

The effect of phonological knowledge on word learning in second language acquisition

Junko Maekawa, University of Kansas

Introduction

L1 word learning is strongly related to phonological knowledge

- ◆ Studies of English speaking children
- ◆ IN vs. OUT sounds
 - IN – correctly produced sounds
 - OUT – incorrectly produced sounds
- ◆ Word learning
 - Early stage: IN words > OUT words (Leonard, et al., 1981)
 - Later stage: IN words < OUT words (Storkel, 2004)

L2-L1 phonological mapping influences L2 perception

- ◆ L1 Japanese L2 English speakers (Guion, et al., 2000)
 - /t, s, w, v, b/ → IN
 - /r, l, θ/ → OUT

Phonology and L2 word learning

- ◆ Past studies showed that phonology affects L2 word learning
 - Phonological short-term memory
 - Nonword repetition (e.g., Speciale, et al., 2004)
 - Suppression (Papagno, et al. 1991)
 - Phonotactic patterns (Feldman & Healy, 1998)
- ◆ The relationship between L2-L1 phonological mapping and L2 word learning is unknown
- ◆ Question
 - Is L2 word learning influenced by the speaker's phonological knowledge of the target sounds (IN vs. OUT) in the word?

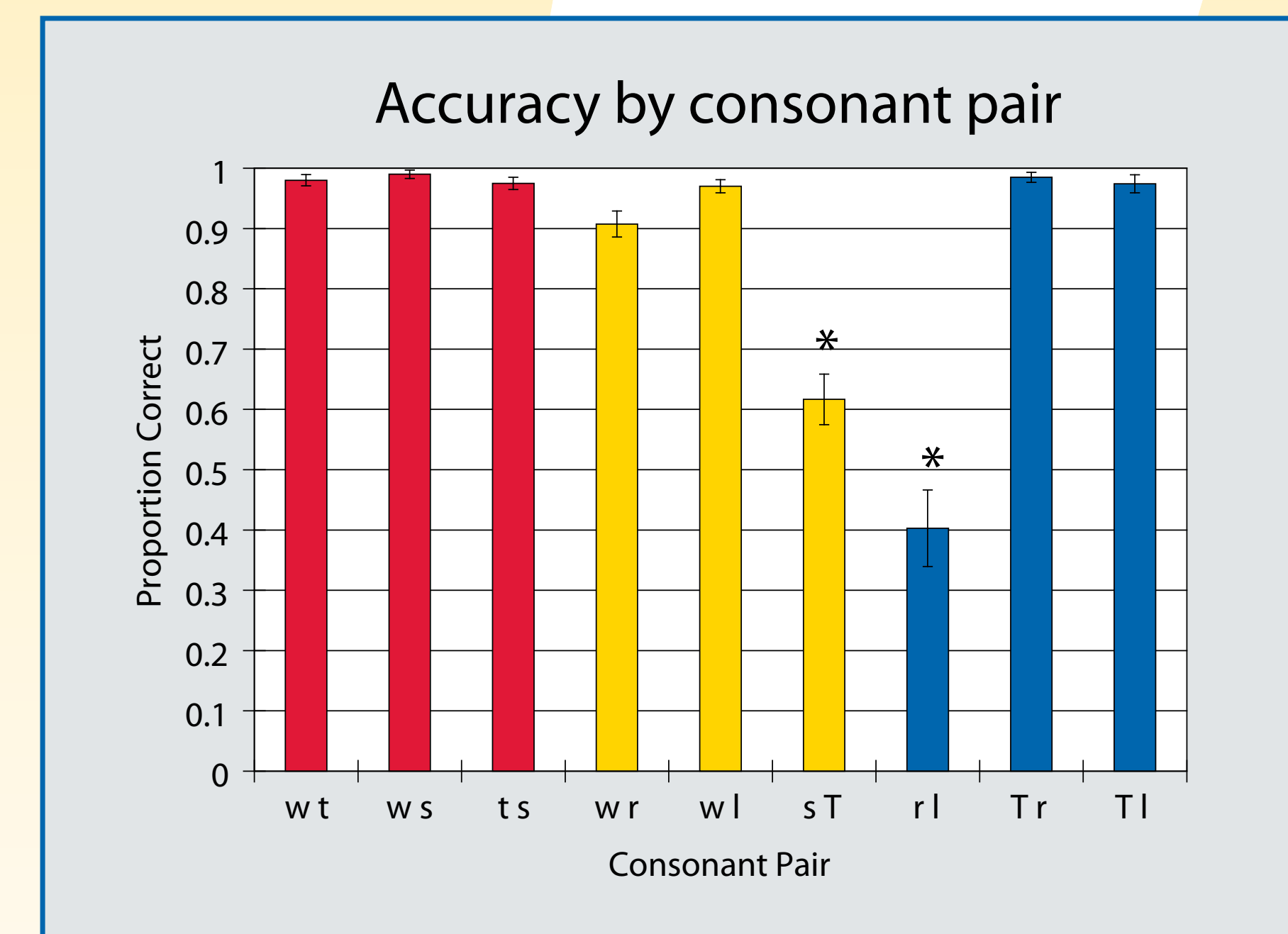
Method

Participants

- ◆ n = 24
- ◆ L1 Japanese – L2 English
- ◆ Ages 19 – 33
- ◆ High English proficiency (TOEFL score ≥ 570 or equivalent)
- ◆ Normal speech, hearing, and cognition

Target consonants

- ◆ IN: /s, t, w/
- ◆ OUT: /r, l, θ/
- ◆ IN vs. OUT sounds were verified through a perception task



Auditory stimuli (24 CVC nonwords)

- ◆ 4 CVC nonwords selected for each of the 6 target consonants (IN= /s, t, w/; OUT = /r, l, θ/)

Visual stimuli

- ◆ Each of the nonwords were paired with a picture of a novel object (Kroll & Potter 1984)
- ◆ Examples

Type	IN			OUT		
Novel object						
Nonword	seib	wis	touk	θed	ruk	las

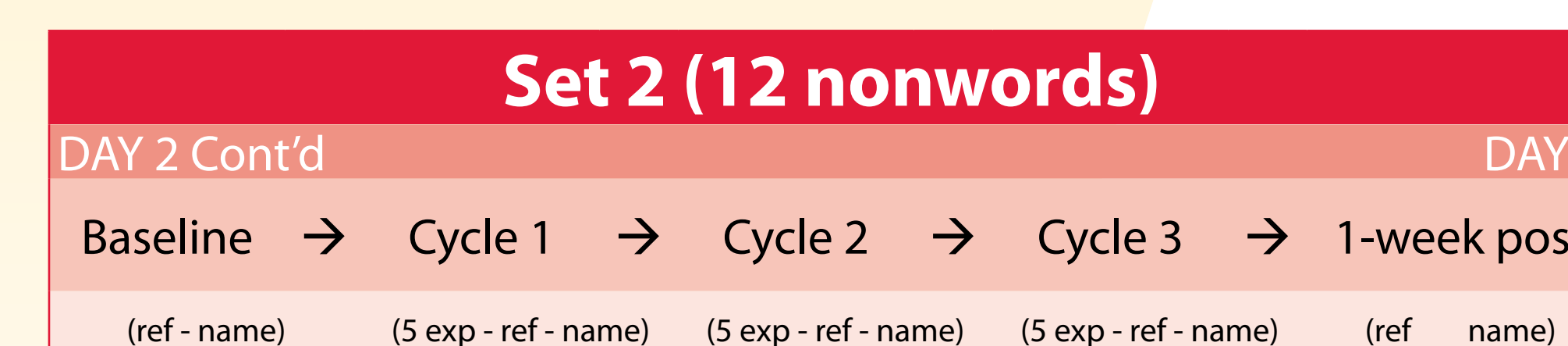
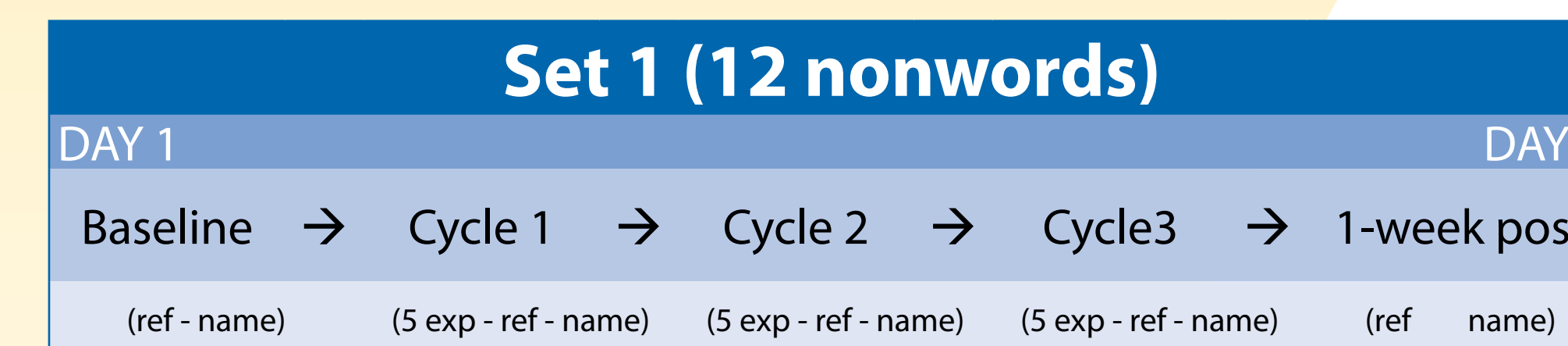
Exposure script

