

Phonemic Awareness Skills of Deaf Educators

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ABSTRACT

Participants completed an online assessment of their skills on basic phonemic awareness tasks adapted from Spencer et al. (2008). Phonemic awareness skills that were assessed in the present study included (a) phoneme segmentation (e.g., how many sounds are in “box?”), (b) phoneme matching (e.g., which word contains the underlined sound in “sugar”: push, tune, jump?), and (c) phoneme isolation (e.g., what is the third sound in “tree?”). In addition, participants provided demographic information such as highest level of education completed, courses taken in their degree programs, and philosophy of deaf education program in which they teach (e.g. total communication, auditory-oral). The total score for deaf educators was 68%. Deaf educators scored highest on phoneme matching (78%), followed by phoneme segmentation (61%), and lowest on phoneme isolation (56%). In addition, deaf educators performed much better on phoneme segmentation of easy words (e.g., cat, ball, stop; 81%) than hard words (e.g., box, use, squirrel; 43%).

INTRODUCTION

Phonemic awareness is an important precursor of word reading (Adams, 1990), as well as an important component of early literacy instruction (NRP, 2000). Reading, along with the development of phonemic awareness, is delayed in children with hearing loss (e.g., Most, Aram, & Andorn, 2006; Paul, 2009). Even in children with profound hearing loss, phonemic awareness predicts reading outcomes (Harris & Beech, 1998). Thus, it is vital that teachers of the deaf possess adequate phonemic awareness skills to explicitly explain phonemic awareness activities to children with hearing loss.

Spencer et al. (2008) reported differential performance on tasks of phonemic awareness among groups of educators, with speech-language pathologists performing highest (though not at ceiling) and other educators scoring significantly lower ($d = 1.54$). However, deaf educators were not assessed.

Little is known about the phonemic awareness skills of deaf educators; however, deaf educators are expected to deliver early literacy instruction to children with hearing loss. If, as hypothesized, deaf educators perform similarly to other educators, professional development in the area of phonemic awareness may be necessary.

Purpose

The purpose of this study was to examine the explicit phonemic awareness skills of deaf educators as a first step toward developing effective professional development in early literacy for deaf educators.

METHOD

Participants

Participants were 80 deaf education lead teachers.

