Bridging Theories of Phonological Awareness for Children who are Deaf and Hard of Hearing: Perspectives from Verbotonal Specialists in the United States

BY: JAZMIN RAMBEAU

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THESIS COMMITTEE: DR. YVETTE HYTER (CHAIR), DR. TERESA CRUMPTON, DR. SUSAN PIAZZA
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Diversity within Deaf Education

  - Type/severity/configuration/onset of hearing loss
  - Amplification
  - Additional learning challenges

- Environmental:
  - Family
  - Early identification and intervention services
  - Educational setting
Deaf and Hard of Hearing Definitions

  Audiometric deafness: PTA or SRT poorer than 80 to 90 dB HL
  Functional deafness: Inability to use hearing for verbal communication
- Time of onset:
  Prelingual, Perilingual, Postlingual, Deafened
  Determines extent of normal speech and language
- Auditory Speech Recognition Ability
  Hard of Hearing: better than for person who is deaf
  Deaf without amplification: Unable to comprehend conversational speech
- The term Deaf (not deaf): individuals who identify with Deaf community, ASL
World Health Organization: International Classification of Functioning, Disability, and Health

- Health Condition
  - (Disorder or disease)
- Body Functions & Structures
  - (Impairments)
- Activity
  - (Limitations)
- Participation
  - (Restrictions)
- Contextual factors
- Environmental factors
- Personal factors
Literacy within Deaf Education

- One of the biggest challenges (Andrews & Wang, 2015; Easterbrooks & Beal-Alvarez, 2013)
- Typical to only reach each 4th grade level (Traxler, 2000)
- How is the process similar/different?
- Teachers in Senegal requested ways they could target reading comprehension
- Purpose of study: provide teachers in Senegal with current perspectives on how children who are DHH develop literacy skills based on literature review and interviews with Verbotonal specialists in the U.S
Thesis Research Questions

- What are the current evidence-based theories regarding the role of phonological awareness in literacy acquisition for children who are DHH?
- What are the current perspectives from Verbotonal specialists in the United States regarding the role of phonological awareness in literacy acquisition for children who are DHH?
- How can the Verbotonal method be used as a tool to develop phonological representations for children who are DHH?
- How can the Verbotonal teachers in Senegal use this information to develop lesson plans to help students with literacy?
Methodology

- Ethnomethodology
- Observations of classroom interactions at Centre Verbotonal de Dakar
- Literature review and conference presentation
- Ethnographic interviews with Verbotonal Specialists in the United States
- Conclusions
Results: General Observations at Centre Verbotonal de Dakar

- Hospitable and gracious faculty: principal, teachers, orthophonist (SLP)
- Goal of school: develop spoken French language to be integrated
- Portion of students had hearing aids
- Teachers used Verbotonal equipment and body movements: provide tactile and proprioceptive channels to augment acoustic information
- Focus on suprasegmentals: rhythm and intonation
- Sign language not encouraged, but signed gestures used between students and with teachers
Results: Classroom Observations at Centre Verbotonal de Dakar

- “Rhythm” classrooms: repeat individual phonemes and words without letters
- “Transition” classrooms: repeat sentences with natural rhythm, words written on board
- “Primary” classrooms: silently read passage and answer comprehension questions
- 2 lesson plans:
  1. Primary classroom: concept maps for WH questions
  2. Transition classroom: phonological awareness activity-pair letter with picture cue and spoken word. Ex. Pomme (apple): P at top, glue picture of apple, say word

- Faculty expressed that children at this age (~4-5) did not have letter knowledge
- Appeared to be curious about how they could introduce letters using Verbotonal method
un pantalon  une jupe  une chemise
un bonnet  une robe  un grand bébé
les chaussures  une culotte  un slip
Lit. Review Results: Language and Literacy

- Continuum of language environments (auditory to visual) = needs to be complex (Humphries et al., 2012; Spencer & Marschark, 2010).
- Language = literacy
- Language is reciprocal and interactive across modalities: (Mayer & Trezek, 2015; Nelson & Crumpton, 2015)
  
  Thinking <-> Writing <-> Reading <-> Speaking <-> Listening

- Levels of language:
  - Reading and listening: decoding (sound/word level) comprehension (sentence level)
  - Writing and speaking: formulation (sentence level) transcription (sound/word level)

