Researching, Learning and Training *Late* Second Language Speech

Kazuya Saito

Email: k.Saito@bbk.ac.uk

Web: http://kazuyasaito.net/

Birkbeck
UNIVERSITY OF LONDON

My background:

I am a late bilingual (Japan → US → Canada → UK)…

Therefore, my research interest lies in **late** L2 speech learning (age of acquisition > **16** years)

Organization

1. Theories on late L2 speech learning
   - Speech Learning Model (Flege)
   - Critical Period Hypothesis (Abrahamsson, DeKeyser)

2. Previous empirical studies

3. My research projects

4. Extra topic (designing an optimal training method)

For ppt slides, please check the following:

- **My personal website**:
  - http://kazuyasaito.net/

- **L-SLARF Facebook**

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Theoretical account 1: Speech Learning Model

Speech Learning Model (SLM)

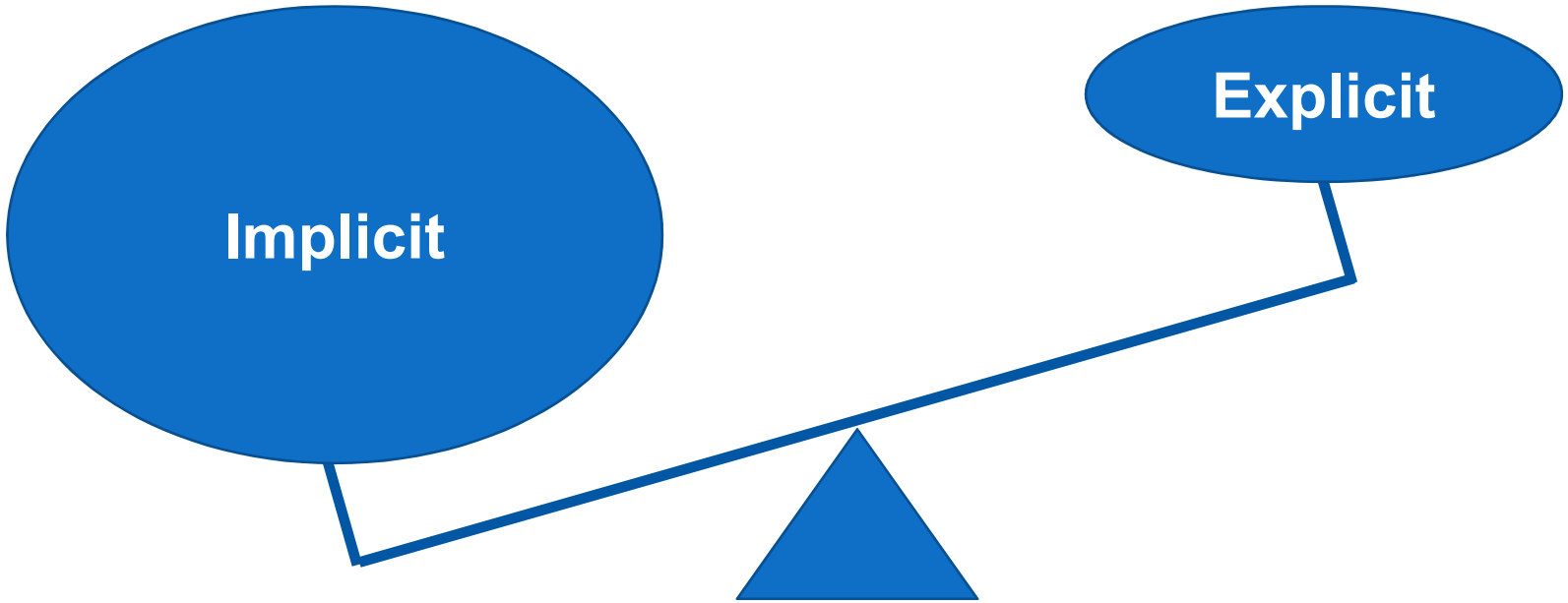
Flege (1995, 2003, 2009)

- The speech learning capacity used for successful L1 speech acquisition remains **active** throughout life and may be invoked in L2 learning, provided ample exposure to L2.

Similar theoretical accounts

- Perceptual Assimilation Model-L2 (Best & Tyler, 2007)
- Native Language Magnet (Kuhl, 2000)
- Vocab Restructuring Model (Bundgaard-Nielsen, et al., 2012)

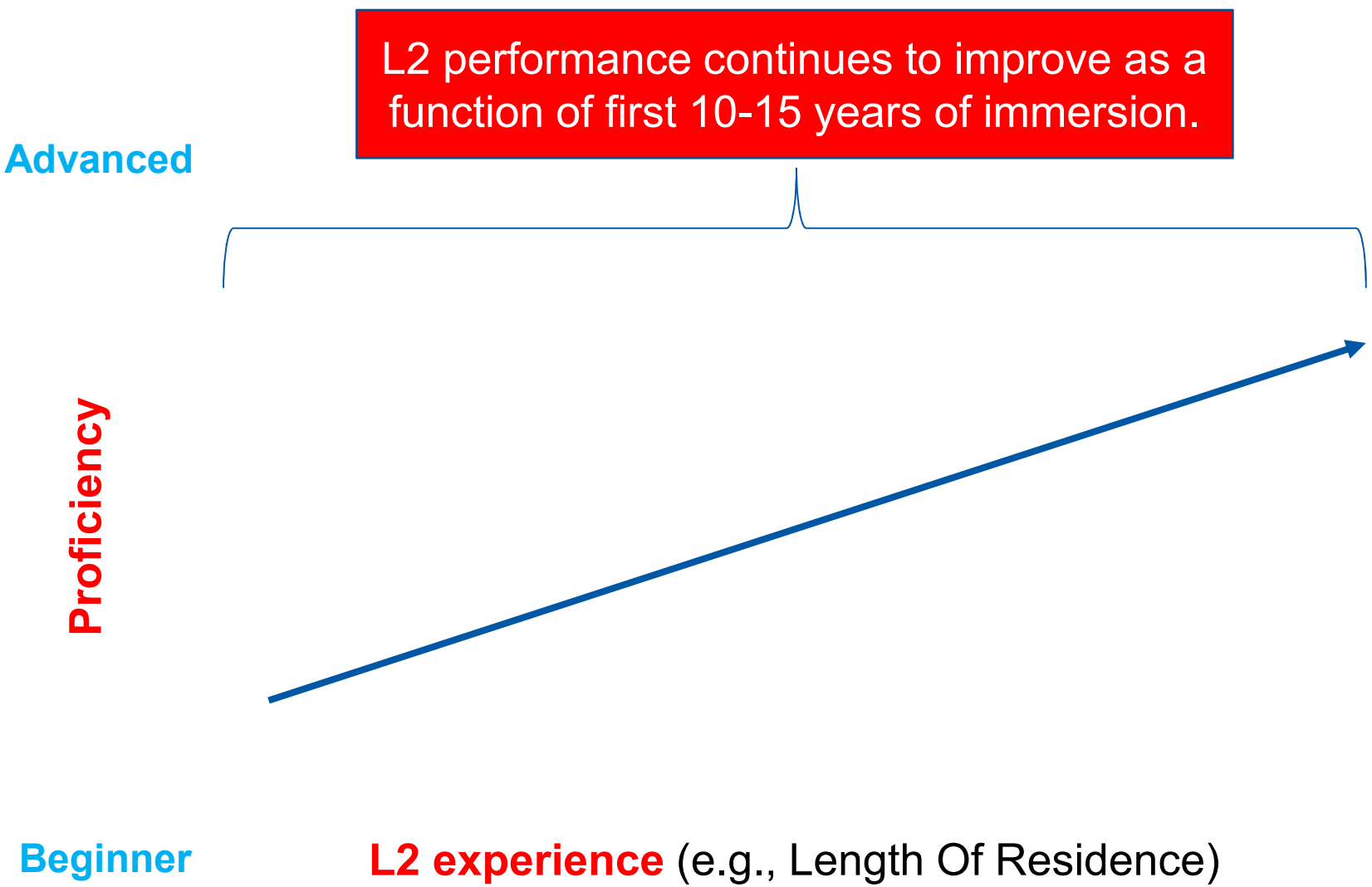
Late L2 speech learning



Mainly incidental/implicit
(similar to L1 acquisition)!

