

Methodological issues for the study of phonetic variation in the Italo-Romance dialects

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In questo articolo si discutono alcune tecniche di elicitazione e se ne valuta l'adeguatezza per lo studio della variazione fonetica nei dialetti italiani. Le riflessioni teoriche sono ancorate all'analisi di uno specifico fenomeno linguistico: l'alternanza sincronica tra dittonghi e monottonghi nel dialetto di Pozzuoli (in provincia di Napoli). In rapporto a questo fenomeno di variazione, vengono messi a confronto dati raccolti con l'intervista libera e risposte a un questionario di traduzione. L'analisi mette in luce l'opportunità del ricorso a materiale parlato spontaneo elicitato in situazioni il meno artificiali possibili. Nello stesso tempo, si argomenta in favore di un metodo di analisi che parta dai dati dell'uso per risalire induttivamente ai *patterns* di variazione, limitando così il ricorso ad assunzioni fonologiche *a priori*.

1. Introduction¹

A central role in Italian dialectology is played by phonetic/phonological descriptions of dialectal varieties. Regrettably, phonetic research on dialects has generally lacked an experimental base. In fact, while most of experimental phonetics is directed towards the regional varieties of Italian, experimental techniques are only sporadically applied to the Romance dialects of Italy². This paper investigates the reasons for such a gap, considering some problems of elicitation methods of dialectal speech. The theoretical reflections are anchored to the study of an actual phenomenon of phonetic variability: the synchronic alternation between diphthongs and monophthongs in the dialect of Pozzuoli.

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² With regard to this observation, a survey of the proceedings of the Italian congresses in phonetics (e.g. the ones organized by the *Gruppo di Fonetica Sperimentale* and by the *Associazione Italiana di Scienze della Voce*) reveals that the articles applying experimental methods to dialectal varieties are a small minority. Similar considerations apply to papers published in the journals of Italian dialectology *Rivista Italiana di Dialettologia* and *L'Italia Dialettale*.

Eliciting dialectal speech in Italy is not an easy task. The peculiar status held by dialects in the linguistic repertoire³ makes some standard techniques of experimental phonetics inapplicable. This is the case for reading word lists, but also for techniques such as Map Task (Anderson *et alii*, 1991) which have otherwise been successfully used to elicit spontaneous speech⁴. Reading dialectal texts or words is an extremely unfamiliar activity. Moreover, people that speak dialect fluently are often illiterate or semiliterate. Lastly, many dialects do not have a written tradition at all, or they refer to the tradition of other dialects, avoiding more locally marked features⁵. In short, if based on reading, useful research on Italo-Romance dialects would completely fail.

Similar considerations apply to Map Task. Dialectal speech is confined to familiar contexts, while Map Task creates an artificial situation where the use of dialect would be judged as inappropriate.

Two more applicable techniques are discussed here: "spontaneous interview" and "translation questionnaire". They differ greatly in the quality of the phonetic and linguistic detail they reveal. The case study from Pozzuoli argues for the use of natural conversational data.

2. Diphthongization in Pozzuoli

A synchronic alternation between monophthongal and diphthongal realizations of a vocalic variable characterizes several Italo-Romance dialects. This phenomenon can be locally found on the Tyrrhenian coast, especially in the south and west areas of Naples, while it is more spread in the dialects of the Adriatic coast, from Abruzzo to Apulia (Sornicola, 2006a). Romance linguists usually term this "spontaneous diphthongization", as opposed to "conditioned diphthongization" which is a metaphonetic process (Schürr, 1970). However, it should be stated that the term "diphthongization" is often used to define a diachronic change that

³ The Italo-Romance repertoire can be defined as a "situazione di bilinguismo endogeno (o endocomunitario) a bassa distanza strutturale con dilalia" (Berruto, 1993: 5). This definition adequately describes the relationship between national language and dialects, which in Italy presents peculiar features if compared with classic diglossic situations. In fact, in Italy both the national language and the dialects are "impiegate/impiegabili nella conversazione quotidiana e con uno spazio relativamente ampio di sovrapposizione" (Berruto, 1993: 6), but while "la gamma di funzioni dell'italiano è aperta verso il basso, quella del dialetto è chiusa, o quanto meno limitata, verso l'alto" (*ibidem*: 22).

