Implicit Improvement of Spelling Through Talker Variability

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Introduction

The purpose of this study is to examine the effects of auditory bombardment and talker variability on the spelling of academic vocabulary. Phonological awareness is strongly linked to a person's ability to spell words (Anthony & Francis, 2005). With this knowledge, we hypothesize that implicitly strengthening phonological awareness will improve spelling. The use of auditory bombardment can be used to explicitly learn and memorize information but it may also be useful for implicit learning. Based on past research that shows high talker variability is beneficial for spoken nonword learning in preschoolers, we hypothesize that people will show greater improvements on spelling words trained with high talker variability compared to those trained with high talker consistency during auditory bombardment (Richtsmeier, Gerken, & Ohala, 2010).

Participants

- 15 college-aged individuals without a hearing loss and without a history of brain injuries or seizures. They have been recruited from the University of Arizona.
- Mean age: 20.5-years-old
- Native languages: English (10), Spanish (4) and Arabic (1)

Stimuli

- Stimuli: consisted of 30 scientific words from the Bio 181 course. The words chosen varied in orthographic transparency and phoneme length.
- Words were recorded with the same phonemic pronunciations by 28 different speakers (ages 4-72-years-old).
- Each word was accompanied by a corresponding picture

Acknowledgements

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Refernces

Anthony, J. L., & Francis, D. J. (2005). Development of Phonological Awareness. Current Directions in Psychological Science, 14(5), 255–259. https://doi.org/10.1111/j.0963-7214.2005.00376.x

Richtsmeier, P., Gerken, L., & Ohala, D. (2011). Contributions of phonetic token variability and word-type frequency to phonological representations. *Journal of Child Language, 38*(5), 951-978. doi:10.1017/S0305000910000371

Methods

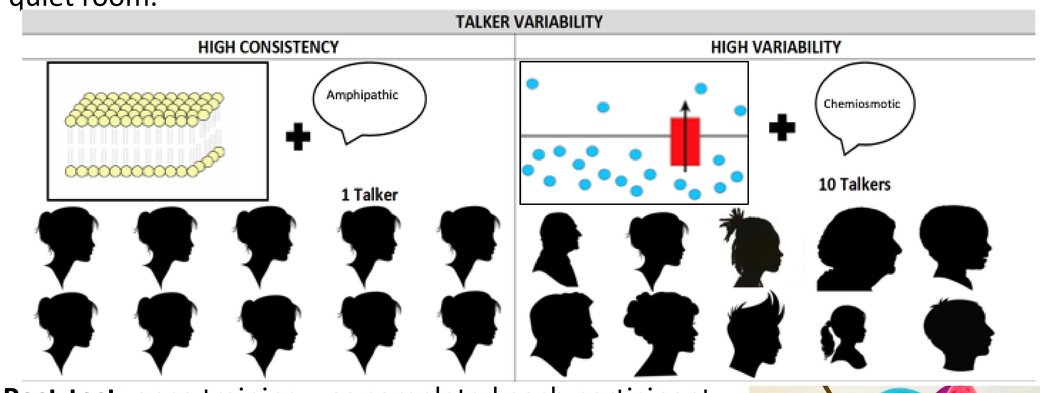
Pretest: participants were asked to take a spelling test on a computer. During this test, they were prompted to spell each word after it was said only one time by a recorded voice. For this test, the voice was the same for each word.

Qualify: a participant qualifies for the study if they provide a non-plausible spelling for 10 out of 30 words.

	Orthographically Correct	Plausible	Non-plausible
Orthographic	dynein	dynean	diamin
IPA	daɪnin	daɪnin	daɪmin
Orthographic	quaternary	cuaternary	quateriary
IPA	kwɑtərnɛri	kwɑtərnɛri	kwɑtəriɛri
Orthographic	vacuole	vaccual	vachuhole
IPA	vækjuoʊl	vækjuoʊl	vækʧuhoʊl

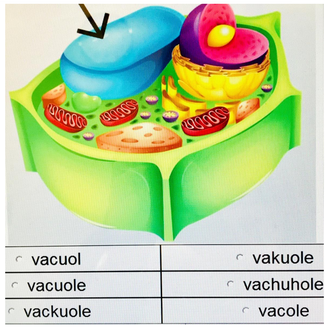
Training: a computer training program presented each participant with 10-12 of their misspelled words. Each word was randomly presented 10 times. Half of the words for each participant were presented with high talker variability and the other half were presented with high consistency. Each word was accompanied by a corresponding picture.

How long: The training took approximately 10 minutes and was administered in a quiet room.



Post-test: once training was completed each participant took a post-test that consisted of :

- spelling each word after it had been named (like the pretest) and
- a six-option multiple choice test where they were asked to find the correct spelling. The correct spelling along with the participants misspelling of the word were accompanied by four foils of the word.



Results

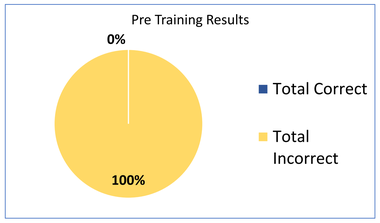


Figure 1. This chart shows the number of words spelled correctly versus incorrectly on items from the pretest that were later trained. It shows that 100 percent of the items used during training were spelled incorrectly.

Figure 2. This chart shows the results of high talker variability on the spelling of trained items in terms of percentage correct, plausible and incorrect. The standard deviation for improvement (combining percent correct and plausible) was 5.58.

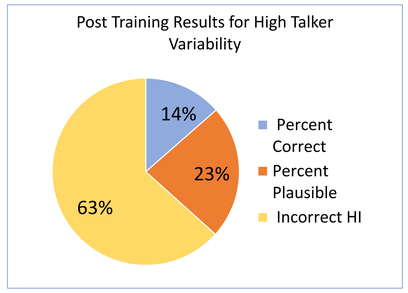
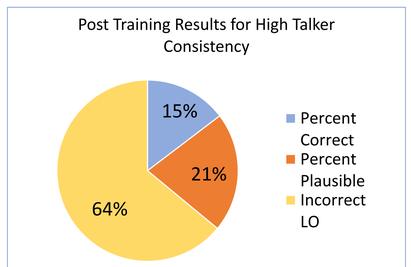


Figure 3. This chart show the results of high talker consistency on the spelling of trained items. The *SD= 5.65* for improvement when combining percent correct and plausible.



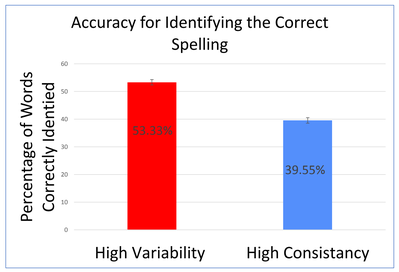


Figure 4. This figure represents the percentage of trained items that were identified correctly during the multiple choice test in each condition.

Conclusion

To date, all participants have shown improvements in correct and plausible spellings in both conditions. This suggests that listening to words can potentially implicitly improve phonological awareness, and thus spelling. This also shows that improvement in phonology can occur in adults who already have the ability to read, write and decode language. More data are needed to determine if one condition provides stronger results than the other.