- ◆ This is a *ruk*. Say *ruk*. Find the *ruk*. Yes, that's the *ruk*.

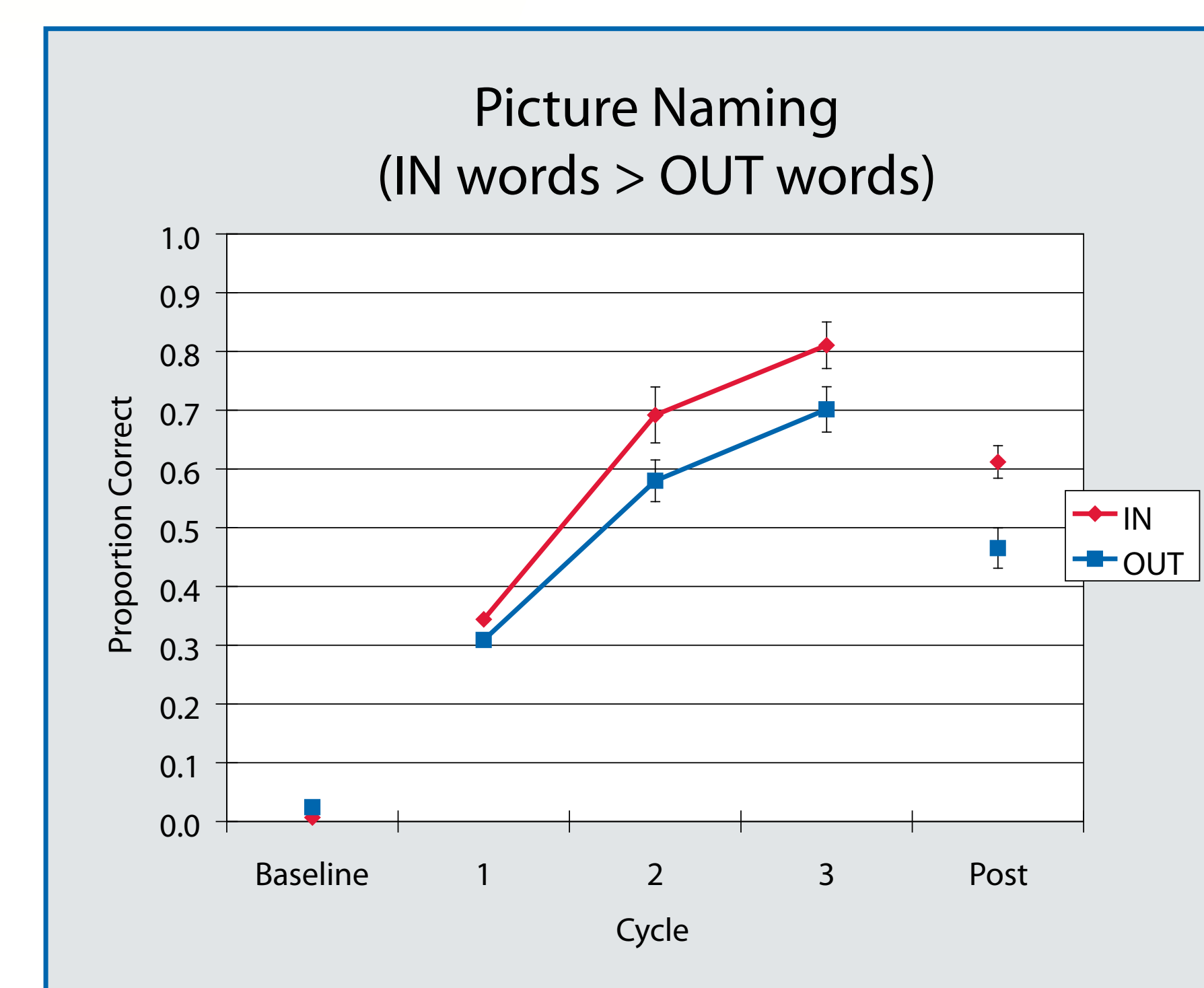
