

Alessandro Vietti and Daniela Mereu

Mid vowels at the crossroads between standard and regional Italian

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Abstract: The variety of Italian spoken in Bolzano (South Tyrol) represents a singular case in Italy, because it is not the result of a long-term contact between standard and Italo-Romance dialects but rather the outcome of a process of levelling and koineization. In such sociolinguistic scenario, it is interesting to study phonological variability in Bolzano Italian with the aim of understanding which language varieties have possibly played a role as models from a sociolinguistic point of view. The purpose of our exploratory study is to characterize this variety within the spectrum of variation between the standard and the regional norm. In our analysis, we will focus on the set of mid vowels as a window to understand which variety of Italian BI most closely resembles. Through a corpus-based analysis, we will investigate the phonological distribution of mid vowels (for both Italian and Tyrolean speakers), in order to explore whether it can be explained on the basis of a contextual or a lexical distribution.

Keywords: mid vowels, regional Italian, standard Italian, regional Italian in South Tyrol

1 Introduction

Geographical variation in Italian is typically understood as the result of a long-term contact between standard and Italo-Romance dialects (see Cerruti and Regis 2015; Auer 2005). This historical process leading to the emergence of different geographical varieties did not take place in Bolzano, nor in South Tyrol more generally. The variety of Italian spoken in Bolzano can be considered as a new dialect of Italian, or rather, as a new town koine (Kerswill and Williams 2000) that developed as an

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Alessandro Vietti, Free University of Bozen-Bolzano, Italy, alessandro.vietti@unibz.it
Daniela Mereu, University of Turin, Italy, daniela.mereu@unito.it

outcome of internal migration from different areas of Italy (Vietti 2017). A leveling process among different varieties and dialects makes this variety more difficult to be defined in terms of geographical linguistic characteristics. In such scenario, it is interesting to study the phonological variability in Bolzano Italian (henceforth BI) with the aim of understanding which language varieties have possibly played a role as models from a sociolinguistic point of view.

In addition to the emergence of a new town koine, the development of a variety of contact between Italian and German increases the complexity of the sociolinguistic context. Since the 1920s, the German-speaking community living in South Tyrol has developed a non-native variety of Italian as the outcome of a process of imperfect second-language acquisition (Thomason 2001). The variety, together with the new dialect of Italian, provided the input for the acquisition of the later generations of German speakers.¹ Therefore, the non-native variety underwent a process of nativization² and became a regional variety of German Italian (GI). While some speakers living particularly in the valleys and smaller towns of South Tyrol continue to develop contact varieties of Italian as a result of interference from German, in larger urban contexts, such as Bolzano, the effect of contact is definitely milder, and it can be observed that the nativized variety of GI is used by those who identify themselves with the German community both culturally and linguistically (Vietti 2017).

The purpose of our exploratory study is (a) to characterize the new variety of BI within the spectrum of variation between the standard and the regional Italian norms, and (b) to draw a comparison with the local variety of GI. In our analysis, we will focus on the distributional patterning of mid vowels as a way of understanding which variety of Italian BI most closely resembles: the macro-regional varieties (whether central or northern) or the more local varieties of north-eastern Italy (whether Veneto or Trentino Italian). Moreover, the outcome of the analysis indirectly provides us with information on the sociolinguistic identity of the urban community of Bozen/Bolzano, i. e. whether it is more oriented towards a macro-regional standard or it identifies with (one of) the neighboring regional communities.

1 We are aware that there is ambiguity in our use of the term ‘Italian’ or ‘German’, but this is related to the structural difficulty of defining what ethnic and linguistic identity is for minority groups. In the paper we will primarily use a linguistically based denomination, for example ‘German-speaking community’, although this criterion is not sufficient to identify the complex construct of membership in a linguistic-cultural group (Joseph 2004).

2 Nativization is a concept that originated in two connected research fields, namely Creolistic (Mühlhäusler 1985) and the study of English varieties (Kachru 1981). Here, we understand it as a process through which a (contact) variety becomes native to a group of speakers.

The paper is organized as follows. Firstly, we briefly illustrate (a) the language varieties that may have influenced the phonological structure of BI, in particular the standard and the neighboring regional varieties (Section 2.1), (b) the variability of Italian mid vowels (Section 2.2), and the sociolinguistic outline of the variety of BI (Section 2.3). In Section 3 we provide methodological information on speakers' sample and data collection, while the socio-phonological analysis is presented in the following section (Section 4). This section consists of two parts: a general overview presenting a comparison between Bolzano Italian and Standard Italian mid vowels (Section 4.1) and the distributional analysis of mid vowels based on syllable and phonetic contexts (Section 4.2). A final discussion section summarizes and comments on the key findings (Section 5).

2 Background

2.1 Standard and regional Italian

From a phonetic/phonological perspective, Standard Italian (henceforth SI) is generally considered as an abstraction (Bertinetto and Loporcaro 2005), because it does not coincide with any variety spoken in Italy nor it is learned by any speaker as a language of primary socialization (Berruto 2012). Historically it corresponds to the educated Florentine pronunciation, excluding the most marked local features (Galli de' Paratesi 1984).

A standard model exists only as prescriptive pronunciation, i. e. as a phonetic variety codified in pronunciation manuals that is learned for professional reasons (news broadcasting or acting) through specific training (Schmid 1999; Marotta and Vanelli 2022).

Italian spoken by native speakers encompasses wide linguistic geographical variation and this variation is shaped in different regional varieties of Italian (e. g. Bruni 1992; Berruto 2012). These varieties are the results of the long-standing contact between standard and primary dialects. This kind of contact has contributed to the substantial absence of a standardizing center in the Italian sociolinguistic repertoire and to the existence of many local competing norms in the Italian phonology (cf. Auer 2005). The different regional standards correspond to the linguistic varieties spoken by educated people in each region (for an overview on standard and regional pronunciation, see Crocco 2017).

