2aSC9 Perception of English Resyllabification by Monolingual Japanese Listeners

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BACKGROUND

Perceptual resyllabification

- Perceptual resyllabification is a phenomenon that coda (VC) structures are perceived as onset (CV) structures as speech rates increase. (Stetson, 1951)
- Perception of resyllabified CV structures isn't 100%. (Lim et al., 2001)
- Perceptual resyllabification affects voicing perception, *i.e.* /p/ is perceived as /b/. (de Jong et al., 2002, Lim et al., 2001)
- Japanese and Korean listeners shows resyllabification perception. (Nagao et al., 2001)

Cross-language comparison
   (de Jong et al., 2002, Lim et al., 2001, Nagao et al., 2001)

1. Cross-language perceptual resyllabification happens.
2. Degree of resyllabification differs in non-native listeners. Japanese exhibited a bias toward the CV structures.
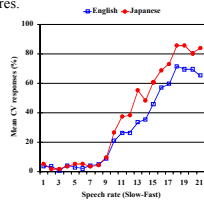
Mean CV responses for the VC inputs by English & Japanese.

3. Voicing categorization is affected by non-native voicing distinctions. Japanese showed preference for /p/ responses whereas English did not show such preference.
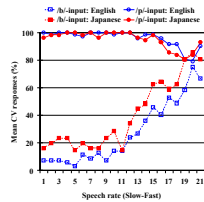
Mean /p/ responses for the CV inputs by English and Japanese.

Unanswered question

- Most of the subjects resided in Bloomington, IN for more than three years.
- → Their near native level performance for this task might be due to extensive exposure to English.

RESEARCH QUESTIONS

- Does extensive exposure to English have an influence on Japanese perceptual resyllabification?

1. Resyllabification

Do Japanese listeners who have little exposure to English also exhibit perceptual resyllabification?

IF they do,

2. Bias at Fast rate speech

Is speech rate effect stronger in monolingual Japanese than bilingual Japanese?

3. Voicing

Is the degree of bias stronger in monolingual Japanese than bilingual Japanese?

METHODS

Stimuli:

- Four original utterances were spoken by four native speakers of American English.
- Repeated syllables for each utterance were either /ib/, /ip/, /bi/, or /pi/.
- Repetition rate started slow (450 ms/s) and ended fast (200 ms/s). Rate was controlled with a metronome.
- 21 stimuli were spliced from each original utterance.
- Each stimulus contained three syllables.
- Total number of stimuli was 336.

Splice: From vowel offset to vowel onset
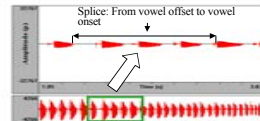
An example of spliced stimuli -/pi/.

Subjects:

Monolingual group: 20 native Japanese listeners in Japan.

- None (except one) had stayed in foreign countries for more than five days.
- None had taken any English classes outside of a regular school system.
- English education in Japan has placed little importance on listening and speaking skills hence we do not consider taking English in Japanese regular schools count as exposure to English speech.

Control group: Same subjects in the previous study (Nagao et al., 2001).

Target Listeners	Japanese Monolingual Younger group (JMY)	Japanese Monolingual Older group (JMO)
N(Male:Female)	12 (0:12)	8 (2: 6)
Age(Mean)	18 - 21 (19.7)	42 - 60(51.6)

Control Listeners	Japanese Experienced (JE)	English (ENG)
N(Male:Female)	14 (4:10)	18 (0:18)
Age(Mean)	21 - 31 (24.4)	18 - 23(20)

Tasks: Identification Test with 4 alternative choices

- One response per stimulus.
- Listeners were allowed to listen to each stimulus as many times as they wished.
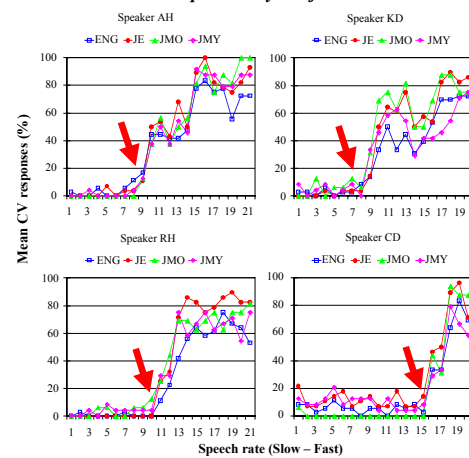
RESULTS

Perceptual Resyllabification

Speaker AH — Speaker KD — Speaker RH — Speaker CD (ENG, JE, JMO, JMY)
Mean CV responses (%) vs Speech rate (Slow – Fast), 1–21

Figure. Mean CV responses for the VC inputs (/ib/ and /ip/) by four groups.

JE	: Japanese Experienced
JMO	: Japanese Monolingual Older group
ENG	: English natives
JMY	: Japanese Monolingual Younger group

1. Perceptual resyllabification

All listener groups exhibit perceptual resyllabification at the same shifting points (indicated by red arrows).

2. Fast rate effects

- Bias toward CV responses at fast rate by JE and JMO.
- JMY tends to show bias toward VC responses (except Speaker AH).

2-way ANOVA (group*talker) for fast rate (#16 to #21).

Table. Sheffe's post-hoc test results (* indicates significant results)

Fast inputs	ENG	JE	JMY	JMO
ENG	-	*	ns	*
JE		-	*	ns
JMY			-	*
JMO				-

Fast inputs	AH	CD	KD	RH
AH	-	*	*	*
CD		-	ns	ns
KD			-	ns
RH				-

Voicing Perception

/bi/ inputs — /ib/ inputs (ENG, JE, JMO, JMY)
Mean /p/ responses (%) vs Speech rate (Slow – Fast), 1–21

Figure. Mean /p/ responses for the voiced inputs (/bi/ and /ib/) by four groups.

3. Voicing

Bias toward /p/ for /b/-inputs by Japanese.

2-way ANOVA (group* rate) group={ENG, JE, JMO, JMY} rate ={slow, mid, fast}

Table. Sheffe's post-hoc test results (* indicates significant results)

/bi/ inputs	ENG	JE	JMY	JMO
ENG	-	*	*	*
JE		-	*	*
JMY			-	ns
JMO				-

/ib/ inputs	ENG	JE	JMY	JMO
ENG	-	*	ns	*
JE		-	ns	ns
JMY			-	*
JMO				-

SUMMARY

1. Monolingual Japanese listeners show perceptual resyllabification.
2. At fast rate, the older monolingual Japanese(JMO) show CV-bias as strong as Japanese with a lot of exposure to English(JE), while the younger Japanese (JMY) show VC-bias.
3. Monolingual Japanese show stronger bias toward their native voiced category.

DISCUSSION

- How can Japanese monolinguals perceive the slow VC inputs almost perfectly if they don't have such a category in Japanese?

  According to the Perceptual Assimilation Model (Best, 1995), VC and CV inputs in this study can be analyzed as Uncategorized-Categorized pairs, which is expected to yield good discrimination.

- Why did the younger group (JMY) show bias toward VC identification than the older group(JMO), for fast speech?

  We consider this is due to perceptual 'hyper-correction'. Listeners with knowledge of English devoid of spoken content tend to associate any oddity in spoken stimuli with alien category.

CONCLUSIONS

- Perceptual resyllabification is a robust phenomenon.
- Influence from Japanese seems stronger when the listeners have little to no exposure to English.
- However, the effects of native language is weaker before a new category has fully developed.

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