1999 National Reading Panel established 5 necessary skills for hearing children: (National Institute of Child Health and Human Development, 2000)

- Phonemic awareness
- Alphabetic knowledge
- Vocabulary
- Text comprehension
- Fluency

Phonological Awareness: encompasses both phonemic awareness and alphabetic knowledge—sound related decoding skills that are based on the relationship between graphemes and phonemes (Easterbrooks & Beal-Alvarez, 2013)
Lit Review Results: Qualitatively Similar Hypothesis

- DHH develop literacy skills through same processes (Andrews & Wang, 2015; Mayer & Trezek, 2014; Wang, Trezek, Luckner, & Paul, 2008)
- Phonological skills are necessary and not modality specific (Wang et al., 2008)
- Positive association between PA and reading development with visual and tactile channels such as Cued Speech (Colin et al. 2007, 2013)
- TILLS assessment test (Nelson et al., 2015) administered to two deaf children (Test of Integrated Language and Literacy Skills)
- It is important to explicitly teach phonemic awareness and phonics together in order to provide these children with concrete visual cues to help them differentiate between sounds (Nelson, 2015)
Qualitatively Different Hypothesis

- DHH can bypass phonology to become proficient readers
- Studies that did not find relationship between PA and proficient DHH readers (Allen et al., 2009; McQuarrie & Parilla, 2009; Miller et al., 2012)
- Deficient structural knowledge (Miller et al., 2012)
- Suggest they rely on a top-down manner of comprehension by mapping content words and applying them to prior knowledge (Miller et al., 2012)
Agreements

- Phonological sensitivity is central in learning to read, and is language independent (possible through spoken or signed) (Andrews & Wang, 2015)
- “Since phonological skills are implicit in language acquisition in the first place, the argument of whether or not deaf individuals need phonological understanding has persisted for far too long” (Mayer & Trezek, 2014)
- Research should no longer focus on how deaf readers are different, but rather on how “the process of learning to read is manifested differently in deaf readers” (Mayer & Trezek, 2014)
Preliminary Conclusions (RQ1)

- Strong foundation of language (Andrews & Wang, 2015)
- Two theories: agree phonological awareness is significant, independent of language (Andrews & Wang, 2015)
- If the Verbotonal specialists perspectives’ fall within the Qualitatively Similar Hypothesis, necessary to address each component of Balanced Literacy Model, including phonological awareness skills
Results: Ethnographic Interviews

- Knoxville and Maryville, Tennessee
- 5 interviews with Verbotonal experts
  - University Professor (UP)
  - Preschool Teacher (PT)
  - Elementary Teacher (ET)
  - Therapy expert and Trainer (TT)
  - Research Audiologist (RA)
- Themes and Quotes
Method has been used in over 50 countries because of Petar Guberina’s connections as world renowned linguist and politician (UP, TT)

Introduced and developed through research grants at OSU and UT

Biggest challenge to its development in U.S—lack of research (All)

Guberina was European and “philosophical” in ideas (UP, TT)

His ideas were “ahead of his time” (TT)

(i.e. current integrative understanding of multiple modalities to access phonological representations)
How VT has adapted to curriculum

- High-Scope and Common Core—no longer has capacity to be implemented as “whole package” (TT)
- “I utilize the tools and techniques of the VT method while implementing the High-scope curriculum” (PT)
- Both perspectives recognize importance of situational teaching (PT)
- Easy to meet child where he or she is at and use body movements or various rhythm patterns to help child access the components of language in natural way (PT, ET)
- Children expected to be integrated into classroom and follow same curriculum regardless of hearing loss (PT, ET)
Each participant acknowledged value of visual input to aid language and literacy (All)

Signing can help them gain access to language and learn about the communication exchange (RA)

For the children in Senegal that do not have access to sound, signing is probably the best option for their language development (RA)
Role of Phonological Awareness Skills

- Agreed that a strong foundation of language is necessary
- Agreed that these skills develop same as hearing children (in line with qualitatively similar hypothesis)
- PA encompasses both phonemic awareness and alphabetic knowledge
- Discussed within the following steps:
  - Rhythm
  - Discrimination
  - Blending/pulling apart sounds
  - Alphabetic principle
For normally hearing children, phonemic awareness begins in womb with ability to perceive rhythm and speech patterns (RA).