Among these regional standards, some show a greater sociolinguistic prestige than others; among those high-prestige varieties are the northern variety spoken in Milan, thanks to the economic development of the area, or the central variety of

Rome Italian, for its influence in the mass media (Galli de' Paratesi 1984). Factors contributing to the language prestige of some varieties also include the size of urban centres and the proportion of population positively oriented towards these varieties (De Mauro [1963] 1972; De Pascale et al. 2017). Because of their prestige, these sociolinguistic norms may function as possible models towards which Italian speakers could converge. Generally, native speakers' attitudes are more positive towards northern varieties, such as Milan-based regiolect (Galli de' Paratesi 1984), in comparison to southern varieties, associated with a low socioeconomic status and lacking overt prestige (Volkart-Rey 1990). Italian central accents from Florence and Rome are positioned in the middle between these two extremes (Crocco 2017: 109).

Although we are aware of the fine texture of geographic variability, our purpose in this study is to observe how some very macroscopic patterns in the Italian repertoire are reflected in a 'new' geographic variety such as BI. In this perspective, by Northern Italian or Central Italian we do not mean a well-defined sociolinguistic object but rather a set of linguistic features shared by a large speech community over a wide area radiating from major urban centers such as Milan or Rome. Therefore, even if SI is considered an abstract variety, it must also be acknowledged that Central Italian is the variety that most closely approximates this phonological pattern. For this reason, in the paper we assimilate the standard to the central variety of Italian as a pragmatic solution to the problem of identifying a standard variety that exists in the Italian sociolinguistic repertoire.

2.2 Italian mid vowels

The phonological status and distribution of mid vowels play a crucial role in distinguishing different regional varieties of Italian. In fact, in SI there are seven vowel phonemes but the distinction within the set of mid vowels is very weak in terms of both functional load and diffusion among the geographical varieties (Krämer 2009; Renwick and Ladd 2016; Vietti 2019).

In the absence of sociolinguistic studies on the production and perception of mid vowels, it is difficult to say whether their quality and distribution represent a stereotype of regional origin or a metalinguistically salient feature. At the more local level of intra-regional variation, it is possible to associate social properties or geographic features with mid vowels (Calamai 2017, 2019), whereas at the level of the entire Italian sociolinguistic repertoire, the relation between the distribution and quality of mid vowels and their sociolinguistic meaning is probably more unclear, with the possible exception of the more regionally marked vowel systems such as Sardinian or Sicilian.

The linguistic system of SI in stressed syllable consists of seven vowel phonemes (/i e ε a ɔ o u/); however, not all regional Italian varieties show phonological opposition between high and low mid vowels and, where they phonologically contrast, the opposition has a very low functional load, with few minimal pairs. From a synchronic point of view, since in SI the presence of high mid and low mid vowels is lexically determined, their distribution cannot be predicted on the base of phonetic context. In unstressed syllable, the contrast between high and low mid vowels is neutralized, with only high mid vowels /e o/ occurring in this position.

In regional varieties, the stressed vowel system oscillates between a contextual and a lexical distribution. Briefly, the different vowel systems of Italian can be grouped into the following three types (Schmid 1999; Mioni 2001; Vietti 2019):

- (a) Systems with seven vowel phonemes, characterized by a lexical distribution of high mid and low mid vowels that may also not match that of SI. Besides central Italy, this type is also widespread in Campania, Basilicata, and Molise, as well as Veneto and Trentino.
- b) Systems with seven vowel phonetic categories, but only five phonemes, because the distribution of mid vowels is allophonic, hence conditioned by the phonetic context. Therefore, they do not form phonological oppositions. This group is present in Lombardy, Piedmont, Emilia-Romagna, Friuli and, probably, Liguria. The regional Italian variety spoken in Sardinia also belongs to this type, although the pattern of alternation is based on a process of metaphony (Loi Corvetto 1983).
- c) Vowel systems with five phonetic categories and five phonemes, where mid vowels show intermediate degree of openness between high mid and low mid. This third type is common in the extreme Southern Italy and Venezia Giulia (northeastern Italy).

Interestingly, Schmid (1999) observes that the degree of geographical variation is greater in the case of front mid vowels /e ε/ than in back mid vowels /ɔ o/, whose distribution is less subject to phonotactic rules and more influenced by lexical factors.

For the purposes of this work, we will focus in detail on the northeastern varieties of Veneto and Trentino Italian. These varieties can function as models toward which BI might converge, both because of geographical proximity and because of the historical composition of the Bolzano speech community (see Section 2.3). As already mentioned, both varieties show a set of seven vowel phonemes, with a lexical distribution of high and low mid vowels that may also not correspond to SI (type a).

Italian spoken in Veneto (VI) is characterized by seven vowel phonemes (/i e ε a ɔ o u/) in stressed syllable and the realization of mid vowels is basically very similar

to that of SI. However, lexical realization of mid vowels may diverge. With respect to /e ε/, unlike SI, in closed syllable with a nasal coda, /ε/ is realized as [e], e. g. *gente* [ˈdʒente] ‘people’, *penso* [ˈpenso] ‘I think’, *cento* [ˈtʃento] ‘one hundred’, *tempo* [ˈtempo] ‘time’ (Trumper and Maddalon 1992). While the standard form for stressed diphthong /je/ is [je], in VI it is generally produced as [je], e. g. *piede* [ˈpjeɗe] ‘foot’, *inchiesta* [inˈkjesta] ‘investigation’ (Canepari 1986). Moreover, VI shows minimal pairs different from SI: for example, in this northeastern variety the pronunciation of *pesca* as [ˈpeska] is used for both ‘peach’ and ‘fishing’, while in SI, the first word is realized as [ˈpeska]. On the other hand, VI shows different minimal pairs, like *becco* [ˈbekko] ‘beak’ and *becco* [ˈbekko] ‘buck’, while in SI the same realization with [e] is produced for both words.

These patterns have been explained with the presence of the Veneto dialectal substratum, in a twofold sense. On the one hand, since the lexical distribution of mid vowels in Veneto dialects approximates closely that of the standard (Zamboni 1974; Trumper and Maddalon 1982), then clearly the distribution of these phonemes in VI is very similar to SI. On the other hand, in some cases speakers move away from the dialect with processes of hypercorrection, even when it matches the standard, by choosing a vowel quality that differs from that of the dialect, e. g. *venti* [ˈventi] ‘twenty’ pronounced with [ε] against the dialectal form *vinti* (Canepari 1986; see also Mioni 1990a). In this case, speakers prefer the form with [ε], instead of the form with [e], although the standard realization is the one close to the dialect.

