view them as problematic for our account. Rather, we see the Upper FA subvariety described here as more conservative than the subvarieties reported on by Alfaifi & Behnstedt (2010) & Alfaife (2018). In this way, we can see that labiodentalization first affects the root-initial emphatic that is cognate with Classical Arabic /d^ʕ/ as discussed in section 4. The subvariety discussed by Alfaifi & Behnstedt (2010) is innovative in extending labiodentalization to forms cognate with Classical Arabic /ð^ʕ/ and to non-root-initial position, as well. Given that we do not know the full range of data in the subvariety presented in Alfaifi & Behnstedt (2010) and Alfaife (2018), we do not know whether the extension of labiodentalization to these other environments is a sporadic change ('A-change') or a systematic change ('N-change').

When the Classical Arabic /d^ʕ/ is not root-initial the cognate form in the Upper FA subvariety considered here (if it occurs) is always realized with [ð^ʕ]; some examples are given in (7).

| (7) | Root | RSA UR | FA PR | | Gloss |
|-----|-----------------------|--------------------------|----------------------------|-----------------|-----------|
| | (a) ʕd ^ʕ l | /ʕað ^ʕ ala/ | [ʕa.ð ^ʕ a.la] | → *[ʕa.fa.la] | ‘muscle’ |
| | (b) qd ^ʕ j | /gaað ^ʕ in/ | [gaa.ð ^ʕ in] | → *[gaa.fin] | ‘a judge’ |
| | (c) wd ^ʕ ʕ | /wað ^ʕ aʕa/ | [wa.ð ^ʕ a.ʕa] | → *[wa.fa.ʕa] | ‘he put’ |
| | (d) mrd ^ʕ | /mariið ^ʕ in/ | [ma.rii.ð ^ʕ in] | → *[ma.rii.fin] | ‘ill’ |

While the distinction between historical /ð^ʕ/ and /d^ʕ/ has neutralized to [ð^ʕ] in FA in non-root-initial position, the distinction is maintained in root-initial position where words with historical /ð^ʕ/ can have the devoiced interdentals [θ^ʕ] and [θ] as reflexes but not [f] (as shown in section 3), while words with historical /d^ʕ/ can have [f] as a reflex, but not a devoiced interdental. What needs to be explained is how it can be that labiodentalization occurs just in root-initial position in a way that distinguishes between historic /ð^ʕ/ from /d^ʕ/ even though these sounds have fallen together in non-root-initial position in FA and in most RSA dialects, none of which have a reflex [d^ʕ] for Classical Arabic [d^ʕ]. We consider the path to labiodentalization in the next section.

5 The Path to Labiodentalization

In section 4 we have documented that in the Upper Faifi Arabic subvariety that is native to the second author a voiceless labiodental fricative is the reflex of CA root-initial /d^ʕ/, which we will refer to by its Arabic letter name, *ḍād*. One interesting question concerns the source of FA [f] that is the reflex of the historical *ḍād*. This question is not independent of the discussion within Semitic linguistics and historical Arabic linguistics in particular, as to the original pronunciation of the *ḍād* (realized as the voiced emphatic dental stop /d^ʕ/ in Classical Arabic). Steiner (1977) put together a strong case for lateral fricatives in Proto-Semitic and for a lateralized *ḍād* as the original pronunciation in early Arabic. A major piece of evidence that Steiner pointed to was early loanword data reflecting on the pronunciation of *ḍād* as exemplified by the Spanish borrowing of Arabic *alqaad^ʕi* ‘(the) judge’ as [alkalde] ‘mayor’ in which *ḍād* is borrowed with a lateral component. Moreover, as summarized by both Watson & Al-Azraqi (2011) and Al-Wer & Al-Qahtani (2016), the eighth-century description by the Arabic grammarian Sibawayh of the correct pronunciation of *ḍād* is consistent with it being an emphatic lateral fricative. Furthermore, Watson & Al-Azraqi (2011, 425-426) point out that in some of the modern South

Arabian languages the emphatic counterpart that is cognate with the Arabic *ḍād* is a pharyngealized lateral fricative. These South Arabian languages can be considered as the substrate languages of the southern part of the Arabian Peninsula where Faiifi Arabic is spoken. Finally, and most importantly, recent fieldwork within the last fifteen years, especially by Peter Behnstedt, Janet Watson and Enam Al-Wer and their colleagues, has documented a number of communities in the southern part of the Arabian Peninsula where Arabic *ḍād* has lateralized reflexes that include a voiced lateral fricative that is pharyngealized and a voiceless plain lateral fricative. Some of these communities are in areas in close geographic proximity to the mountain region where Faiifi Arabic is spoken, but as seen by the Faiifi Arabic phoneme inventory in (2), which includes allophonic realizations of the emphatics, there are no lateralized consonants in present day Faiifi Arabic. However, we would contend that the existence of a pharyngealized lateral fricative as a reflex of the Old Arabic *ḍād* in an earlier stage of Faiifi Arabic is crucial for the understanding of the path to labiodentalization that occurs in Upper FA as exemplified by the data in (6) in the previous section.

