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Where do accents come from? Factors affecting the degree of foreign-accented Italian[1]

Following similar research on non-native speech, in this paper we assessed the degree of perceived foreign-accented Italian. This is an extensive study on 6 accents (i.e. English, German, French, Romanian, Spanish, and Russian, in comparison to L1 Italian), supported by a database of 42 speakers whose performance was evaluated by 288 Italian listeners, using a six-points scale. Such an approach allowed us to perform comprehensive descriptive and inferential analyses, the outcomes of which suggested that while having comparable levels for all variables, some accents (i.e. German and Spanish) are perceived as being stronger than others. Additionally, it seems that the degree of perceived foreign accent may be predicted by speaker-dependent variables generally ascribable to the quality and quantity of input received (i.e. presence/absence of pronunciation training) and proficiency. Finally, the samples of read speech were perceived as more accented than those of spontaneous speech, presumably as a result of the fact that speakers might not be fully familiar with written Italian.

Key words: perceived foreign accent, foreign-accented Italian, non-native Italian.

1. *Introduction*

The differences between native and foreign pronunciations have been a topic of constant research interest in the community of Second Language Acquisition (SLA). Over the last few decades, scholars have described, analysed, and explained various phenomena observable in the perception and production of the language being learned (L2[2]).

It has long been established that after their birth, healthy infants can perceive, discriminate, and learn the sounds and prosody of all languages (Eimas, Siqueland, Jusczyk & Vigorito, 1971; Grieser, Kuhl, 1989). Yet, by the time children have reached one year old, they have already become aware of the speech contrasts that are phonologically relevant in their native languages (L1s), and they have started to neglect the rest (Werker, Gilbert, Humphrey & Tees, 1981). Oftentimes, it has been suggested that the older one gets, the harder it becomes to achieve native-like pronunciation skills in an L2.

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[1] Authorship note: this paper is the result of a collaboration as it discusses data taken from Combei's (2019) Ph.D. dissertation, supervised by Marotta. For academic purposes, Combei is held responsible for §2.2, § 2.3, §3, §4, and §5, while Marotta for §1, §2.1, and §2.2.

[2] Throughout this paper we will use second language (L2) to refer to any language (i.e. second, third, fourth, etc.) different from the native language (L1).

However, rejecting the assumption that a loss of neural plasticity and the neuro-functional reorganisation result in foreign-accented speech, and instead following Moyer (2013), we believe that this age-related issue occurs fundamentally because L2 learners, unlike L1 learners, start acquiring the L2 with a consolidated L1 phonology, involving an established metalinguistic awareness, but at the same time also a possible source of interference. Lövdén, Wenger, Mårtensson, Lindenberger & Bäckman (2013) and Flege, Wayland (2019) criticise Lenneberg's (1967) assumption that neural maturation could block L2 speech learning, pointing out that, instead, learners cannot prevent the interaction between their L1 and L2 subsystems. Moreover, not all late learners manage or aspire to a native-like proficiency in the L2. Some might be constrained or simply want to remain grounded in the culture of their home country and therefore they will 'continue to use other languages in their daily lives' (Gut, 2007: 75). Consequently, this might unavoidably decelerate the process of achieving native-like pronunciation.

More realistically, recent research has proposed that, in time, the late learners' sensitivity towards subtle phonetic cues of an L2 is not entirely lost, but rather it is 'obscured' (Piske, 2008). As a matter of fact, older learners might actually be able to learn phonological patterns even faster than young learners (Moyer, 2013). On a similar note, Flege (2009) suggests that 'input', rather than age, is responsible for how learners sound when they speak a foreign language.

Anyway, simply put, in case learners of an L2 do not manage to sound like a native speaker they are said to have a 'foreign accent'.

2. *Topic and goals*

2.1 Foreign accent matters

In fact, on the course towards achieving the much desired native-like linguistic proficiency, some hurdles are more difficult than others. It is reasonable to think that when learning an L2, a great difficulty lies in accommodating perception and production mechanisms, so as to take into account new patterns or contrasts, but also similar features. Many theories indicate that especially in the first stages, learners may apply the phonology of their L1 or that of other languages they acquired before the target L2 (Flege, 1995; Kuhl, Conboy, Coffey-Corina, Padden, Rivera-Gaxiola & Nelsonm, 2008). Native speakers would perceive these phenomena as non-native or foreign, thus, the name 'foreign accent'. Following Munro (1998) and Jilka (2000), but abandoning the idealistic concept of a 'standard accent'[3], Combei (2019: 65) proposes a more encompassing definition of foreign accent, namely 'a non-pathological manner of speaking in a foreign language that deviates from the pronunciation generally accepted as native by the native speakers of that language'.