With respect to /o ɔ/, it is not easy to find regularities. Also in this case, Canepari (1986) claims that minimal pairs distinguishing /o ɔ/ in SI are not the same for VI: e. g. *foro* is realized as [ˈforo] both for ‘square’ [ˈfɔro] and ‘hole’ (that in SI is [ˈforo]). In addition, hypercorrection can also be detected for back mid vowels. The suffix /ɔjo/ is categorically realized as [ojo] (in SI [ɔjo]; in Veneto dialect: [ˈore]) (Mioni 1990a: 197).

The phoneme /ɔ/ generally corresponds to the normative pronunciation, in closed and open syllables. The diphthong /wɔ/ is always realized with open vowel, as in SI.

Italian spoken in Trentino (TI) shares with VI the distributional pattern of mid vowels, with some minor deviations. Similarly to VI, also in TI the stressed diphthong /je/ is predominantly realized as [je], e. g. *ieri* [ˈjeri] ‘yesterday’, but only in open syllable, because in closed syllable it is produced with open front vowel, e. g. *chiesto* [ˈkjesto] ‘asked’ (Canepari [1992] 2004: 395). Another difference from VI concerns the closed syllable with a nasal coda: in this context TI displays a low front mid vowel, e. g., *tempo* [ˈtempo] ‘time’, *vento* [ˈvento] ‘wind’ (Canepari [1992] 2004; see also Trumper and Maddalon 1990).

As we shall see below, these two phonetic contexts are particularly meaningful for the comparison between these two varieties and BI.

In relation to /o ɔ/, Canepari ([1992] 2004) identified a lexical distribution, providing a list of words where low/high back mid vowels tend to occur. Trumper and Maddalon (1990: 166) claim that VI and TI (i. e., Trento speakers) show the neutralization of /o ɔ/ opposition in favor of the first element, as in SI.

2.3 Bolzano Italian

The linguistic repertoire of Bozen/Bolzano is generally defined as a social bilingualism with two quite separate linguistic communities, whose dominant languages are Italian and Tyrolean³ (cf. Mioni 1990b). However, over the last decades the proportion of bilingual speakers, particularly in the German-speaking community, has been steadily increasing in the urban context, to the extent that bilingual practice and the presence of contact varieties can be considered the norm (Vietti 2011; Dal Negro 2018).

In the Italian sociolinguistic context, BI is a rather singular case, because its development is not the result of a long-standing contact between standard and dialects, as is generally the case with regional varieties of Italian, but rather the consequence of a sudden sociolinguistic transformation, which led to the creation of a new variety through a process of levelling (Vietti 2017). The formation of this new variety of Italian can be traced back to a massive migration of people coming from different parts of Italy speaking different varieties of regional Italian or Italo-Romance dialects. In this sociolinguistic context, the main sources of language change that could have played a role in determining the current linguistic characteristics of BI are represented by a) the force responsible for both the levelling of the different Italian regional varieties and the convergence towards a common set of norms, and b) a force that led to the slow but constant development of a continuum of contact varieties of Italian as spoken by the local German speakers (Vietti 2017: 177). In this respect, it seems particularly interesting to explore how these forces contribute to the structuring of the phonological system of this variety.

After a comparison between second-generation Italian speakers born in Bolzano and speakers from Padua (Veneto), Mioni (1990a, 2001) defined BI as a northeastern variety of Italian, and he also concluded that this variety was at a more advanced stage of standardization than Italian spoken in Veneto. This greater standardization has been explained with the history of Italian speakers' immigration towards Bolzano, which took place after the First World War. In the first decades of the 20th century, despite the presence of a small number of managers

3 Tyrolean is the German Southern Bavarian dialect that is spoken in the region (Russ 1990).

from the regions of Lombardy and Emilia-Romagna, the largest part of the population was made up of people from Trentino and Central Veneto. Instead, the migration of people from southern Italy occurred in the period after World War II, which was when the pattern of pronunciation had already been formed through leveling and koineization (Mioni 1990a; Vietti 2017).

Following Mioni (1990a, 2001), the BI predominant pronunciation is therefore that of Veneto-Trentino but with a higher degree of standardization, which in this case probably means a less regionally marked Italian, rather than a standard-oriented variety.

Mioni (1990a) provided an impressionistic phonetic description of BI (spoken both by Italian and Tyrolean native speakers) and Padua Italian, that is a variety of VI.

By resuming here only the characteristics of vowel system, BI spoken by Italian native speakers is characterized by:

- the phonological opposition between the mid vowels /e/ and /ɛ/, which occurs in different words with respect to the standard (in a similar way to Padua),
- the more standardized realization of the back mid vowels /o/ and /ɔ/, compared to Padua Italian.

Canepari (1999) also describes BI as a more standardized variety respect both to VI and TI, especially with reference to the production of mid vowels. Moreover, he argues that in the lexical items diverging from the other two northeastern varieties, the difference results into a more standardized pronunciation for Italian spoken by local Tyrolean speakers (Canepari 1999). However, also for GI, mid vowels have to be considered as semi-phonemes, that is, unpredictable realizations that can only be described with a lexically based distribution, using SI as a benchmark (Canepari 1999). The phonetic patterns of the GI are characterized by Mioni (1990a) as an effect of the contact with the Tyrolean dialect. Through auditory analysis, Mioni (2001) observes how vowels in GI are always realized as long in CV syllables, regardless of the position of the lexical stress.⁴ Given the dearth of phonetic studies on the overall synchronic structure of the Tyrolean sound system, we are unable to formulate any hypotheses on the contact between the German dialect and Italian. Therefore, we simply assume as a null hypothesis that there is no expected difference between BI and GI, regarding the distribution of mid vowels. Any alternative hypothesis is therefore treated as a mere divergence from the model of Italian spoken by the Italian community in Bolzano (BI), without providing an explanation based on phonological contact in this study.

⁴ However, an analysis that aims to assess the role of phonological contact should consider the interaction between the phonological systems of German, Tyrolean dialect and Italian.

