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Developing Sign-Symbol Aptitude To Support Word Reading Acquisition



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Reading Acquisition



It's called **reading**. It's how people install new software into their brains.

Mental orthographic Representations (MOR's)

Spoken Phonological Representation of SPEECH

Sound – Symbol Aptitude Readers must have competence in the mappings between orthography and phonology, which requires <u>sound-based</u>letter knowledge.

... Or does it?

English Orthography (MOR's)

Learning Mechanisms



Mental orthographic Representations (MOR's)



ASL Phonological Awareness Intervention

Systematic ASL phonological awareness instruction (Handshape, Movement, and Location patterns).

- Structured lessons.
 - Introduction of target HS and sign/word targets
 - Activities: Identification, categorization, segmenting, blending manipulation (phonological change).
 - Reinforcement/practice activities emphasizing sign phonology-semantic and sign phonologyorthography connections
- Protocol: 30 min/daily instruction from trained bilingual Deaf teacher for 4 weeks.



ASL Handshapes NOT Manual Alphabet Handshapes

Manual Alphabet Handshapes





ASL Handshape Phonemes:



BUT...'X' is not for "xylophone"!

Handshape Families



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Learning Tools

• Dual Language Learning Apps developed for practice and reinforcement.



2 Game Play Options:

Picture mode: Phonology-Semantic connections (Sign Vocabulary learning)

Print mode: Phonology-Orthography connections (Print Vocabulary learning)



Research Question

Question: What are the effects of systematic, explicit signed language phonological awareness (ASL-PA) instruction on both Sign (ASL) and English print (English) vocabulary learning?

Hypothesis 1:

ASLPA training will have a positive impact on the development of both ASL and English print vocabulary in young deaf dual language learners.

Prediction Hypothesis 1:

Sign language vocabulary and English word reading vocabulary will increase as determined by children's scores over time on probes assessing trained and untrained ASL and print English stimulus items.

(?)

Alternative Hypothesis 2:

ASLPA training will impact children's ASL vocabulary development but will have little or no effect on English print vocabulary.

Prediction Hypothesis 2:

ASLPA training will lead to increased accuracy on probes assessing children's vocabulary in ASL but not in English print.

Single Case Design (SCD)

Multiprobe multiple baseline across skills:

- IV: explicit ASL-PA instruction using 4 phonologically contrastive handshapes (2 High density, 2 Low density);
 20 taught & 20 untaught sign and print targets
- print targets
 DV: number of items correctly signed and/or read for each Handshape

Procedures:

- Pre-post assessment battery
- Assessment Probes: baseline; daily prior to instruction; 2 weeks & 4 weeks following intervention
- Intervention phase: structured individual lessons 30 min/day 5 days/week for 20 days.
- Fidelity of training: Observation and video recording of instructional sessions



SIGN-PRINT Bilingual Grade 1 male:6.7 yrs ASL AoE (age 5)



SIGN-SPEECH Bitingual Grade 1 female: 6.9 yrs ASL AoE (birth). CI-age 4



Diversity of Populations

SIGN-PRINT Bilingual Grade 2 male: 8.3yrs ASL AoE (birth)



SPEECH-SIGN Bilingual Grade 2 Male: 8 yrs; ASL AoE (age 6)



SIGN-PRINT BILINGUAL Grade 1 male (6.7 yrs) AOE (ASL) age 6

SIGN Vocabulary



Sessions



Print Vocabulary

SPEECH-SIGN BILINGUAL Grade 2 male (8 years) AOE (ASL) age 6



Results

- A functional relation between ASL-PA instruction and skill acquisition (sign and print word learning) for those children who did not have the skills at baseline.
- Percent of Non-Overlapping data points (PND) was between 96- 100% across skills (90%+ = Highly Effective).
- Results were confirmed by the marked increase in post scores on the ASL-Phonological Test for each of the student.
- Skill learning maintained 4 weeks beyond intervention and generalized to untrained words.

Summary

- ASL-PA training was a highly effective instructional intervention for each of the students – deaf children who varied in primary communication mode, chronological age, and language ability.
- ASL-PA (i.e. HS classification) appears to be an effective mnemonic device to facilitate sign vocabulary and print vocabulary learning.
- Further research is necessary to further tease apart the mechanisms of ASL-PA that facilitate acquisition of an orthographic lexicon.



Questions



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THANK YOU!