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Towards a Research-Led Approach to the Teaching of Arabic Pronunciation

Sam Hellmuth

University of York

Abstract

This paper attempts to reverse-engineer recent research-led recommendations which have been made for the priorities to be adopted in the teaching of English pronunciation. The goal of this enterprise is to lay the initial groundwork for a parallel set of recommendations for practitioners engaged in teaching Arabic as a Foreign Language (AFL). The paper starts by setting out the rationale and evidence-base which underpins the proposals made for English, then gathers together equivalent information for Arabic, based on a review of relevant primary research literature. A set of preliminary recommendations regarding which aspects of Arabic pronunciation should be prioritised in the AFL classroom is made, and is shown to differ to a greater or lesser extent from the aspects of pronunciation highlighted in published textbooks for different types of AFL learner. The paper closes by suggesting avenues of future research which could further inform pronunciation teaching in Arabic and, potentially also, in other non-global languages.

The goal of this paper is to adapt research-led approaches proposed for teaching English pronunciation (Fraser, 2001; Jenkins, 2002; Derwing & Munro, 2005) for use by practitioners engaged in teaching Arabic as a Foreign Language (AFL). In order to do so, the paper identifies the types

of evidence which have been shown to inform successful teaching of English pronunciation, based on proposals made for English, then presents parallel information, for Arabic, based on a review of relevant primary research literature. This review yields a set of preliminary recommendations regarding which aspects of Arabic pronunciation should be prioritised in the AFL classroom. These priorities are found to differ to a greater or lesser extent from the aspects of pronunciation highlighted in published textbooks for different types of AFL learner. The paper closes by suggesting avenues of future research which could further inform pronunciation teaching in Arabic and, potentially also, in other non-global languages.

INSIGHTS FROM RESEARCH-LED APPROACHES TO TEACHING ENGLISH PRONUNCIATION

For English, there is a degree of consensus in the literature about what aspects of pronunciation should be taught (or not), and why.

What is the Goal of Pronunciation Teaching?

The first question to address is what counts as ‘successful’ pronunciation: if we teach pronunciation, what is the goal? Derwing and Munro (2005, p. 385) identify three possible measures of pronunciation ‘success’, as defined in (1).

- | | |
|------------------------|--|
| (1) a) Intelligibility | The extent to which a listener actually understands an utterance. |
| b) Comprehensibility | A listener’s perception of how difficult it is to understand an utterance. |
| c) Accentedness | A listener’s perception of how different a speaker’s accent is to that of the L1 speech community. |

The authors argue strongly that intelligibility should be the goal of all/any attempts to teach pronunciation, based on the results of an earlier study (Munro & Derwing, 1999). In which speech samples from ten L2 learners of English whose L1 was Mandarin, were evaluated along each of the three parameters listed in (1) by a group of 18 native speakers of Canadian English. The speech samples were also phonetically transcribed by the authors, to identify errors of different types: phonetic, phonemic,

intonation and grammatical. The listener ratings for each parameter were then correlated with the error scores for different types of error.

The study yields two key findings: firstly, that intelligibility and degree of perceived foreign accent are not strongly correlated: “highly intelligible stimuli were not necessarily assigned low accent scores” (Munro & Derwing, 1999, p. 299); and secondly, that different types of learner errors correlated differently with the different parameters listed in (1). Accentedness was strongly correlated (72-89%) with errors of all types (phonetic, phonemic, intonation and grammatical), but intelligibility was correlated only with phonemic and intonation errors, and the degree of correlation was much weaker (22-28%); comprehensibility was correlated with errors of all types, but with much greater variation in the degree of correlation of different types of errors: phonetic 11%, phonemic 44%, intonation 83%, grammatical 56% (for details see Munro & Derwing, 1999, p. 301, Table 2). As a result, the authors argue that: “instruction should not focus on global accent reduction, but only on those aspects of the learner’s speech that appear to interfere with listeners’ understanding” (Munro & Derwing, 1999, p. 305).