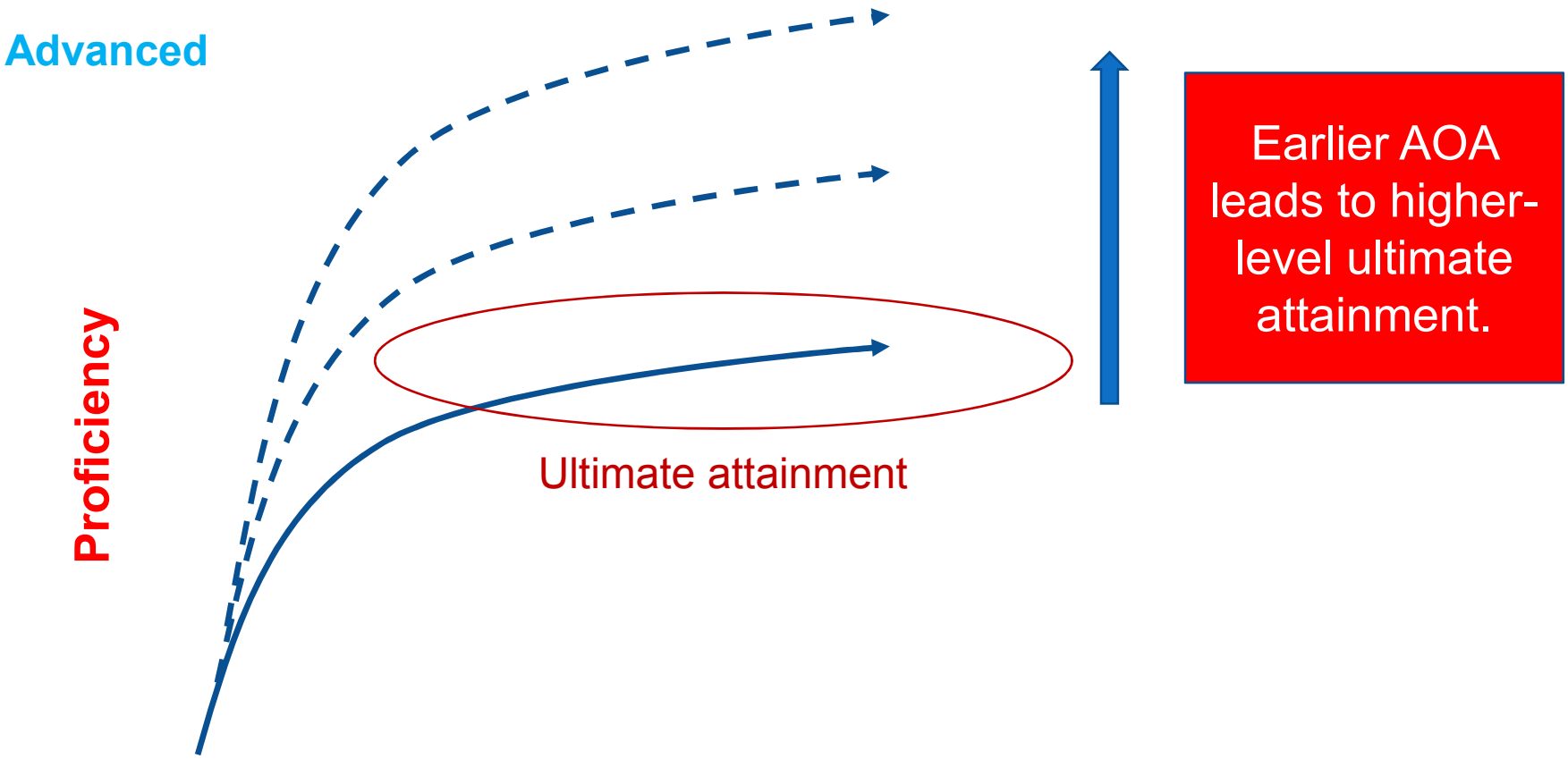
Initial to mid stage of late SLA

Experience effects vs. interlang



Final stage of late SLA

Age effects vs. ultimate attainment



Key references

- Flege, J. E. (2009). Give input a chance! In T. Piske & M. Young-Scholten (Eds.), *Input matters in SLA* (pp. 175–190). Clevedon: Multilingual Matters.
- Best, C., & Tyler, M. (2007). Nonnative and second-language speech perception. In O. Bohn, & M. Munro (Eds.), *Language experience in second language speech learning: In honour of James Emil Flege* (pp. 13–34). Amsterdam: John Benjamins.
- Birdsong, D. (2005). Interpreting age effects in second language acquisition. In J. F. Kroll & A. M. B. de Groot (Eds.), *Handbook of bilingualism: Psycholinguistic approaches* (pp. 109127). New York: Oxford University Press.