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[3] Following Lippi-Green (1997), Jenkins (2000), and Derwing (2010) in general and Bertinetto, Loporcaro (2005) for the specific case of the Italian language, we believe that the standard accent is merely a utopian concept reflecting some actors' and some television presenters' pronunciation.

Foreign accent has evolved from initially being treated 'largely as a theoretical puzzle' to a topic of 'great public interest' (Moyer, 2013: i). This may be explained also in light of the fact that, in our globalised world, where many people are active speakers of at least one L2[4], the likelihood of hearing foreign accents has increased. Generally, native speakers understand if their language is spoken with a foreign accent; and in fact, accent-detection and accent-rating studies have demonstrated that people recognize non-native pronunciations in a wide variety of speech samples, including short excerpts (Flege, 1984).

Nonetheless, this does not mean that attitudes towards foreign accents are always neutral. As a matter of fact, native speakers have different reactions to non-native speech, that could range from positive to negative (Bianchi, Calamai, 2012; Levis, Moyer, 2014; Calamai, 2015).

On another note, speaking with a foreign accent may lead to unintelligibility, which affects communication, but it can also have implications at personal, social, communicative, and professional levels. Furthermore, in recent years, accents have posed challenges to Automatic Speech Recognition (ASR) systems; in fact, it has been shown that accent is one of the factors that reduces the performance of ASR (Behravan, Hautamäki & Kinnunen, 2015).

2.2 A brief review on the perception of foreign-accented Italian

By the beginning of 2000, the majority of empirical research on foreign accent had been conducted on English. However, in recent years, various studies focused on L2 Italian, as well. In this subsection we are presenting a brief review of some empirical studies that quantified the degree of perceived foreign accent in Italian[5] (cf. Combei, 2019, for a complete up-to-date review on this topic).

In their pioneer study on accent rating, Marotta, Boula de Mareüil's (2010) study show, among other things, the two German speakers were perceived as having a stronger accent than that of the French and the Spanish informants, both in samples of read and spontaneous speech.

De Meo and her colleagues have recently published various studies on the perceived foreign accent. For instance, Vitale, De Meo & Pettorino (2012) tested the reactions of Italian listeners in a perceptual experiment aimed primarily at evaluating the levels of persuasiveness of non-native speech. While listening to eight radio ads recorded by native speakers of Italian, Chinese, French, and Russian, 164 listeners had to indicate whether the speakers were Italian or foreign, to assess the degree of foreign accent and persuasiveness of each person, and to mention the features that influenced the rating. The authors report that five out of six L2 speakers were rated as accented by almost all listeners. Additionally, their accents were judged as

[4] According to United Nations' International Migration Report (United Nations, 2017), the number of international migrants worldwide reached 258 million in 2017, displaying an ever-growing trend.
[5] Keeping in mind the scope of this paper, we are presenting only studies that examined the Italian listeners' perception of foreign accent. Theoretical research as well as acoustical studies on non-native Italian speech are not discussed.

'strong'. Regarding persuasiveness – correlating to flat and less variable pitch contour – only the French female speaker received positive ratings.

In two similar studies, Vitale, Boula de Mareüil, & De Meo (2014; 2017) assessed the prosody in yes/no questions and statements produced by twelve Chinese learners and four Italians. Instrumental analyses were performed on the utterances examined, by extracting various prosodic features. The results show that prosody may account for differences between elementary, intermediate, and advanced Chinese learners of Italian. Additionally, the perceptual experiment – using prosody transplantation – conducted on 40 Italian listeners revealed that non-native segments with a native Italian prosody are judged as less accented than native Italian segments with a non-native prosody. Finally, the importance of prosody was confirmed also for discriminating between questions and statements.

Similar experiments were performed by Pellegrino and Dellwo (2015); their paper examined the role of rhythmic cues, from the amplitude envelope (ENV), on the perception of non-native Italian. As part of that study, the authors asked ten Italian listeners to assess the native-likeness in two different types of utterances: those produced by a German speaker of L2 Italian and by a native speaker of Italian, and those synthetically manipulated with either the ENV of a German learner of Italian and that of native speaker of Italian. The results show that rhythmic features in the speech ENV affect the listeners' perception of foreignness.

