

DESUGA ですが AND THE SPREAD OF VOICING FEATURE IN L2 JAPANESE

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Abstract

It has been observed that Slovene students of Japanese tend to pronounce formal verb suffix ~ます ~*masu* or formal copula です *desu* followed by a conjunctive particle が *ga* as [...mazga...] and [...dezga...]. Present acoustic experiment confirms these perceptual observations. The author discusses phonological processes of Japanese and Slovene, and discusses possible reasons for the mispronunciations. She finds out that similarities in the surface phonetic form of the above expressions first introduced cause students to misinterpret Japanese vowel devoicing as vowel elision, the process which is familiar to them from L1. Consequently, any further conclusions built on such thinking would lead to further mispronunciations.

Keywords: phonology; [+voice] feature spread; Japanese; Slovene; second language learning

Izvleček

Pri vajah iz japonskega jezika opazamo, da študentje izgovarjajo formalno glagolsko pripono ~ます ~*masu* ali pa pomožni glagol v formalni obliki です *desu*, katerima sledi vezni členek が *ga*, kot [...mazga...] oziroma [...dezga...]. Tokratni akustični eksperiment potrjuje naša slušna opazanja, v članku pa avtorica primerja fonološke procese v japonščini in slovenščini ter razpravlja o vzrokih, ki privedejo do nepravilne izgovarjave. Ugotavlja, da podobnost fonetične realizacije najprvo usvojenih izrazov privede do napačne /nezavedne/ interpretacije japonske izgube zvenečnosti na visokih samoglasnikih kot izgube samoglasnika, torej procesa, ki obstaja tudi v slovenščini, s čimer vsako nadaljnje sklepanje privede do nepravilnosti v izgovarjavi.

Ključne besede: fonologija; širjenje lastnosti [+zveneč]; japonščina; slovenščina; učenje tujega jezika

1. Introduction

High vowels /i/ and /u/ in standard Japanese tend to be devoiced when occurring between voiceless consonants, or after a voiceless consonant and before a pause. This phenomenon has been studied extensively in terms of its mechanism (Sakuma, 1929; McCawley, 1968; Kawakami, 1977; Nihon Housou Kyoukai, 1985; Vance, 1987, 1992; Yoshida, 1997; Kubozono, 1999 etc.), phonetic realizations (Fujisaki & Sugito, 1977; Tsuchida, 1997; Kondo, 2005; Varden, 2010, etc.), social aspects (Yuen, 1997; Imai, 2004, 2010), and dialectal differences (Shibatani, 1990), and it is commonly included in even most basic descriptions of Japanese pronunciation.

Slovene students of Japanese get acquainted with vowel devoicing – though not being aware of the phenomenon yet – through a formal copula です in their very first lessons. In later months they also meet with its theory and further examples, and in overall they seem to master Japanese vowel reduction with relative ease. However, while the production of devoiced vowels generally poses no problem to Slovene speakers of Japanese, it is rather its overgeneralization that triggers a faulty pronunciation. The result of this language-acquisition concept (Selinker, 1972) is well observed in the case of formal verb suffix ~ます ~*masu* or formal copula です *desu* followed by a conjunctive particle が *ga*, which are very often pronounced as [...mazga...] and [...dezga...] respectively.

This study acoustically examines the presence of the above mispronunciation, and discusses phonological processes which collaborate in such output by comparing Japanese (L2) and Slovene (L1) phonological structure.

2. Japanese: vowel elision vs. the loss of [+voice] vowel feature

Vowel elision is one of the reduction phenomena, generally defined as a process in which phonological material, c.f. vowel is lost in speech due to easier pronunciation. Diachronic vowel elision is triggered by the phonotactic constraints of the respective language, and their changes in time. Synchronic vowel elision, on the other hand, is very likely to be found in stress-accent languages, in which it is the consequence of articulatory undershoot or, in other words, extreme phonetic reduction in unstressed syllables (Hyman, 1975; Wheeler, 1979; Kohler, 1990). Vowel elision may occur in any position within a word, or across word boundaries, and is independent of the surrounding sounds.