Theoretical account 2: Critical Period Hypothesis

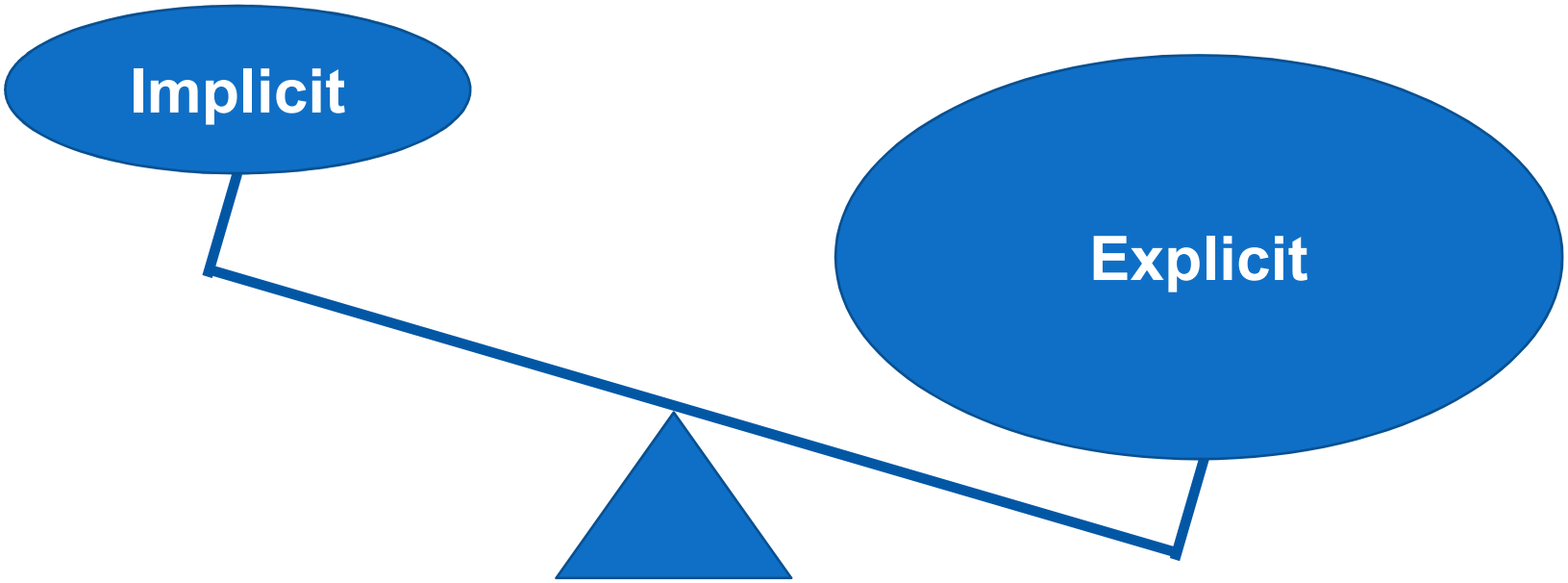
Critical Period Hypothesis (CPH)

Abrahamsson (2012) DeKeyser (2013)

- Any linguistic performance by late bilinguals is constrained by a loss of plasticity resulting from neural maturation after adolescence.

- Post-critical period SLA relies on **general cognition** (intentional/explicit learning) rather than **language-specific cognition** (incidental/implicit learning).

Late L2 speech learning

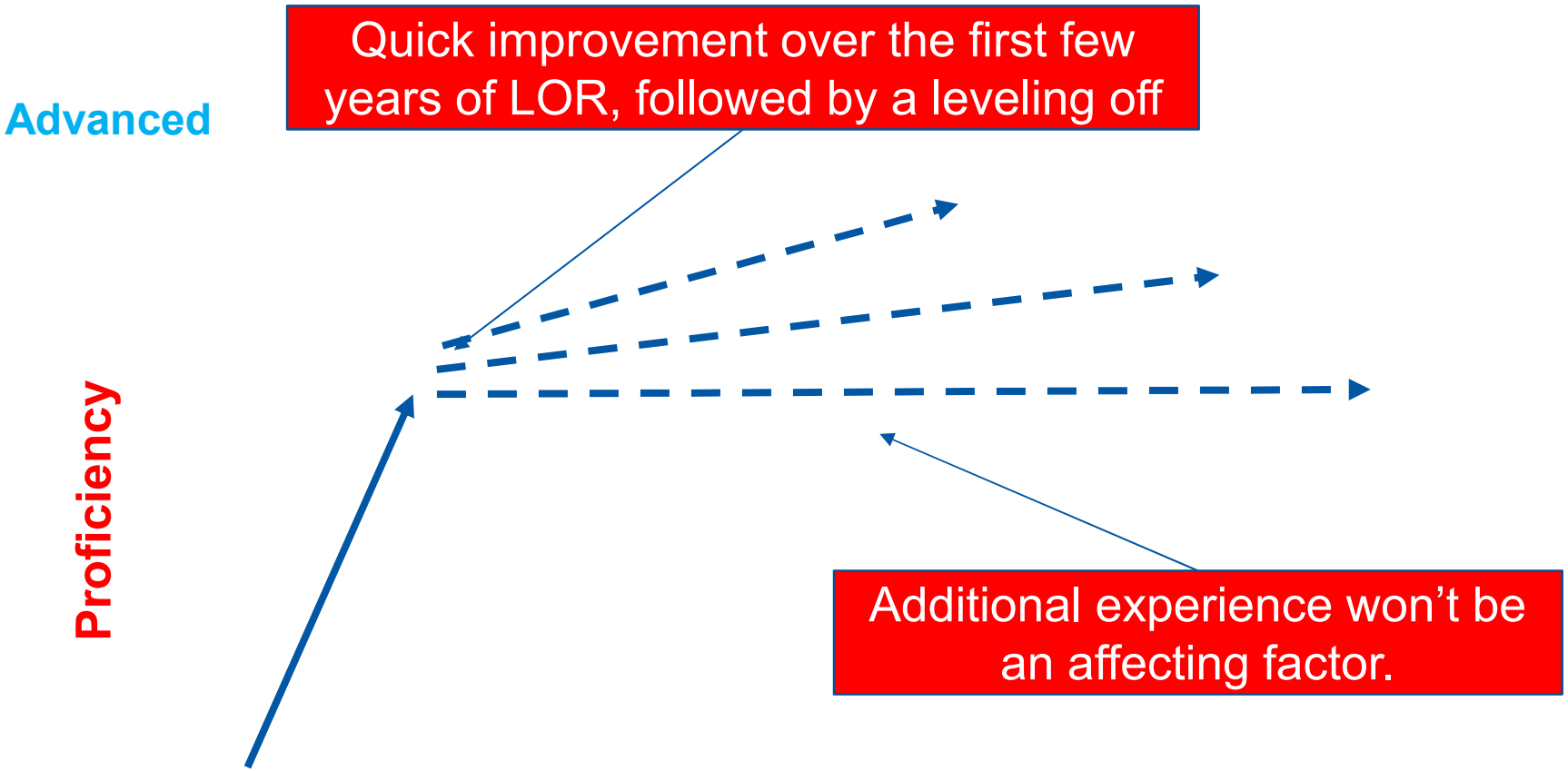


→ Mainly <u>explicit</u>
(different from L1 acquisition)!