⁴ For the Italian language, see the *corpora* AVIP (Bertinetto, 2001), API (Crocco *et alii*, 2002) and CLIPS (Albano Leoni, 2007).

⁵ This is the case of many dialects in Campania which are subject to the normalizing influence of written Neapolitan. See the examples in Abete (2008).

produced diphthongs in certain contexts, while I will use it here to refer to a synchronic process of phonetic variation.

The data presented here are part of a larger study which compares diphthongization in four different dialects of southern Italy (Abete, 2011). Data from Pozzuoli, a medium-sized town just West of Naples, will be briefly presented in this section. The utterances reported below were produced by one speaker, a 48 year-old fisherman, during a conversation (see §3 for the elicitation method). Eight tokens of the lexical item /rettsə/ "fishing-nets" in different prosodic positions are presented.

- 1) a 'kɔsɪr i **rɛtts** || a fɪð i 'zɛttsə || (.)
to sew the nets, to make the nets (a fisherman has to learn)
- 2) tʊ sɑpːh i **rɛtts** || ðə 'βas:ən pə vi'fɔɪŋ ||
you haul the nets in, they (the motor-boats) pass close to you
- 3) 'p:ʊrʊ kʷɛnd jɛn æ kɔ'li i **rɛtts** || (.)
also when we went to cast the nets
- 4) pɛ'kːhɛ 'pɾɪm:ə ɣʊ 'tːhɛndə pjetts i **retts** zə ɣãm'bã: || (.)
because once with thirty nets one could live
- 5) i **retts** v m:ʊ'lʲʊtts ε<ε> (.) <ε> 'nãðu ðip i rɛtts ||
nets for codfish is... another type of net
- 6) zãn ĩ mɛgə'dzɪnɪ ɣv nu <u> tãn i **retts** a:rɪnt ||
there were warehouses where we... left the nets inside

As these examples show, the same lexical item (for the same speaker) can be realized with a stressed vowel of the type [e] or with a diphthong of the type [ɛi]. More specifically, diphthongs appear before a prosodic pause (1-3), while they are not found in internal position (4-6)⁶. In order to have diphthongs, a silent pause does not seem to be necessary⁷, as can be seen in 1) and 2).

⁶ In terms of prosodic phonology (e.g. Beckman & Pierrehumbert, 1986), in order to have diphthongal realizations an intonational phrase break is necessary, whether or not it coincides with the end of an utterance, while an intermediate phrase break alone is not sufficient, although a few exceptions exist. For quantitative data supporting these statements see Abete (2011: §5.2.3).

⁷ This observation has been confirmed by acoustic measures and statistical tests in four dialects of southern Italy (Abete, 2011: §6.1.3).

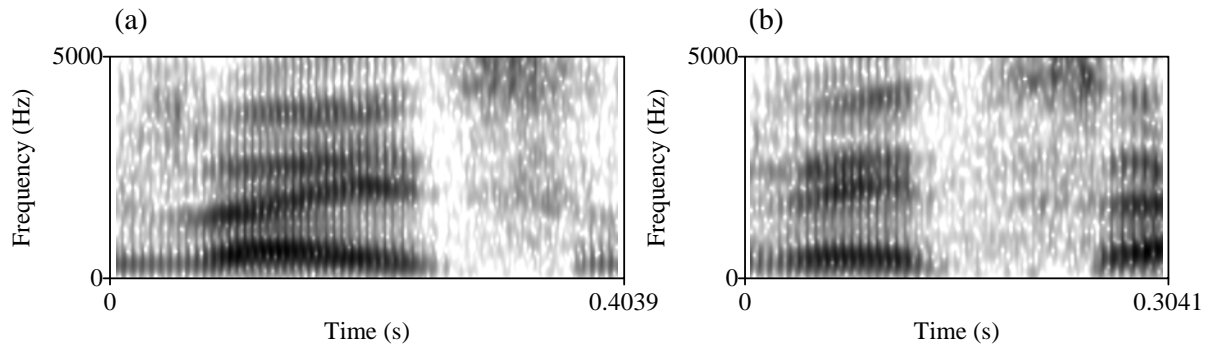


Fig. 1: Spectrograms of a diphthongal realization (a) and of a monophthongal realization (b) of the lexical item /rettsə/ "fishing-nets" in different prosodic positions

In Figure 1, spectrograms of two tokens are shown, with and without diphthong (they are taken from the utterances 2 and 6). This kind of alternation is very pervasive in the dialect of Pozzuoli as it involves all stressed high and high-mid vowels (i.e. /i/, /e/, /o/, /u/) and even seems to have spread to /ɛ/ for the younger speakers of the local fishermen community (Abete & Simpson, 2010).