In Japanese, a pitch-accent language¹, vowel elision is a possible interpretation of a reduced across-boundary form of the aspectual use of the verb *～いる* *-iru* ‘to be’ and *～いく* *-iku* ‘to go’, for example 家まで歩いてく *uchimade aruiteku* ‘I will go home on foot’ (Toki, 1972; Kawase, 1992), though phenomenon is suggested to be better explained through vowel coalescence² (Kubozono, 1999; Toda, 2004).

There are conflicting arguments on whether Japanese formal verb ending *～ます* *~masu* or formal copula *です* *desu* can be interpreted as the vowel elision process (Ogasawara, 2013; Vance, 1987, 2008; Yoshioka, 1981; Hirose, 1971) or does it employ a different process called vowel devoicing (Varden, 1998, 2010b; Han, 1962, 1994; Tsuchida, 1997, 2001). On a surface form of a vowel alone, it may seem similar to word-final vowel elision in stress-accent languages³. However, vowel devoicing shows no dependency on phonetic shortness as it also occurs in slow or formal speech (Kondo, 1995), and is thus ‘not merely an optional process in fast or casual speech, but a phonologically controlled process’ (Kondo, 2005, p. 229).

Japanese vowel devoicing is restricted to high vowels /i/ and /u/, and undergoes several phonetic and phonological rules such as types of surrounding consonants (Kuwabara & Takeda, 1988; Yoshida & Sagisaka, 1990), presence of accent on the vowel (Takeda & Kuwabara, 1987; Hattori, 1989), position in a word or utterance (Maekawa, 1989; Takeda & Kuwabara, 1987), and following word boundary (Sakurai, 1985). And upon the above rules, all studies agree that in the consecutive devoicing environment only some devoiceable vowels undergo the devoicing process (Tsuchida, 2001).

2.1 Recoverability-driven vowel devoicing: the problematic case of *～ますが* and *ですが*

The conflicting arguments on whether a phonological process on vowels is vowel elision or vowel devoicing, as described in the previous section, are well soothed down by Whang, who suggests a relatively consistent definition and experimental design to accurately describe acoustic properties of high vowel devoicing and factors that affect the process (Whang, 2013). He proposes yet another phonological factor in favour of

¹ Japanese accent is realized through [±high] prosodic feature on each moraic unit of a phonological word.

² In [phonetics](#) and [historical linguistics](#), vowel coalescence is the merger of [features](#) of two [segments](#) into one feature, and is very common in hiatus. In Japanese, the phenomenon simplifies the explanation of any reduced forms in Japanese connected speech (Toda 2006).

³ Acoustically, a completely devoiced vowels in Japanese do not show a periodic wave, have no clear formants in a spectrogram, and shows a drop in intensity and no pitch track.

vowel devoicing; that is the fact oral gestures of a vowel are retained but only voicing is lost, which can be understood from the features of the proceeding consonant

Recoverability of the vowel in a given context seems to be the primary force driving the process. The vowel deletes after [ç, ø, s, t̚, ts], where the vowel is completely predictable, and thus the consonant alone suffices to recover the identity of the underlying vowel. On the other hand, deleting the vowel after [k, ɕ] jeopardizes the recoverability of the vowel since both /i, u/ can occur in these contexts, and thus the oral gestures of the underlying vowel are retained even though it devoices.

3. Slovene interpretation of Japanese vowel devoicing and its consequences

Perceptual evaluations of pronunciation in Japanese classes reveal that there is a very strong tendency among Slovene students to pronounce formal verb ending ~ます ~*masu*, or formal copula です *desu*, followed by a conjunctive particle が *ga* as [...mazga...] and [...dezga...] respectively. The following experiment examines the extent of such mispronunciation on the lower-intermediate level of Japanese as L2, and discusses the reasons for it.

3.1 Experiment

In the experiment, 2 native Japanese speakers from Tokyo area and 20 students of Japanese on lower-intermediate level were asked to read 22 sentences which included formal verb ending ~ます ~*masu* or formal copula です *desu* in the final position of the prosodic phrase (3+3 items for each), followed by a conjunctive particle が *ga* (5+5 items for each), or followed by a sentence particle か *ka* (3+3 items for each), respectively (see Table 1 for details). Sentences were read three times each in random order, and the second reading was then taken as pronunciation material for analysis.