Within the dominant tendency for lexical distribution, both Mioni and Canepari have identified some phonological contexts that show regularities in the /e ε/ distribution: closed syllable with nasal coda and raising diphthongs [je], where the closed realization [e] is more frequent.

2.4 Research questions

In this paper, we will focus on the linguistic and sociolinguistic characterization of BI, that is, a regional variety without a dialect, considering the linguistic forces that could have played a role in structuring the BI phonological system. We will explore whether it is possible to identify the influence of ‘external’ models (e. g., central standard, northern standard, regional/more local koine) and/or internal social factors (autonomous structuring tendencies and contact with German dialect).

To do this, we will investigate the set of mid vowels, through a corpus-based analysis. Basing on previous impressionistic studies on this topic, our specific research questions included the following:

- How BI mid vowels are distributed? Do they show phonologically or lexically based distribution?
- Do the two language varieties (i. e., GI and BI) show a different distribution of mid vowels, in terms of phonological and/or lexical distribution?
- Does the linguistic analysis reveal which language variety (i. e., central, northern, Veneto and/or Trentino varieties) functions as a model toward which BI might converge?

3 Data collection and method

3.1 Materials and speaker sample

Materials for the analysis consist of Italian spontaneous speech data coming from the DIA (Dialogic ItAlian) corpus (Mereu and Vietti 2021), a corpus of dialogic interactions in pairs between people who know each other well and that are based on topics of interest for speakers. It consists of 10 hours of dialogic spontaneous speech (9h 49' 32"), that correspond to approximately 100,000 tokens. The speaker sample is made up of 40 participants (age range 18–65; 14 M, 26 F), that represent different types of Italian speakers: simultaneous bilinguals, sequential bilinguals, and late sequential bilinguals, or monolinguals. They show also different social characteristics, in terms of levels of education (from middle school to university), and type of

occupation. Data have been recorded at 44,100 Hz and 16-bit depth with a Zoom H4 recorder, using headset microphones (Shure SM35). All data have been orthographically transcribed (for an in-depth description of data processing, see Mereu and Vietti 2021).

For the analysis presented here, 4 minutes of spontaneous speech for 14 speakers (age range 18–61; 13 F, 5 M) were used, i. e., 56 minutes. This speaker sample is made up of 7 Italian native speakers and 7 Tyrolean native speakers, all from Bolzano and surroundings (see Table 1 for more details).

Table 1: List of participants and their characteristics.

Speaker	Sex	Age	Town	L1	Job	Education
D01_01BF47	F	47	Bolzano	Italian	employee	high school
D01_02BF47	F	47	Bolzano	Italian	employee	university
D03_05SGF21	F	21	San Giacomo	Tyrolean	student	high school
D05_09BF52	F	52	Bolzano	Italian	employee	high school
D05_10BF52	F	52	Bolzano	Italian	housewife	middle school
D07_13BF49	F	49	Bolzano	Tyrolean	employee	high school
D07_14BF45	F	45	Bolzano	Tyrolean	employee	university
D09_17BF59	F	59	Bolzano	Tyrolean	teacher	university
D10_19LM18	M	18	Laives	Tyrolean	student	middle school
D11_21BM60	M	60	Bolzano	Italian	employee	university
D11_22BM51	M	51	Bolzano	Italian	computer technician	university
D14_27BF49	F	49	Bolzano	Tyrolean	employee	university
D17_33TM62	M	62	Terlano	Italian	retiree	high school
D20_39BF58	F	58	Bolzano	Tyrolean	retiree	high school

3.2 Phonemic and phonetic segmentation and labelling

After the orthographic transcription, recordings and their corresponding transcriptions have been processed in WebMAUS (Kisler et al. 2017), using the tools of forced alignment, automatic segmentation and labeling of speech signals.

The output of this process is, for each speaker, an audio file with a time-aligned transcription file. The transcription file in TextGrid format consists of five tiers containing information at different levels: 1) an orthographic transcription at the word

level, 2) a phonemic transcription of the entire words, 3) a phonological annotation for each segment, 4) a phonetic annotation and 5) an annotation of lexical stress (stressed vowels vs unstressed vowels). The phonemic segmentation tier is created by means of a system of forced alignment (Kisler et al. 2015), based on the phonemic transcription at the word level. The first three tiers are automatically created and then checked and corrected. The tiers 4) and 5) have been manually added. For the phonological annotation of mid vowels, we followed SI, which represents the reference point for the analysis. The phonetic labelling of mid vowels has been carried out by means of an auditive and spectrographic examination, with a check for each case of the first two formants' frequencies.

Then, all transcribed and annotated data have been transformed in a searchable EMU database (EMU Speech Database Management System – EMU-SDMS, Winkelmann et al. 2017). By means of emuR, we have also extracted values of formants of all items, but for the present research we have used only phonetic labels.

In terms of numbers of items, the general dataset (for 14 speakers) consists of 11,077 vowels (stressed and unstressed). For this analysis, we examined only stressed mid vowels (/e ε/ and /o ɔ/), that is 2049 tokens (1194 front mid vowels and 855 back mid vowels).

4 Results

In this section we describe the phonological distribution of mid vowels in BI (for both Italian and Tyrolean speakers). Specifically, we compare this set of vowels between BI and SI, then we explore whether the distribution of BI categories can be explained on the basis of a phonological or a lexical distribution.

4.1 A general overview

In order to determine how close this variety is to the standard, we begin with a comparison of the phonetic realizations of the set of mid vowels with the expected realizations in SI.⁵ We compare the two groups of speakers separately: the group of Italian native speakers and the group of Tyrolean native speakers (see Figure 1).

As for stressed /e ε/ produced by Italian native speakers, SI /e/ is realized as [e] in 94 % of the items (e. g. *perché* [per'ke] 'because'), while in the remaining per-

⁵ As a reference for the standard, we have adopted the 'neutral' pronunciation as reported in the online Dizionario di Pronuncia Italiana (see <http://www.dipionline.it/>).

centage the variant used is [ɛ], e. g. *praticamente* [pratika'mente] ‘practically’. The phoneme /e/ is realized according to SI for the 70 % (e. g. *commercio* [kom'mertʃo] ‘trade’), while the 30 % presents [e], e. g. *senso* ['senso] ‘sense’.