2.3 Goals

This paper, just like those summarised above, assesses the degree of perceived foreign-accented Italian in comparison to native varieties. However, differently from previous studies on spoken L2 Italian, we are focusing on six foreign accents (i.e. English, German, French, Romanian, Spanish, and Russian) and we are investigating whether speaker- and style-related factors affect the degree of accentedness. The database used for this corpus consists in 42 speakers and 288 listeners (see §3.2 and §3.3).

Our hypothesis is that the age of onset is not the only variable hindering the path towards native-like pronunciation. To our mind, it is more reasonable to assume that foreign accent may depend on more than one factor, a composite variable incorporating the quality and quantity of L2 exposure and use, possibly but not necessarily, the length of stay in the L2-speaking country, and L2 (pronunciation) training (Combei, 2019). In fact, Flege (2009) suggested the fundamental role of 'input'[6] on the attainment of L2 pronunciation skills. The approach we propose here may be advantageous in explaining and understanding the production and perception of non-native Italian speech from sociolinguistic and educational perspectives. Therefore, the results of this study may be beneficial in the field of second language acquisition, especially in teaching Italian pronunciation to foreigners.

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[6] According to Flege (2009: 175) input may be defined as 'all L2 vocal utterances the learner has heard and comprehended, including his own, regardless of whether these utterances have been produced correctly by L2 native speakers, or incorrectly by other non-native speakers of the L2'.

3. *The study*

3.1 The experiment

This study assesses and interprets the degree of foreign-accented Italian. In order to trigger quantitative judgements expressed by monolingual[7] native Italian listeners, an accent-perception experiment was carried out[8]. We built an *ad-hoc* computer-based task that was conducted over the Internet on a WordPress[9] platform from May 2017 through January 2018. It was distributed to various interest groups via mailing lists. This allowed us to reach a solid, unbiased, and varied pool of listeners from all over Italy (see §3.3).

The first section of the experiment was compulsory and qualifiable for further rounds. The questions were designed to collect background information on the listeners. We sampled for the region of origin, the sex, the L1 (only monolingual Italian speakers were admitted), the age range (i.e. 18-30, 31-45, 46-65), the highest level of education achieved (i.e. high-school, B.A./B.Sc., M.A./M.Sc./M.B.A.), occupation (i.e. student, employee, unemployed), proficiency level in foreign languages (i.e. English, German, French, Romanian, Spanish, and Russian), the degree of familiarity with the foreign accents investigated (i.e. English, German, French, Romanian, Spanish, and Russian), and experience in the field of linguistics (i.e. having attended B.A. and/or M.A. courses in Linguistics).

The participants that qualified for the experiment were reminded to activate the audio on their computers and to use headphones during the experimental session. A detailed description of the task and a short trial were provided as well.

In the actual accent rating experiment, the Italian listeners were asked to assess the degree of foreign accent in the speech samples they were listening to, using a 6-gradients Likert scale (Likert, 1932). The top of the rating scale (i.e. "0") was labelled with "no foreign accent – native speaker of Italian", whereas the bottom (i.e. "5") was labelled with "very strong accent". The in-between values were the following: "1" – "mild accent", "2" – "moderate accent", "3" – "marked accent", "4" – "strong accent". The type of scale and the number of gradients complies with those normally used in similar accent perception experiments (cf. Piske, MacKay & Flege, 2001, for a survey on methods and tools employed in measuring foreign-accented speech).

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[7] The term "monolingual" is used here to refer to speakers that are neither early nor late "perfect bilinguals"; however, these speakers may be proficient in other languages without being considered "bilingual" (Grosjean, 2010).
[8] This paper presents the results of one of the three tasks of a large accent-perception experiment. The other two tasks were: accent recognition (1) and the identification of features of foreign-accented speech (2). However, it is worth mentioning that for each task original speech samples produced by new speakers were used (i.e. the listener had not heard them in the other tasks). Moreover, in the experiment described in this paper the listeners did not know the L1 of the speakers they were listening to.
[9] WordPress is a content management system based on a Hypertext Pre-processor and a MySQL. A detailed description of this platform is available at this webpage: https://wordpress.com (WordPress, 2019, accessed on the 17th of March 2019).

3.2 Speakers and stimuli

The stimuli were automatically randomised for each experimental session and they could be played only twice, in order to avoid, or at least to reduce, responses and associations that could have emerged due to bias or the authors' intentions.