Collected data was perceptually evaluated by the author. Acoustic analysis was further conducted to confirm perceptual evaluation, and to analyze data into details. Analysis was conducted with Praat⁴ program. Main focus was on acoustic material including the sequence /desuga/ and /masuga/, while sentences including /desu/ and /masu/, or /desuka/ and /masuka/ were used for comparison.

Table 1: Experiment material

⁴ Praat: doing phonetics by computer. (<http://www.fon.hum.uva.nl/praat/>)

No.	Example	Transliteration
1.	(電話で)私、田中と申し ます が、ご主人はいらっしゃいますか。	/denwade/ Watasi, tanakato moosimasuga, gosyujinwa irassyaimasuka.
2.	書き方がわからない い ん です が、教えてください。	Kakikataga wakaranain desuga , osiete kudasai.
3.	桜はきれい い ん です が、香りはありません。	Sakurawa kiree desuga , kaoriwa arimasen.
4.	ここから富士山が見え ます が、いかがですか。	Kokokara fujisanga miemasuga, ikaga desuka.
5.	この映画は面白い い ん です が、長すぎます。	Kono eegawa omosiroi desuga , nagasugimasu.
6.	ふつうは毎日公園に行き ます が、今日には行きませんでした。	Hutuuwa mainiti kooen'e ikimasuga, kyoowa ikimasendesita.
7.	早く春が来るといい い ん です が...	Hayaku haruga kuruto iin desuga ...
8.	彼女が独身だとい い ん です が...	Kanojoga dokusindato iin desuga ...
9.	部長は今会議中ではござ い ます が ...	Butyoowa ima kaigityuu degozaimasuga...
10.	私も行き ます が...	watasimo ikimasuga...
11.	象は鼻が長い い です。	Zoowa hanaga nagai desu .
12.	明日は日曜日 い です。	Asitawa nitiyoobi desu .
13.	あそこに桜が咲いて い ます。	Asokoni sakuraga saite imasu .
14.	秋になると、台風が心配 い です。	Akini naruto, taihuuga sinpai desu .
15.	どうもありがとうございます。	Doomo arigatoo gozaimasu.
16.	来年は、アメリカへ行こうと考 え て い ます。	Rainenwa, amerikae ikooto kangaete imasu .
17.	郵便局はどこに あ ります か 。	Yuubinkyokuwa dokoni arimasuka .
18.	どの人が課長 い ですか。	Dono hitoga katyoo desuka .
19.	寿司と天ぷらとど ち らが好き い ですか。	Susito tenpurato dotiraga suki desuka .
20.	明日のパーティーに行き ま す か 。	Asitano paathiini ikimasuka.
21.	これは誰の傘 い ですか。	Korewa darenō kasa desuka .
22.	この人は学生 い ですか。	Kono hitowa gakusee desuka .

3.2 Results

General results of perceptual evaluation and acoustic analysis confirm the observations in classrooms that many Slovene students of Japanese pronounce the sound sequence of a formal verb suffix *~ます ~masu* or formal copula *です desu* followed by a conjunctive particle *が ga* incorrectly. Figure 1 shows that there is only 30% of students who consistently use Japanese vowel devoicing correctly. Corectness of vowel devoicing in this experiment is analyzed on the basis of speakers correct recovery of the devoiced vowel in /masu/ and /desu/ when followed by /ga/.

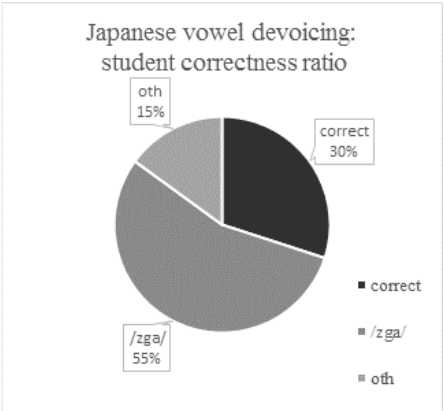
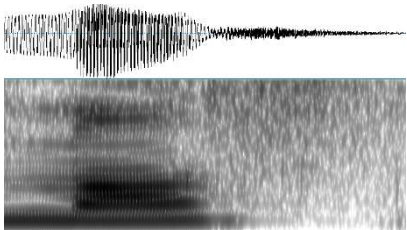


Figure 1: Slovene students correctness ratio

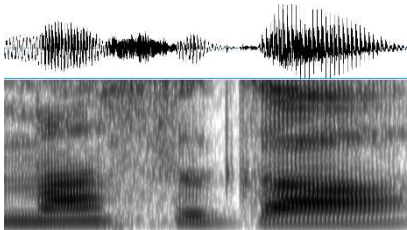
It is here to be described as to what is an expected pronunciation, and what are its acoustic characteristics. Spectrograms 1a-1c show acoustic realizations of /masu/, /masuga/, and /masuka/, respectively, pronounced by a Japanese speaker.

