THE PHONOLOGICAL CATEGORIZATION OF [jː] IN MILANESE ITALIAN

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Abstract

In northern Italian the phonemes /j/ and /ʎ/ generally contrast and are realized as [j] and [ʎ(:)] respectively, whereas in many varieties of central-southern Italian they are merged into [j:]. The purpose of this study was to establish how northern Italian speakers from Milan from two different generations phonologically categorize the central-southern sound [j:]. I predicted that the younger speakers, due to the large migration waves from the South that occurred after World War II, would be more inclined than older speakers to categorize [j:] as /ʎ/, whereas the older speakers would just perceive [j:] as a geminated version of /j/ and thus categorize it as such. I also considered other factors such as language contact situations arising from the arrival of the Internet in the 1990s, low functional load, orthographic ambiguity, lack of contrastive duration and late acquisition of /ʎ/.
45 native Italian speakers from Milan, of which 22 born before 1970 and 23 after 1990, took part in a perception task in which they heard /j/-/ʎ/ minimal pairs pronounced with [j:] and chose out of two orthographic options. The younger speakers categorized [j:] as /ʎ/ in two thirds of the cases, whereas the older speakers showed the opposite pattern, categorizing [j:] as /j/ twice as much as /ʎ/. Furthermore, in one of the three test items [j:] was perceived as /j/ more frequently than as /ʎ/ by both groups. These results indicate that both age groups are ambivalent about how to phonologically categorize [j:].

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1. Introduction

The status of the phonological contrast between the voiced palatal lateral approximant /ʎ/ and the voiced palatal approximant /j/ in the Romance-speaking area differs from language to language and from dialect[1] to dialect, and these differences can be synchronic or diachronic. At one end of the continuum there are languages that have completely merged /ʎ/ and /j/ into /j/ in most varieties. This is the case in Modern Standard French, where the /ʎ/-/j/ contrast was lost as early as the beginning of the 19th century (Mooney and Hawkey, 2019: 286). At the other end there are languages in which the /ʎ/-/j/ contrast is overall still maintained nowadays and in which the merger of the two phonemes occurs only on a dialectal level. For instance, in Portuguese /ʎ/ and /j/ merge into /j/ only in some local varieties such as the Caipira dialect in Brasil (Istre, 1971: 258). Italian appears to occupy an intermediate position in which the contrast is neutralized in some varieties and maintained in others. In the central-southern varieties of Italian (excluding Tuscan) the phonemes /ʎ/ and /j/ show a tendency to merge into [jː] (Calamai, 2011). By contrast, according to the literature, the northern dialects not only preserve the distinction between /ʎ/ and /j/, but also do not feature the sound [jː] as a possible outcome for either of them. Nevertheless, even in the varieties that preserve the /ʎ/-/j/ contrast, this latter appears to be challenged by a number of factors, such as low functional load, orthographic ambiguity, lack of contrastive duration, late acquisition of /ʎ/ (see Section 1.3) and the increase of language contact situations due to internal migration and the diffusion of the Internet (see Section 1.2).

In this study I present the results of an intergenerational perception task involving the phonological categorization of the sound [jː] as a non-local form in the urban area of Milan, which is the major contrast-preserving area as well as a dynamic plurilingual and pluridialectal center that has been strongly affected by internal migration. Subsequently, I employ the data obtained from the task to assess the status of the /ʎ/-/j/ contrast in the aforementioned area.

1.1 The status of /ʎ/ and /j/ in Italian and its varieties

In Italian both /ʎ/ and /j/ can occur in initial position before a vowel, in intervocalic position, and between a consonant and a vowel. However, it is only in intervocalic position that the two phonemes really contrast. Indeed, there are very few occurrences of /ʎ/ in initial position, which are

[1] In this article the word "dialect" is used as a synonym of "variety" and not in the Italian sense of regional language.

limited to the definite article as well as indirect personal pronoun *gli* /ʎi/, and to some pronominal compounds featuring this word. Furthermore, in contemporary Italian the only consonant that can precede /ʎ/ is /r/, and even this combination is limited to infinitive+*gli* compounds (e.g. *dargli* /ˈdarʎi/ "to give him"). By contrast, /j/ is much more flexible than /ʎ/ in initial and post-consonatal position, but it cannot occur before /i/. Therefore, there are no /ʎ/-/j/ minimal pairs that feature the two phonemes at the beginning of a word or between a consonant and a vowel.

As mentioned in the introduction, /ʎ/ and /j/ are not realized in the same way in all varieties of Italian. First, intervocalic /j/, whose standard outcome is [j], is reported to be realized as [jː] in the local Italian of many central-southern regions (Calamai, 2011). Second, in the same areas, intervocalic /ʎ/, which in the standard surfaces as [ʎː], tends to be delateralized and also realized as [jː]. As it appears, the realization of both /j/ and /ʎ/ as [jː] results in a merger. The literature is not consistent with how /j/ and /ʎ/ are exactly realized in the Centre-South and whether they completely overlap. For instance, in the Italian variety spoken in Rome, the phonemes /j/ and /ʎ/ are described in different ways by different authors. According to D'Achille (2011), Roman speakers featuring low sociolinguistic traits may realize /ʎ/ as either [jː] or [j], or may even drop it completely when preceded by /i/. By contrast, according to Bertinetto and Loporcaro (2005: 134) /ʎ/ may be realized as [jː] in non-acrolectal Roman Italian. Nevertheless, the spectrograms in Figure 1, which show the