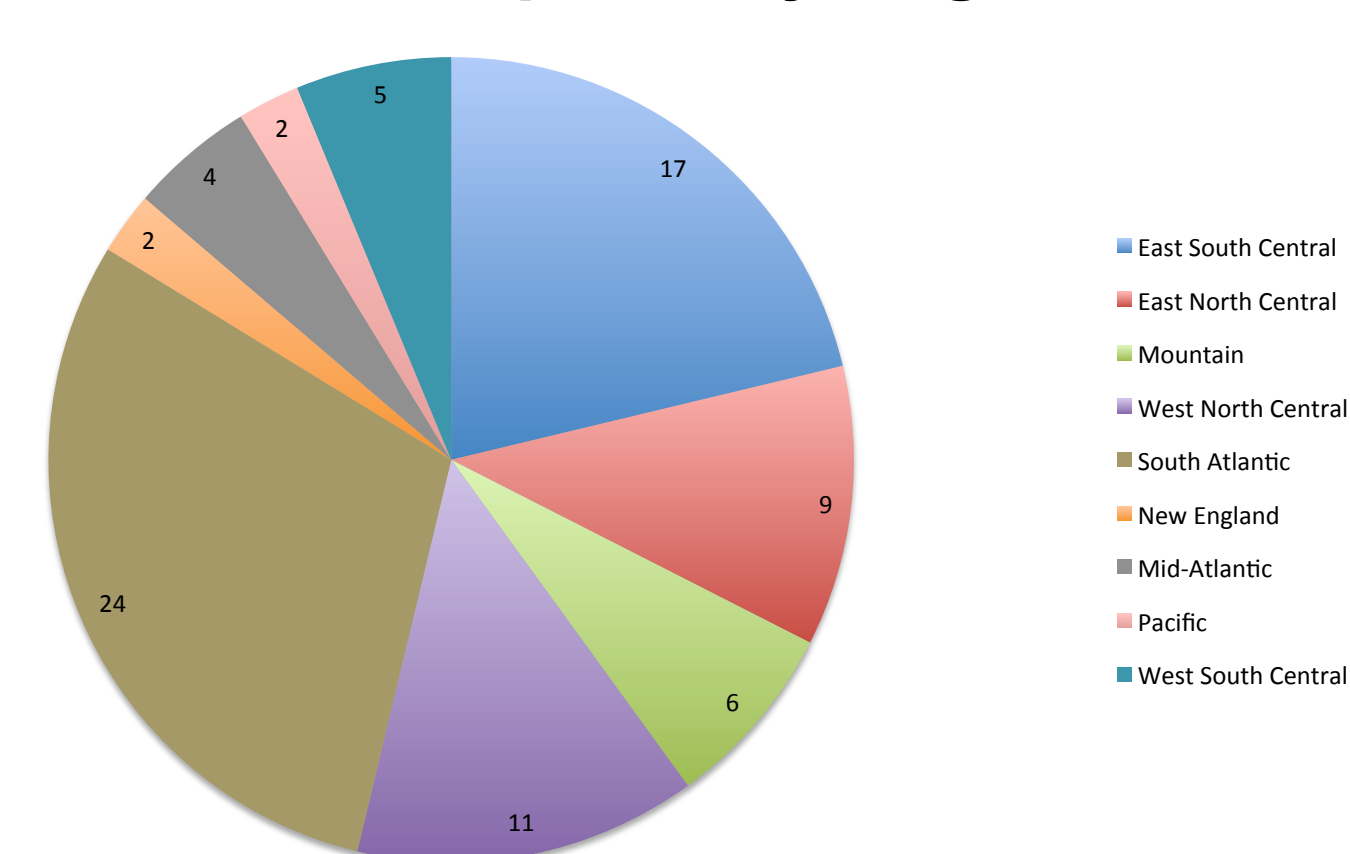
Participant Demographic Information

Gender	Race	Ethnicity	Education	Communication Mode
Female = 71	White = 76	Hispanic = 3	Bachelor's = 8	Manual = 23
Male = 9	Black = 2	Not Hispanic = 75	Bachelor's + = 13	TC = 36
	Multiple = 6	NR = 2	Master's = 26	Oral = 20
	NR = 1		Master's + = 31	NR = 1
			Doctoral = 1	

Note: NR = Not Reported

METHOD

Participants by Region



Procedures

Participants completed an online assessment of their explicit phonemic awareness skills with tasks adapted from Spencer et al. (2008): (a) phoneme segmentation (e.g., How many sounds are in “box?”), (b) phoneme matching (e.g., Which word contains the underlined sound in “sugar”: push, tune, jump?), and (c) phoneme isolation (e.g., What is the third sound in “tree?”). Participants also provided demographic information (e.g., highest level of education). Each participant received a total score and subscores for each task.

RESULTS

How accurate are deaf educators on tasks of explicit phonemic awareness?

Total Score (max 47)

Mean	SD	Percent Correct
32.24	7.04	68%

Phoneme Segmentation (max 21)

Mean	SD	Percent Correct
12.84	4.42	61%

Phoneme Matching (max 20)

Mean	SD	Percent Correct
15.56	2.66	78%

Phoneme Isolation (max 6)

Mean	SD	Percent Correct
3.34	1.55	56%

Are deaf educators more accurate at segmenting easy-to-segment words than hard-to-segment words?

Easy- vs. Hard-to-Segment Words



Yes. Deaf educators correctly segmented more easy words than hard words ($p = .000$; $d = 1.65$).

RESULTS

Is deaf educator performance on explicit phonemic awareness tasks predicted by communication mode, coursework, or education level?