The research of Watson (2011), Watson & Al-Azraqi (2011), Behnstedt (2016), and Al-Wer & Al-Qahtani (2016) all observe that in areas near where FA is spoken, the pronunciation of the historical /d^ʕ/ of Classical Arabic is frequently the voiced emphatic lateral fricative [ḍ^ʕ]. Now given that FA root-initial /ḍ^ʕ/ undergoes devoicing (and depharyngealization) as was seen by the data in (3) and (4) in section 3, we posit that in older FA, historical *ḍād* was pronounced as the voiced emphatic lateral fricative [ḍ^ʕ], but then underwent devoicing (and depharyngealization) in root-initial position that transformed it into the voiceless lateral fricative [ḏ]. That is, just as devoicing (and depharyngealization) occurred with root-initial /ḍ^ʕ/, it also occurred with the posited voiced emphatic lateral fricative /ḍ^ʕ/. Note that Watson & Al-Azraqi (2011) report the occurrence of a devoiced pharyngealized lateral sonorant [ḏ^ʕ] in a dialect in the Saudi *Tihāmah* region, which is geographically proximate to the Faifa Mountains region.

Assuming that older Faiifi Arabic did have the phoneme /ḍ^ʕ/ (cognate with CA /d^ʕ/) and that devoicing (and depharyngealization) occurred in root-initial position just as we observe in Faiifi Arabic words with root-initial /ḍ^ʕ/, then we can posit a path to labiodentalization by referencing perceptual similarity (e.g. Ohala 1981). Impressionistically, there is a perceptual similarity between a voiceless lateral fricative [ḏ] and labiodental [f]. While we are not aware of any specific studies that discuss the perceptual similarity of these two segments, it is not inconsistent with the cross-linguistic acoustic characteristics of these sounds as presented in Gordon et al. (2002). Thus, we posit that at an

earlier stage of Upper Faifi Arabic when the emphatic lateral fricative /ḳ̣ʰ/ (cognate with CA /ḍʰ/) underwent devoicing and depharyngealization to [ħ] in root-initial position, listeners heard this voiceless lateral fricative as the FA phoneme [f] because of their perceptual similarity. This perceptual confusion is plausible given that FA did not have a voiceless lateral fricative in its phonemic inventory. Once this root-initial labiodentalization of the emphatic lateral fricative occurred, words containing it in root-initial position would have been relexicalized as having the phoneme /f/ synchronically rather than /ḳ̣ʰ/. (This is especially plausible given that the effect of a literary Arabic on the dialect would have been minimal at best.) We conjecture that after this labiodentalization occurred in root-initial position, then, in non-root-initial position the emphatic lateral fricative /ḳ̣ʰ/ eventually merged with the emphatic interdental /ð̣ʰ/ also because of perceptual similarity, but motivated by the system-internal peculiarity that /ḳ̣ʰ/ was no longer present as a root-initial consonant. It would not have become [v] because /v/ is not a phoneme in FA and because there is no depharyngealization in non-root-initial position. Crucial to understanding the path to labiodentalization of /ḳ̣ʰ/ to [f] in FA is the general devoicing (and depharyngealization) of emphatic fricatives in root-initial position that also affected words with root-initial /ð̣ʰ/. Observe that as shown in section 3, words with historical root-initial /ð̣ʰ/ underwent devoicing but do not show labiodentalization as exemplified by /ð̣ʰif.rin/ → [θif.rin] (not *[fif.rin] ‘a fingernail’) from (4a). We, thus, propose the diachronic path illustrated in (8) as the route of FA labiodentalization exemplified with the word [fab.ʃin] ‘a hyena’.

(8) Diachronic labiodentalization path in Faifi Arabic

*ḳ̣ʰab.ʃin > ʔab.ʃin > [fab.ʃin] ‘a hyena’

Consequently, the path to labiodentalization can be best understood if the historical reflex of Classical Arabic /ḍʰ/ was originally the voiced emphatic lateral fricative /ḳ̣ʰ/ in Upper FA. This is plausible in terms of the dialectal geography of the region since there are geographically proximate Arabic dialects that maintain [ḳ̣ʰ]. It also accounts for the fact that labiodentalization does not occur in words with historic /ð̣ʰ/ in the Upper FA dialect under consideration and for the observation that the distinction between Classical Arabic *dād* and /ð̣ʰ/ are still maintained in root-initial position by their different reflexes in contemporary Upper FA: [f] for *dād* and [θ̣ʰ] or [θ] for /ð̣ʰ/.