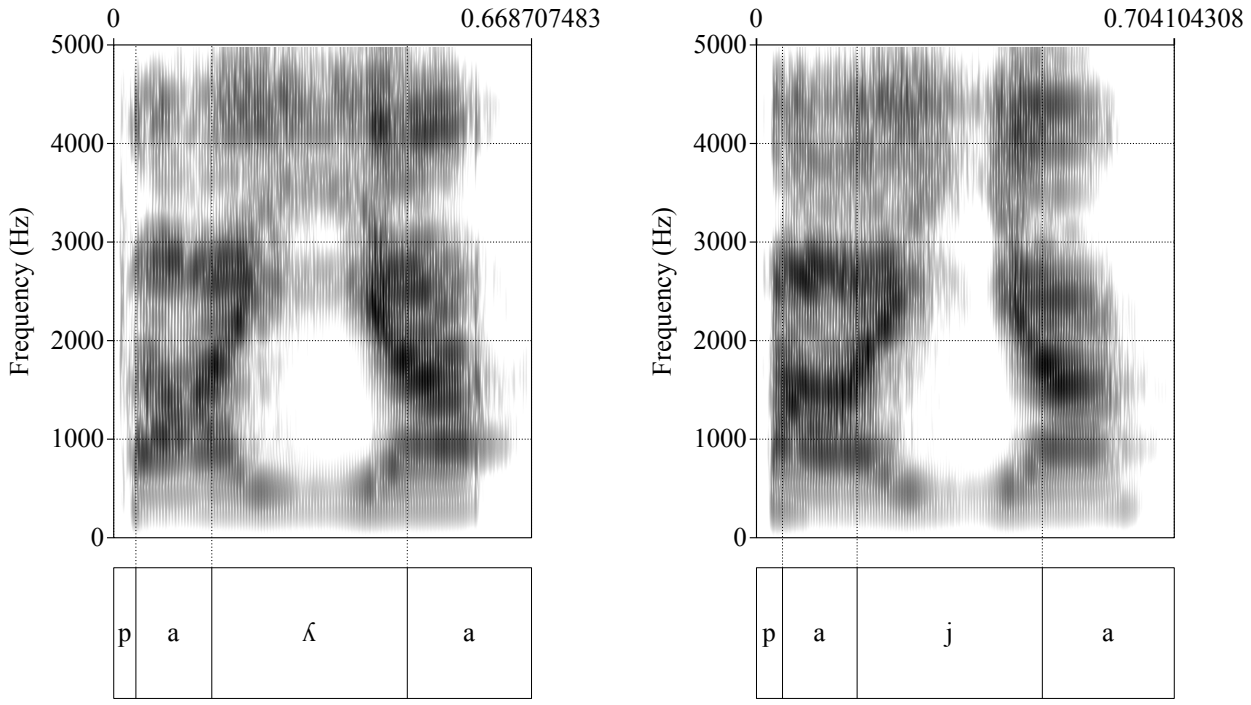

Figure 1: Spectrograms of the words /ˈpaʎa/ and /ˈpaja/ as pronounced by an Italian speaker from Rome.

consonants /ʎ/ and /j/ in intervocalic position as pronounced by a Roman speaker[2], indicate that [j̻ː] is the realization of /j/ rather than /ʎ/. This degree of variation suggests that, even if /ʎ/ and /j/ are at times realized in slightly different ways, this does not seem to be done in a consistent fashion and does not seem either to prevent the speakers from confusing the two phonemes.

In contrast with what happens in the Centre-South, the merger of /ʎ/ and /j/ is traditionally not ascribed to the northern varieties of Italian (Berruto, 2011). Possible non-standard realizations of intervocalic /ʎ/ in the North are [ʎ] or [lj], which all preserve the lateral component (Berruto, 2011), whereas /j/ is usually realized as [j] in all positions, like in the standard language. The outcome [ʎ] in particular is the result of the typically northern phonetic phenomenon of degemination (Bafile, 2011b). It is reported that in this area the length of geminated consonants can be overall shorter than in the Centre-South (Poggi Salani, 2010). However, the sociolinguistic transformations that concerned the North-West in the course of the 20th century provide a good reason to expect that the phenomenon of degemination will be more likely found in older speakers, and that the Italian of young north-western speakers will share more features with standard Italian and central-southern varieties compared to the Italian spoken by older north-western speakers.

1.2 From language contact to language change

Language contact is known to be an important cause for language change (Thomason, 2001). Language contact can manifest itself in different ways and it is not always clear how it originates. However, one common origin of language contact seems to be caused by the movement of a group of people to a territory that is not their own and is inhabited by another population (Thomason, 2001). The north-western regions of Italy, and especially their urban areas (Genova, Milan and Turin), have been characterized since the end of World War II by strong migration waves from the rest of the country, especially from the South and the North-East (Pugliese, 2015), with considerably high peaks between 1950 and 1970 (Bruni, 1992: 131). While the migrations from the North-East ended towards the end of the 1960s (Birindelli, 2004), the ones on the South-to-North route, after subsiding in the 1970s and 1980s, resumed at the beginning of the 1990s. These migrations, although at a lower rate, have continued up until recently; only in 2018, 8,000 southern citizens transferred their residence to Lombardy, making the latter the most popular destination of South-to-North migrations for that year (ISTAT, 2019). These persisting migratory waves have had

[2] I asked a speaker from Rome to record themselves while pronouncing various words featuring /j/ and /ʎ/ in intervocalic position.

a strong impact on the sociolinguistic situation of the receiving territories (Bruni, 1992: 130; Galli de' Paratesi, 1984: 208). The coexistence of locals and immigrants led to the reduction of the linguistic distance between the two communities, which were forced to abandon their respective local languages and converge toward standard Italian for a matter of necessity (Galli de' Paratesi, 1984: 225). The effect of immigration on the sociolinguistic situation of the North-West becomes particularly evident when looking at generational differences, as the incidence of certain typically northern features, such as indeed degemination, is lower in the younger generations compared to the older ones (Bruni, 1992: 133). In her study, Boario (2008) shows how immigration can influence language by analyzing how young speakers from Turin use syntactic gemination. Indeed, this phenomenon is foreign to the local pronunciation habits, and in general to northern varieties, and it probably started spreading from speakers born and raised in Turin but with southern parents.

There is another factor of language contact that may have bolstered the sociolinguistic changes initiated by immigration in the North-West. This factor is the arrival of the Internet in the 1990s. Indeed, during this decade the World Wide Web became available to the public (Kahn and Dennis, 2020) and the people who were born in this period, or later, grew up in a highly interconnected world. Speakers of different languages and dialects were given the opportunity to speak to and text each other in real time, and were given access to a wide array of linguistically-diverse multimedia content (Christiansen, 2016). It is possible that this phenomenon, like immigration, has brought closer different Italian varieties and has increased the scope of diffusion of certain phonological features that before the arrival of the Internet were less likely to spread beyond the boundaries of their areas of origin.