The situation is very similar for Tyrolean native speakers, because for the high mid vowel /e/, the 90 % is realized as SI (e. g. *veramente* [vera'mente] ‘truly’), while only the 10 % is diverging, e. g. *termine* ['termine] ‘end’. The same proportion of Italian speakers’ group was also observed for /ɛ/ in Tyrolean speakers, because the 70 % of items is realized as in SI (e. g. *adesso* [a'desso] ‘now’), while the remaining 30 % is produced as [e], e. g. *genere* [dʒe:nere] ‘genre, kind’.

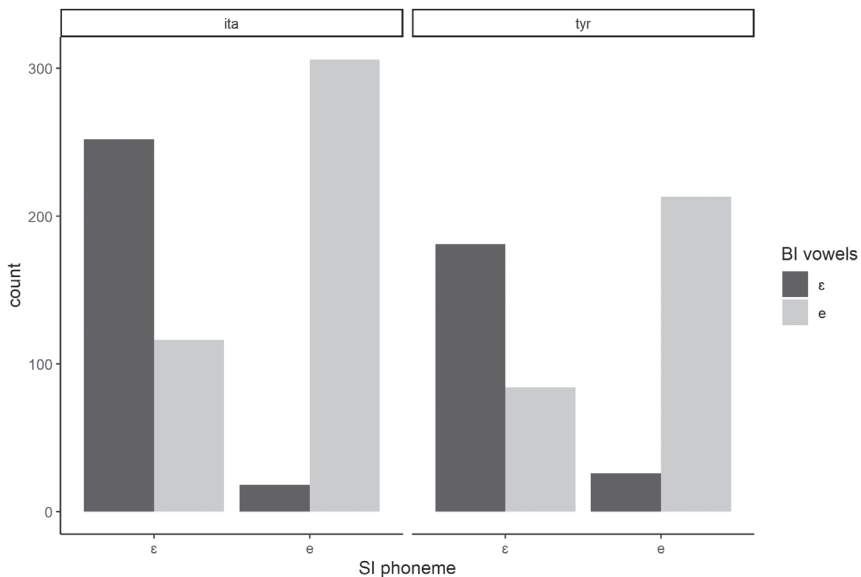


Figure 1: Comparison between SI phonological categories of /e ɛ/ and BI realizations (Italian group on the left; Tyrolean group on the right).

Based on this description, we can say that the phonetic realizations of the two groups overlap to a large extent, with a preference for [e] over [ɛ].

Regarding the number of items, as shown in Figure 1, Italian speakers produce a greater number of words respect to Tyrolean speakers, because they basically talk more.

The relationship between SI and BI for back vowels is illustrated in Figure 2. It is worth noting that the frequency of lexical items containing a back mid vowel is in general lower than that of front vowels.

The overlapping between realizations of mid vowels in BI and SI categories is even higher in this case. In the Italian group, lexical items that require /o/ in SI are 92 % realized in the same way (e. g. *forma* ['forma] 'form'), while for /ɔ/-items the overlapping degree is 88 % (e. g. *cosa* ['kɔ:za] 'thing'). In the Tyrolean group, /o/ is realized as [o] in the 83 % of the cases (e. g. *nome* ['no:me] 'noun'), while /ɔ/ is realized in the expected contexts in the 79 % of the items (e. g. *ottimo* ['ɔttimo] 'excellent').

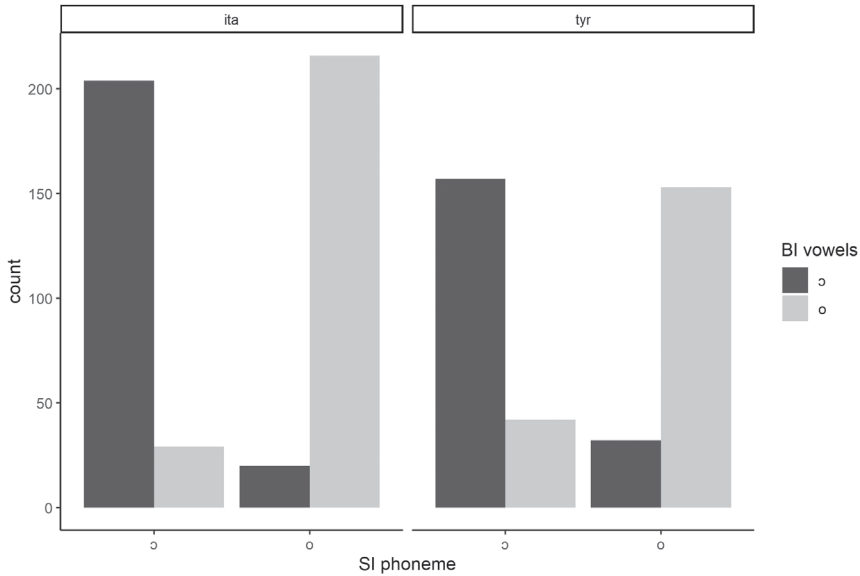


Figure 2: Comparison between SI phonological categories of /o ɔ/ and BI realizations (Italian group on the left; Tyrolean group on the right).

In general, the BI productions for /o ɔ/ almost coincide with the SI expected realizations, as also Mioni (1990a) noted in his study.

4.2 Phonological distribution and specific phonological contexts

After finding a high degree of correspondence between general patterns of mid vowels in BI and the expected outcomes for SI, we will now investigate whether the distribution of BI mid vowels can be explained in accordance with the phonological contexts or on a lexical basis. To do this, we will look at how mid vowels are distributed on the base of the syllable structure.

4.2.1 Front mid vowels

Figure 3 and Figure 4 illustrate the distribution of the front mid vowels for Italian and Tyrolean speakers, respectively. Both mosaic plots clearly show a pattern of front high mid vowel [e] in almost all contexts, except for CV]⁶, V and VC structures, where [ɛ] is preferred (e. g. *lei* [lɛi] ‘she’, *ero* [‘ɛro] ‘(I) was’, *ecco* [‘ɛkko] ‘here’, respectively). German-speaking participants show a preference for [ɛ] also in CJV structure (e. g. *piena* [‘pjɛna] ‘full, sing. fem.’), but we can observe that distributional patterns are very similar for the two groups.