6 Faifi Arabic labiodentalization in light of Honeybone (2016)

In the previous section we posited that the [f] realization of Classical Arabic *ḍād* in contemporary Upper Faifi Arabic can be best understood if the reflex of *ḍād* in older Faifi Arabic was the voiced emphatic lateral fricative /ḍ^ʕ/, as is found in geographically proximate dialects as well as in the South Arabian substrate languages. Given that, as shown in section 3 and 4 of this paper, there has been a general (historical) devoicing process that affects root-initial emphatics in Faifi Arabic, it was proposed in section 5 that the historical path to labiodentalization starts with the root-initial devoicing (and depharyngealization) that transformed the voiced emphatic lateral fricative *ḍ^ʕ to voiceless [ɬ]. Listeners then heard this voiceless lateral fricative as the FA phoneme /f/ because of their perceptual similarity. That [ɬ] could systematically be affected by perceptual similarity is plausible given that FA does not have voiceless lateral fricatives as phonemes. The labiodental /f/ would have been the closest phonemic match perceptually to voiceless [ɬ]. The path to labiodentalization in Upper FA documented in this paper raises several issues for the general discussion on labiodentalization that has emanated from the work of Honeybone (2016). Two specific issues to be addressed in this section include Upper Faifi Arabic representing a case of labiodentalization whose source is not an interdental and labiodentalization as an endogenous (system-internal) regular N-change that has misperception as its underpinnings.

In the cases of labiodentalization that have been discussed in the recent literature regarding misperception as a possible source of the sound change, such as in Honeybone (2016), Garrett & Johnson (2013), and Blevins (2006), these cases typically involve perceptual confusion with interdentals. The Upper Faifi Arabic case of labiodentalization documented in this paper points to a different path, one in which a voiceless lateral fricative is the that segment that becomes a labiodental (i.e. ɬ > f). While we know of no laboratory studies that test the possible perceptual confusability of [ɬ] with [f], impressionistically, they seem to be potentially confusable. Consequently, we consider the path to labiodentalization posited in section 5 that goes from a voiceless lateral fricative to [f] to be plausible even if it has not been previously documented.

The more interesting issue concerns our labeling of Faifi Arabic labiodentalization as an endogenous (system-internal) regular N-change that has misperception as its underpinnings. First, given that FA has been a very isolated dialect that preserves substrate features and archaic features of Arabic we consider the labiodentalization process documented in this paper to be an endogenous change motivated by system-internal pressure. Specifically, as documented in this paper,

there is pressure for any emphatic consonant to be realized as voiceless in root-initial position. While the motivation for this devoicing process that was illustrated in sections 3 and 4 of this paper is unclear, it is systematic. Moreover, given the historic isolation of FA, it is not a change that is a result of language (i.e. dialect) contact. The dialect atlas of Behnstedt (2016) shows that the emphatic labiodentalization only occurs in the Faiifi Mountain region; the labiodentalization of historical *dād* is not found in any other variety of Arabic. Thus, we consider FA labiodentalization to be an endogenous change. Second, we consider FA labiodentalization to be a regular N-change in the sense that it applies to all words historic to the dialect that had root-initial **ḏ*^ʕ (ignoring a few words that were exceptional for reasons of homophony avoidance as mentioned in section 4). The phonetic environment and position in the word did not affect the change as long as **ḏ*^ʕ occurred in root-initial position. In this sense we consider it to be consistent with it being an N-change. Third, as discussed in section 5, we consider FA labiodentalization to be perceptually motivated (i.e. based on a misperception). As discussed in section 5, once root-initial **ḏ*^ʕ underwent the process of devoicing (and depharyngealization) to [ʔ] in root-initial position listeners heard this voiceless lateral fricative as the FA phoneme [f] because of their perceptual similarity. This misperception is made plausible by the fact that a voiceless lateral fricative was not part of the FA phoneme inventory so that the misperception to [f] occurred in a nonrandom way. Also, because of the depharyngealization, it became a target to be reanalyzed as an allophone of a phoneme that was not pharyngealized. Consequently, FA labiodentalization may be contrary to Honeybone's (2016, 351) statement that, "...N-changes and A-changes are fundamentally different things: as sporadic, lexically specific changes, A-changes are good candidates for misperception models of changes, but that kind of model does not predict the properties of N-changes." While we do not disagree with Honeybone's statement, we would nonetheless conclude that Upper FA labiodentalization indeed represents an N-change that is perceptually motivated.

7 Conclusion

In this paper we have documented a unique case of labiodentalization of a historical voiced emphatic (pharyngealized) consonant to [f] in Upper Faiifi Arabic, an isolated dialect spoken in the Faiifi mountains in the southwest corner of Saudi Arabia. The FA emphatic fricative that is cognate with CA /*d*^ʕ/ is realized as [f] when in root-initial position and as [ḏ^ʕ] elsewhere. We suggest that the [f] realization of CA /*d*^ʕ/ can be

understood if in older Faiifi Arabic this sound was pronounced as the voiced emphatic lateral fricative [ɮʕ] (as in geographically proximate dialects). A general root-initial devoicing (and depharyngealization) process then transformed the historical voiced emphatic lateral fricative [ɮʕ] to voiceless [ɮ], which was then perceived as [f] by FA speakers because of their perceptual similarity. This misperception is made plausible by the fact that a voiceless lateral fricative was not part of the FA phoneme inventory and because of the depharyngealization it was susceptible to being reanalyzed as an allophone of a phoneme that was not pharyngealized. We conclude that in the categorization of Honeybone (2016) Upper FA labiodentalization can be considered an endogenous (system-internal) regular N-change that has misperception as its underpinnings.

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