In order for the stimuli to meet balancedness and representation criteria, when selecting the speakers, we controlled for the following variables: the speaker's mother-tongue, the occupation (all speakers were enrolled as regular or exchange students in degree, Ph.D., or specialization programmes in Bologna), the age (ranging from 20 to 30 years old), the sex, the self-assessed[10] proficiency level in Italian (ranging from B1 to C2 levels, based on *The Common European Framework of Reference for Languages: Learning, Teaching, Assessment-CEFR*[11]), the length of stay in Italy (i.e. less than 12 months, less than 24 months, more than 24 months), the age of onset (i.e. the first exposure to the Italian language: infancy, adolescence, adulthood)[12], the predominant language learning method (i.e. purely naturalistic and guided-naturalistic), and the presence or absence of specific pronunciation training.

The accents considered here are English, German, French, Romanian, Spanish, and Russian, compared to native varieties of Italian elicited by speakers from the Centre and the North of the country. Ten-to-fifteen-seconds-samples of read and spontaneous speech produced by a balanced set of 42 speakers – 6 for each L1 – were included in the perceptual experiment. The read speech samples were elicitated with the support of a newspaper article[13], while in order to obtain spontaneous speech, we asked speakers to talk about their most recent holidays (cf. Combei, 2017 and Combei, 2019, for a complete description of the speech samples).

The stimuli were previously validated by five experts[14] who assessed the degree of foreign accent (inter-rater reliability: ICC (A, 1) = 0.76[15]; p-value 0; 95% – confidence interval).

Considering that one of the hypotheses we wish to test is whether speaker- and style-related factors have an effect on the degree of foreign accent, we rigorously

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[10] Considering the number of speakers involved and the scope of this study, we rely on the informants' self-assessed level of Italian, as it would not have possible to actually test the proficiency prior to the experiment.

[11] A description of *CEFR* is available online at this webpage: https://europass.cedefop.europa.eu/it/resources/european-language-levels-cefr (CEDEFOP, 2018, accessed on the 6th of April 2019).

[12] The age of onset (i.e. the first exposure to Italian) coincides with the age of arrival for informants who learned Italian naturalistically; for all the other informants it refers to the age they started to learn Italian at school. In either case, the age labels correspond to the following values: "infancy" between 3 and 12 years, "adolescence" between 13 and 18, and "adulthood" 18 or older (cf. Combei, 2017).

[13] Although the lexical frequency was not controlled, the excerpt is linguistically rich, so as to enable further acoustic and perceptual analyses (cf. Combei, 2017).

[14] The expert informants were 1 full professor in Linguistics and 4 Ph.D. students in Linguistics from the University of Pisa, all having a solid background on the topic of this study. This ensured the choice of a balanced dataset, highly necessary for this kind of experiment.

[15] According to Cicchetti's (1994) guidelines for the interpretation of inter-rater agreement measures, an ICC value of 0.76 is considered 'excellent'.

controlled for all the variables mentioned at the beginning of this section (i.e. the corpus is well-balanced for all variables and at all levels). Below, we are summarising the speakers' characteristics.

As far as the sex is concerned, 61.90% of the stimuli used for the accentedness rating task were uttered by female voices, while 38.10% by male voices. Besides the native speakers (i.e. 14.29% of the corpus) that were exposed to Italian from birth, for all other informants, the age of onset is distributed as follows: infancy, 21.43%; adolescence, 23.81%; and adulthood, 40.47%. Regarding the method used for learning Italian, 50.00% of the non-native speakers acquired it naturalistically, and 50.00% using both guided and naturalistic approaches (cf. Klein, 2003, for the definition and characteristics of these two acquisition paths). At the dataset level, 38.89% of the learners were given specific pronunciation training, while 61.11% were no. As concerns the length of stay in Italy, 44.44% of the speakers had spent less than a year there by the time they were recorded, 19.44% between one and two years, and 36.12% for more than two years, and generally less than five years. In this experiment we used only samples produced by speakers having at least a B1 level in Italian. The proficiency level among non-native speakers is balanced for each L2 and distributed as follows: B1 (30.56%), B2 (22.22%), C1 (19.44%), and C2 (27.78%).

3.3 Listeners

An adequate number of listeners for each of the levels of the variables mentioned in §3.1 was collected, even if they were not evenly distributed.