Initial to mid stage of late SLA

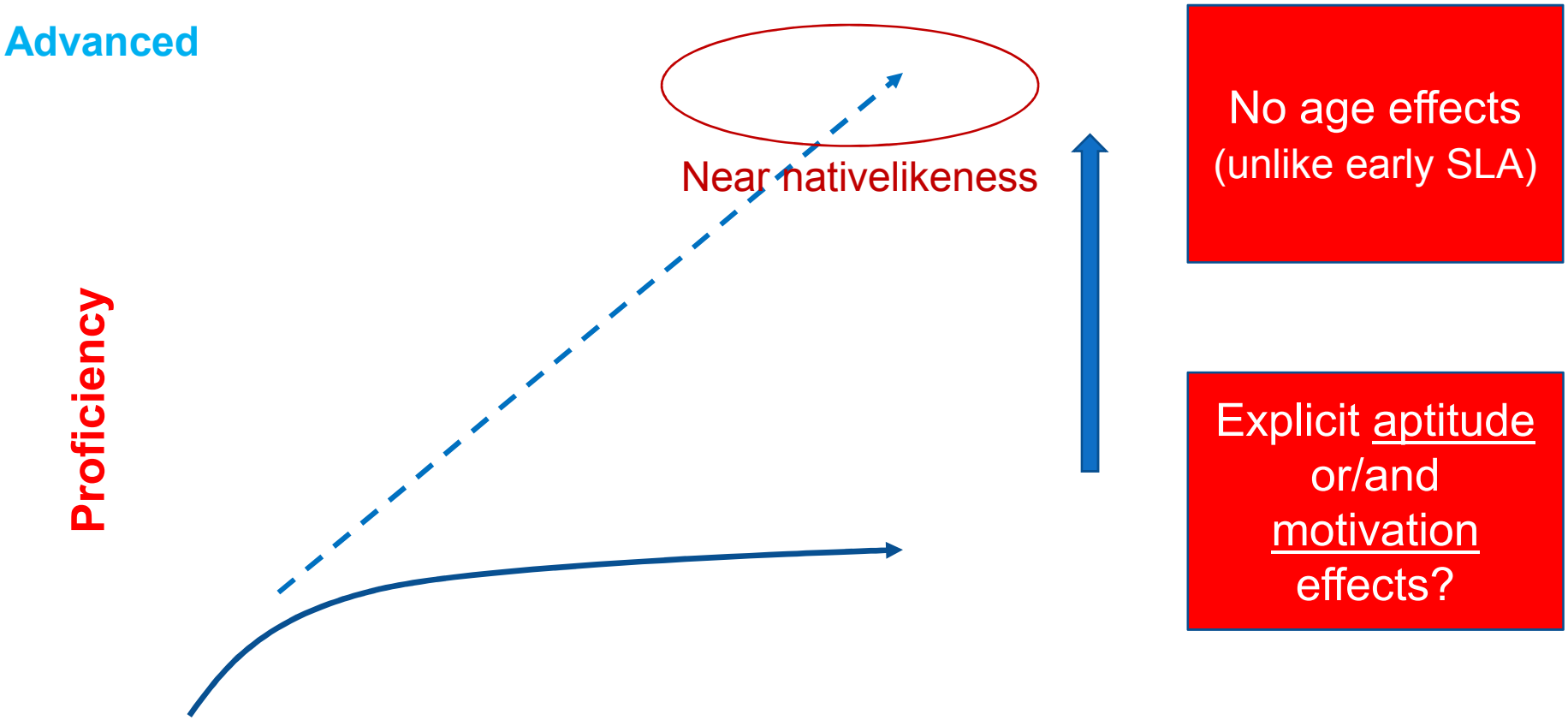
General skill learning

(e.g., the learning of algebra, computer programming)



Final stage of late SLA

Ultimate attainment = individual differences



Key references

- Abrahamsson, N. (2012). Age of onset and nativelike L2 ultimate attainment of morphosyntactic and phonetic intuition. *Studies in Second Language Acquisition, 34*, 187–214.
- DeKeyser, R., & Larson-Hall, J. (2005). What does the critical period really mean? In J. F. Kroll & A. M. B. De Groot (Eds.), *Handbook of bilingualism: Psycholinguistic approaches* (pp. 88–108). New York, NY: Oxford University Press.
- Patkowski, M. (1990). Age and accent in a second language: A reply to James Emil Flege. *Applied Linguistics, 11*, 73–89.

Confounding findings: Experience effects

Who?

- Late L2 learners with a varied length of residence (0 to 10 years)

Question?

- To what degree can Length of Residence (LOR) predict their L2 pronunciation performance?

Findings?

- LOR is significantly predictive of (e.g., Derwing & Munro, 2013) or unrelated to (e.g., Munro, 1993) SLA.

Confounding findings: Age effects

Who?

- Experienced late L2 leaners with extensive length of residence (LOR > 10 years)

Method?

- To what degree can age of acquisition (AOA) predict their ultimate attainment?

Findings?

- Strong age effects (e.g., Flege et al., 2006) vs. no age effects (e.g., Patkowski, 1990)

Problems

Most L2 speech research has exclusively concerned native speakers' global accent judgments (e.g., *1 = no accent, 9 = heavily accented*).

Little research attention has been given to the role of LOR and AOA in adult L2 pronunciation development of **specific** phonetic features (see DeKeyser & Larson-Hall, 2005, p. 93).

Target structure: Word-initial English /ɹ/ by Japanese learners

- Inexperienced Japanese learners tend to substitute the Japanese tap /ɾ/ (similar to English /l/) for English /ɹ/ (Guion et al., 2000; Riney et al., 2000)

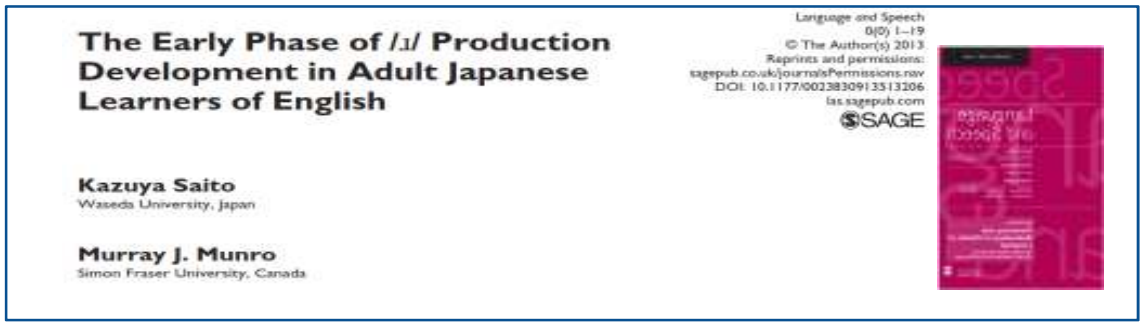
- Most difficult instance of L2 speech acquisition (Flege, 1995; Best & Tyler, 2007)

- Bradlow (2008)
  - ✓"A productive testing ground for general principles of learning and claims about adult neural plasticity" (p. 294).

Current Study (partially reported in..)

Journal of Memory & Language (2013)

Bilingualism: Language & Cognition (2013)



Language & Speech (2014)

Current Study

Research Question 1

- Whether and to what degree can experience (measured via Length of Residence) be predictive of Japanese learners' /ɹ/ production development?

Predictions

- SLM = "Extensive" LOR effects
- CPH = "Limited" LOR effects

Current Study

Research Question 2

- Whether and to what degree can AOA be predictive of the ultimate attainment and nativelikeness of /ɹ/ production by Japanese learners?

Predictions

- SLM = Strong AOA effects
- CPH = No AOA effects

Participants

- *n* = 180 Japanese learners of English in Vancouver and Montreal, Canada.

- All participants had received 6 years of foreign language education in Japan prior to their arrivals in Canada.

- Their age of arrival > 16 years (late bilinguals).

- Highly motivated: Their main language of communication had to be English (self-reported use of English: *M* = 5.4).