The listener ratings in Munro and Derwing’s (1999) study were provided by native speakers of English, and they defined accentedness in relation to the accent of the L1 speech community. It is now widely agreed that consideration of *who* learners wish or need to be intelligible *to* is critical. A number of studies have shown that non-native listeners (who are themselves L2 learners of English) rate intelligibility and accentedness in samples of L2 speech differently from native English listeners (Flege, 1988; MacKay, Flege, & Imai, 2006; Munro, Derwing, & Morton, 2006; Yuan, Jiang, & Song, 2010). As a result, different aspects of learner pronunciation may merit the attention of instructors, depending on who their learners wish to be intelligible to. This distinction is critical for learners of English, a language which has more non-native speakers than native speakers, but is likely to be less critical for learners of Arabic and other non-global languages. Learners of Arabic will typically learn Arabic in order to communicate with native speakers of Arabic, rather than with other non-native speakers of Arabic.

In sum then, the general consensus in the literature is that pronunciation teaching should prioritise only those aspects of pronunciation which hinder intelligibility. The next section outlines the recommendations that have been made about pronunciation teaching based on research into the relative contribution of different aspects of pronunciation to accentedness, comprehensibility and intelligibility.

What Aspects of Pronunciation Should be Taught?

Derwing and Munro (2005) identify three types of studies which can provide evidence about which aspects of pronunciation contribute most to accentedness and/or unintelligibility: i) listener rating studies similar to Munro and Derwing (1999), in which native listeners rate the accentedness, comprehensibility or intelligibility of samples of learner speech; ii) intervention studies, which evaluate whether listeners' ratings of learner speech are different before and after provision of specific training to the learners in certain aspects of pronunciation; and iii) psycholinguistic studies which evaluate the processing by native listeners of particular aspects of L2 speech. The authors also argue for greater attention to be paid to the relative functional load of different types of errors, that is, the degree to which a particular phonological contrast is actually used in the language. For a long time, most of the evidence for English was derived from studies of the first type (native listener rating studies), but recent evidence has also come from qualitative analysis of mutual intelligibility among learners in corpora of learner speech (Jenkins, 2000; 2002). The aspects of pronunciation which instructors are recommended to focus on now differ according to the learners' most likely target listeners, native or non-native.

Frasier (2001) provides a prioritised list of which aspects of pronunciation to teach in the English as a Second language (ESL) classroom, as set out in Table 1 below. The training materials were designed for teachers working with immigrants in Australia, and thus the focus is on becoming intelligible to listeners who are native speakers of English.

Table 1. Priorities for Pronunciation Teaching in the ESL Classroom (Fraser, 2001, p. 33)

1.	word and sentence stress
2.	syllable structure (final consonants, consonant clusters)
3.	vowel length distinctions
4.	major consonant distinctions (those with a high functional load, eg. [s]~[ʃ], [f]~[p])
5.	vowel quality distinctions
6.	minor consonant distinctions (those with a low functional load, eg. [θ]~[ð])

In a similar way, Jenkins (2002) makes recommendations regarding which aspects of pronunciation should be included in teaching of English

as an International Language (EIL), which are summarised in brief in Table 2 (see Jenkins 2002 for further details). This list represents the Lingua Franca Core (LFC), and comprises “those phonological and phonetic features which... seem to be crucial as safeguards of mutual intelligibility in [interlanguage talk]” (Jenkins, 2002, p. 96). The list is not presented in order of priority, but Jenkins notes later the relative importance to be placed on the different aspects listed here; for example, teaching of nuclear stress placement is described as ‘critical’ in the EIL context (p.99).

Table 2. Priorities for Pronunciation Teaching in the EIL Classroom (Jenkins, 2002, pp. 96-97)

consonant inventory	but not [θ]~[ð] or allophones
some phonetic details	e.g., aspiration in voiceless plosives, vowel length before voiced/voiceless coda
consonant clusters	avoidance of initial/medial consonant deletions
vowels	maintenance of long/short contrast
production and placement of tonic (nuclear) stress	appropriate to signal contrast, described as ‘critical’

The two sets of priorities are clearly different, and Jenkins acknowledges that, for example, teaching of correct pronunciation of word stress is “critical” for learners seeking to communicate with native speakers of English, but argues that this is essentially “unteachable” in the EIL context (Jenkins, 2002, p. 99).