Therefore, as a result of the influence of the Internet and immigration, one can expect that younger speakers from the North-West will be more likely to perceive gemination compared to older speakers from the same areas. Furthermore, the phonological categories of younger speakers, compared to the ones of older speakers, may be perceptually more flexible and open to a wider range of phonetic realizations, among which non-local ones such as [j:] for /ʎ/ and /j/. However, it is also possible that wider phonological categories, especially if they partially overlap, will cause perceptual confusion and work against the preservation of the contrast between /ʎ/ and /j/.

1.3 The inherent weakness of the /ʎ/-/j/ contrast

In addition to language contact, there are also a number of non-sociolinguistic factors to consider when analyzing that status of the phonemes /ʎ/ and /j/ in Italian. First, the /ʎ/-/j/ contrast has low

functional load, and this is known to play a role in phonological contrast loss (Wedel et al., 2013). Second, the gemination of /ʎ/ is not indicated by orthography, which plays an important role in the language learning process of Italian speakers; it is established that gemination is less consistent in all those cases in which consonant quantity cannot be inferred from orthography (Galli de' Paratesi, 1984: 211). The same duration inconsistencies also arise from the fact that /j/ and /ʎ/, unlike most Italian consonants, do not feature contrastive duration. Furthermore, it appears that the weakest consonantal contrasts in Italian consist of phonemes that do not contrast in duration or do so only marginally, such as /t͡s/ and /d͡z/, /s/ and /z/ and indeed /j/ and /ʎ/. Third, due to its articulatory complexity, /ʎ/ is one of the very last phonemes to be acquired by Italian-speaking children, who tend to replace it with /j/ (Pettorino, 2011; Zanobini et al., 2012: 17). Therefore, the apparent weakness of the contrast between /ʎ/ and /j/, together with the expansion and consequent overlap of their phonological categories, suggests that the two phonemes may have started merging even in those varieties in which they are generally still described as distinguished, such as north-western Italian. An intergenerational study would allow to understand whether in the aforementioned varieties the contrast between the two phonemes is indeed weaker among younger speakers compared to older ones.

1.4 The aim of the present study

In this study I attempted to assess whether there is a generational difference in the phonological categorization of the sound [jː] in the Italian variety spoken in the major urban area of the North: the city of Milan. More specifically, I investigated whether younger speakers are more likely to perceive [jː] as /ʎ/ compared to older speakers. In order to do so, I carried out a perception experiment in which 45 Milanese Italian speakers of two different age ranges (see Section 2.1) had to listen to 30 recorded words belonging to minimal pairs, and had to select the orthographic word that matched the recording out of two options (see Section 2.3). The 30 items included three test words featuring the sound [jː] in intervocalic position; the meaning of the words changed according to whether [jː] was interpreted as either /j/ or /ʎ/ (see Section 2.2). For instance, they heard the word [ˈpajːa] and had to click on either *paia* (/ˈpaja/ "pairs") or *paglia* (/ˈpaʎa/ "straw"). The participants were allowed to play each recording no more than twice, and the number of times each item was played was also recorded. Reaction time was also measured in addition to response and play count, although its unreliability due to the experimental setting (i.e. cursor speed being affected by computer performance) was taken into account.

My first prediction was that the younger speakers would be more inclined to categorize [jː] as /ʎ/ compared to the older speakers. Indeed, I expected that the older participants would show lower sensitivity to gemination and, as a result of this, would perceive [jː] as [j] and thus categorize it as /j/. Furthermore, I predicted that the older participants would also be less likely to categorize [jː] as /ʎ/ based on the phonological processes that occur in other varieties, such as /ʎ/ → [jː] in central-southern Italian. By contrast, I expected that in the younger participants the sound [jː] would activate not only the qualitatively-similar /j/, but also the quantitatively-similar /ʎ/, which younger speakers are more likely to produce and perceive as a geminate compared to older speakers, and also I expected that the younger participants would be more likely to show activation of /ʎ/ also as a non-local underlying form of [jː].

My second prediction was that the younger speakers would replay the test items more often than the older speakers as the former would have more difficulty categorizing the sound [jː] for the reasons presented in the first prediction.

In Section 2 I explain the methodology of the experiment. In Section 3 I present the results, which are followed by a discussion and a conclusion in Section 4.

2. Methodology

2.1 Participants

The participants were 45 Italian native speakers who had completed most of their mandatory education (from 6 to 16 years old) in the Metropolitan City of Milan or in the Province of Monza and Brianza. This latter province was included in the study because it was part of the former Province of Milan up until 2009, and therefore it could be still considered part of Milan metropolitan area. The participants had also spent most of their lives in the aforementioned areas after finishing high school. This requirement was necessary in order to avoid speakers who could have potentially picked up a different accent from the Milanese one. The participants were divided into two age groups: the first group comprised 22 subjects born before 1970, whereas the second group comprised 23 subjects born after 1990. The year 1990 refers to the restart of the South-to-North migrations (Pugliese, 2006); moreover, the 1990s are the decade in which the World Wide Web became accessible to the public (Kahn and Dennis, 2020). The year 1970 refers to the end of the massive post-war migration wave that interested the North-West (Pugliese, 2015); besides, the

parents of the people born in the 1990s approximately belong to the generation born between 1950 and 1970.

The data collection has been in accordance with the requirements of and approved by the Ethics Committee of the University of Amsterdam.

2.2 Stimuli

The test stimuli consisted of the three words [ˈpajːa], [abːaˈjːaɾe] and [ˈsɔjːa]. In light of the reasons explained in Section 1, the first word could be categorized as either *paia* /ˈpaja/ "pairs" or *paglia* /ˈpaʎa/ "straw", the second as either *abbaiare* /abːaˈjare/ "to bark" or *abbagliare* /abːaˈʎare/ "to dazzle", and the third as either *soia* /ˈsɔja/ "soy" or *soglia* /ˈsɔʎa/ "threshold". It was not possible to choose words with similar frequency because of the limited occurrence of /j/-/ʎ/ minimal pairs. However, in order to control for frequency effects, both words of each pair were made clearly visible to the participant before they heard the recording. This was meant to prime both options before the audio could prime the more frequent one. In addition to the test items, 27 fillers were also included. The fillers consisted of 7 ambiguous words and 20 unambiguous words. Indeed, choosing only ambiguous fillers could make the participant too alert. On the other hand, choosing only unambiguous fillers could expose the test items. The ambiguous words were in-between realizations of minimal pairs. For instance, the item [ˈkuːb̥o] was created as an in-between form of [ˈkuːbo] "cube" and [ˈkuːpo] "somber", with [b̥] being less voiced than [b] but more voiced than [p].