Participants

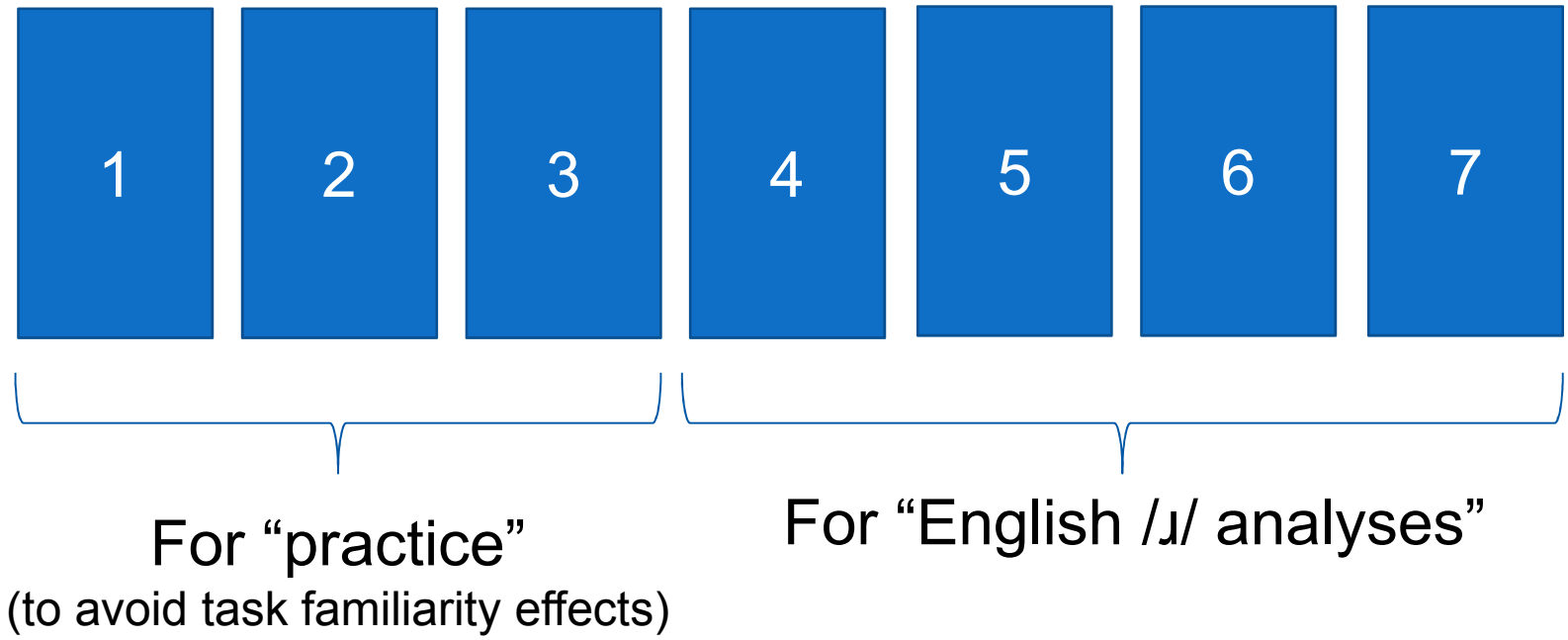
- Their experience substantially varied…

Length of residence	*n*	Age of arrival	*n*
1-6 months	56	16-20 years	31
6-12 months	30	21-25 years	54
1-5 years	14	26-30 years	49
6-10 years	19	31-35 years	28
11-20 years	34	36-40 years	18
21-41 years	27		
Total	180	Total	180

Speaking Task

Spontaneous production task (adapted from Munro & Mann, 2005)

- Describing 7 different pictures



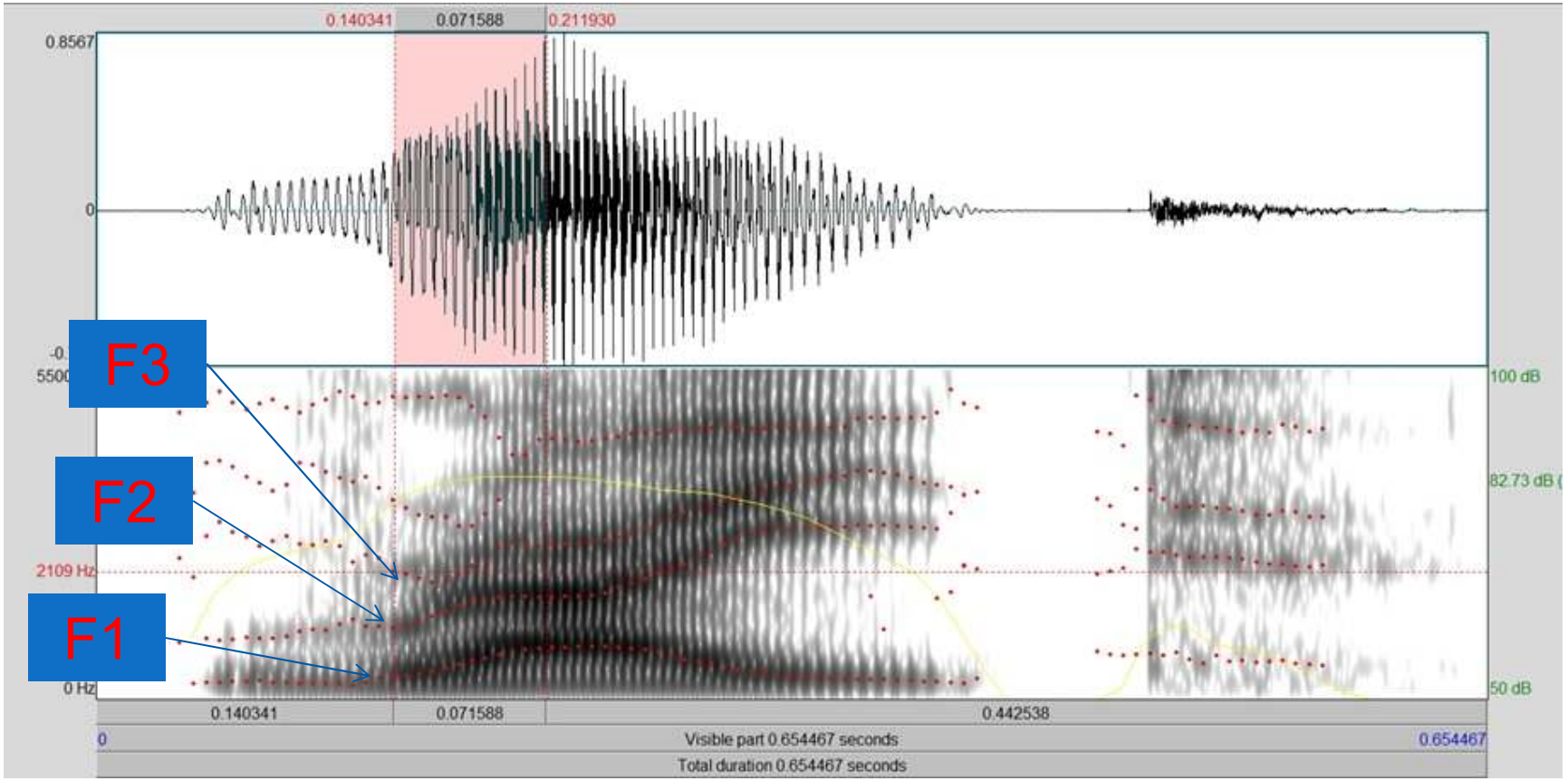
Key words
"blue sky"
"road"
"cloud"

- Three key words (one of which was always a target word)
- Within 5 s of planning time for each picture

A. Timed Picture Description	
Following vowels	
[front]	read, rain
[central and back]	road, rock

Acoustic Analysis of English /ɹ/

Transition Duration



[ɹ a ɪ t]