Phoneme Segmentation

Variable	B	SE (B)	β	t	p
Communication Mode	-.769	.662	-.134	-1.161	.249
Phonetics	-1.292	1.077	-.141	-1.200	.234
Education Level	.140	.367	.043	.381	.704

Note: $R^2 = .053$

Phoneme Matching

Variable	B	SE (B)	β	t	p
Communication Mode	-.247	.397	-.072	-.623	.535
Phonetics	-1.123	.646	-.205	-1.740	.086
Education Level	.060	.220	.031	.273	.786

Note: $R^2 = .059$

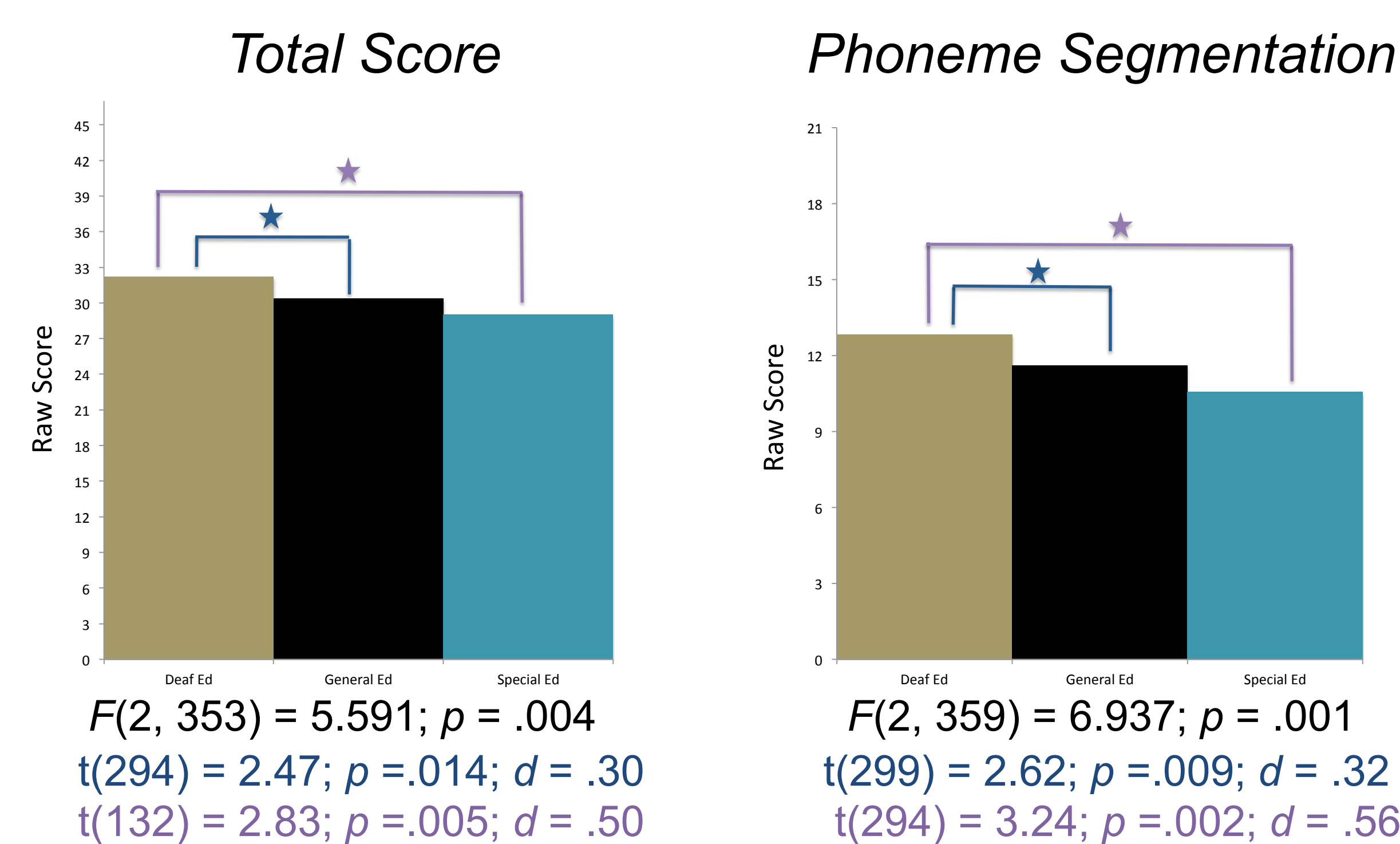
Phoneme Isolation

Variable	B	SE (B)	β	t	p
Communication Mode	-.370	.240	-.182	-1.546	.126
Phonetics	-.354	.384	-.110	-.922	.360
Education Level	.069	.129	.062	.531	.597

Note: $R^2 = .063$

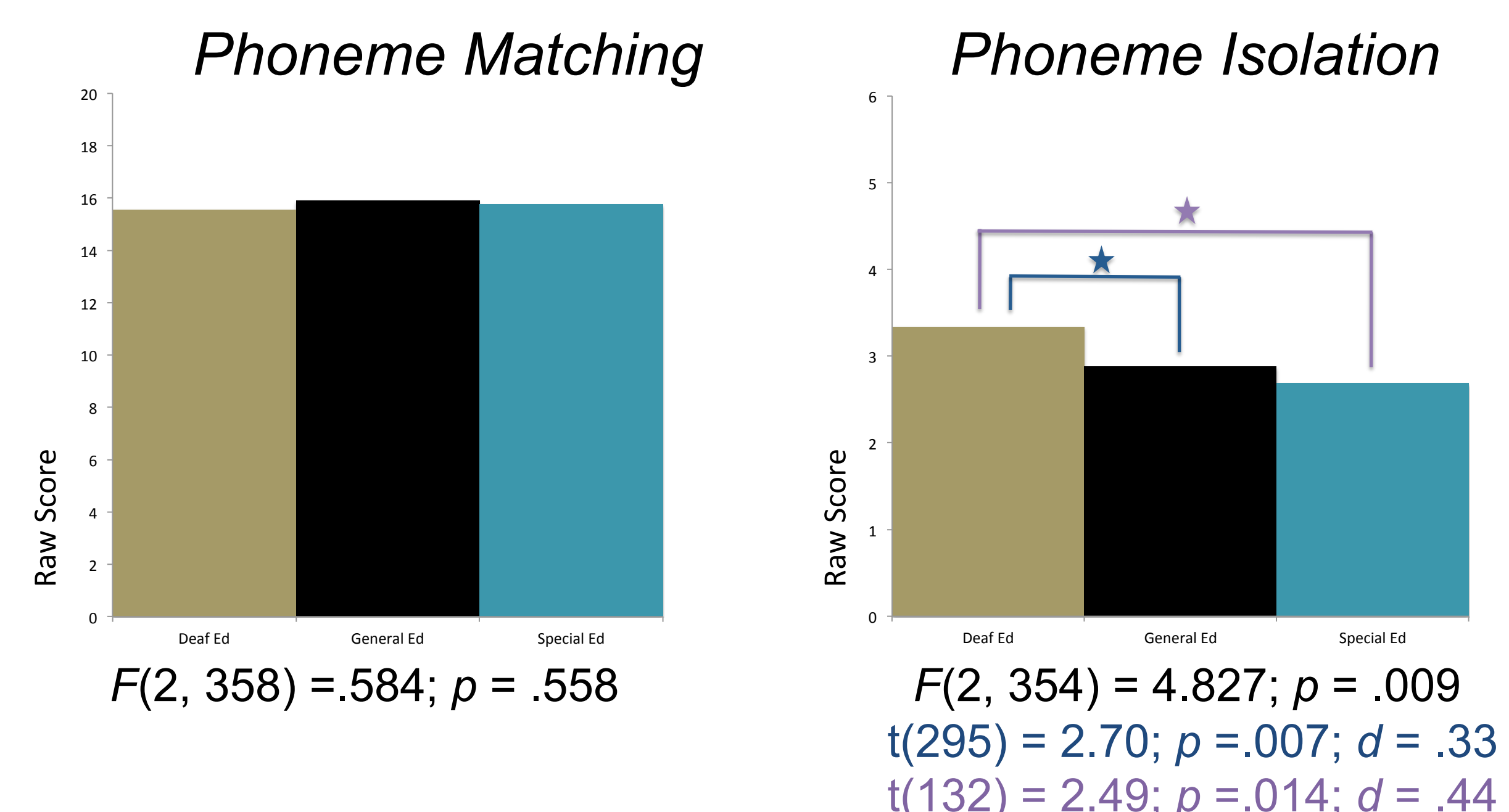
No. Performance was not predicted by communication mode, phonetics coursework, or education level.