All items were given always in the same order (see Appendix A), and in order to accustom the participant to considering both the left button and the right one when answering, the positions of the right and wrong answers for the unambiguous stimuli were alternated. Also the buttons for the three test items were alternated so that there would not be the option of /j/ always appearing on one side and /ʎ/ always on the other. Having a training in phonetics and phonology, I personally recorded all the stimuli with the in-built microphone of my MacBook Air (13-inch, 2017) and a sampling frequency of 44100 Hz. The stimuli were recorded with Praat (Boersma and Weenink, 2021). For the complete list of the stimuli, see Appendix A.

2.3 Procedure

The participants were recruited through acquaintances and online via social networks like Facebook. I also contacted people that I had recruited in previous experiments and with whom I had

already worked. The participants had to take part in an online experiment, which was designed using ED - Experiment Designer by Dirk J. Vet (Vet, 2021). On the first page they were provided with the information about the experiment, to which they had to declare to have been correctly and thoroughly informed by ticking a box. The participants were allowed to proceed with the experiment only if they ticked said box. Then, they were provided with the instructions for the experiment (see Figure 2). After that, a page opened in which there were at the top two buttons with the two words of a minimal pair and at the bottom a speaker-shaped button (see Figure 3). The participants had to click on the speaker-shaped button to play the recording of a word. Then they had to click on one of the two top buttons to indicate the word they thought they had heard. The participants were allowed to play the sound a second time. However, it was not possible to play it a third time. Once the participant had selected a word, the next page exhibiting the two answer categories for the next stimulus and the link to the next sound file was automatically loaded. In total the experiment lasted approximately two minutes.

Figure 2: Instruction page of the perception experiment

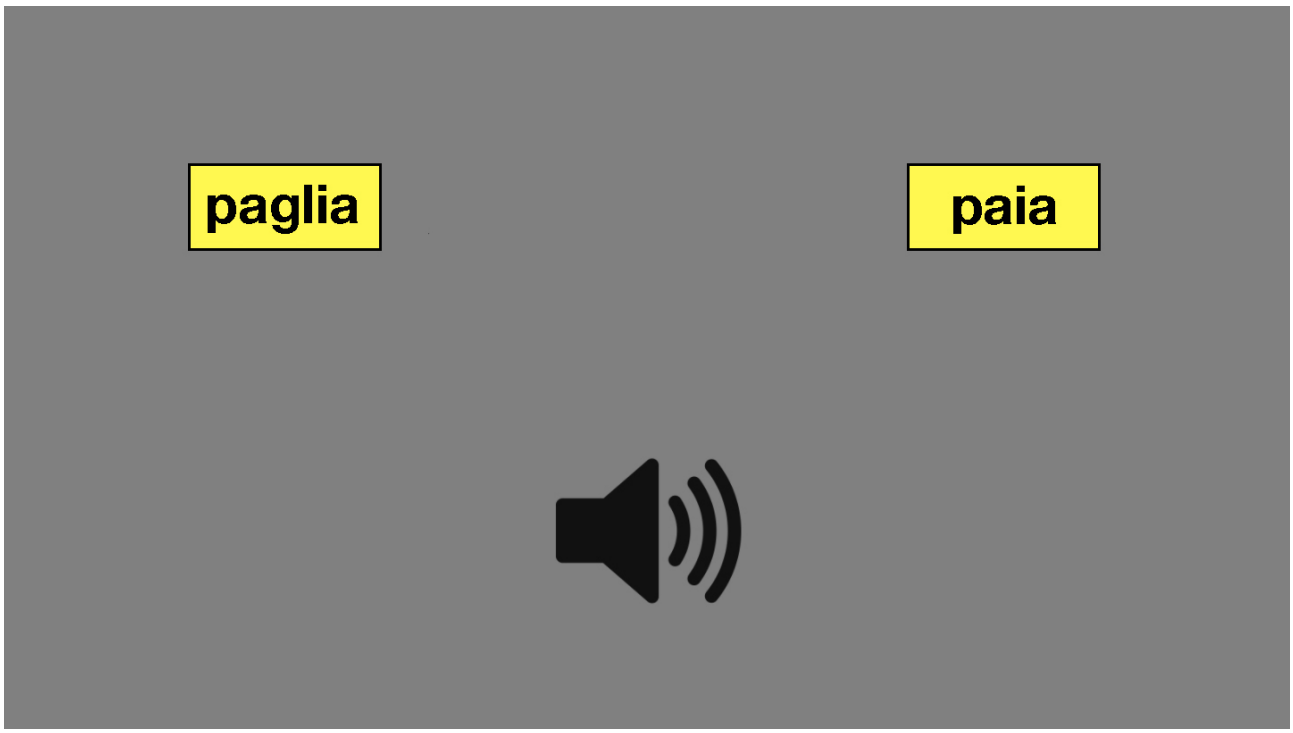

Figure 3: Layout of the perception experiment

2.4 Data analysis

The statistical significance of the data was tested with RStudio (RStudio Team, 2020) by means of Fitting Generalized Linear Mixed-Effects Models (glmer) and Fit Linear Mixed-Effects Models (lmer)[3].

The first glmer model was used to compare the occurrences of the lateral approximant in the test items for the two age groups to answer the first RQ. The younger participants selected the lateral approximant more frequently than the older participants, and this difference proved to be statistically significant (p value: 0.000142). Furthermore, it also emerged that in both age groups the lateral approximant was selected much less frequently in [abːaˈjːaːɾe] compared to [ˈpajːa] and [ˈsɔjːa]; this difference, having a p value of 0.0000544, can be considered statistically significant. By contrast, the same difference in lateral approximant occurrence was not found between [ˈpajːa] and [ˈsɔjːa].

[3] glmer(lateral ~ group + item + (group | item) ...), glmer(repetition ~ group + (group | item) ...), lmer(RT ~ group + item + (group | item) ...)

