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Are minimal pairs too few to be used in pronunciation classes?

In this contribution we address the usage of minimal pairs in L2 pronunciation classes. An informal survey with FL teachers of Italian and English revealed that minimal pairs are considered to be scant and difficult to find. We present here a tool (Minimal Pair Finder) that has been developed with the aim to support teachers and learners in pronunciation classes by providing quick access to several minimal pairs via a top-down approach. We describe how this tool can be consulted, how it has been implemented, and we show a sample teaching unit where students are asked to make use of it. Minimal Pair Finder reveals that minimal pairs are generally not too few to be used in pronunciation classes; however, we argue that L2 teachers should wisely choose minimal pairs for their classes based on the proficiency level of their students, by paying attention to parameters such as productivity and word frequency.

Key words: minimal pairs, pronunciation, tool, pronunciation teaching.

Introduction

Minimal pairs are pairs of words which differ by just one sound, e.g. *p*et – *b*et. Such pairs have been used since the time of classical phonology (Trubetzkoy, 1939) as a proof that two similar sounds have a distinct function in a language and can thereby be considered as phonemes, rather than mere variants of the same abstract entity (allophones). The procedure of replacing one sound with another in a word and checking whether this produces a new word has been called commutation test and has also been used since classical phonology. Minimal pairs are still important in present-day research in phonology, for example in studies measuring functional load (Oh, Coupé, Marsico & Pellegrino, 2013, and Oh, Pellegrino, Coupé & Marsico, 2015). And they have also been widely used outside proper phonology for various purposes. For instance, they are often used in psycholinguistic experiments testing first/second language acquisition issues (e.g., Pallier, Colomé & Sebastián-Gallés, 2001, as well as Lin, Chang & Cheung, 2004).

It has been suggested by numerous authors (see for instance Breitzkreuz, Derwing & Rossiter, 2009) that minimal pairs can also be profitably employed for didactic purposes, notably to illustrate and teach phonological oppositions to learners of foreign languages. In effect, the observation of minimal pairs is a metalinguistic exercise that helps learners understand the importance of pronouncing and perceiving sounds that they may erroneously consider as the same phonological entity based on their native language. For instance, novice Italian learners of

L2 English will have a tendency to perceive/produce *fill* /fɪl/ and *feel* /fi:l/ as the same word, since both /i:/ and /ɪ/ are assimilated to the closest L1 phonological category, namely /i/ (this and similar phenomena are widely described in L2 phonological models such as Best, Tyler, 2007, and Flege, 1995). Many authors (e.g., Renard, 1979, and Celce-Murcia, Brinton & Goodwin, 1996, and Santiago, 2012) suggested that exercises with minimal pairs can be beneficial for developing phonological awareness. Analysing such pairs of sounds, hearing their pronunciation and observing the change in meaning can be an important contribution to help learners acquire this phonological opposition. Explicit exercises using minimal pairs may in effect contribute to improve learners' pronunciation and phonological awareness.

Minimal pairs are frequent in general ESL/EFL textbooks, as reported by Levis, Cortes (2008). However, we find that not many textbooks of Italian as a SL/FL include exercises on or about minimal pairs, and/or exhaustive lists of minimal pairs to support teachers and students. An informal enquiry among teachers of English/Italian as a FL at the Universities of Warwick and Rome 3 revealed that teachers consider minimal pairs to be few or difficult to find. Lists of such word pairs are not easy to find (except Baker, Goldstein & Dolgin, 1990, for English), so we attempt here to provide a solution to this problem.

In the first part of our contribution we shall present a tool called *Minimal Pair Finder* (MPF), which has been developed in order to assist learners, teachers and linguists to search for minimal pairs of English and Italian. It is freely available online at <http://phonetictools.altervista.org/minimalpairfinder/> and more languages will possibly be added in the future. In the second part of this article, we shall illustrate how MPF can be used in L2 classroom activities: we present pronunciation exercises developed with it and we describe how it can be used in a class of Italian as a FL, along the lines of what is being done at the University of Rome 3. In the third and last part of this article, we shall present our considerations about using minimal pairs in L2 pronunciation classes.