The recommendations are however in agreement with respect to the importance of teaching: i) only those consonantal contrasts which have a high functional load, and ii) sentence stress, or the production and placement of nuclear stress. The next section outlines some of the research evidence which supports the claim that these two aspects of pronunciation—segmentals with high functional load, and suprasegmentals—should be prioritised.

Why Prioritise Segmental Contrasts with High Functional Load?

Brown (1988), based on ideas in Avram (1964), calculates functional load for a sample set of contrasting phoneme pairs in Received Pronunciation (RP) British English, in terms of the combined (‘cumulative’) frequency of each member, the number of minimal pairs in which they contrast, and whether the contrast is maintained in other varieties of native English

accent. This last factor is based on the premise that native listeners who are used to tolerating ambiguity between members of a contrasting phoneme pair as realised in other varieties or dialects of their native English, will also tolerate ambiguity in their realisation by L2 learners of English. Other factors also taken into account in evaluating functional load are acoustic and/or articulatory phonetic similarity, the structural distribution of phonemes (such that context may disambiguate), the number of lexical items in which a sound occurs, and the number of minimal pairs—of the same part of speech—in which the contrast is found, together with the frequency and distribution of each member of a minimal pair.

In sum, Brown argues that functional load cannot be calculated solely on the basis of the raw number of minimal pairs in which the contrast between a particular pair of phonemes is observed. He provides a summary table listing phonemic contrasts of RP English which are frequently conflated by learners, ordered according to the functional load of each contrast. Contrasting pairs with high functional load (score = 10) include /e, æ/ and /p, b/; contrasting pairs with low functional load (score = 1) include /ɔ:, ʌ/ and /f, θ/. The contrast /θ, ð/, which is identified by both Fraser and Jenkins above as an example of a contrast bearing low functional load, is weighted by Brown with a mid-range score of 5. Brown makes a clear link between functional load and intelligibility in arguing for a focus in pronunciation teaching on contrasts bearing high functional load. Citing the examples of high functional load /e, æ/ and low functional load /u:, ʊ/, he notes that “both these contrasts are contained in pronunciation drill books and are no doubt practiced with equal emphasis by language teachers, whereas far greater weight ought to be given to the former, since it is a much greater potential barrier to intelligibility” (Brown, 1988, p. 603).

An alternative, indirect, source of evidence for the relative functional load of phonemes in an inventory comes from child language acquisition of phonemic contrasts. Stokes and Surendran (2005) show that three factors account for the degree of variation between different infants in the order of acquisition of the consonantal inventory of English, Dutch and Cantonese: functional load, articulatory complexity and (input) frequency. Functional load was correlated with order of acquisition in all three languages, though accounted for a different proportion of the variation in different languages, and at different ages.

Why Prioritise Suprasegmental Features?

There is a small body of evidence which suggests that errors in suprasegmental features contribute more to the perception of foreign accent, intelligibility and comprehensibility than segmental features.

As discussed above, Munro and Derwing (1999) found that intonation errors were highly correlated (83%) with low listener ratings for comprehensibility, in contrast to all other error types (phonetic, phonemic, grammatical), though both intonation errors and phonemic errors were weakly correlated (22-28%) with low intelligibility ratings. This suggests that intonation errors contribute somewhat to poor intelligibility—and to the same extent that phonemic errors do - but that they contribute to a much greater extent to an impression on the part of listeners that a learner is difficult to understand. Similar results were obtained by Anderson-Hsieh et al. (1992) in an earlier ratings study, and it is evidence of this kind which motivates the recommendation that teaching of intonation be prioritised.

It is not always clear, however, from these ratings studies, what types of intonational errors are at issue, since they report only an overall impressionistic score for intonation accuracy. A study which clarifies this ambiguity is Grabe et al. (2005), which provides descriptive evidence of what aspects of intonation vary between different dialects of British English. Based on a parallel database of read speech data collected in Cambridge, Newcastle and Belfast, Grabe et al. examine variation across the three dialects in i) choice of nuclear accent shape (e.g., rise vs. fall) and ii) the position of the nuclear accent (e.g., default utterance-final position vs. earlier in the utterance). They find that there is much variation both within and between dialects in the choice of nuclear accent, but almost no variation, within or between dialects, in the position of the nuclear accent. Grabe et al. thus recommend that learners should prioritise acquiring correct patterns of nuclear accent placement (particularly in focus contexts) and not be concerned about what nuclear contour (fall vs. rise) they use, since native listeners already tolerate dialectal variation in this aspect of intonation.