The second glmer model was used to compare how many times all the test items were replayed in the two age groups to answer the second RQ. No significant difference in play count was found (p value: 0.375226).

As an exploratory analysis, we also used another glmer model and two lmer models to see whether additional unpredicted age differences would arise. We used the additional glmer model to compare how many times all items were replayed in the two age groups. In this case the younger participants replayed all items more frequently than the older participants, and this age difference proved to be statistically significant, with a p value of 0.0000000000573.

The first lmer model was used to establish whether, in test items only, there was a significant difference in reaction time between the two age groups and between items. No significant difference was found.

Finally, the second lmer model was used to establish whether, in all items, there was a significant difference in reaction time between the two age groups and between items. Again, no significant difference was found.

3. Results

The full data relating to how the sound [jː] was phonologically categorized, to how often the participants used the replay button (play count) and to the time passed between the end of the recordings and the selection of the word (reaction time) can be found in the Appendices B, C and D respectively. In general the younger subjects categorized [jː] as /ʎ/ more often than as /j/, with 65% against 35%. On the other hand, the older subjects show the opposite trend, with [jː] categorized as /j/ in 65% of the cases against 35% as /ʎ/ (see Figure 4). If we look at the data for the single test items, it appears that in the younger group the sound [jː] in [ˈpajːa] and [ˈsɔjːa] was largely categorized as /ʎ/, whereas in [abːaˈjːaːɾe] it was perceived as /j/ more often than as /ʎ/. The older participants show a similar pattern; indeed, despite the fact that in no test items [jː] was perceived as /ʎ/ more often than as /j/, the /ʎ/ option seems to be only marginal in [abːaˈjːaːɾe], whereas it was selected much more often in the other two test items. Indeed, *abbagliare* (/abːaˈʎare/) was selected only in 14% of the cases, whereas *soglia* (/ˈsɔʎa/), despite being selected less often than *soia* /ˈsɔja/, amounts to 41%, and *paglia* (/ˈpaʎa/) even reaches 50%, thus tying with *paia* (/ˈpaja/). All these results were proven statistically significant (see Section 2.4).

As for play count, the younger participants feature a tendency to replay the test items more often than the older participants. However, the same pattern seems to apply to all items. Indeed, the