1. *Minimal Pair Finder*

1.1 Using Minimal Pair Finder

MPF has a simple HTML/JavaScript interface (see figure 1) that lets the user specify a language and a pair of phonemes. As for the language choice, only American English and Italian are currently implemented, but collaborations have already been set up with other universities to extend the tool to more languages. As for the phoneme choice, the list contains all phonemes traditionally described for each language and is updated automatically whenever the user switches languages.

Figure 1 - MPF interface for standard queries

Once the user launches the search, the tool will dynamically look up a lexicon and return all minimal pairs found in it matching the criteria specified by the user; for productive oppositions, the output can contain several hundred pairs. Depending on the language, the results also contain extra information (such as frequency in a reference corpus for each word in the pair, see figure 2 – details in the next section).

Figure 2 - Output of a query in MPF

283 minimal pairs for /f/ and /v/ were found in the Italian data.
 Words come from text corpora and may contain errors or imprecisions:
 the most suspicious-looking words are marked **like this**.
 Numbers in parenthesis indicate word frequency in the **COLFIS corpus**.

/f/	/v/
fa (3566) fà (6) /f a/	va (1389) vah (0) /v' a/
fino (1924) /f' ino/	vino (233) /v' ino/
fanno (863) /f' an: o/	vanno (463) /v' an: o/
foto (354) /f' o to/	voto (369) /v' o to/
fedè (238) /f' ede/	vede (383) /v' ede/
fù (1450) /f' u/	v (50) vu (7) vù (2) /v' u/
fia (11) /f' ia/	via (2563) /v' ia/
inferno (119) /inf' erno/	inverno (191) /inv' erno/
fai (143) /f' ai/	vai (90) /v' ai/
finto (39) /f' into/	vinto (314) /v' into/
fan (66) /f' an/	van (160) /v' an/
fini (196) /f' ini/	vini (51) /v' ini/

Additionally, MPF also has an advanced feature that makes it possible to search for semi-minimal pairs, i.e. words that are identical except for $n > 1$ phonemes. This feature may be used for various purposes, such as looking for pairs of words opposing /tʃ/ vs. /kʃ/ (e.g. Italian *cedere* vs. *chiedere*), and once French is ready, /ã/ vs. /an/

and similar, or syllables such as /ma/ vs. /no/, or longer segments such as /'tart/ vs. /'tɔrd/, or something totally unrelated and having different lengths such as /'tart/ vs. /'nud/.

Figure 3 - *Advanced MPF interface for searching semi-minimal pairs*

It has to be noted that other software exists to find phonological neighbours for various languages, such as Worden (Origlia, Cangemi & Cutugno, 2015) and the Clearpond database (Marian, Bartolotti, Chabal & Shook, 2012). The distinctive feature of MPF is that it leads the user through a bottom-up (rather than top-down) search. Both Worden and Clearpond let the user input one word or non-word, and they will provide phonological neighbours of various types according to the options specified. Instead, the search in MPF is always bottom-up: the user specifies the terms of the opposition (i.e. the two opposing segments, be they phonemes such as /p/ vs. /b/, or longer chunks such as /tʃ/ vs. /kj/) and the tool will output corresponding word pairs. This means that MPF is somehow complementary to Worden or Clearpond and, in our view, it responds to the needs of learners and teachers looking for lists of minimal pairs. In effect, we can imagine that teachers are not interested in finding minimal pairs (or other phonological neighbours) of one given word; rather, if they are planning a pronunciation teaching session on the palatal nasal in Italian, they might be interested in finding minimal pairs given the phonemes /n/ vs. /ɲ/; or, similarly, if they are planning a teaching session on geminates, they might be interested in finding examples of /m/ vs. /mː/, /l/ vs. /lː/ etc. For this reason, we believe that MPF can profitably be used by learners/teachers of foreign languages.