However, it should be noted that, even preceding a prosodic pause, diphthongization is quite unstable. With regard to this, there are presented some examples taken from the same conversation quoted previously:

- 7) və'rɛ̃:n a 'p:atəmʊ 'ɣom:ə ɣu'zɛv ɪ 'rɛ̃tsə ||
we looked at my father sewing the nets
- 8) 'kʷandə vɛ: k:hɐ'lɪ rɛ̃ts || 'arə və'reə .ɪ.ɪ ɛ kʷal'ṽ: ||(.)
when you go to cast the nets, you have to see where you have to cast

These examples can be respectively compared with 1) and 3), whose structure and meaning are quite similar. Even if the syntactic-prosodic position of the item is the same, in 7) and 8) the stressed vowel does not exhibit a noticeable change of quality, resulting perceptually in a monophthong.

In certain circumstances, monophthongal realizations in pre-pausal position can be accounted for in terms of stylistic choices related with the formality of the context. However, this cannot be the case of 7) and 8) because the situational context remains unvaried for all the utterances showed before. Rather, monophthongs in 7) and 8) can be considered as the result of a monophthongization process which simplifies the diphthongal target under conditions of fast speech. Evidence in favour of this interpretation can be found not only in the speech rate, which is impressionistically higher for 7) and 8), but also in the quality of the monophthongs themselves: they are slightly more open than the realizations of /e/ in internal position.

Alternations like these, involving the dynamics between diphthongization and monophthongization, are crucial to any theory of linguistic variation and change. At the same time, capturing and analysing this type of variability requires some special techniques.

3. The spontaneous interview

The data presented in §2 were elicited using an adapted version of the "spontaneous interview" (Como, 2006). This elicitation technique aims to overcome the traditional face-to-face interview⁸, incorporating principles from more anthropologically oriented methods, like participant observation (Vidich, 1971). Some of its main issues are summarized below.

The interview must be conducted in a context which is familiar to the speaker, i.e. where he/she habitually uses the dialect⁹. For example, the utterances reported in §2 were recorded in a little bay where fishermen usually spend many hours a day repairing fishing-nets. Figure 2 is a sketch of the setting in which this recording was made, which is also the typical setting of the recordings used in Abete (2011).



Fig. 2: Typical setting of the recordings collected via spontaneous interview in Abete (2011)

⁸ In the traditional sociolinguistic interview, the roles of interviewer and interviewee are rigidly distinct and their power relationships are fairly asymmetrical, the interviewer driving the turn-taking and the choice of the topics. The ecological validity of the data collected by this method has been highly criticized, because the interactional norms imposed by the interview are too much restrictive in comparison with the every-day conversation (e.g. Briggs, 1984; Cicourel, 1982, 1988; Wolfson, 1976).

⁹ See the notion of sociolinguistic *habitat* discussed in Sornicola (2006b: 195-198).

The interviewee should preferably be supported by one or more of his peers, such as friends or relatives. Studying groups rather than individuals is one of the strategies defined by Labov (1972) to break down the social roles of interviewer/interviewee. As Milroy (1987: 62) observes, "this has the effect of "outnumbering" the interviewer and decreasing the likelihood that speakers will simply wait for questions to which they articulate".

The interviewer has to use a variety as close as possible to the interviewee's dialect, or another neighbouring variety, provided that it is perceived as low in the hierarchy of the repertoire. This principle aims to minimize the social distance between interviewer and interviewee (Gumperz, 1982). Moreover, it is well known that the speech variety of the researcher can influence the interviewee's answers (Sanga, 1991: 172).

The interviewer has to try to steer the conversation onto particular topics, in order to assure the systematic emergence of some lexical items, but he should also be flexible to other topics of interest for the speaker.