Spectrogram 1a-1c: Acoustic realizations of /masu/, /masuga/, and /masuka/ by a Japanese speaker

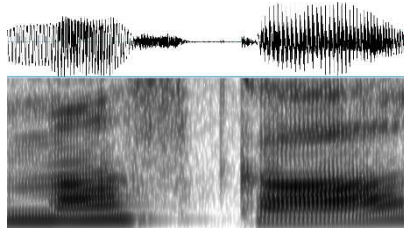
1a) /masu/



1b) /masuga/



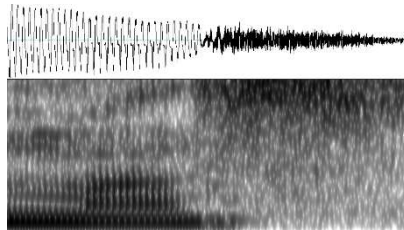
1c) /masuka/



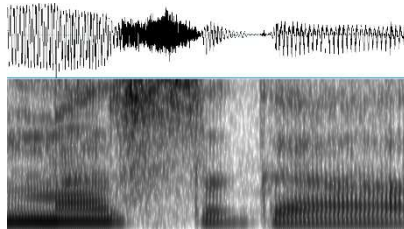
Similar acoustic realization are found for those Slovene speakers of Japanese who had their pronunciation evaluated as correct. Spectrograms 2a-2c show acoustic realizations of /masu/, /masuga/, and /masuka/, respectively, pronounced by a Slovene speaker who consistently followed vowel devoicing.

Spectrogram 2a-2c: Acoustic realizations of the ‘correct’ /masu/, /masuga/, and /masuka/ by a Slovene speaker

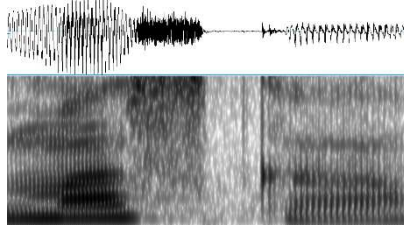
2a) /masu/



2b) /masuga/



2c) /masuka/



According to Figure 1 above, 70% of students have difficulties recovering the devoiced vowel when followed by a voiced consonant. 55% of them all never recover it, even more, they assimilate the neighbouring consonants in the way that the voiceless consonant proceeding the supposed devoiced vowel gets voiced. Pronunciations are

thus realized as /mazga/ and /dezga/, as was observed during Japanese classes. Looking at the results of respective items in Figure 2, there were 118 items or 59% of all 200 items that were mispronounced in the same way.

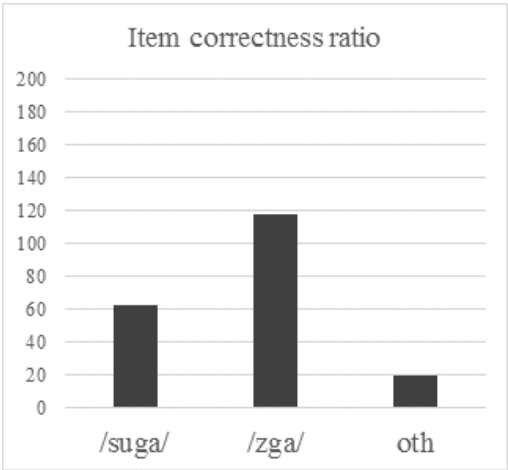
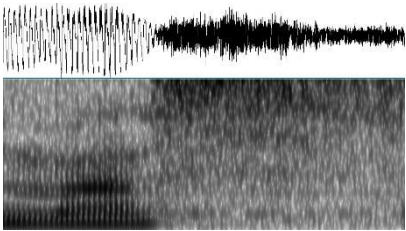


Figure 2 : Pronunciation of /desuga/ and /masuga/ by Slovene speakers of Japanese

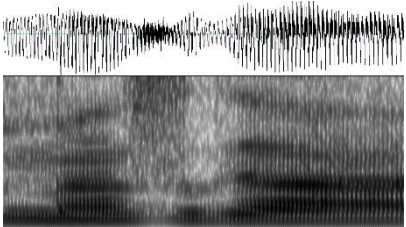
The change from voiceless to voiced fricative is obvious in Spectrogram 3b, where constant periodic wave continues from the proceeding nasal sound /m/ and vowel /a/ throughout the fricative and onto the voiced plosive.