For instance, out of 288 participants, 82.99% were women and 17.01% men. As far as the age groups are concerned, 82.02% of the listeners were in the first group (i.e. 18-30 years), 13.20% in the second group (i.e. 31-45 years), and 2.78% in the third group (i.e. 46-65 years). This is not surprising since the experiment was distributed on the internet; thus, it indirectly guaranteed major visibility to younger respondents. Therefore, the majority of the participants (i.e. 61.80%) were bachelor's students and their highest level of education was a high-school diploma; there followed, with similar percentages, the master's students that had a bachelor's degree and the workers that had a master's degree. Another variable that emerged from the sampling is the region where listeners had spent most of their lives. We achieved a fairly well-stratified sample; there were listeners from all Italian regions, except for Molise. Most of the times, the number was directly proportional to the number of inhabitants of that region, all other variables considered. As a matter of fact, most respondents were from Lombardy (i.e. 17.70%), Piedmont (i.e. 11.11%), Sardinia (i.e. 10.07%), Sicily (i.e. 9.72%), and Apulia (i.e. 7.29%). There were relatively fewer informants from Valle D'Aosta, Basilicata, and Marche. We were also interested in the listeners' background in Linguistics. The values for the levels of this variable are well-balanced: those that had attended B.A. and/or M.A. classes in Linguistics represent 59.37% of the entire sample, while those that replied 'no' represent 40.63%. Additionally, we asked participants to indicate their proficiency level in foreign languages and their familiarity with the accents investigated in this

study, by using a "0" through "5" scale[16]. As one may expect, everyone (i.e. 99.65%) spoke English, at least to some extent. Similarly, almost 80% of the respondents had some knowledge of French or Spanish. On the contrary, very few respondents spoke or understood Russian (i.e. 20.14%) or Romanian (i.e. 4.86%). Not surprisingly, young people claimed that they had a better knowledge of foreign languages than the older ones (see Table 1), especially regarding English, Spanish, and French.

Table 1 - *The listeners' language proficiency as a function of the age group*

Language	Age group: 18-30 Average level (±S.D.)	Age group: 31-45 Average level (±S.D.)	Age group: 46-65 Average level (±S.D.)
English	3.85 (±0.95)	3.29 (±1.14)	3.25 (±1.17)
German	1.10 (±1.48)	0.78 (±0.32)	1.37 (±1.68)
French	1.90 (±1.44)	1.76 (±1.34)	1.50 (1.07)
Spanish	1.99 (±1.56)	1.97 (±1.62)	0.75 (±1.04)
Romanian	0.08 (±0.39)	0.19 (±0.69)	0.00 (±0.00)
Russian	0.45 (±0.98)	0.11 (±0.51)	0.13 (±0.35)

Finally, we were interested in the participants' familiarity with the six foreign accents under consideration. Listeners rated themselves with the scale described earlier. Overall, 98.96% of them had at least some familiarity with the English accent; there followed the French accent (92.36), the Spanish accent (88.54%), and the German accent (78.12%). At the opposite side, there were the Russian and the Romanian accents, both familiar to less than 50.00% of the listeners. Considering that Romanian- and Russian-speaking people represent some of the largest communities in Italy (ISTAT, 2018), these data may seem unexpected. However, we believe this could be explained in terms of the characteristics of our sampling set; it includes a lot of young people that might have not met native speakers of Romanian and/or Russian. The average levels of familiarity with the accents are detailed in Table 2.

Table 2 - *The listeners' accent familiarity as a function of the age group*

Language	Age group: 18-30 Average level (±S.D.)	Age group: 31-45 Average level (±S.D.)	Age group: 46-65 Average level (±S.D.)
English	3.86 (±1.15)	3.32 (±1.28)	3.62 (±0.92)
German	2.30 (±1.77)	1.87 (±1.66)	3.25 (±1.16)
French	2.76 (±1.53)	2.79 (±1.47)	2.88 (1.25)
Spanish	2.81 (±1.67)	2.97 (±1.60)	2.38 (±1.77)
Romanian	1.08 (±1.36)	1.45 (±1.52)	1.00 (±0.76)
Russian	1.54 (±1.56)	1.24 (±1.38)	1.25 (±1.04)