The interviewer should not limit himself to asking questions, rather he should take turns in conversation, giving his own opinion and introducing his own personal experiences (Como, 2006: 107).

Some technical notes are also quite important. The microphone (as small as possible) should be attached to the speaker's clothing about 15 centimetres from the mouth. This position, together with the recording level which is kept as high as possible (avoiding distortion), minimizes any external noises and optimizes the recording of the speaker's voice (Ladefoged, 2003: 22). Moreover, in that position the microphone is out of the speaker's visual field and it can be easily ignored, especially when there is an emotional involvement in the conversation.

This technique has been tested on four dialects of southern Italy (two from Campania, one from Calabria and one from Apulia), eliciting data of high phonetic and linguistic quality, as those presented in §2. This kind of material meets the theoretical need of studying phonetic patterns in a natural conversational context (e.g. Local, 2003; Local *et alii*, 1986; Local & Walker, 2005; Simpson, 2006; Sornicola, 2002).

4. Data from questionnaire and from spoken discourse compared

It is also worth considering one other elicitation method: the "translation questionnaire". This method consists of submitting words or sentences in Italian to the interviewee, and asking the speaker to translate them into the local dialect. Romance dialectology has been using this technique for a

long time and debates about its merits and faults are countless¹⁰. For the purpose of this contribution, I shall confine myself to the limitations of this elicitation method with regard to the study of diphthongization in Pozzuoli.

First, it is easy to understand that any method eliciting words in isolation will fail to describe phenomena of phonetic alternation which have a wider domain than the word, like those described in the previous section. For this reason, only the translation of whole sentences will be discussed here.

In an experiment conducted with four speakers from Pozzuoli both questionnaire and spontaneous interview have been tested. The speakers are all older males (between 62 and 82), come from the town centre, belong to the lower working class and have very low education (just a few years of primary school), with the exception of S4, who belongs to the lower middle class and declares ten years of education. The local Italo-Romance dialect constitutes for them the first language, while their competence in Italian is quite low and mostly passive.

Table 1 presents the percentages of diphthongization before intonational phrase boundary, for high and high-mid vowels for the four speakers (S1-4). Data in the first column are taken from impressionistic transcriptions of ten minutes of conversational speech for each speaker¹¹. Data in the second column are taken from the translation of seventy sentences from Italian into dialect.

SPEAKERS	CONVERSATION	QUESTIONNAIRE
S1	44%	90%
S2	34%	52%
S3	8%	73%
S4	25%	0%

Table 1: Percentages of diphthongal outputs before a prosodic pause. Data from conversation and from translation questionnaire compared.

During conversation the speakers S1 and S2 exhibit the highest percentages of diphthongization; S3 diphthongizes only sporadically, while S4 presents an intermediate situation. Results from the questionnaire are remarkably different. First, S4 does not produce any diphthongs at all. In discussing phenomena like diphthongization, Sornicola (2002: 152-153) points out that they are often under the level of speaker's awareness and

¹⁰ For a critical review see Sanga (1991).

¹¹ The total number of selected tokens was 57 for S1, 62 for S2, 53 for S3 and 48 for S4.

that they appear only in spontaneous speech. This seems to be the case with S4. The influence of Italian (lacking diphthongization) on the results of translation may also be involved. Research using a questionnaire with this speaker would not elicit any diphthongs at all.

A completely opposite behaviour is exhibited by S3: he produces diphthongs only sporadically during conversation, while he produces a large number in response to the questionnaire. The naturalness of speech could be distorted in this case, as well. With regard to this, two particular translations should be considered, when S3 produces words as [marə^hne:rə] "sailor" and [k^hε:sə] "cheese", with a stressed [ε], instead of the etymological /a/. This phenomenon, called "palatalization of /a/", was recorded for Pozzuoli by Rohlfs (1966: §22) in the first half of the twentieth century, but it seems to have disappeared in the present day speech since it does not occur once in 20 hours of recordings from 14 speakers (some of which were very old), collected over the last three years, despite there being a large number of potential contexts. Translations by S3 exemplify the problems of the questionnaire more clearly. Although it can be a useful way of accessing forms in the speaker's passive competence, it fails to provide reliable data on the speaker's everyday communicative behaviour.