Acquisition of English /ɹ/ by L1 Japanese

Adjusting existing cues

- Retracting tongue body (i.e., /w/-like) (lowering F2 values)
- Prolonging the phonemic length (> 50 ms)

Establishing a new articulatory parameter

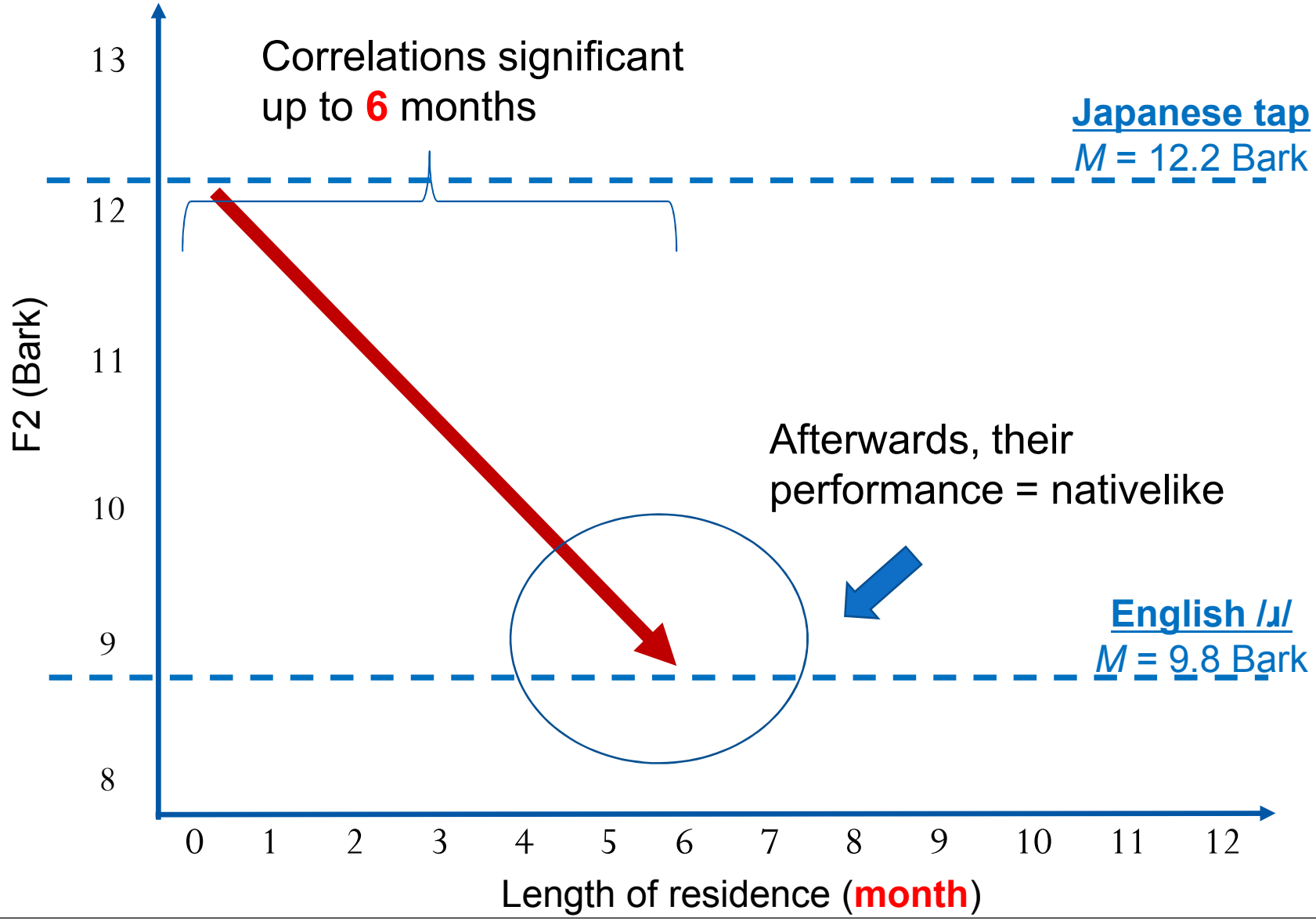
- Labial, alveolar and pharyngeal constrictions (lowering F3 values)

Results

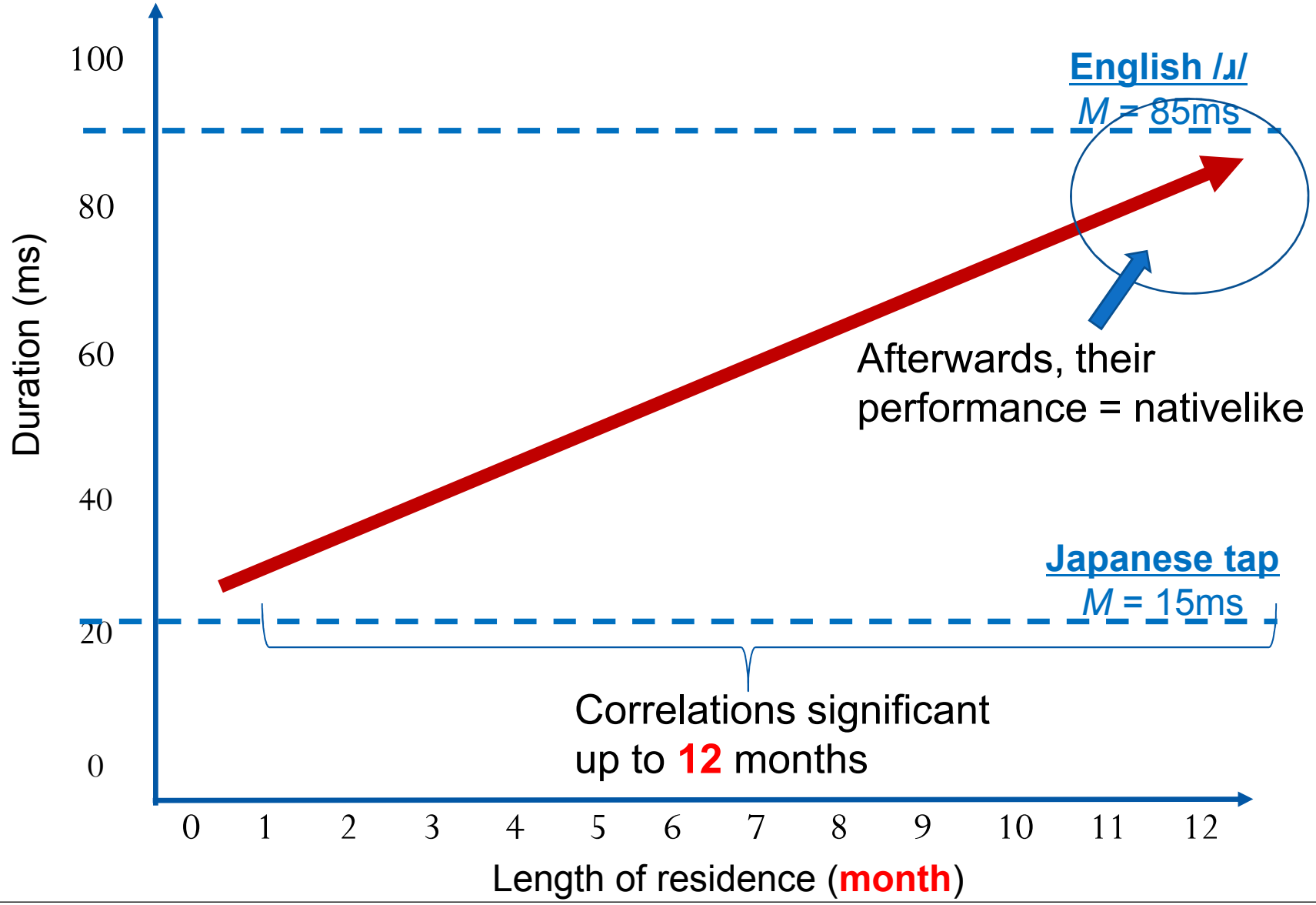
To what degree can LOR be related to L2 pronunciation?