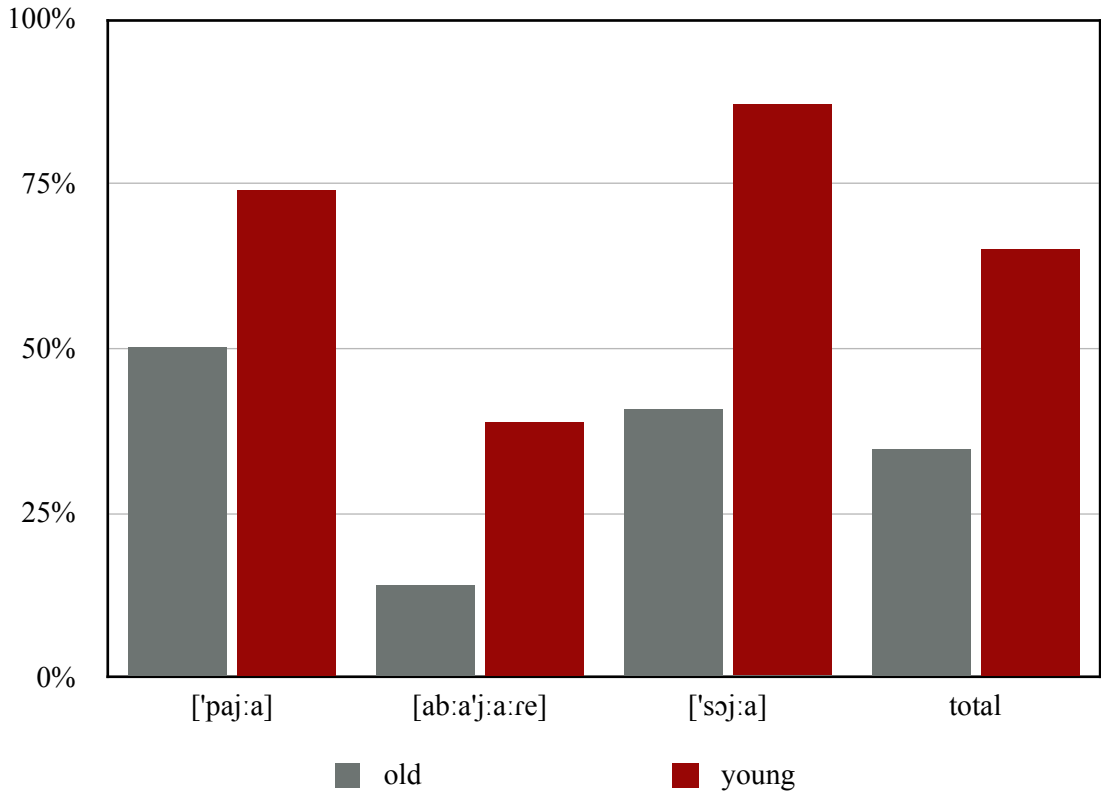

Figure 4: Selection of the phoneme /ʎ/ among old and young subjects

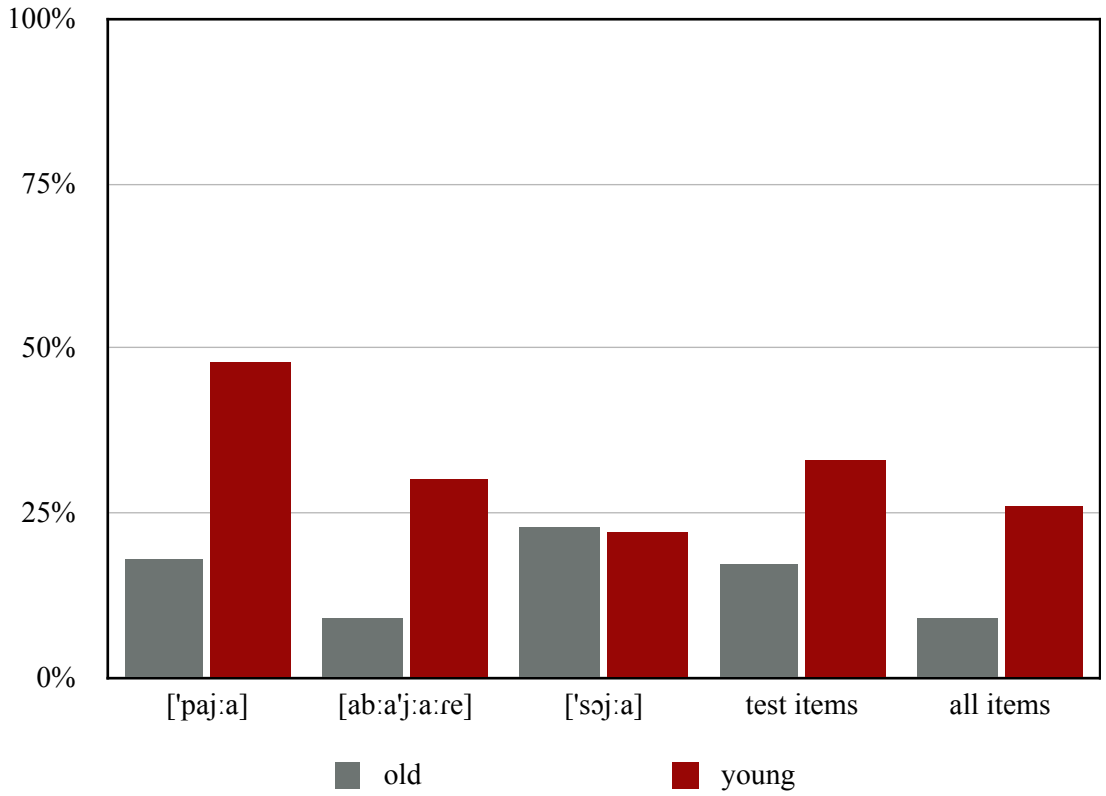

Figure 5: Item repetitions among old and young participants

younger subjects replayed 33% of the test items and 26% of all items, whereas the older subjects replayed 17% of the test items and 9% of all items (see Figure 5). The age difference in play count for all items, unlike the one for test items only, seems to be significant (see Section 2.4). It is possible that younger speakers are in general more prone to replaying audios in listening comprehension tasks compared to older speakers, irrespective of the audio content.

Lastly, there seems to be a small difference in the reaction time for test items and for all items in the two groups. Indeed, the mean reaction time for test items in younger participants is higher than in older participants, with 485 ms against 448 ms respectively. By contrast, the mean reaction time for all items in younger participants is lower than in older participants, with 388 ms against 414 ms respectively. However, again, these differences are not large enough to be statistically significant.

4. Discussion and conclusion

According to the data presented in Section 3, the first prediction was only partially met. Indeed, on the one hand the younger participants exceeded the expectations and categorized [j:] as /ʎ/ not only more often than the older participants, but also more often than as /j/. Indeed, the younger subjects selected /ʎ/ twice as much as /j/. On the other hand, the older subjects did select /j/ more often than /ʎ/, however the latter still amounted to one third of the total group responses. This means that there is a significant generational difference in the perception of the sound [j:], but also that said sound is perceived as ambiguous not only by younger speakers, but also by older ones. Such ambiguity could be explained in two ways. One possible explanation is that both older and younger speakers consider [j:] an acceptable realization of both /j/ and /ʎ/. This assumption implies that, unlike what was posited in the first prediction, also older speakers, although to a lesser extent compared to younger speakers, are receptive to gemination and non-local realizations. Another possible explanation is that the ambiguity of [j:] arises from the fact that this sound is not a realization of either /j/ or /ʎ/ in the Italian spoken in Milan, and therefore this may have confused the participants and led them to consider both /j/ or /ʎ/ as possible answers.

As for the second prediction, the two age groups do not appear to significantly differ in how often they replayed test items. Therefore, play count cannot be considered a reliable indicator of confusion between /j/ and /ʎ/.

In addition to this, another phenomenon arose that had not been initially predicted, namely the preference for /j/ for the test item [ab:a'j:a:ɾe] in both age groups. For this item both older and

younger participants selected /j/ significantly more frequently than /ʎ/. In particular, this goes against the general pattern showed by the younger subjects, who for the other two test items selected /ʎ/ in most cases. This phenomenon could be explained by the fact that in the case of [ab:a'j:a:re] the test sound is in the onset of a stressed syllable, whereas for the other two test items it is not. There are cases in Italian in which gemination is not etymological but rather caused by the structure of the word. A prime example of that is the gemination of the first posttonic consonant in words with antepenultimate stress (e.g. Latin /le:ˈgitimum/ > Italian /leˈd͡ʒit:imo/) (Bafile, 2011a). It is thus possible that a similar phenomenon occurs involving the consonant /j/ in pretonic position. If this is the case, speakers may allow for a certain degree of gemination when /j/ is the onset of a stressed syllable, and thus accept [j:] as a possible outcome, but the same may not happen when /j/ is the onset of an unstressed syllable. It is also possible that this case of expressive gemination is reinforced by the fact that /j/, unlike most Italian consonants, lacks contrastive quantity. In any case, further research is needed to better understand the differences in behavior of /j/ in onset position of stressed versus unstressed syllables.

On the whole, these findings suggest that, although there is a significant generational difference in how the sound [j:] is phonologically categorized, all participants, irrespective of their age, seem to have found said sound ambiguous. Such ambiguity is ascribed only to the sound [j:] and not to the Milanese local realizations, which have not been tested in the present study. This means that, in order to establish whether there is an age-based confusion factor in the perception of the phonemes /j/ and /ʎ/, the two local outcomes [j] and [ʎ(:)] should be also tested. Nevertheless, one must consider that the sound [j:], despite not being a local realization, is very common in Milan due to the large presence of central-southern speakers residing in the area. Therefore, the fact that Italian speakers from Milan are inconsistent in the phonological categorization of a sound to which they are highly exposed may affect, at least on the perceptual level, the preservation of the /j/-/ʎ/ contrast in the area. In any case, further research is required to better understand the interaction between local and non-local forms in Milan, and the effect of this interaction on the preservation of phonological contrasts.