1.2 The implementation of Minimal Pair Finder

The implementation of MPF is fairly simple and the search engine is written in PHP. It relies on a lexicon with orthographic forms and corresponding phonological transcriptions. For American English, we simply used the *CMU Pronouncing Dictionary*, which is freely available online (<http://www.speech.cs.cmu.edu/cgi-bin/cmudict>). For Italian, we combined two sources: the list of lemmas found in the CoLFIS corpus

(Bertinetto, Burani, Laudanna, Marconi, Ratti, Rolando & Thornton, 2005), and the list of lemmas in Garzanti's Italian dictionary, which can be downloaded from the publisher's website (<http://www.garzantilinguistica.it/lemmario-italiano/>). We combined those two complementary sources in order to have a richer list of entries in the lexicon: Garzanti's list contains only lemmas, while COLFIS contains many word forms that can contribute to the output list of minimal pairs. For example, had we used only lemmas, MPF could not find such productive oppositions as Italian /m/ vs. /m:/ in future tense vs. conditional (e.g. *andremo* /an'drɛmo/ - *andremmo* /an'drɛm:o/). Instead, had we used COLFIS only, MPF would not be able to find minimal pairs such as Italian *intorpidire* - *intorbidire* as neither of these words occur in COLFIS.

Both sources (Garzanti's lemmas and CoLFIS word forms) were transcribed with a component of the Espeak TTS system¹ (<http://espeak.sourceforge.net/>). Transcriptions were mapped to an internal symbol set for programming convenience, but are then further remapped and presented as IPA symbols in the results: this means that the user can comfortably use the IPA alphabet without being aware of the double remapping which happens "under the hood".

For Italian, we also included frequency information for each word form as found in the CoLFIS corpus: this way, the output minimal pairs can be sorted in a tentative *reliability order* with the intention to have "better" (i.e. frequent and native-looking) words high on the list, and foreign or uncommon words further down in the list. This is achieved by a complex set of rules that attribute a score to each word on the basis of

- [a] their frequency in CoLFIS and
- [b] Italian phonotactic and orthographic restrictions (i.e. giving a certain cost to words ending in one or more consonants, having foreign letters, showing unauthorized consonant clusters, etc.). For instance:
 - Exists in Garzanti: +100.
 - Occurs in COLFIS: +1 for each occurrence.
 - Orthography contains letters (or symbols) that are not included in 'aàbcdeèéfgghiiilmnoòópqrstuùvxxz' (and corresponding capital letters): -70 for each letter/symbol.
 - Contains unauthorized consonant clusters² (e.g. 'broaddband', 'Burlington', 'Kommerzzbank', 'feeddback'): -50 for each unauthorized cluster.

¹ Although MPF is already fully functional and available online, we are currently in the process of manually screening output transcriptions and correcting mistakes coming from Espeak's automatic transcriber module.

² This check is actually performed by multiple rules. The following regular expression checks for generic unauthorized clusters:

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/b[fgpqvxz]|c[bdfgpvxz]|d[bfpqtxz]|f[bcdpqvxz]|g[fpqtxz]|p[bcdfgvxz]|q[^qu]|v[cfpqtxz]|x[bcdfglnpqrsvxz]|z[bcdfpqvxz]/i
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Successive rules check for additional constraints on double consonantal graphemes (geminate), making sure they are preceded by a vowel and followed by a vocalic grapheme, or <r>, or <l>.

- Contains typical foreign letter combination (e.g. ‘eau’, ‘ou’, ‘ées’): -40 for each combination.
- Ends in consonant(s): -30 for each consonant.
- Orthographic form(s) contains double vowel grapheme (e.g. ‘scooter’): -25.
- Orthographic form contains >4 consonant graphemes in a row (e.g. ‘Gershwin’, ‘Goldsmith’): -20.
- Etc.

Additionally, we also used a whitelist to account for exception words such as ‘per’ (*for*) and ‘nord’ (*north*), which would otherwise be penalized as non-native looking by the rules above. The reliability score of each word in a minimal pair is then combined via another set of rules³ to get a final score for the pair as a whole, which determines its relative position in the list.

Instead, the ranking feature was not added to English. This has two main reasons: on the one hand, it is not possible to identify non-native English words by relatively simple orthographic rules as we did for Italian. On the other hand, we did not dispose of frequency information for English word forms in a reference corpus. We did implement a ranking of word-forms on the basis of trigram frequencies, but the results are not satisfactory and we are still looking for a better alternative.