Do deaf educators perform similarly to other educators on tasks of phonemic awareness?



$F(2, 353) = 5.591$; $p = .004$
 $t(294) = 2.47$; $p = .014$; $d = .30$
 $t(132) = 2.83$; $p = .005$; $d = .50$

$F(2, 359) = 6.937$; $p = .001$
 $t(299) = 2.62$; $p = .009$; $d = .32$
 $t(294) = 3.24$; $p = .002$; $d = .56$



$F(2, 358) = .584$; $p = .558$

$F(2, 354) = 4.827$; $p = .009$
 $t(295) = 2.70$; $p = .007$; $d = .33$
 $t(132) = 2.49$; $p = .014$; $d = .44$

No. Deaf educators outperformed other educators on all tasks but phoneme matching ($ds = .30-.56$).

DISCUSSION

Children with hearing loss often demonstrate delays in early literacy acquisition, including phonemic awareness. Therefore it is important for deaf educators to have sufficient explicit phonemic awareness skills to provide effective intervention. The results of this study indicate that deaf educators have superior phonemic awareness skills to general educators and special educators. However, the performance of deaf educators was not at ceiling.

Accuracy of Deaf Educators

The overall accuracy on tasks of phonemic awareness for deaf educators was 68% correct. Deaf educators scored highest on phoneme matching (78%), followed by phoneme segmentation (61%), and lowest on phoneme isolation (56%). Deaf educators did not exceed 80% correct on any task of phonemic awareness. Such performance indicates that deaf educators may not have sufficient explicit phonemic awareness to adequately teach phonemic awareness to children with hearing loss.

Easy versus Hard Words

Deaf educators performed much better on phonemic segmentation of easy-to-segment words (81%) than on hard-to-segment words (43%). This difference parallels the difference for other educators reported in Spencer et al. (2008). Teachers' low performance on hard-to-segment words is particularly alarming, because this low performance indicates that deaf educators highly rely on print and do not think beyond print to analyze the sounds that comprise words. Thus, deaf educators may not have sufficient knowledge to explicitly explain phonemic segmentation to students.

Predictors of Phonemic Awareness Skills

None of the predictors hypothesized to affect phonemic awareness skills were significant. However, follow-up analyses indicated that deaf educators in oral settings outperformed those in manual settings on phoneme matching. Future research should examine whether this difference is a result of training programs or the nature of the teaching environment in which educators work.

Comparison of Deaf Educators to Other Educators

With the exception of phoneme matching, deaf educators consistently outperformed both general educators and special educators. However, deaf educators still scored below ceiling on all subtests. Spencer et al. (2008) recommended professional development for educators, and we make the same recommendation for deaf educators.

Implications for Practice

The results of this study provide clear implications for practice. Deaf educators outperformed other educators on tasks of phonemic awareness but did not perform at ceiling, even on easy-to-segment words. Thus, we suggest that professional development for deaf educators that effectively improves phonemic awareness skills is needed. Future research should evaluate such programs, as well as measure the effects of such programs on student outcomes.

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Poster presented at the 13th Symposium on Cochlear Implants in Children

References available upon request: krystal.werfel@vanderbilt.edu

Poster available at: www.mc.vanderbilt.edu/languagelab