Is Research-Led Teaching of Pronunciation Effective?

There is evidence that implementation of the type of priorities set out above can positively influence listener ratings of the speech of L2 learners. Derwing et al. (1998) compared the effect on accentedness, intelligibility

and fluency ratings of the speech of three groups of L2 learners of English who underwent three different interventions: training in segmental accuracy (including both production and perception of segmental contrasts), ‘global’ training (which addressed “speaking rate, intonation, rhythm, projection, word stress, and sentence stress [...] with no attempt to focus on individual consonant and vowel sounds” p.399-400) and a control group who received no special instruction in pronunciation. The authors found that listener ratings of samples of read speech sentences, recorded before and after training, improved for both of the groups who received some kind of pronunciation training, segmental or prosodic. However, in parallel before/after samples of spontaneous narratives, listener ratings only improved for the speech of learners who were in the global training group.

SURVEY OF RELEVANT PHONETIC AND PHONOLOGICAL PROPERTIES OF ARABIC

The preceding sections have outlined the rationale and content of research-led approaches to the teaching of English pronunciation. The remainder of the paper explores what the parallel evidence base might look like for Arabic. Specifically, what does existing research tell us about the relative functional load of speech segments and suprasegmentals in Arabic?

What Segmental Contrasts Carry High Functional Load in Arabic?

There is no existing study of the functional load of phonemic contrasts in Arabic parallel to that of Brown (1998). However, as discussed above, a source of indirect evidence regarding the relative functional load of speech segments is the order of acquisition of those segments by L1 learners. In a study of 180 children acquiring Jordanian Arabic, Amayreh and Dyson (1998) observe general trends in the order of acquisition of consonants, as set out in (2).

- | | |
|-----------------|---------------------------|
| (2) a) early | [b t d k f m n l w ħ q ?] |
| b) intermediate | [s ʃ χ ʁ h r θ sˤ ðˤ dʒ] |
| c) late | [tˤ dˤ ð z ʕ] |

We therefore infer, as a first estimate, that the consonants with high functional load in Arabic are those which are acquired early. The order of

L1 acquisition is only an indirect source of evidence regarding functional load, and is likely to also reflect developmental and physiological constraints, and may vary across spoken dialects of Arabic. Nonetheless this evidence suggests that it may be more important for L2 learners of Arabic to master accurate pronunciation of sounds such as [ħ q ʔ] and [χ ʁ sʕ ʕʕ] than [tʕ dʕ ʕ].

What Prosodic Contrasts Carry High Functional Load in Arabic?

Amayreh and Dyson also show that all consonants are acquired earlier in medial position in the word than in word-initial or word-final position (p. 645). In addition, they observe that children frequently make use of a word-initial filler syllable, [ʔV], which they compare to coronal geminates resulting from assimilation of the definite article [ʔal] before word-initial coronals. Both of these patterns suggest that the short-long consonant contrast has a high functional load in Arabic (cf. Khattab & Al-Tamimi, 2013). This in turn indicates that it is important for L2 learners of Arabic to master realisation of short-long consonant contrasts.

With respect to word stress, the surface position of stress actually varies rather less across dialects than is generally assumed (van der Hulst & Hellmuth, 2010). In addition, only a few dialects display minimal pairs which differ in the position of word stress alone (Hellmuth, 2013). The functional load of the position of stress in the word is probably thus low in Arabic, and its correct realisation may be a relatively low priority for L2 learners.