Among all contexts, three of them are worth observing, that is, CVC, CJV and CJVC. Due to its great number of tokens and its internal variability, CVC is particularly revealing because several phonological contexts could converge within this syllable structure. On the other hand, CJV and CJVC are interesting because the two groups of speakers show different patterns.

Within the CVC structure, some regular patterns are evident for /e ɛ/. In the CVC structure with nasal coda, most tokens are realized with the front high mid vowel [e]. In the items including a CVC syllable closed by a nasal (262 tokens), 79 % of them are [e], while 21 % are [ɛ], e. g. *tempo* [‘tempo] ‘time’, *appuntamento* [appunta‘mento] ‘appointment’. Italian native speakers use the front high mid vowel on 77 % of the cases, while Tyrolean speakers on 72 %. As mentioned above, this is a characteristic of VI and not of TI, that in this context prefers the low-mid realization.

Other regularities emerging from the CVC structure can be explained more by a lexical distribution than by a contextual one, but this kind of investigation will be possible only with a larger amount of data.

The other two syllable structures worth examining more closely are CJV and CJVC, which include the diphthong /je/. These two contexts are not represented by a high number of items, but considering data as a whole, the 77 % of tokens are realized as [e], e. g. *piedi* [‘pje:di] ‘feet’, *ambiente* [am‘bjente] ‘environment’. It is worth to note that, in the Italian group, the 98 % of items (N=33) is realized as [e]. All 4 items realized with [ɛ] occur in open syllable; however, the number of these items are not sufficient to provide a clear descriptive pattern in relation to the openness of the syllable. The only hypothesis we can put forward is that this feature seems to follow VI template, instead of a TI one, where the low mid realization occurs only in open syllable, while in closed syllable the expected realization is [ɛ], as we have already mentioned (cf. Canepari [1992] 2004: 395).

For Tyrolean dominant speakers, the number of tokens is not high enough to reveal a particular trend.

⁶ J stands for a glide in raising and falling diphthongs.

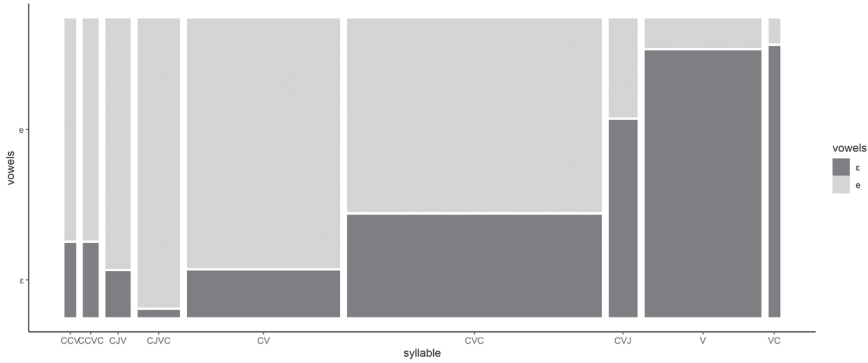


Figure 3: Distribution of /e ɛ/ based on syllable structure in Italian speakers.

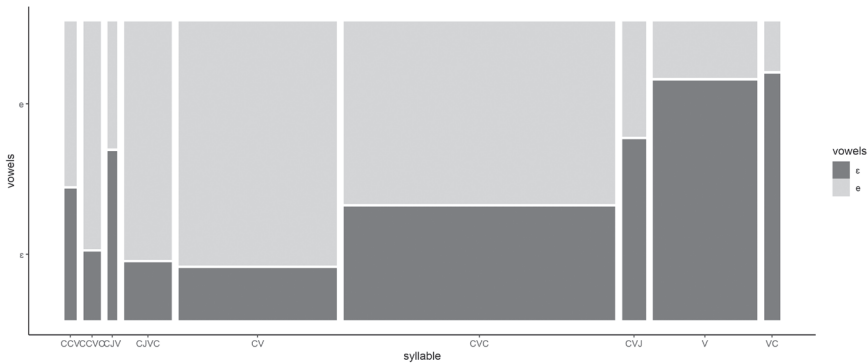


Figure 4: Distribution of /e ɛ/ based on syllable structure in Tyrolean speakers.

With regard to statistical analysis, a chi-squared test shows that mid vowels are not uniformly distributed over the syllabic contexts. Moreover, in this case a test is rather uninformative because the only fact that it can reveal is that the counts are not proportionally distributed. A correspondence analysis plot is more revealing of the underlying association patterns in our data.

We have conducted a Correspondence Analysis, an exploratory statistical technique specifically designed to explore emergent patterns and associations among categorical variables (Greenacre 2007). This analysis resulted in a graph that seeks to reduce the complexity of a matrix of data by plotting the values of the variables onto a two-dimensional scatterplot (Figures 5 and 6). An easy way to interpret these plots is by bearing in mind that the nearer two points are on the graph, the stronger is the association between them.

From Figure 5 and Figure 6, we can see that the distribution of /e ε/ is correlated with some syllable context (Dimension 1). The plots spatially reproduce what we have already observed in the previous analysis. In some syllable contexts [e] or [ɛ] are clearly the preferred option (in the Italian group, the contexts where [e] is clearly preferred are VC and V, while [ɛ] is much more used in CJVC, CV and CCV contexts; in the Tyrolean group, [ɛ] is correlated to VC, V, CVJ and CJV contexts and [e] with CV and CJVC), while in other contexts the choice is more variable, like in CVC and in CCV.

For both groups of speakers, the distribution of mid vowels by syllable type is minimally explanatory, since only a small proportion of the total variance is ‘captured’ by the variable Syllable (17,5 % and 16,1 %). Nonetheless, some subtle effects can be noticed, mainly localized to specific contexts like the selection of [ɛ] in syllables with no onset (V, VC). In both cases graphs show a very low variance, therefore we can conclude that front mid vowels variation is not governed by syllable structure.