A similar trend characterizes S1, whose percentages of diphthongization are at a middle level in the conversation and become close to 100% in the questionnaire. Apparently, S1 could be regarded as the perfect informer for a research by questionnaire: he seems to have a good level of metalinguistic awareness and translates the sentences into a very marked dialect. However, his answers are of course equally problematic. What a researcher needs is not a record of diphthongs *per se*, but rather one in which the answers to the questionnaire reliably reflect linguistic behaviour in a normal communicative context. Alternations between diphthongs and monophthongs are exactly what a good method should elicit, while the questionnaire distorts the linguistic variability in one way or another. According to the translations by S1 and S3, it would not have been possible to describe phenomena like 7) and 8), which are fundamental for the study of the variation between diphthongization and monophthongization.

A smaller gap between conversation and questionnaire characterizes only S2. However, even if researchers could work exclusively with informers like S2, other more fundamental problems could not be escaped. A questionnaire elicits sentences in isolation, i.e. data are completely decontextualized from the conversational structure. As Local *et alii* (1986) have pointed out, phonetic and phonological patterns are shaped by the needs of conversation and can be understood only with reference to the

structure of talk-in-interaction¹². Looked at from this perspective, the questionnaire is of little or no use at all.

Finally, questionnaire introduces strong circularity in the research, imposing *a priori* phonological assumptions on the process of data collection (Sanga, 1991: 167-168) and sharpening the well-known problem of the observer's paradox. The study of phonetic processes requires a completely different approach, starting from data of usage and arriving inductively at patterns of variation (Kelly & Local, 1989; Simpson, 1991, 1992, 2006).

5. Analyzing phonetic variation

The issue of linguistic variability is central in linguistics because it has implications on the way the speaker's competence is conceived and on the modelling of synchronic variation and diachronic change. This problem can be addressed in very different ways. Many structuralist linguists deal with the issue of variability by giving a logical and methodological priority to the systemic invariants of speech¹³. In the field of phonetic variation, this approach results in practices that assign a special theoretical place to the so-called "citation form" (the form of a word pronounced in isolation). In generative phonologies, the citation form is a basic form from which the different outputs of connected speech are derived via a series of rules¹⁴. However, the way of obtaining the citation form is often not explicitly declared. Simpson (1991) identifies two main methods, one based on the researcher's intuitions¹⁵, and the other based on lists of words and sentences read in a laboratory (e.g. Nespor & Vogel, 1986). In both cases, arguments against these practices are very strict¹⁶.

The alternative to a phonology of connected speech based on citation forms is the detailed analysis of spoken texts elicited in natural conversational

¹² See also Couper-Kuhlen & Ford (2004); Local (2003); Local (2007).

¹³ For example, Coseriu (1997: 10) states that "la notion même de 'variété' n'a du sens que par rapport à (et en tant qu'opposée à) une homogénéité perçue comme telle, supposée ou cherchée. [...] Or, la variété du langage acquiert son sens propre précisément par rapport à ces homogénéité". However, in the context of structural linguistics there are also different approaches to variation. For a discussion of this issue, with a focus on the "Geneva school", see Sornicola (1997).

¹⁴ The process of derivation can be represented in different ways, for example via a series of rules applying to different steps of the derivation (e.g. Kiparsky, 1982; Lass, 1984), or via constraints working in parallel on the input, like in Optimality Theory (Prince & Smolensky, 1993). In any cases, the starting point is always the citation form.

¹⁵ Simpson (1991) discusses examples from Stampe (1973); Kohler (1977); Lass (1984).

¹⁶ For a complete discussion see Simpson (1991: §1.3.1).

contexts. By analyzing the variability of real data and by using an inductive approach it is possible to elicit patterns of variation, without recurring to citation forms and to processes of derivation. Following Simpson (1992: 540):

- i. There are no citation-form phonetics.
- ii. The researcher is assumed to be able to identify different tokens of the same lexical item.
- iii. Patterns of variation can be recognized by looking at the similarities and/or differences that can be found in the phonetic shape of the tokens of the same item (or of analogous ones).
- iv. Phonological statements can be constructed to account for the similarities and differences observed in the phonetics.