Spectrogram 3a-3c: Acoustic realizations of the ‘correct’ /masu/, /masuga/, and /masuka/ by a Slovene speaker

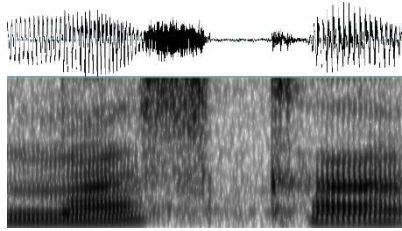
3a) /masu/



3b) /masuga/



3c) /masuka/



Detailed analysis revealed that there is yet one more statistically significant difference, that is the correctness ratio between /masuga/ and /desuga/. Among students who inconsistently recovered the devoiced vowel there was a tendency to correctly pronounce /masuga/ while /desuga/ was pronounced in the /dezga/ pattern (Figure 3). The reasons for it should probably be looked for in students native Slovene.

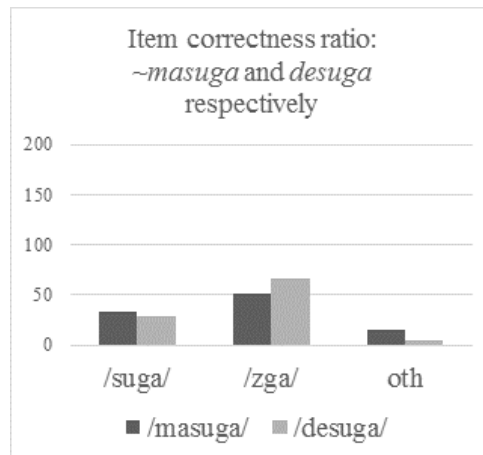
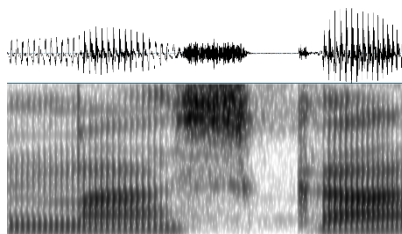
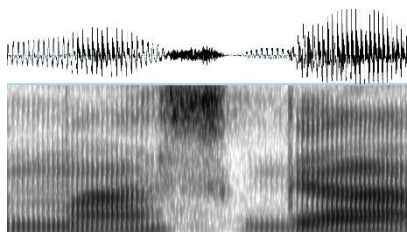


Figure 3: Pronunciation differences between /desuga/ and /masuga/ by Slovene speakers of Japanese

Interestingly, there were cases of two more strategies observed in the pronunciation of /masuga/ and/or /desuga/. Both of them base on the presumption that high vowels in /masu/ and /desu/ are elided. While one of them uses assimilation into voiceless on the consequently consecutive consonants (Spectrogram 4), the other one maintains the sequence voiceless fricative – voiced plosive (Spectrogram 5) but only in the case of /masuga/.

Spectrogram 4: Assimilation into /-voice/ strategy**Spectrogram 5:** Voiceless fricative and its following voiced plosive

4. Conclusion

It has been observed that Slovene students of Japanese tend to pronounce formal verb suffix ~ます ~*masu* or formal copula です *desu* followed by a conjunctive particle が *ga* as [...mazga...] and [...dezga...]. Present acoustic experiment confirms these perceptual observations. The author discusses phonological processes of Japanese and Slovene, and discusses possible reasons for the mispronunciations. She finds out that similarities in the surface phonetic form of the above expressions first introduced cause students to misinterpret Japanese vowel devoicing as vowel elision, the process which is familiar to them from L1. Consequently, any further conclusions built on such thinking would lead to further mispronunciations.

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