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[16] "0" means that the informant has no knowledge of that language, while, on the contrary, "5" means that she/he is highly proficient.
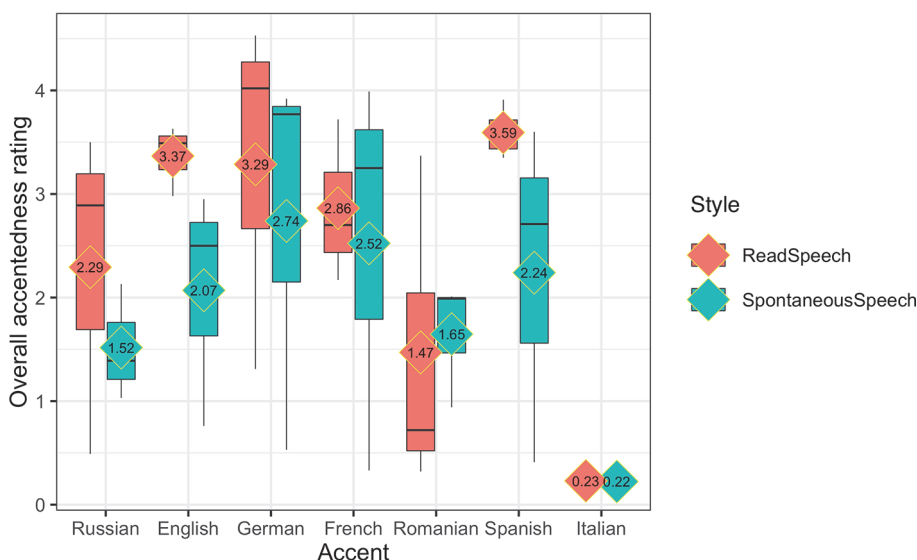
The unbalanced distribution of listeners is inevitable in this type of experiment, since, in fact, one cannot fully control crowdsourcing data collection. Nevertheless, we reached an adequate number of participants for each variable and each variable level.

4. *Predicting the degree of foreign accent*

4.1 Models built around speaker- and style-dependent factors

Before analysing the results, an inter-rater reliability test was performed on the listeners' judgements; this yielded a positive outcome: ICC (A,1) = 0.68[17]; p-value: 0; 95% – confidence interval, suggesting that most of the times there was agreement between the listeners' ratings. A chart aggregating the scores for all accents as a function of the style is shown in Figure 1.

Figure 1 - *Accentedness ratings for each accent as a function of the style*

Following Piske et al. (2001), we were interested in assessing which factors contributed to the perception of accentedness in Italian. For such purpose, after a treatment coding of the categorical variables, we fitted Linear regression models in R (R Core Team, 2018), where we tested the effect of all the variables under control on the accentedness score (i.e. the dependent variable). Since the levels of some speaker-dependent variables regarding native speakers of Italian generated aliased coefficients in the models due to perfect multicollinearity, we excluded this group from the analyses presented below. Not surprisingly, in fact, Italians were perceived

[17] According to Cicchetti's (1994) guidelines for the interpretation of inter-rater agreement measures, an ICC value of 0.68 is considered 'good'.

as being native speakers and they were assigned ratings around "0" (see Figure 1). Thus, their data would not have added any relevant information to the models.

We started with a model that was built around all independent variables (i.e. the style; the speaker's sex, L1, age of onset, method of learning Italian, pronunciation training, length of stay in Italy, and proficiency level in Italian), while the response variable was the accentedness score received by the speakers (Model 1 in Table 3). This model could estimate 77.00% of the variation in the accentedness ratings. However, since the sex variable was the weakest predictor for the degree of foreign accent (p-value: 0.86), we dropped it. In fact, Model 2 (see Table 3) predicts 78.1% of the variation. Finally, in Model 3 (see Table 3) we excluded also the second weakest factor, namely the age of onset (p-value: 0.68); even if there is a difference between the ratings received by the three groups (i.e. infancy, adolescence, and adulthood), it is not statistically significant. This finding actually might suggest that starting to learn Italian at a young age – especially during adolescence – does not necessarily guarantee native-like productions. Therefore, in the end, Model 3 explains 79.3% of the variation in the accentedness ratings.

Table 3 - *Summary of the three multiple linear regression models*

	Model 1	Model 2	Model 3
Dependent variable	accentedness rating	accentedness rating	accentedness rating
Independent variables	style, sex, L1, age of onset, method of learning Italian, pronunciation training, length of stay in Italy, and proficiency level in Italian	style, L1, age of onset, method of learning Italian, pronunciation training, length of stay in Italy, and proficiency level in Italian	style, L1, method of learning Italian, pronunciation training, length of stay in Italy, and proficiency level in Italian
Observations	36	36	36
Residual standard error	0.626 on 19 degrees of freedom (sigma: 0.254)	0.611 on 20 degrees of freedom (sigma: 0.247)	0.594 on 22 degrees of freedom (sigma: 0.240)
Multiple R-squared	0.875	0.875	0.870
Adjusted R-squared	0.770	0.781	0.793
F-statistic	8.33 on 16 and 19 degrees of freedom, p-value: 1.678e-05	9.34 on 15 and 20 degrees of freedom, p-value: 5.346e-06	11.34 on 13 and 22 degrees of freedom, p-value: 6.578e-07