This approach has been applied to the analysis of diphthongization in the Italo-Romance dialects by Abete (2011)¹⁷. In this research, the analysis started from the careful listening of a set of recordings and from the choice of a list of lexical items which showed variability in the quality of the stressed vowels, and, more specifically, variability between diphthongal and monophthongal realizations. The analysis then moved to all the realizations of the selected items, which were manually segmented and labelled (e.g. all the tokens of the lexical item /rettsə/ "fishing nets"; see §2). On the basis of the collected data, it is possible to identify systematic differences and similarities in the realizations of each item; moreover, it is possible to delimit a range of variability, and eventually define classification categories inside this range, as for instance diphthongal and monophthongal variants. The next step is to look for correlations of the identified variants with other internal or external features, taking into account that "each part of the speech signal relates to several functions simultaneously" (Local, 2003: 323).

Although detailed impressionistic analysis is a fundamental step of this method, it does not prevent the application of objective techniques. In Abete (2011), diphthongization was analyzed by calculating a numeric index of the amount of diphthongization¹⁸ for each token, and by observing the

¹⁷ The dialects of four communities were investigated: Pozzuoli and Torre Annunziata in Campania, Belvedere Marittimo in Calabria and Trani in Apulia.

¹⁸ This "coefficient of diphthongization" represents an estimation of the Euclidean distance covered by the vowel articulation in the F1-F2 space, and it was crucial for an objective classification of each token in the *continuum* between diphthongal and monophthongal realizations. The coefficient is calculated as follows: measurements of formants are taken at each 20 ms; *minima* and *maxima* of F1 and F2 are obtained from these measurements; the excursion between *maximum* and *minimum* is calculated for each formant; finally, a single value is obtained by the square root of the squares of the two excursions. Before the

variations on this index according to different positions of the vowel variables in the prosodic structure¹⁹. The prosodic labelling focused on the presence/absence of Intonational Phrase boundaries and Intermediate Phrase boundaries (as they are defined by Beckman & Pierrehumbert, 1986²⁰). On the basis of these two constituents, it was possible to distinguish between three prosodic positions: 1) inside the Intermediate Phrase; 2) at the end of the Intermediate Phrase; 3) at the end of the Intonational Phrase²¹.

The Figure 3 shows the relationship between the coefficient of diphthongization and the defined prosodic positions in four dialects of southern Italy. The graph is based on 2384 tokens representing several vowel variables. The straight line indicates a threshold of 1.8 which seems relevant for the perception of diphthongization. The picture highlights the strong conditioning of prosodic position on the alternation between monophthongal and diphthongal realizations. There is a clear polarization between the realizations inside the Intonational Phrase (positions 1 and 2), with coefficients almost always under the threshold; and, on the other hand, the realizations at the end of the Intonational Phrase (position 3), with coefficients generally higher than 1.8. The relation between diphthongization and prosodic position is stronger in the dialects of Torre Annunziata and Belvedere, while it is a bit weaker in the dialects of Pozzuoli and Trani.

formula is applied, Hz values are converted to Bark values by the Traunmüller (1990) formula. This was designed to take into appropriate consideration the contribution of the F1 movement to the overall diphthong movement. For more details about the coefficient and the technique of diphthong dynamics characterization see Abete (2011: §4.4).

¹⁹ Sociolinguistic parameters can be very important too. For instance, for the dialect of Pozzuoli, Abete and Simpson (2010) found a clear correlation between the amount of diphthongization of the variable (ε) and the age of the speakers.

²⁰ See also Shattuck-Hufnagel & Turk (1996).

²¹ These distinctions can also be reduced to just two main categories: on the one hand, the position 3, often called "prepausal position"; and, on the other hand, the positions 1 and 2, grouped in one category that we can call "internal position".