Some additional improvements could be made to this study in order to carry it out again in the future to confirm or deny the hypotheses brought forth in the present paper. First, the age difference between the two groups could be widened and the older participants could be sourced from the 1930s and the 1940s, so that there is no possibility that the immigration waves of the 1950s and 1960s could have somehow influenced their phonological perception. Secondly, it would be more advisable for the recording of the stimuli to recruit a speaker whom the participants are not

acquainted with. In this study I recorded the stimuli using my own voice. Due to the fact that a large number of the participants know me, it is possible that, in selecting the words that they had heard, they made assumptions based on their knowledge of my voice and of the way I speak. Recruiting an external speakers would prevent this issue.

In conclusion, the findings presented in this article suggest that the condition of the phonological contrast between /j/ and /ʎ/ in the Italian spoken in Milan is far from stable and is thus worth further investigation.

5. References

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6. Appendices

6.1 Appendix A

Stimuli used in the experiment

** = test items

* = ambiguous fillers

unmarked = unambiguous fillers (correct answers underlined)

The items were given in the following order to all participants:

Item n.	Audio realization	Left choice	Right choice
1	[kaˈm:i:no]	camino	cammino
2	[baˈɾa:ɾe]	barare	badare
3	[ˈfat:o]	fatto	fato
4*	[ˈku:b̥o]	cubo	cupo
5	[ˈda:to]	dato	dado
6	[kuˈʧi:no]	cucino	cugino
7*	[ˈmɔ:d̥o]	moto	modo
8	[kanˈto:ɾe]	candore	cantore
9	[dʒeˈla:ɾe]	celare	gelare
10**	[ˈpaj:a]	paglia	paia
11	[ˈfa:ɾo]	farro	faro
12*	[ˈkwand̥o]	quanto	quando
13	[ˈbe:ɾe]	bere	pere
14	[peˈla:ɾe]	pelare	belare
15*	[paˈg̊a:to]	pagato	pacato
16	[poˈte:ɾe]	podere	potere
17	[ˈmanto]	manto	mando
18*	[ˈd̥ɛt:o]	detto	tetto
19	[ˈka:ɾo]	cado	caro
20**	[ab:aˈj:a:ɾe]	abbagliare	abbaiare
21	[ˈtut:a]	tuta	tutta

Item n.	Audio realization	Left choice	Right choice
22	[ˈvaːno]	vano	vado
23	[puˈliːɾe]	pulire	punire
24*	[kamˈpaːɲa]	Campania	campagna
25	[ˈveːto]	veto	vedo
26	[ˈmɔːto]	motto	moto
27*	[ˈpeːʃe]	pece	pesce
28	[ˈkaːlo]	calo	callo
29	[salˈdaːɾe]	saltare	saldare
30**	[ˈsɔjːa]	soglia	soia

6.2 Appendix B

Number of different phonological categorizations of the sound [jː] in the three test items. All percentages have been rounded to whole numbers.

subject code	birth year	[ˈpajːa]		[abːaˈjːaːɾe]		[ˈsɔjːa]		sum	
		/j/	/ʎ/	/j/	/ʎ/	/j/	/ʎ/	/j/	/ʎ/
3833	1952	1	0	1	0	1	0	3	0
2968	1954	0	1	0	1	0	1	0	3
3710	1955	0	1	1	0	0	1	1	2
1644	1955	0	1	1	0	1	0	2	1
8619	1955	1	0	1	0	1	0	3	0
2605	1957	1	0	1	0	1	0	3	0
2407	1957	0	1	1	0	1	0	2	1
7040	1958	1	0	1	0	1	0	3	0
2134	1959	0	1	1	0	0	1	1	2
3793	1960	1	0	1	0	0	1	2	1
8938	1961	1	0	0	1	0	1	1	2
9435	1961	0	1	1	0	1	0	2	1
9077	1961	1	0	1	0	1	0	3	0
9872	1963	0	1	1	0	1	0	2	1
8862	1963	0	1	1	0	0	1	1	2
7310	1963	0	1	1	0	1	0	2	1
4	1963	1	0	1	0	1	0	3	0
7510	1964	1	0	1	0	0	1	2	1
499	1966	1	0	1	0	1	0	3	0
4355	1966	0	1	0	1	0	1	0	3
1976	1968	0	1	1	0	0	1	1	2
8373	1969	1	0	1	0	1	0	3	0
sum old		11	11	19	3	13	9	43	23
%		50	50	86	14	59	41	65	35

subject code	birth year	[ˈpajːa]		[abːaˈjːaːɾe]		[ˈsɔjːa]		sum	
		/j/	/ʎ/	/j/	/ʎ/	/j/	/ʎ/	/j/	/ʎ/
8216	1992	0	1	1	0	0	1	1	2
603	1995	0	1	0	1	0	1	0	3
6846	1996	0	1	0	1	0	1	0	0
5081	1997	1	0	1	0	0	1	2	1
8455	1997	0	1	1	0	0	1	1	2
7448	1997	0	1	0	1	0	1	0	3
8156	1997	1	0	1	0	0	1	2	1
6427	1997	0	1	1	0	0	1	1	2
502	1997	0	1	0	1	0	1	0	3
2994	1997	0	1	1	0	0	1	1	2
4845	1997	0	1	1	0	0	1	1	2
8242	1997	0	1	0	1	0	1	0	3
1995	1997	0	1	0	1	1	0	1	2
7462	1997	1	0	1	0	1	0	3	0
7665	1997	0	1	1	0	0	1	1	2
3330	1997	0	1	1	0	0	1	1	2
208	1997	0	1	0	1	0	1	0	3
7571	1997	1	0	1	0	0	1	2	1
8567	1998	0	1	1	0	0	1	1	2
7971	1998	0	1	0	1	0	1	0	3
2322	1999	1	0	1	0	0	1	2	1
5746	2000	0	1	0	1	0	1	0	3
1053	2000	1	0	1	0	1	0	3	0
sum young		6	17	14	9	3	20	23	43
%		26	74	61	39	13	87	35	65

6.3 Appendix C

Play count for the three test items and for all items. All percentages have been rounded to whole numbers.

