

Acquiring social characteristics of phonetic variants in L2: The case of L2 perception of Japanese tap /ɾ/ and velar stop /g/

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Whether L2 learners can distinguish an L2 contrast at the linguistic level has been extensively studied [1]. However, the sociophonetic aspect of L2 learning, especially in a non-English context, remains unexplored, i.e., whether the L2 learners can connect the phonetic variant of an L2 sound with corresponding social characteristics like native speakers do [2]. Therefore, the present study examined the L2 sociophonetic perception of two Japanese phonemes, /ɾ/ and /g/, which have socially marked phonetic variants. In Japanese, the apical tap /ɾ/ can be realized as a trill [r] variant associated with a ‘gangster’ speech style, implying aggressiveness or vulgarity [3,4]. The velar stop /g/ also has a socially marked nasal [ŋ] variant occurring in non-initial positions, e.g., /dai.ga.ku/ ‘university’ can be pronounced as [dai.ŋa.ku]. Nowadays, the use of [ŋ] has mostly been replaced by [g] and [ŋ] is typically heard only among older speakers [5]. Despite this, it retains prestige in specific contexts, such as news broadcasting, and is part of professional training for Japanese teachers, announcers, and voice actors, potentially conveying an impression of being more proper and traditional.

Seventeen L1-Mandarin L2 Japanese learners (7M, 10F) participated in a matched-guise experiment. We had 8 stimuli for the /ɾ/ sound by varying speaker’s gender (female vs. male), emotion (neutral vs. angry), phonetic variant ([ɾ] vs. [r]) of 1 target sentence, and another 8 stimuli for the /g/ sound by varying speaker’s gender and variant ([g] vs. [ŋ]) of 2 target sentences, along with 4 filler items (see Table 1). The stimuli for the [ɾ] vs. [r] and the [g] vs. [ŋ] contrasts were produced by two separate pairs of Japanese speakers, each consisting of one male and one female. Natural, unedited stimuli were used for the [g] vs. [ŋ] contrast. For the [ɾ] vs. [r] contrast, sentences with [ɾ] were used as base sentences and sentences with [r] were created by replacing the [ɾ] in the base sentences with [r]. Additionally, some [r] sounds were manually adjusted to increase the number of lingual constrictions for a clearer distinction from [ɾ]. Participants rated each recording along 11 traits, such as education level, attractiveness, and politeness, using a 10-point scale. We employed Principal Component Analysis (PCA) to distill the 11 traits into 3 principal components, followed by fitting separate linear mixed-effects models (see the model details below) to examine how Phonetic Variant ([ɾ] vs. [r] or [g] vs. [ŋ]), Speaker Gender (female vs. male) and other factors affected each component’s scores.

A principal component termed “social desirability” emerged for both contrasts, reflecting valued social qualities like being well-educated, attractive, polite, elegant, standard pronunciation, etc. For the [ɾ] vs. [r] contrast, our findings indicate that the trill [r] sound consistently resulted in lower social desirability ratings, irrespective of the emotion conveyed or the speaker’s gender (see Fig. 1). This consistent negative perception of the [r] variant may be attributed to its stereotypical association with gangster-like characters in Japanese media. In the case of the [g] vs. [ŋ] contrast, we observed an interaction between Phonetic Variant and Speaker Gender. Female voices using the [ŋ] variant tended to receive slightly higher social desirability scores, though not statistically significant. Conversely, the [ŋ] variant in male voices led to a significant reduction in its scores. This discrepancy could suggest that the softer [ŋ] sound may be perceived as less congruent with male speakers for our participants. In other words, it might reveal the gender-based expectations for the use of [ŋ] or the possibility that the [ŋ] variant aligns better with femininity, constructed by L2 learners during their learning.

Our study suggests that L2 learners are aware of the social characteristics associated with different variants of an L2 sound. More data from native Japanese speakers are needed to have a clearer picture of the indexicality of different variants, and for comparison with L2 learners. Additionally, interview with the participants would provide additional insights.

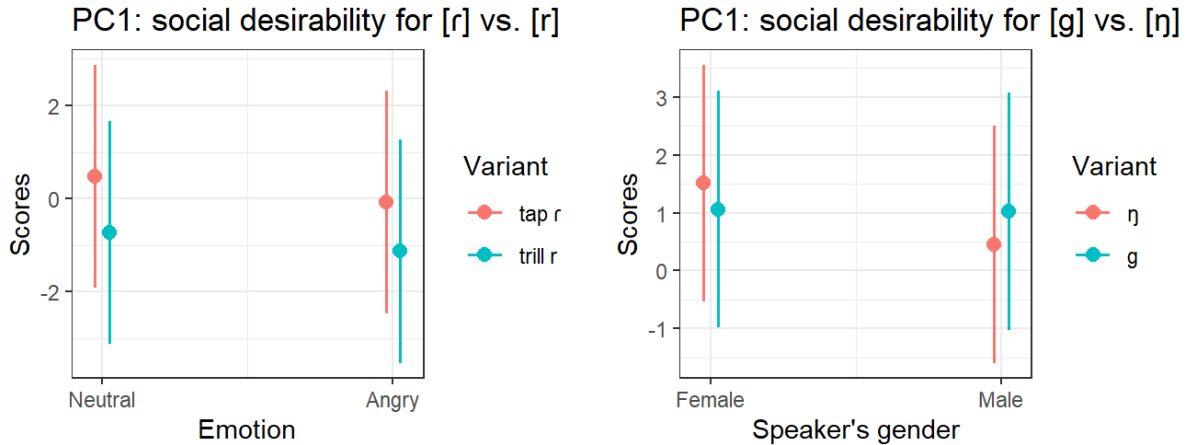


Fig. 1. Social desirability scores for [r] vs. [r] (left) and [g] vs. [ŋ] (right)

LME model for [r] vs. [r]: `lmerTest::lmer(PC1 ~ Speaker*Variant*Emotion + Age + Gender + Length_of_learning + JLPT + Exposure + Productive + Receptive + Immersion + L1_dialect + (1|id), data_r)`

LME model for [g] vs. [ŋ]: `lmerTest::lmer(PC1 ~ Speaker*Variant*Sentence + Age + Gender + Length_of_learning + JLPT + Exposure + Productive + Receptive + Immersion + L1_dialect + (1|id), data_g)`

Table 1. Stimuli of the study

Target sentence for [r] vs. [r]:

(1)	鍵は	机に	置いてある	だろう。
	Kagi-ha	tsukue-ni	oite-aru	darou
	Key-TOP	Desk-LOC	place-EXIST	PROB
	“The key should be on the desk”			

Target sentence for [g] vs. [ŋ]:

(2)	大学行きの	バスが	遅刻に	なる。
	Daigaku-yuki-no	basu-ga	chikoku-ni	naru.
	University-going to-GEN	Bus-NOM	late-TO	become.
	“The bus going to the university will be late”			
(3)	おみやげとして	中国の	鏡を	送った。
	Omiyage-toshite	chuugoku-no	kagami-wo	oku-tta.
	Souvenir-as	China-GEN	mirror-OBJ	send-PAST
	“I sent a Chinese mirror as a souvenir.”			

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