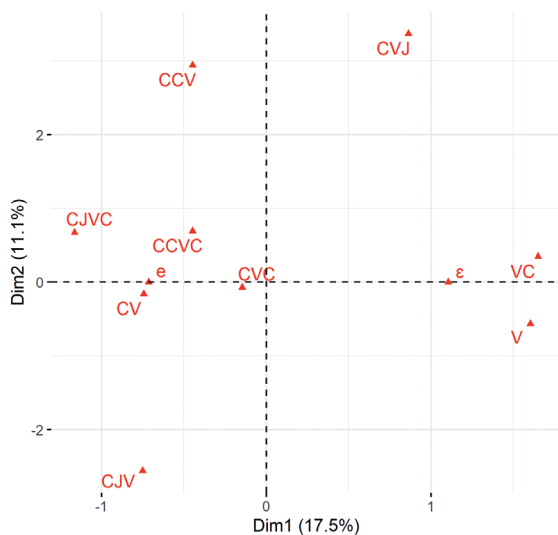


Figure 5: Map of correspondences for /e ε/ (Italian group).

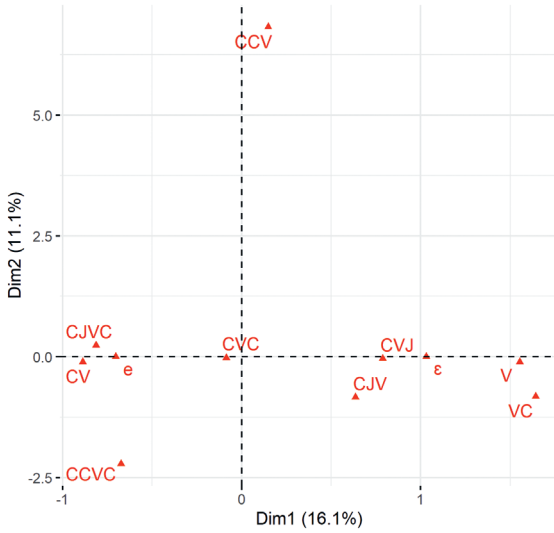


Figure 6: Map of correspondences for /e ε/ (Tyrolean group).

4.2.2 Back mid vowels

We carried out the same kind of analysis for back mid vowels. Figures 7 and 8 illustrate the distribution of the back mid vowels for Italian native speakers and Tyrolean speakers, respectively.

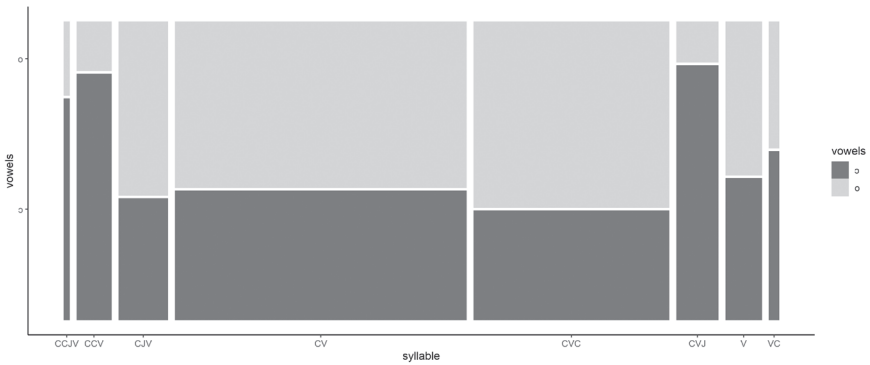


Figure 7: Distribution of /o ɔ/ based on syllable structure in Italian speakers.

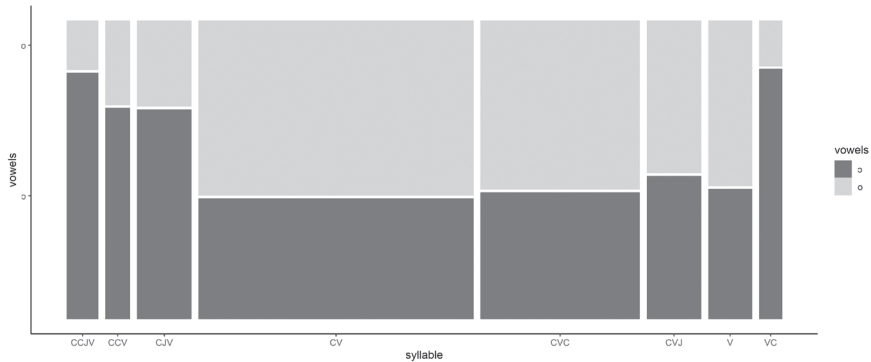


Figure 8: Distribution of /o ɔ/ based on syllable structure in Tyrolean speakers.

The overall tendency, within both groups of speakers, show a default choice for one vowel over the other in most of the contexts, as it was found for front vowels. Also in this case, it seems interesting to look at specific contexts in more detail: on the one hand, we will focus upon the most frequent contexts (CV and CVC) where /o ɔ/ occur, because they may hide segmental phonological constraints to the general distributional pattern; on the other hand, we will focus on syllable structures containing a raising diphthong (CCJV and CJV).

Both CV and CVC contexts contain lots of items and show a similar distribution of back mid vowels for the two groups of speakers. For both groups, in the CV and CVC context the distributional patterns are lexically based, e. g. *modo* ['mɔ:do] 'manner'; *loro* ['lo:ro] 'they'; *volta* ['vɔlta] 'time', *corso* ['kɔrso] 'course'. Interestingly, in words that exhibit variable form, realization by Tyrolean speakers is even less predictable to the point that in some words vowel selection approaches a causal choice, e. g. 50 % of items (as in the case of word *allora* 'then'). Italian native speakers tend to be more categorical in their realizations. A contextual regularity emerges in the CVC structure, that is, the closed syllable with a nasal coda, where the back mid vowels are realized as [o] e. g. *mondo* ['mondo] 'world', *ponte* ['ponte] 'bridge'. This is almost categorical for both groups, but Tyrolean speakers show some variability. This phonological constraint has been already noted by Mioni (1990a) and it also characterizes VI, while it does not apply for TI, as it can be inferred from the word lists identified by Canepari ([1992] 2004).