There is as yet no directly parallel study of the intonation of Arabic dialects to parallel that of Grabe et al. (2005). Descriptions of individual dialects suggest that the inventory of possible nuclear accent shapes varies across dialects (Chahal, 2006), and thus that variation in the choice of nuclear accent may vary across dialects in Arabic as it does in British English. The position of the nuclear accent can vary also, to mark contrastive or narrow focus, again, in a similar way to that observed in English. Crucially, variation in the position of the nuclear accent has been shown to behave in a similar way in dialects which nonetheless differ in the range of observed nuclear accent shapes (Chahal & Hellmuth, 2014). This suggests that, as for English, mastering the realisation of the position of the nuclear accent may be more important for L2 learners of Arabic than mastering the shape of nuclear accents.

IMPLICATIONS FOR TEACHING ARABIC PRONUNCIATION

The literature review above suggests the following aspects of pronunciation are likely to be important for L2 learners of Arabic:

- | | | |
|--------|---|--|
| (3) a) | accurate realisation of consonants according to functional load | high priority [b t d k f m n l w ħ q ʔ]
mid-priority [s ʃ χ ʁ h r θ sˤ ɖˤ dʒ]
low-priority [tˤ dˤ ɖ z ʕ] |
| b) | length contrasts | maintenance of a clear distinction between long and short consonants |
| c) | intonation | nuclear accent placement |

These suggestions are of course subject to revision in the light of future research, which may reveal greater insight into the relative functional load of Arabic segments, or other aspects of Arabic prosody. Nonetheless, it is of value to compare even these preliminary recommendations with the approaches taken to teaching of pronunciation in textbooks currently on the market for use in the AFL context.

A survey was made of nine textbooks published in English for beginner level learners of Arabic. They range from single volume texts designed for part-time self-study to the first volume in a more structured series of the type used in undergraduate *ab initio* Arabic programmes. In the review that follows only examples of good practice are identified by name, but a full list of the textbooks consulted is provided in the Appendix. The aim is not to provide an exhaustive survey, but rather to gauge in general terms what approach is taken to the teaching and learning of pronunciation in a sample of currently available texts.

The first observation to make is that in general, and in particular in the self-study books, very little space is devoted to the description of pronunciation. Typically, a list of vowels and consonants is provided early on, accompanied by 'lay' phonetic descriptions of each sound, often with comparison to the speech sounds of English. Some texts mention vowel length contrasts, but few mention short/long consonant contrasts. A number of texts discuss assimilation of coronal consonants ('sun letters') to the definite article, but few mention the lengthening of the assimilated consonant in this context. Some texts point out fine-grained phonetic details of certain sounds, the most common case being the different realisation of vowels in the vicinity of emphatic consonants.

Turning to suprasegmentals, one or two of the self-study textbooks mention stress, but some provide potentially confusing information. For

example. in one textbook, aimed at the self-study market, the following generalisation is provided:

- (4) “The last syllable of a word is never stressed.”
e.g., [ʃuˈhu:d-un] *martyr.Nom sg.* ‘martyr’

This statement is true of formal varieties of Arabic (Classical Arabic or Modern Standard Arabic) but for words occurring in non-phrase-final positions only. In all spoken dialects and in utterance-final position in formal Arabic, known as ‘*waqf*’ (pause), grammatical case endings are generally not realised and if the word has a final superheavy syllable (CVVC or CVCC) this word-final syllable will almost invariably receive stress.

Another of the self-study books does provide recommendations regarding which sounds learners should focus on, in a special section entitled ‘Speaking Arabic like a Native’: “If you can enunciate your letters clearly—particularly the more difficult ones—you’ll sound like you’re fluent.” The four chosen sounds for which word-based pronunciation drills are provided are: [ħ] ح , [ʁ] غ , [ʕ] ع and [q] ق . The first two are of high/mid functional load, and the latter two are of low functional load. Mastery of all of these sounds is important if a learner wants to avoid having a foreign accent in Arabic, but if the goal is intelligibility this advice may be at least partially counterproductive.