Another issue concerns orthographic ambiguity in both Italian and English, and particularly homographs which are not homophones, such as *wind* ([wɪnd] *vs.* [waɪnd]) in English and *pesca* ([ˈpɛska] *vs.* [ˈpɛska]) in Italian. These cases are represented in the CMU as two distinct entries; this does not pose any problem to MPF, which also stocks them as two completely separate items, each with its pronunciation. In effect, the automatic transcription coming from a TTS component is deterministic by definition: it only outputs one transcription for such words, meaning that only one of the two (or more) possible pronunciations is represented. The solution has been that of manually building a list of Italian homographs which are not homophones, and appending it to the data. This includes homographs with lexical stress on a different syllable (e.g. *scrivano* [ˈskrivano] *vs.* [skriˈvano]), and minimal pairs opposing /e/-/ɛ/ or /o/-/ɔ/ (the only phonological oppositions of Standard Italian that are not marked by the orthography).

The opposite case concerns homophones that are not homographs, such as *waste* *vs.* *waist* ([weɪst]) in English, and *hanno* *vs.* *anno* ([ˈanːo]) in Italian. These words have multiple entries in all of the sources we used (CMU, COLFIS, Garzanti). So, in order to overcome this issue, we organized MPF data with phonetic transcrip-

³ One may think that it is possible to simply add the scores of each word in the minimal pair, but this unfortunately gives odd results as it favours pairs where one word is very frequent, even if the other is not. We found that a slightly more complex algorithm gave cleaner results than a simple score sum: if scores for both words in the pair are > 0, such scores are multiplied; else, they are summed and then divided by 100. This will heavily penalize pairs where one (or both) of the words has a negative score. Moreover, the multiplication of positive scores will heavily favour pairs where both words have high scores, whereas a simple sum would also favour pairs where one word has a high score, and the other does not.

tions (instead of orthographic forms) as the key for retrieval. This means that words like *waste* and *waist* are listed within the same entry (e.g.: [weɪst]#waist#waste) and are both retrieved when the result of a search includes [weɪst].

Many further improvements of MPF are currently being considered, apart from extensions to other languages. From an L2 pronunciation learning/teaching perspective, the most interesting extensions would consist in adding audio to all or some words via speech synthesis, and adding information to each word about its competence level (A1, A2, B1, B2, C1, C2). The latter would make it possible (given 2 phonemes) to exclusively get minimal pairs that are adequate to the learner's level of competence (say C1). It would require a categorization of words into competence levels such as has been done within the *English Vocabulary Profile* project (see Capel, 2012) and by the *Instituto Cervantes* for Spanish (see http://cvc.cervantes.es/Ensenanza/Biblioteca_Ele/plan_curricular/indice.htm). Until this feature becomes available, teachers will need to screen all output minimal pairs and select the ones that are appropriate to their students' level.

2. Minimal Pair Finder in L2 pronunciation classes

MPF targets a double audience: on the one hand, we believe it can be useful to researchers working in experimental phonetics, phonology and psycholinguistics. The first author started the development of this tool while striving to find minimal pairs matching specific requirements, and then successfully used it for ongoing psycholinguistic experiments. On the other hand, we believe it can be useful to learners and teachers for pronunciation classes.

Teachers can obviously find a wealth of minimal pairs to be used as illustrations in their classes. Learners can also find many examples to learn phonological oppositions; but above all, they can experience first-hand how productive certain oppositions are in the language they are studying. Learners of Italian as an L2 will for instance have the opportunity to see how many minimal pairs can be created by contrasting singletons and corresponding geminates, and thereby (hopefully) realize that this opposition is worth learning. They will also be able to focus on the type of contexts that any given opposition can create: for example, they can observe that /m/ vs. /m:/ is a recurring opposition in verbs for future tense vs. conditional (e.g. *mangeremo* vs. *mangeremmo*).