“Phonotactic probability is another name for phonological awareness for babies” (RA)—ability to recognize patterns for where words begin and end.

RA found that hearing impaired babies had higher accuracy and reaction time for infant directed speech for a longer period of time (RA).

Require longer exposure to exaggerated rhythm (infant directed speech) due to “hearing age,” or age at which they receive amplification (RA).

Verbotonal method uses exaggerated babbling rhythms (All).
Phonological Awareness Skills: Discrimination

- Next step is discriminating between sounds and their characteristics
- Verbotonal helps make child aware of these differences how they occur in different environments, and correct pronunciation
- Classroom activities to target discrimination: (PT)
  - One sound vs. many, quiet vs. loud, short/long duration, phonemes
  - Rubber circles on floor—one circle on one side, many circles on other side
  - “Ba, ba, ba, ba”: run to many circles; “Ba”: run to one circle
- “You have to hear it in order to say it” (PT)
Phonological Awareness Skills: Blending/Pulling Apart

- Understanding that sounds make up words
- Verbotonal clinician presents a nonsense rhythm with various consonant-vowel blends (bi, bu), body movements, and natural intonation, and the child repeats the sequence (TT, PT)
- Helps them understand that sounds can be blended together in different ways (TT)
- Builds auditory perception and memory (RA)
Phonological Awareness Skills: Alphabetic Principle

- Agreed that D/HH children develop phonics and emergent literacy in the same way as hearing children.
- Begin through reading books and making print available.
- Once child is at a language age of 2 or 3, you pair letters with sounds.
- Body movements help child develop letter identification because body movements help child remember sound to pair with letter.
- Coming up with words for a letter.
- Within High Scope:
  - “Letter Links”—each name posted on wall with picture “Langdon Ladder”
  - Incidental letter identification “Wacky Wednesday”
Conclusions: RQ 2

Verbotonal experts’ perspectives concerning role of phonological awareness (PA) skills in literacy acquisition:

- In line with Qualitatively Similar Hypothesis: phonological awareness skills are delayed, but develop in same way as children with normal hearing
- PA skills are necessary to literacy development
- PA skills involve phonemic awareness (rhythm, discrimination between sounds and characteristics, sound blending/segmenting)
- PA skills involve alphabetic principle (print awareness, letter identification, spelling and rhyming)
Conclusions RQ 3:

- How the Verbotonal method can be used as a tool to help develop phonological representations for children who are DHH?
  - VT uses multiple sensory channels to help augment acoustic information:
  - Phonemic awareness: Babbling patterns with normal rhythm and exaggerated intonation (similar to infant directed speech)
  - Phonemic awareness: Body movements help child feel how sound is produced
  - Alphabetic principle: Body movements and corresponding phonemes can be visually paired with letters
Conclusions RQ 4:

- How Verbotonal teachers in Senegal can target phonological awareness skills:
- Already addressing components of PA:
  - Phonemic awareness: rhythm and sound discrimination
  - Alphabetic principle: providing full words
- Other PA skills to address:
  - Discrimination tasks between sound characteristics (one vs. many, quiet vs. loud, etc.)
  - Letter identification within alphabetic principle:
    - Incorporate individual letters during lessons consisting of phoneme repetition
    - Incorporate beginning letters of words during lessons consisting of word repetition
    - Incidentally incorporate letters through common concepts such as names and days of week
Future Directions

- Observations to verify how teachers in Senegal address phonological awareness skills.
- Interviews with teachers in Senegal to construct conclusions for how these skills can be most effectively implemented in the classroom.
- Literature review of evidence based classroom activities and methods to target phonological awareness.
- Literature review of theories related to how children who are DHH develop other components of literacy: vocabulary, fluency, comprehension.
- Literature review on how sign language can help support spoken language.
Overall Conclusions

- Literature review and interviews support conclusion that deaf and hard of hearing develop literacy acquisition using similar processes as normal hearing through multiple sensory modalities.
- Teachers of children who are DHH must explicitly address every level of phonological awareness.
- Children who are DHH must be exposed to complex language during critical period of language development.
- This study provides a foundation of information and perspectives for teachers in Senegal, and for future students to create lesson plans.
References