subject code	birth year	[ˈpajːa]		[abːaˈjːaːɾe]		[ˈsɔjːa]		test items		all items	
		once	twice	once	twice	once	twice	once	twice	once	twice
3833	1952	1	0	1	0	1	0	3	0	30	0
2968	1954	0	1	1	0	1	0	2	1	20	10
3710	1955	1	0	1	0	1	0	3	0	24	6
1644	1955	1	0	1	0	1	0	3	0	30	0
8619	1955	1	0	1	0	1	0	3	0	30	0
2605	1957	1	0	1	0	1	0	3	0	25	5
2407	1957	1	0	1	0	1	0	3	0	30	0
7040	1958	1	0	1	0	1	0	3	0	27	3
2134	1959	1	0	1	0	0	1	2	1	30	0
3793	1960	1	0	1	0	1	0	3	0	30	0
8938	1961	0	1	0	1	1	0	1	2	23	7
9435	1961	0	1	1	0	0	1	1	2	20	10
9077	1961	1	0	1	0	0	1	2	1	25	5
9872	1963	1	0	1	0	0	1	2	1	25	5
8862	1963	1	0	1	0	1	0	3	0	30	0
7310	1963	1	0	1	0	0	1	2	1	24	6
4	1963	1	0	1	0	1	0	3	0	30	0
7510	1964	0	1	1	0	1	0	2	1	29	1
499	1966	1	0	1	0	1	0	3	0	30	0
4355	1966	1	0	1	0	1	0	3	0	30	0
1976	1968	1	0	0	1	1	0	2	1	27	3
8373	1969	1	0	1	0	1	0	3	0	30	0
sum old		18	4	20	2	17	5	55	11	599	61
%		82	18	91	9	77	23	83	17	91	9

subject code	birth year	[ˈpaj:a]		[ab:aˈj:a:ɾe]		[ˈsɔj:a]		test items		all items	
		once	twice	once	twice	once	twice	once	twice	once	twice
8216	1992	1	0	0	1	1	0	2	1	24	6
603	1995	1	0	1	0	1	0	3	0	28	2
6846	1996	1	0	1	0	1	0	3	0	26	4
5081	1997	0	1	1	0	1	0	2	1	21	9
8455	1997	0	1	1	0	1	0	2	1	24	6
7448	1997	0	1	0	1	1	0	1	2	17	13
8156	1997	0	1	0	1	1	0	1	2	24	6
6427	1997	0	1	1	0	0	1	1	2	23	7
502	1997	0	1	0	1	0	1	0	3	3	27
2994	1997	1	0	1	0	1	0	3	0	30	0
4845	1997	0	1	0	1	1	0	1	2	3	27
8242	1997	1	0	1	0	1	0	3	0	25	5
1995	1997	0	1	0	1	0	1	0	3	21	9
7462	1997	1	0	1	0	1	0	3	0	27	3
7665	1997	0	1	1	0	1	0	2	1	11	19
3330	1997	0	1	1	0	1	0	2	1	24	6
208	1997	1	0	1	0	1	0	3	0	26	4
7571	1997	1	0	1	0	1	0	3	0	30	0
8567	1998	0	1	0	1	0	1	0	3	21	9
7971	1998	1	0	1	0	1	0	3	0	29	1
2322	1999	1	0	1	0	1	0	3	0	30	0
5746	2000	1	0	1	0	1	0	3	0	23	7
1053	2000	1	0	1	0	0	1	2	1	24	6
sum young		12	11	16	7	18	5	46	23	514	176
%		52	48	70	30	78	22	67	33	74	26

6.4 Appendix D

Reaction times for the three test items, mean reaction time for the three test items and mean reaction time for all items. All reaction times are in milliseconds. The mean reaction times have been rounded to whole numbers.

subject code	birth year	[ˈpajːa]	[abːaˈjːaːɾe]	[ˈsɔjːa]	test mean	general mean
3833	1952	428.6	322	439.6	397	375
2968	1954	612.1	517.2	392.7	507	556
3710	1955	375.5	287	327.9	330	347
1644	1955	321.3	596	450.5	456	361
8619	1955	363.7	316	268.8	316	315
2605	1957	317.5	264.3	217.6	266	438
2407	1957	269.1	316.2	404.1	330	352
7040	1958	288.8	307.1	279.8	292	363
2134	1959	483.2	353.6	572.4	470	364
3793	1960	187.4	221.8	196.8	202	315
8938	1961	962.8	879.8	339.5	727	517
9435	1961	815.1	323.3	708.6	616	576
9077	1961	662.5	419.7	1178.9	754	706
9872	1963	1766.3	409.9	622.7	933	813
8862	1963	191	264.1	232.4	229	233
7310	1963	539.2	663.7	840.8	681	511
4	1963	281	266.1	230	259	296
7510	1964	1757.4	294.7	332.7	795	344
499	1966	344.7	235	242.1	274	280
4355	1966	180.7	195.8	202.9	193	259
1976	1968	431.8	745	420.2	532	432
8373	1969	315.7	313.3	285	305	352
mean old		541	387	418	448	414

subject code	birth year	[ˈpajːa]	[abːaˈjːaːɾe]	[ˈsɔjːa]	test mean	general mean
8216	1992	160.6	363.4	184.8	236	248
603	1995	199	194	297.8	230	271
6846	1996	470	258.3	206	311	278
5081	1997	406.8	241.1	167.8	272	310
8455	1997	530.7	691.8	248.7	490	429
7448	1997	1021.2	616.2	603.3	747	661
8156	1997	1505.7	607.5	412.9	842	489
6427	1997	553.3	322.3	702.8	526	434
502	1997	356.1	540.4	433.4	443	405
2994	1997	699.1	314.7	225	413	336
4845	1997	1862.6	1902.4	553.2	1439	839
8242	1997	347.7	303.9	263.3	305	413
1995	1997	468.3	964.5	1696.8	1043	353
7462	1997	305.3	215.1	359	293	354
7665	1997	660.2	284.7	269.5	405	551
3330	1997	881.5	455.4	420.9	586	402
208	1997	377.8	357.8	199.4	312	306
7571	1997	869	318.2	249.6	479	294
8567	1998	402.9	641.6	416.4	487	319
7971	1998	517.4	547.2	331	465	366
2322	1999	240.4	254.6	240	245	262
5746	2000	168.8	270.3	242.3	227	304
1053	2000	253.2	255.4	568.9	359	300
mean young		576	475	404	485	388