We have in fact prepared some specific activities around this tool that have been tested in July 2016 with 12 Chinese learners of Italian as an L2 at the University of Rome 3 by the second author. After the intervention, students filled in a short questionnaire where, among other things, they were asked to state whether they found MPF to be a useful tool for learning the pronunciation: out of 12 students, 7 gave a positive evaluation, 1 left a negative evaluation, 2 left neutral comments, 1 left no comment, 1 left an unintelligible comment. Full details of this intervention are given in Calabrò, Mairano (in preparation).

The activities (which can be found in the appendix in English translation) use minimal pairs inserted in specific sentence contexts to help learners improve perception and production of the target phonological oppositions. They can be considered as a first attempt to use MPF to create phonetic activities for learners of Italian as a FL/SL: they can be a support for teachers who are not experienced in phonetics but would like to improve their students' production and perception abilities. They can certainly be a useful illustration for teachers on how to create their own activities with MPF, once they have familiarized with it. Learners can do the activities on their own and then discuss them with the teacher/classmates; or else, they can do them during a phonetic workshop.

The aim of the lesson is to practice the opposition /m/ *vs.* /m:/ in Italian. The activities have been prepared for learners at a final A2 or initial B1 level of the *C.E.F.R. (Common European Framework of Reference)*. The whole lesson is divided in two main parts: two pre-activities (a-b), and six activities proper (c-h).

2.1 Pre-activities (a-b)

The pre-activities have been conceived to awaken the students' previous awareness regarding the /m/ *vs.* /m:/ phonological opposition in production and perception. In (a) learners are asked to start thinking about words that contain the two sounds, and to write them down. If they are working in classroom or in a lab, they can compare their own answers with their classmates' answers. Once they have found an acceptable number of words for their level, they should pass on to the second step and (b) listen to sentences containing one of two words composing a minimal pair. They are asked to mark with an X whether they hear one or the other word, then they can discuss with the teacher and classmates what they have perceived. In this part of the activity the teacher does not give the solution as this should come as a discovery.

2.2 Activities (c-e)

In the real activities students proceed to really use MPF. In (c) they are asked to look at the web page and search for words containing the sounds /m/ *vs.* /m:/ and to write down the five words with the highest frequency for both sounds. The teacher should make sure they all understand that the frequency number is in rounded brackets. This activity can be followed by a comparison of the results with classmates. In (d) learners are asked if they know the words they have found, and what the differences in meaning and pronunciation are. For this part, a plenary discussion with classmates and the teacher is fundamental as it helps to strengthen their awareness and/or correct wrong ideas. In (e) students are invited to start a metalinguistic analysis based on the minimal pairs they have found, specifically about pronunciation. They are asked to observe the sentence context in which the words appear and to think about a rule relating words in these minimal pairs. Of course, the aim of this activity is to let students make a connection between the geminate and the conditional tense *vs.* the singleton and the future tense.

2.3 Post-activities (f-h)

To conclude the work package, we propose 3 post-activities meant to consolidate what students have learnt. In (f) learners can find six sentences taken from COLFIS to be read aloud using word linkers (which are supposed to improve fluency). After practicing, they are subsequently asked to listen to the previous sentences in (g) and to discuss with the teacher about the difference of intonation. Finally, they are asked to listen again to the recorded sentences and repeat what they hear: the aim here is to consolidate what they have learnt and at this stage the teacher should correct the pronunciation of /m/ and /m:/ if necessary.

3. *Are minimal pairs too few to be used in pronunciation classes?*

In the last part of this paper, we shall try to address the question that originally brought us to develop MPF (see the introduction): are minimal pairs too few to be used in pronunciation classes? The answer is not trivial, as much depends on at least 3 factors: (1) the target phonological opposition, (2) the language in question, (3) the level of learners.

3.1 The target phonological opposition

Obviously, not all phonological oppositions are equally productive, as is widely known from the literature since Trubetzkoy (1939). Some phonological oppositions may be attested by a large number of minimal pairs, while others are only attested by a few. The productivity of a phonological pair is in effect linked to the function load of each phoneme. The function load can be defined as the capability of a certain phoneme to create minimal pairs: in fact, recent studies (e.g., Oh et al., 2013; 2015) measure the functional load of a phoneme by calculating the number of minimal pairs that would be neutralized if a phoneme were deleted from a language. Also, some oppositions are only active in certain contexts and are neutralized in other contexts: for instance, the singleton *vs.* geminate opposition in Italian is only active word-internally⁴ and in specific phonotactic conditions⁵. Such oppositions may as a very general rule be considered as less productive, but remarkable exceptions exist (Italian gemination being one of them).