A piecewise regression was adopted to examine where the LOR-proficiency correlations could be the strongest.

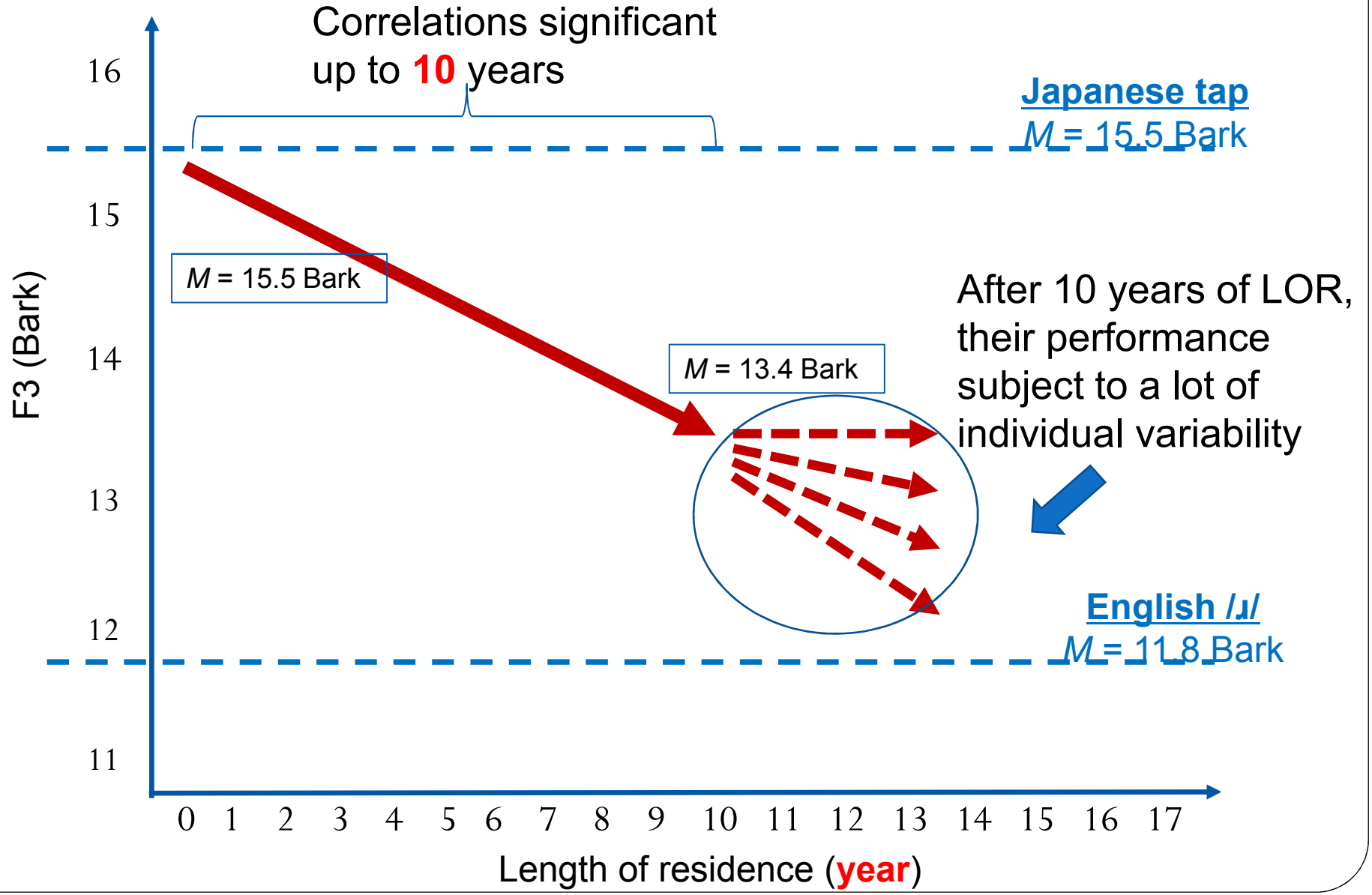
Existing cues: F2



Existing cues: Duration



New cues: F3

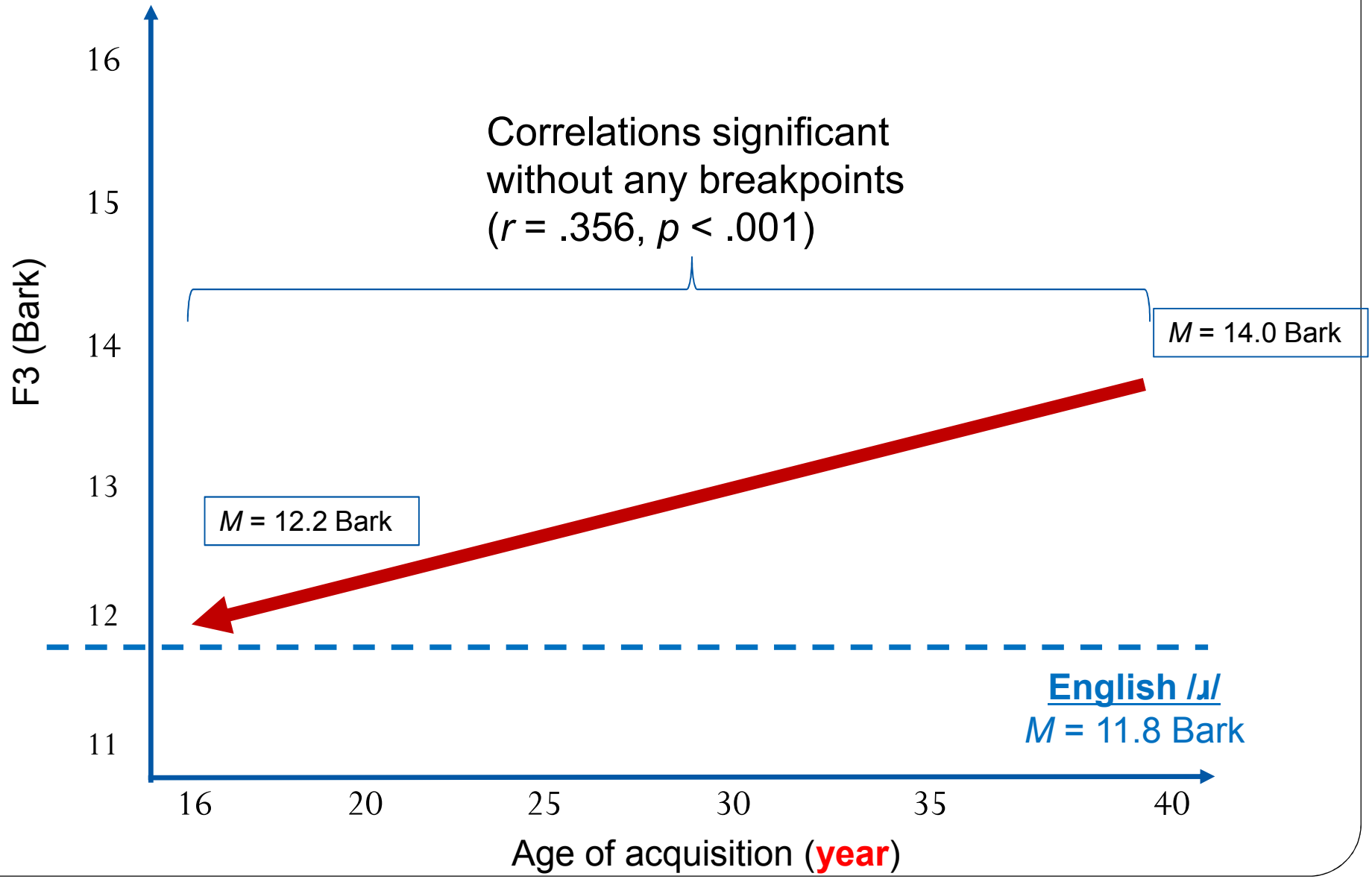

Correlations significant
up to 10 years
Japanese tap
M = 15.5 Bark
M = 15.5 Bark
M = 13.4 Bark
After 10 years of LOR, their performance subject to a lot of individual variability
English /ɹ/
M = 11.8 Bark
F3 (Bark)
16
15
14
13
12
11
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
Length of residence (year)

Results

To what degree can AOA be related to *n* = 88 experienced Japanese leaners' (LOR > 10 years) L2 pronunciation?

Piecewise regression was adopted to examine where the AOA-proficiency correlations could be the strongest.

Existing cues: F3



Discussion

LOR was differentially predictive of various acoustic domains of English /ɹ/ acquisition:

- Adjusting existing cues (< 1 year: nativelike performance)
- Establishing new cues (< 10 years: non-nativelike)

AOA predicted the extent to which experienced Japanese learners (LOR > 10 years) could further approximate the nativelike attainment of the new cue.

→ Supporting the SLM (experience/age effects)

What would be an effective and efficient training method?

How would you teach?

Problems

Japanese learners of English tend to substitute the Japanese tap /ɾ/ for English /ɹ-l/ contrast

Students

Intermediate adult ESL/EFL learners with high expectations/motivations for their career-related goals

Any ideas?

Explicit phonetic instruction?

Contextualized usage of language?

Fun and meaningful activities?

Useful online tools?

Audiolingual teaching methods vs. L2 pronunciation development

Research Evidence

Mcdonald, Power, & Yule (1994) in *Language Learning*

- 23 ESL learners
- 10 key lexical items

Elliott (1997) in *Modern Language Journal*

- 66 English learners of Spanish
- 19 Spanish allophones

Saito (2011) in *Language Awareness*

- 20 Japanese learners of English
- 5 English-specific segmentals

➡ Improvement was clear at a *controlled-speech* level but not at a *spontaneous-speech* level

(See Saito, 2012 in *TESOL Quarterly* for research synthesis)

Key references

- Saito, K. (2012). Effects of instruction on L2 pronunciation development: A synthesis of 15 quasi-experimental intervention studies. *TESOL Quarterly*, 842-854.
- Thomson, R. I., & Derwing, T. M. (2015). The effectiveness of L2 pronunciation instruction: A narrative review. *Applied Linguistics*, *36,* 326–344.
- Lee, J., Jang, J., & Plonsky, L. (2015). The effectiveness of second language pronunciation instruction: A meta-analysis. *Applied Linguistics*, *36*, 345–366.
- Derwing, T., & Munro, M. (2005). Second language accent and pronunciation teaching: A research–based approach. *TESOL Quarterly*, *39*, 379–397.

Contextualized Instruction to teach L2 pronunciation!

Saito, K. (2015). Communicative focus on L2 phonetic form: Teaching Japanese learners to perceive and produce English /r/ without explicit instruction. *Applied Psycholinguistics, 36*, 377-409.