The assessment of the linear model assumptions was performed with a global test on 4 degrees of freedom (level of significance: 0.05). The assumptions for Global Stat, Skewness, Kurtosis, Link Function, and Heteroscedasticity are acceptable. The fit information (i.e. Anova Type II Test) for Model 3 is shown in Table 4.
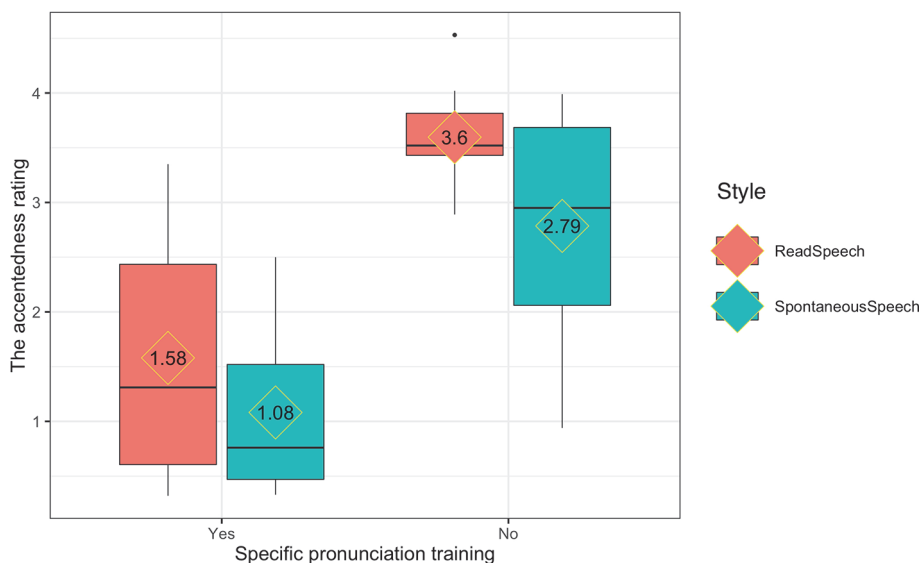
Table 4 - *Anova Type II Test for Model 3*

	Sum of squares	Degrees of freedom	F value	Pr(>F)
L1	8.14	5	4.61	0.005**
Style	1.66	1	4.70	0.04*
Italian learning method	1.53	1	4.30	0.06
Specific pronunciation training	4.36	1	12.33	0.001**
Length of stay in Italy	1.29	2	1.82	0.18
Proficiency level in Italian	5.56	3	5.24	0.01*
Residuals	7.78	22	-	-

Generally, the samples of read speech were perceived as more accented than those of spontaneous speech (p-value: 0.04), presumably as a result of the fact that speakers might not be fully familiar with written Italian and because some reading errors might have arisen due to conflicting orthographic norms between the speakers' L1 and Italian (Wottawa, Adda-Decker, 2016). At the same time, in spontaneous speech, the speaker would tend to use familiar and less problematic constructions. This finding is consistent with previous research on foreign accent; in fact, Oyama's (1976), Thompson's (1991), and Kolly, Dellwo (2013) also found that read speech was perceived to be more strongly accented than spontaneous speech.

All other grouping variables and levels being equal and comparable (i.e. corpus balancedness and representativity), most of the times, Romanian speakers were rated with "no accent" or "mild accent" scores. Romanian and Italian share indeed a high number of the segmental and suprasegmental features, but it is still unclear whether the "good" ratings received by Romanian speakers may be ascribable to this vicinity. Next, the samples produced by German speakers were perceived as the most accented. They were followed in this order by Spanish, French, English, and Russian. This is consistent with the SLA literature that has linked pronunciation deviations, and therefore, foreign accent, to blocking mechanisms ascribable to L1 (Flege, 1995). Therefore, as shown in Table 4, the speaker's L1 seems to predict the degree of foreign accent (p-value: 0.005).

Furthermore, the speakers who received specific pronunciation training were perceived as less accented than those who did not (p-value: 0.001). A clearer representation of this evidence is shown in Figure 2. This finding could advocate for shifting the view towards the role of input in SLA (Flege, 2009).