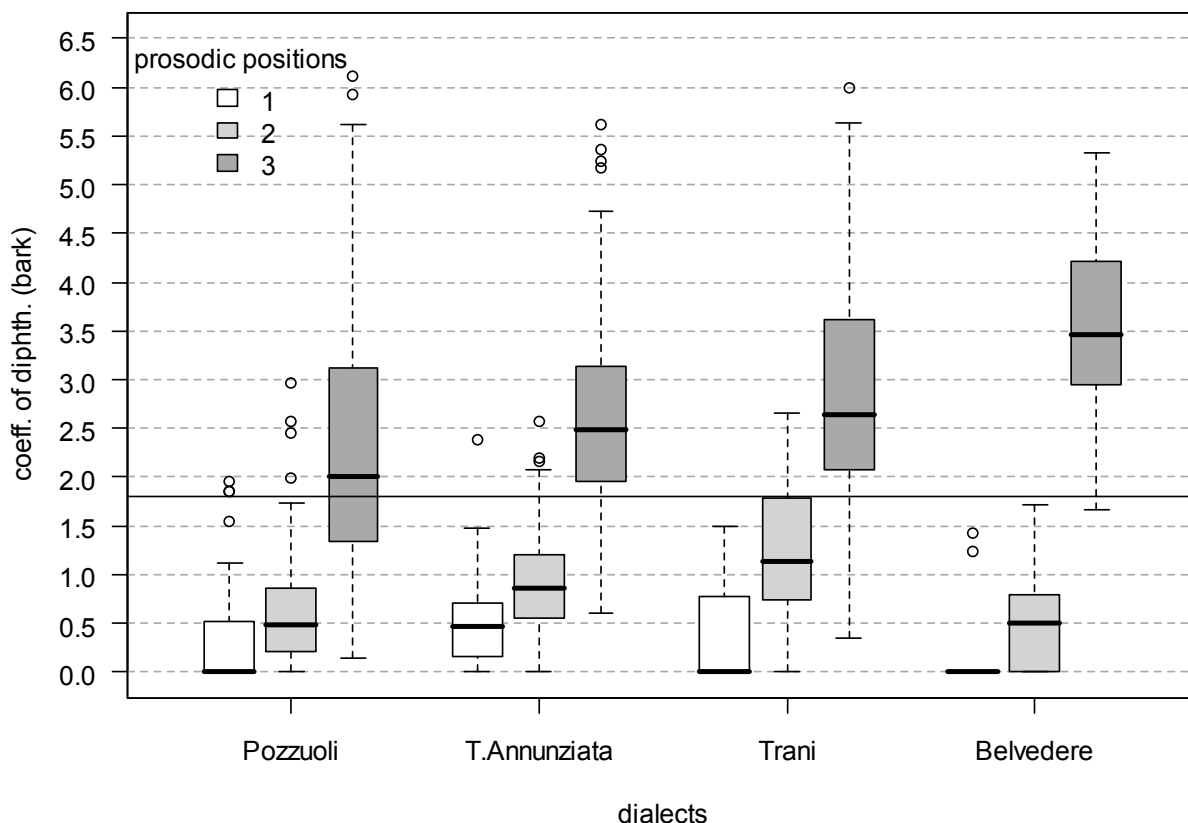


Fig. 3: Diphthongization and prosodic position in four dialects (adapted from Abete, 2011)

This objective approach permits a statistical treatment of the data and avoids the danger of circularity in the analysis²². However, only preliminary qualitative analysis can assure the correctness of the experimental design. Finding a balance between qualitative and quantitative approach is therefore an important requirement for the analysis of phonetic patterns of variation in non standard varieties such as the Italo-Romance dialects.

6. Conclusion

Standard elicitation techniques of experimental laboratory phonetics, such as the reading of word lists or Map Task, are not applicable to Romance dialects of Italy because of the peculiar status of these varieties in the linguistic repertoire. The case study of diphthongization in Pozzuoli clearly illustrates the need for natural conversational data for the research on patterns of variation in Italo-Romance dialects. By contrast, techniques

²² Distinguishing impressionistically between monophthongal and diphthongal realizations can be sometimes arbitrary. Diphthongal movements in final position can be very evident, but sometimes they are not. On the other hand, the formant structure of monophthongs is not necessarily "flat", and it is well known that even phonological monophthongs have some "vowel inherent spectral change" (Neary & Assman, 1986).

based on metalinguistic competence, such as the translation questionnaire, are not reliable when compared with data from spoken discourse. The choice of spontaneous speech as a privileged material of research is accompanied by an inductive method of analysis which starts from data of usage and arrives at patterns of variation, thus avoiding citation forms or other kinds of *a priori* defined phonological forms as starting point of the analysis. These issues can be relevant to fill the gap between experimental phonetics and Italian dialectology and have more general implications for the phonetic study of non standard varieties.

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