Saito, K. (2013a). The acquisitional value of recasts in instructed second language speech learning: Teaching the perception and production of English /r/ to adult Japanese learners . Language Learning, 63, 499-529..

Saito, K. (2013b). Re-examining effects of form-focused instruction on L2 pronunciation development: The role of explicit phonetic information. Studies in Second Language Acquisition, 35, 1-29.

Design (*N* = 100+)

Pre-tests

Four 1-hour meaning oriented sessions with ***communicative*** focus on English /r/ form

Post-tests

Communicative Activities

Theme: “Developing a convincing argument”

Activity 1. How to critique?

Activity 2. English Debating

Activity 3. Argument-creation

Activity 4. Public Speech

English Debating

"***Run***ning inside is better than ***run***ning outside"

Excerpt 2

S: In spite of winter weather, I can see run[ran]*ners in Montreal.

T: Runners.

S: Runners. So, we can get on coat, sweater, more clothes. If you run [ran]*..

T: Run

S: If you run, you get warm so you will take care of weather.

Topics for debate activities

- Which would you prefer, eating ***rice*** vs. ***bread*** for breakfast?
- Listening to ***rock*** music is not good for children
- Is it good to have a ***rain***y day?"
- Is a sense of "***rat race***" among students good (e.g., tests, entrance examinations)?

Communicative focus-on-form techniques used in the project:

Focused tasks (e.g., Ellis, 2003)

- Creating obligatory contexts where learners need to use target features accurately to complete tasks successfully

Input enhancement (e.g., Han et al., 2008)

- Italicizing/color-coding target features

Recasts (e.g., Lyster & Saito, 2010)

- Correcting without interrupting a flow of communication

Results

Perception

M = 60 → 75% (15.5% gain)

- The amount of improvement resulting from 4 hr of instruction (15% gain) could be relatively large compared to other intensive lab training studies (e.g., Logan et al., 1992, for 8% gain after 10+ hr of training). (p. 25)

Results

Production

Neither /ɹ/ nor /l/ → Good/probably /ɹ/ at controlled and spontaneous speech tests

- A communitive focus on form could be an optimal method to allow students to promote the interlanguage development of their new phonetic knowledge (F3).

Conclusions

What characterizes late L2 speech learning?

1. The redeployment of existing cues could be achieved within a relatively short amount of immersion (e.g., LOR < 1 year).

2. The establishment of new cues could be *gradual*, *constant*, and *extensive* process (i.e., experience effects). The level of ultimate attainment could be subject to age of acquisition throughout a life span (i.e., age effects).

3. Even late L2 learners may draw on qualitatively and fundamentally similar language learning mechanisms as used for early L2 (and L1) acquisition.

The underlying mechanism should be taken into account especially in order to design optimal L2 training methods (e.g., communicative focus on form).

THANK YOU!!