MPF shows that the most productive oppositions can create hundreds or even thousands of minimal pairs. For example, the /p/ *vs.* /b/ oppositions outputs 488 minimal pairs in the Italian data, /t/ *vs.* /d/ outputs 422 minimal pairs, /o/ *vs.* /a/ outputs 4034 minimal pairs⁶, and /m/ *vs.* /m:/ outputs 251 minimal pairs. By con-

⁴ Except for *raddoppiamento fonosittico*, which we will ignore here for the sake of simplicity and because it is not relevant with the subject of this paper.

⁵ Namely between two vowels, or preceded by a vowel and followed by one of /l/, /r/, /j/, /w/.

⁶ MPF's output is limited by the memory allocated by the server, so the tool cannot screen all data in cases of such productive oppositions. The output for /a/ *vs.* /o/ would be even higher if all data could be screened.

trast, other oppositions can be far less productive. This is the case of, for example, /n/ *vs.* /ɲ/ which yields 64 minimal pairs in our Italian data, /j/ *vs.* /ɣ/ which yields 41 minimal pairs, or /dʒ/ *vs.* /ʒ/ which yields only 32 minimal pairs in our English data⁷.

So, we can provisionally claim that many phonological oppositions make it possible to find a wealth of minimal pairs. In the case of less productive oppositions, it may be more difficult to find minimal pairs, but usually they will still come in acceptable numbers for a pronunciation class.

3.2 The language in question

Of course it is no surprise that the language in question also is an important factor for the productivity of a given phonological contrast. The same pair of phonemes (or similar phonological entities existing in two languages) can create many oppositions in one language, and just a few in another language. We can illustrate this by the /tʃ/ *vs.* /ʃ/ opposition, which yields 394 minimal pairs in our English data, but only 99 minimal pairs in our Italian data⁸. This distinction is not really relevant for L2 pronunciation classes because they usually focus on one target language. However, on some occasions, foreign language teachers may still want to keep in mind that phonological oppositions in their students L1 may have a different weight in the L2, or vice versa.

3.3 The proficiency level of learners

The proficiency level is certainly another relevant factor at play when looking for minimal pairs to be used in pronunciation classes. Obviously, it is preferable and advisable to use words with which learners are familiar with, and for two reasons. Firstly, presenting unfamiliar words will concentrate the students' effort and attention to learning such words, rather than learning their correct pronunciation. In fact, according to VanPatten (1996), teachers should focus learners' attention to one aspect at a time (see Akerberg, Espinosa & Santiago, 2016, for an application on L2 pronunciation). Secondly, the reason for using minimal pairs is to make the student realize that the target phonological opposition is important and can create differences in meaning: if only obscure words are used, learners may not be able to grasp the change in meaning and, as a consequence, they would not be motivated to learn the target phonological contrast.

So, we propose that teachers focus on productive or fairly productive oppositions – at least with elementary or intermediate students, so that a wealth of examples is available where at least one of the two words is familiar to the students. This idea is

⁷ These results have been obtained with MPF version online on 29th June 2016; the implementation of the tool or the data may be modified in the future, and these numbers may change.

⁸ We have to recognize that it can be dangerously misleading to compare output from our Italian and English data, because they are very different. The English data (coming from the CMU pronunciation dictionary) is composed of many more entries and includes many proper names. The Italian data is less rich, so the output minimal pairs tend to be fewer as a consequence.

not new: other authors have suggested that teachers evaluate the functional load of a phonological opposition in order to decide whether or not it is worth teaching it (see Brown, 1988, as well as Levis, Cortes, 2008). Finding suitable words should not be too difficult with MPF, which also outputs word frequency information (from COLFIS): the higher the frequency, the more relevant the word and therefore the more useful the minimal pair. Only with advanced students can teachers dare to use minimal pairs made up of more infrequent words. In fact, at higher proficiency levels, it is even possible to combine a pronunciation lesson with a vocabulary learning lesson using minimal pairs from lesser productive oppositions.