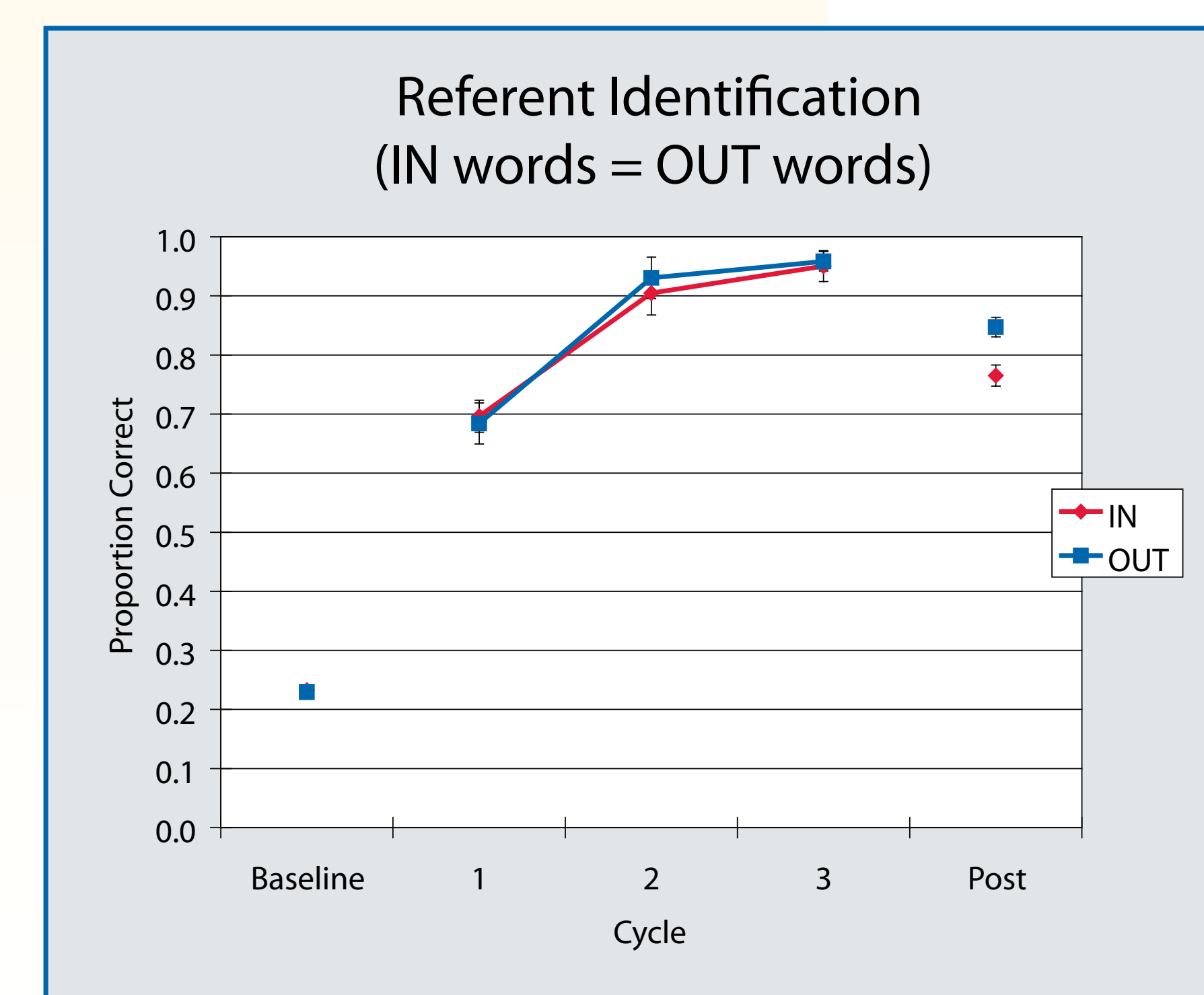
Two measures to test word learning