The textbooks aimed at the full-time, undergraduate students of Arabic provide more, and more accurate, information about pronunciation. For example, the *Alif Baa/Al-Kitaab* series (Brustad, Al-Batal, & Al-Tonsi, 2010; Brustad, Al-Batal, & Al-Tonsi, 2011) discusses intonation patterns in the context of the prosodic realisation of questions, and does so in sensibly general terms: “The exact intonation of an Arabic sentence of question depends on the dialect region. Listen to and imitate the speech of your teacher and native speakers you know” (Brustad et al., 2011, p. 11). Information about stress assignment rules is provided, but only in a footnote which is addressed to “those with some linguistic training” (Brustad et al., 2010, p. 34). This more careful, nuanced presentation of pronunciation information is perhaps to be expected in texts aimed at full-time rather than part-time students, and was already present, albeit in less detail, in earlier texts aimed at undergraduate/full-time learners of Arabic. For example, the ‘EMSA’ series gives brief information about articulation of consonants and provides a set of stress rules, in a single section at the beginning of the book. Intonation is also mentioned, in general terms:

“There are also particular intonation patterns associated with questions; since these vary from one region to another, the student is best advised to imitate his native-speaker model” (Abboud & McCarus, 1988, p. 105).

The review above suggests that appropriate information about pronunciation is now available for students in the textbooks aimed at the undergraduate or full-time study market. However, no direct attempt is made to guide students as to how to prioritise their learning with respect to different aspects of pronunciation. This is perhaps appropriate, since it is known that individuals vary greatly in the rate at which pronunciation accuracy improves, as well as in the aspects of pronunciation that remain problematic (resulting in the percept of foreign accent) (Derwing & Munro, 2013).

The advice given to teachers in the *Alif Baa* series, advocates placing high priority on pronunciation accuracy in general: “Everyone can produce Arabic sounds accurately, and it is necessary to encourage and to expect accuracy from the outset. Not only is this an excellent opportunity for you and your students to focus all of your attention on the phonetic aspects of Arabic, is it also better to form good habits from the start.” (Brustad et al., 2010, p. xi-xii).

Since class time is limited, perhaps what is next needed is a set of guidelines for teachers regarding what types of pronunciation errors or inaccuracies it is most important to single out for correction or remedial work. Such guidelines could be informed by the recommendations proposed in (3) above.

DIRECTIONS FOR FUTURE RESEARCH

A broader evidence base is needed, to include a study of the relative functional load of segmental contrasts along the lines of Brown (1988), as well as a replication in Arabic of Grabe et al.’s (2005) methodology for comparison of cross-dialectal intonation patterns. Further research should also explore what factors influence the intelligibility, comprehensibility and accentedness ratings of the speech of L2 learners of Arabic, and the extent to which prioritisation of teaching and error-correction strategies, in the directions suggested here, can influence such ratings (cf. Derwing et al. 1998). Finally, it would be helpful to clarify whether intelligibility (rather than accent reduction) should be the goal of pronunciation training and teaching, for Arabic and other non-global languages, and if so, whether the concept of intelligibility to non-native rather native listeners is relevant in the context of learners of languages other than English.

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APPENDIX

The following textbooks for beginner level learners of Arabic were surveyed.

BOOKS AIMED AT FULL-TIME/UNDERGRADUATE STUDENTS			
Alif Baa: Introduction to Arabic Letters and Sounds.	Brustad, K., Al-Batal, M., & Al-Tonsi, A.	2010 Third Edition	Georgetown University Press
Al-Kitaab fii Ta'allum al-'Arabiyya: A Textbook for Beginning Arabic Part One.	Brustad, K., Al-Batal, M., & Al-Tonsi, A.	2011 Third Edition	Georgetown University Press
Elementary Modern Standard Arabic: Part 1.	Abboud, P. F. & McCarus, E. N.	1988	Cambridge University Press
Ahlan wa Sahlan: Functional Modern Standard Arabic for Beginners.	Alosh, M.	2000	Yale University Press
BOOKS AIMED AT SELF-STUDY/PART-TIME STUDENTS			
Ultimate Arabic	Vrzić, Z. & Hejazeen, R.	2009 Second Edition	Living Language
Learn Arabic	Ibrahim, R. & Younes, M.	2009	Barron's
Arabic for Reading and Speaking	Mohamed, A. A.	2008	Barron's
The Complete Idiot's Guide to Arabic	Habel, K.F.	2008	Alpha Books
Arabic for Dummies	Bouchentouf, A.	2013 Second Edition	Wiley