4. *Final remarks*

On the whole, we think that the use of minimal pairs is a viable way to teach students the importance of correctly pronouncing and perceiving sounds that contrast phonologically. The use of minimal pairs may be more appropriate for some oppositions than others, notably for the most productive and yet challenging ones, such as singletons vs. geminates in Italian. This is in line with what has been suggested by recent literature in L2 pronunciation: Munro, Derwing (2006) found that pronunciation errors involving oppositions with high functional load had a heavy impact on ratings of accentedness and comprehensibility. The authors suggest that the functional load principle should therefore guide pronunciation instruction. We also propose that the use of minimal pairs with high vs low functional load needs to be tuned to the learner's proficiency level. Most productive oppositions and more frequent words are to be favoured for students at lower and intermediate proficiency levels, whereas less productive oppositions and less frequent words can be introduced in high proficiency levels (see also Brown, 1988).

We provide a tool (*Minimal Pair Finder*, MPF) that can (a) support teachers in the search for adequate minimal pairs to be used in their classes, and (b) support learners in observing the productivity of certain phonological oppositions in the target language. We are profitably⁹ using this tool in L2 pronunciation classes and we provide an illustration of how to do so in the appendix.

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⁹ Cfr. the evaluations given by students after the teaching intervention and briefly reported in section 2.

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Appendix

The appendix contains a work package using MPF for classes of Italian as a FL/SL. Instructions have been translated into English for the comfort of readers.

- **Type of activity:** discover minimal pairs opposing /m/ vs. /mː/
- **Level of students:** A2-B1 of C.E.F.R.
- **Time:** approx. 75 minutes

Pre-activities

- a) Work alone if you are at home or in pairs if you are in the classroom. Think about some words that contain the sounds /m/ and /mː/, and write them down. Then, compare your answers with classmates.
- b) Listen to the sentences: mark with an X what you hear. Then discuss with your teacher and classmates (the teacher will not give the solution).

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- | | |
|---|---|
| 1 | a. Tra dieci anni avremo una casa tutta nostra.
b. Tra dieci anni avremmo una casa tutta nostra. |
| 2 | a. Forse potremo cambiare macchina.
b. Forse potremmo cambiare macchina. |
| 3 | a. Domani saremo tanto stanchi.
b. Domani saremmo tanto stanchi. |
| 4 | a. Il camino è piccolo.
b. Il cammino è piccolo. |
| 5 | a. Dovremo comunicare di più e meglio.
b. Dovremmo comunicare di più e meglio. |
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Activities

- a) Look at MPF web page and search for minimal pairs opposing the sounds /m/ and /m:/. What results can you find? Write down the five words with the highest frequency for both sounds (you can find the frequency in rounded brackets next to each word). Then compare your results with your classmates.
- b) Do you know these words? What is the difference in meaning within each pair? And what is the difference in pronunciation? Discuss your answer with the teacher and classmates.
- c) Work in pairs. Go back to the previous words and observe them in their sentences. Answer the questions below and then discuss them with your teacher and classmates.
 - Where do /m/ and /m:/ appear most often?
 - Can you find a rule for when either sound is used?
 - Which is the difference in pronunciation?

Post-activities

- a) Read the following sentences from COLFIS and use word linkers to get a fluent reading.
 1. *Mi dicono: avremo un campionato di calcio eccellente!*
 2. *Noi non avremmo problemi di sorta.*
 3. *Sono certo che dovremo affrontare tutti qualche sacrificio.*
 4. *Dovremmo proprio prendere un tappeto!*
 5. *Vicino al camino, trovato acceso, ai piedi del letto, è stata trovata una tavola imbandita con cibi cucinati.*
 6. *Quando cammino per strada in America vado tranquillo perché non mi riconosce nessuno.*
- b) Listen to the sentences above and discuss with the teacher about the difference in intonation.
- c) Listen again and repeat the sentences.