- ◆ Referent Identification (picture choice)
 - Tests semantic representations
 - 4 pictures (target + 3 foils)
 - scored as correct or incorrect
- ◆ Picture Naming
 - Tests lexical representations
 - Correct if 3/3 phonemes are produced correctly
 - OUT words: mispronunciation accepted as correct if the participant's typical production pattern

Cycles



Results



Conclusion

- ◆ Phonological knowledge influences L2 word learning.
 - IN > OUT only for picture naming
 - ◆ Affects lexical representations
 - ◆ Does not affect semantic representations
- ◆ L2 word learning similar to early-stage L1 in the effect of phonological knowledge

Implications

L2-L1 phonological mapping can be extended to L2 word learning

Perceptual training can be used to improve L2 word learning

Future/Ongoing Directions

Comparing data with native English speakers & Japanese speakers with different proficiency levels

References

- Feldman, A., & Healy, A. F. (1998). Effect of first language phonological configuration on lexical acquisition in a second language. In A. F. Healy & L. E. Bourne, Jr. (Eds.), *Foreign language learning*. Mahwah, NJ: Lawrence Erlbaum.
- Guion, S. G., Flege, J. E., Akahane-Yamada, R., & Pruitt, J. C. (2000). An investigation of current models of second language speech perception: The case of Japanese adults' perception of English consonants. *Journal of the Acoustical Society of America*, 107, 2711-2724.
- Kroll, J. F., & Potter, M. C. (1984). Recognizing words, pictures, and concepts: A comparison of lexical, object, and reality decisions. *Journal of Verbal Learning and Verbal Behavior*, 23, 39-66.
- Leonard, L. B., Schwartz, R. G., Morris, B., & Chapman, K. (1981). Factors influencing early lexical acquisition: Lexical orientation and phonological composition. *Child Development*, 52, 882-887.
- Papagno, C., Valentine, T., & Baddeley, A. D. (1991). Phonological short-term memory and foreign-language vocabulary learning. *Journal of Memory and Language*, 30, 331-347.
- Speciale, G., Ellis, N. C., & Bywater, T. (2004). Phonological sequence learning and short-term store capacity determine second language vocabulary acquisition. *Applied Psycholinguistics*, 25, 293-321.
- Storkel, H. L. (2004). The emerging lexicon of children with phonological delays: Phonotactic constraints and probability in acquisition. *Journal of Speech, Language, and Hearing Research*, 47, 1194-1212.