Figure 2 - *Accentedness ratings as a function of the style and pronunciation training*

However, as reported in Table 4, having learned Italian in a specific learning set-ting is not generally associated to a better pronunciation score (p-value: 0.06). Moreover, the length of stay in Italy does not seem to have any role in predicting the accentedness (p-value: 0.18), probably because the difference between the lev-els is too small (i.e. 12 months) to display any significant effect. Nevertheless, the speakers that stayed in Italy for more than 2 years received better pronunciation ratings than the other two groups. A similar rationale behind the rather feeble but still statistically significant effects of the proficiency level in Italian (p-value: 0.01), together with the fact that it may not be a fully reliable predictor, since speakers self-assessed their performance. Nevertheless, the speakers that claimed they had a C2 level in Italian received indeed good ratings, suggesting that their pronunciation is close to that of a native speaker.
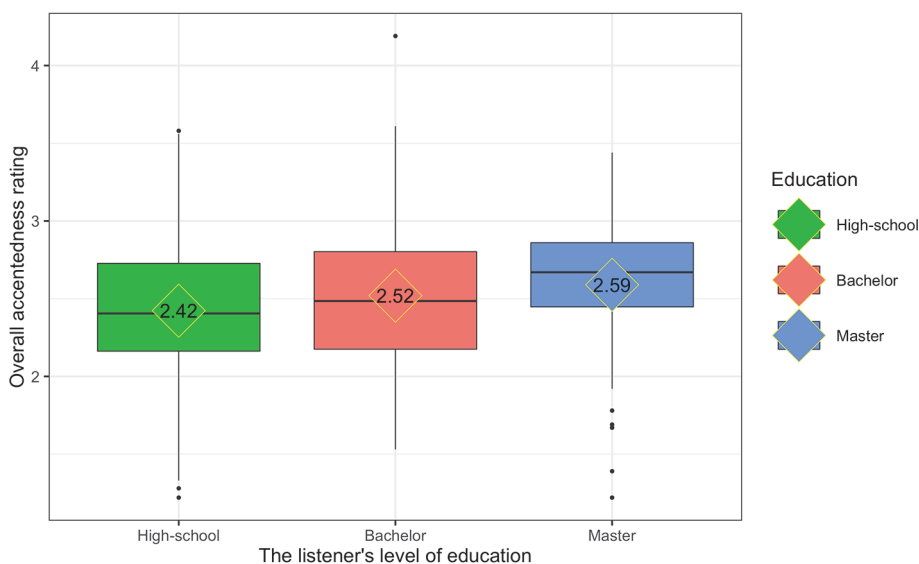
4.2 Models built around listener-dependent factors

After a treatment coding of the categorical variables, we verified the strength of the effect of listener-dependent factors (i.e. sex, age group, education level, region of origin, occupation, background in linguistics, proficiency in foreign languages, and familiarity with the accents investigated) on the score they assigned to speech sam-ples, by attempting to fit a Linear regression model. Its results may be summarised as follows: $F(26,261) = 1.07$, $p = 0.37$; $R^2 = 0.096$; Adj. $R^2 = 0.006$, Residual standard error: 0.46 on 261 degrees of freedom.

Given the model complexity, meaningful results were obtained only for the education variable (see Figure 3), namely, the higher the listener's education level, the more severely they would judge the speakers' degree of accentedness (Sum of squares: 1.53, Degrees of freedom: 2, F value: 3.6087, p-value: 0.03). Even by drop-

ping several factors, such as the listeners' region of origin, age group, sex, and background in Linguistics, the model did not improve its predictive strength. In fact, the results of the final model, having only the listeners' education level and occupation as independent variables, may be summarised as follows: $F(4,283) = 2.35$, $p = 0.05$; $R^2 = 0.03$; Adj. $R^2 = 0.02$, Residual standard error: 0.46 on 283 degrees of freedom.

Figure 3 - *Accentedness rating as a function of the listener's education level*

5. *Conclusions and further research*

Based on our data, the degree of foreign-accented Italian seems to be determined especially by the following factors: the speaker's L1, the presence or absence of specific pronunciation training during the learning path, the proficiency level in Italian, and the style. Therefore, through the ears of Italian listeners, some accents are stronger than others (German accent – strong vs. Romanian accent – mild). Next, receiving pronunciation training seems to improve the learner's accent, making it sound more native-like. Moreover, C2 levels in Italian generally correspond to good pronunciation skills. Read speech was perceived as more accented than spontaneous speech, probably as a result of reading issues arisen due to different orthographic norms. In fact, some speakers might not have had a complete familiarity with written Italian. Listener-dependent factors do not seem to have a significant role in predicting accentedness ratings.

However, in order to confirm all the afore-mentioned associations at a larger scale, in future research, other accents should be investigated as well. Finally, it would be desirable to sample for and test the role of sociopsychological factors, such as attitude, motivation, and personality on the degree of perceived foreign accent.

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