With respect to syllable structures containing a raising diphthong (CCJV and CJV), it is possible to identify two different patterns for /wo/ and /jo/. In the first case, the most frequent variant used is [wɔ] (90 % for Tyrolean speakers and 78 % for Italian speakers), e. g. *scuola* ['skwɔ:la] 'school', while the diphthong /jo/ is

mostly realized as [jo], both by Italian speakers (77%) and Tyrolean participants (61%), e. g. *relazione* [relatʰtʃjo:ne] ‘relationship’.

Correspondence analysis conducted on the back vowel dataset resulted in the plots in Figures 9 and 10, from which we can observe that, even in this case, the two dimensions in the correspondence plots show a very low variance (16.1–12.5% and 16–12.5%). This result implies that back mid vowel distribution is only marginally related to the syllable structure. In general, the distribution of /o ɔ/ is correlated to some syllable contexts, but many other contexts show a high degree of variability (as it is clear from their approaching the origin). Overall, we conclude that vowels’ distribution is more likely based on lexical rather than phonological factors, even though a fine-grained observation of variation across segmental phonetic contexts seems to be useful in determining BI’s orientation to a local Veneto sociolinguistic model. To carry out such an analysis we need a greater amount of data, and this is only possible through a corpus-based approach.

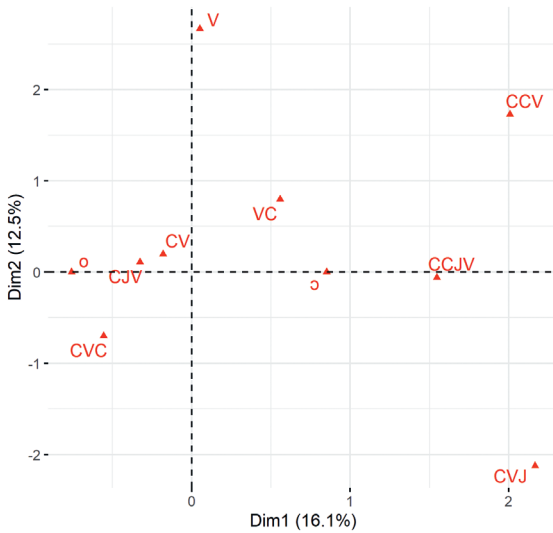


Figure 9: Map of correspondences for /o ɔ/ (Italian group).

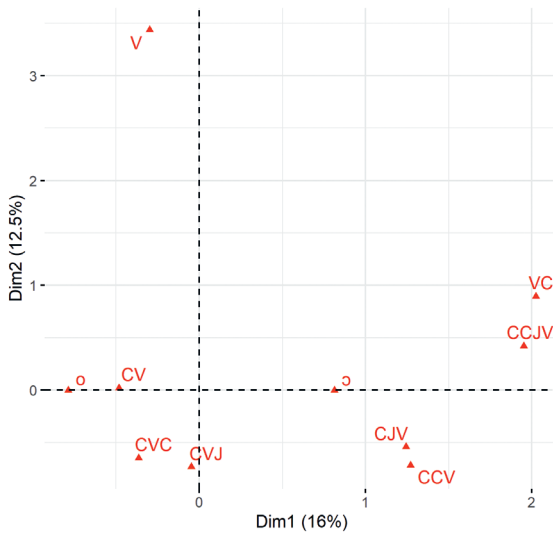


Figure 10: Map of correspondences for /o ɔ/ (Tyrolean group).

5 Discussion and conclusion

The aims of this research were a) to study the phonological variability in BI with the aim of characterizing this variety within the spectrum of variation between the standard and the regional norm, and b) to compare BI with the local variety of GI. We took as variable of interest the variability in the set of mid vowels, since it represents a crucial feature for the identification of the different regional varieties. In order to explore this, a distributional analysis (based on syllable and phonetic contexts) on mid vowels has been conducted.

The picture emerging from this analysis allows us to provide some tentative answers to the initial research questions. It is worth remembering that all the considerations drawn from the analysis apply only to the categories investigated, i. e. mid vowels.

Firstly, our study shows that the distribution of BI mid vowels is not governed by phonological factors, but it is mainly lexically based. However, some segmental phonetic regularities may help to predict the occurrence of high/low mid vowels. This especially applies for front mid vowels. The reduced role of phonological factors, such as syllable structure, appears clearly from both the statistical analysis and the qualitative observation of data.

Secondly, another issue raised by the analysis is that the two varieties of Italian spoken by the groups examined (German-speaking and Italian-speaking community) do not show relevant differences as regards the mid vowels' distributional patterns. This tendency can be interpreted as a kind of sociolinguistic chain of influence: the Italian variety of BI lies between the Italian Veneto and the Standard, while the German variety of BI takes the Italian Bolzano variety as a possible pronunciation model.

Thirdly, among the different potential regional standards, as far as mid vowels' distribution is concerned, we can say that BI is not affected by the northern variety based on Milan Italian, which is strongly governed by allophony, or the central variety based on Rome Italian. The model towards which BI speakers – both Italian and Tyrolean – are oriented seems to be the variety of Veneto Italian, or as we suggest somewhere along a continuum between the Veneto model and the standard. Mioni (1990a, 2001) identified the predominant pronunciation of this variety with the more general Veneto-Trentino pronunciation (with a higher degree of standardization), but some distinct diagnostic phonetic features related to mid vowels suggest that the model is VI rather than TI.

The reasons explaining the role of VI as a model for BI are related to the function played by this variety in the first stage of koineization of BI. From the overall picture reconstructed by Vietti (2017), as regards the population of Bolzano by region of origin after the Second World War, we can see that the most represented region is Veneto, and it remains with the highest percentage until 1999. In addition, probably this variety has been broadly viewed as prestigious (at least more than Trentino Italian), because it expresses cohesion and loyalty to the in-group, while maintaining a connection to the community of origin in Veneto.

In conclusion, our study of mid vowels contributed to a phonological and sociolinguistic definition of the language varieties spoken in Bolzano in relation to regional and standard varieties of Italian. Mid vowels have been investigated from a phonological point of view, with the aim to understand their contextual distribution. The analysis has been conducted with discrete variants, but it will be interesting to explore the phonetic nature of mid vowels on the base of an acoustic analysis. Further research also will focus in more detail on the lexical distribution since preliminary results suggest the prevalence of lexical constraints over contextual distribution. For such analysis, a greater amount of data will be necessary.

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