A Comparison of Language and Articulation Scores Between Students with Single-Sided Deafness and Unilateral Microtia/Atresia

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Disclosure

We are full-time salaried employees at Sunshine Cottage School for Deaf Children in San Antonio, Texas.
Past research has shown...

- Unilateral hearing loss affects 0.4 to 34 per 1000 newborns and 1 to 50 per 1000 school-aged children (Lieu, et. al, 2010)
- 35% of children with a unilateral hearing loss fail at least one grade compared to 3.5% of their typically hearing peers (Bess and Tharpe, 1984)
- They are more than four times as likely to have an IEP and twice as likely to have speech therapy than their typically hearing peers (Vila and Lieu, 2015)
What makes this study different?

• Historically, research has grouped all children with unilateral hearing loss together.

• This study separates children who have a unilateral sensorineural hearing loss versus those with a conductive/outer/middle ear hearing loss.
Definitions of hearing loss

• Single-Sided Deafness (SSD)
  – Sensorineural hearing loss
  – Inner ear component

• Unilateral Microtia Atresia (UMA)
  – Conductive Hearing Loss
  – Outer and middle ear component
Population

- **Number of children with SSD**
  - Right-sided: 3
  - Left-sided: 5
  - Total: 8

- **Number of children with UMA**
  - Right-sided: 11
  - Left-sided: 4
  - Total: 15
Methods

• Audiological Testing
  – Unaided testing bilaterally
  – Aided testing
    • Everyday listening condition
    • Each ear independently
  – Closed set word recognition
    • Everyday listening condition
    • Each ear independently

*The better hearing ear is plugged or masked
Methods

• Speech and Language Assessments
  – Compared to typically hearing, same-aged peers
  – Children tested in their dominant language (English or Spanish)
  – Articulation Assessments used:
    • *Goldman-Fristoe Test of Articulation – 2\textsuperscript{nd} Edition, Goldman-Fristoe Test of Articulation – 3\textsuperscript{rd} Edition, Diagnostic Evaluation of Articulation and Phonology, Clinical Assessment of Articulation and Phonology, or the Goldman-Fristoe Test of Articulation – 3\textsuperscript{rd} Edition, Spanish*
  – Language Assessments used:
Receptive Language

Estimated Marginal Means of Recep Lang SS Preschool

- UHL Type
  - SSD
  - UMA

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Expressive Language

Estimated Marginal Means of Expr Lang SS Preschool

Estimated Marginal Means

UHL Type

SSD

UMA

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Conclusions/Observations

• Within our population:
  – Children with SSD performed better than children with UMA in all areas
  – Children who are identified younger scored better in articulation
  – Children who get amplification earlier perform better in expressive language
  – Those who wore their equipment for 6+ hpd perform better in expressive and core language
Hopes for the future

• Children would achieve full time use of their hearing technology younger/prior to entering a preschool program.
• Children with any type of unilateral hearing loss would receive speech-language therapy/early childhood intervention services as intensively as those children with a bilateral hearing loss.
• Children, especially those with unilateral hearing loss, would be evaluated by a Craniofacial Specialist prior to entering school to rule out or confirm any confounding diagnoses.
• Children under three years old will qualify for articulation therapy.
Future research

• Observe whether or not a statistically significant difference exists between children with SSD and UMA for language and articulation.

• Explore whether or not the ear that has a hearing loss affects speech and language scores in these children.

• Investigate the connection between UMA/SSD and other confounding diagnoses.
Bibliography/Citations


Thanks for listening!

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