Language Development in Deaf Children: Foundations and Outcomes

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Disclosure

A. I have no financial relationships with the manufacturers of any commercial product or providers of commercial services discussed within this CME activity.

B. I do NOT intend to discuss an unapproved/investigative use of a commercial product/device in my presentation.

C. I do not conduct research on or have much of anything to do with EHDI or even language development.

D. No kids, no pets.
Conclusions
#1 - “…lack of understanding of the cognitive skills underlying educational interventions is the fundamental problem in the development of special education.”

Detterman & Thompson (1997)

What Is So Special About Special Education?
#2 – Language and Learning Interact and are Cumulative

Environment/Experience

Language

Thinking, Learning, Problem Solving, Socialization, Literacy

CERP Center for Education Research Partnerships
Preliminaries
Preliminaries

• Foundations and outcomes of language development
  – Hearing, vision, and language
  – Cognition, social context, and experiential diversity
  – Academic placement, literacy, achievement
  – Real-world contexts (language scores vs. language use)

• Apparent simplicity of conclusions

• Groups vs. individuals

• Don’t believe everything you read (even if I wrote it)
Preliminaries

• Research challenges and limitations on interpretation
  – Comparability of samples
  – Heterogeneity of deaf children
  – Anecdotes and generalizations vs. empirical study
  – Conference presentations vs. peer-reviewed publication

• Goals and tone

• “I’m mad as hell, and I’m not going to take it anymore!”
  
  (Howard Beale, UPN - 1976)
"We've been arguing about this question for hundreds of years now, and we're at a point in the argument, I'm afraid to say, where evidence isn't changing people's minds at all."

*(Malcolm Gladwell, NPR Talk of the Nation, 12/19/07)*

"If you are scientist … you have an obligation when you speak to speak carefully... and produce the evidence to back up what you say."

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"We've been arguing about [race and IQ] for hundreds of years now, and we're at a point in the argument, I'm afraid to say, where evidence isn't changing people's minds at all."

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Claims Made about Deaf Children without the Evidence to Back Up What They Say

• Claim
  – Where it likely came from
  – What we really know (and don’t know)
Claims Made about Deaf Children without the Evidence to Back Up What They Say

• Cued speech facilitates deaf children’s English literacy skills
  – Cued speech facilitates deaf children’s literacy skills in French (Leybaert, & Alegria, 2003; Alegria & Lechat, 2005)
Claims Made about Deaf Children without the Evidence to Back Up What They Say

- ASL-English bilingual programs result in bilingual language fluencies
  - Early language fluency in correlated with later literacy skills (Padden & Ramsey, 2000; Singleton et al., 1998)
  - Hearing and deaf parents who expose their children to sign and English have the highest literacy scores (Brasel & Quigley, 1977; Akamatsu, Musselman, & Zweibel, 2000)
Claims Made about Deaf Children without the Evidence to Back Up What They Say

• Sign language interferes with learning to speak
  – Sign sometimes trumps speech in young bilingual children because they’re more likely to be understood (Crittenden, Ritterman, & Wilcox, 1986)
  – Exposure only to spoken language typically results in significant delays through high school (Geers, 2006)
  – Three years after implantation, speech skills are independent of prior use of speech or sign (Archbold, Nikolopoulos, Tait, O’Donoghue, Lutman, & Gregory, 2000)
Claims Made about Deaf Children without the Evidence to Back Up What They Say

- Deaf children (especially native signers) have better visual-spatial skills than hearing children
  - Deaf people and especially native signers had better peripheral vision (Neville & Lawson, 1987; Swisher, 1991)
  - Deaf individuals are more distracted by peripheral stimuli, but they do not obtain more information (Dye, Hauser, & Bavelier, in press; Pelz, Marschark, & Convertino, in press)
Claims Made about Deaf Children without the Evidence to Back Up What They Say

• Children with CIs should not be allowed to sign
  – We don’t know how much exposure to speech is enough (it varies widely across children)
  – Early grade-level reading skills become multi-year lags by high school in oral CI children (Geers, 2005)
  – By high school, reading and academic achievement are equal to hearing peers when kids with CIs have both speech and sign (Spencer, Gantz, & Knutson, 2004)
Claims Made about Deaf Children without the Evidence to Back Up What They Say

• Deaf children of deaf parents have higher academic achievement than those with hearing parents
  – Having deaf parents is a proxy variable for having effective access to language
  – (Jensema & Trybus, 1978) but see (Jensema & Trybus, 1978)
  – 50% of deaf adults read at or below the grade 4 level
Claims Made about Deaf Children without the Evidence to Back Up What They Say

- If we remove communication barriers, deaf children will succeed in inclusive classrooms
  - P.L. 92-142
  - P.L. 92-142 was the result of advocacy by parents of children who have full access to language around them
Median Reading Comprehension Scores of Deaf and Hard-of-Hearing 14 & 18-Year-Olds

<table>
<thead>
<tr>
<th>Norms</th>
<th>SAT7 -1974</th>
<th>SAT8 -1983</th>
<th>SAT9 - 2000</th>
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<tbody>
<tr>
<td>Age 14-18</td>
<td>14</td>
<td>14</td>
<td>12</td>
</tr>
<tr>
<td>Grade Equivalents 2.2</td>
<td>2.7</td>
<td>2.9</td>
<td>3.3</td>
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<td></td>
<td>4.0</td>
<td>2.8</td>
<td>4.0</td>
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</tbody>
</table>
Claims Made about Deaf Children with Plenty of Evidence to Back Them Up

• Deaf children are not hearing children who can’t hear

• Deaf children do not learn/think/know in the same ways as hearing children
Claims Made about Deaf Children with Plenty of Evidence to Back Them Up

- Deaf children generally demonstrate poorer memory skills (remember less) than hearing peers
  - Words, signs (Krakow & Hanson, 1985; Liben & Drury, 1977)
  - Text (Banks, Gray & Fyfe, 1990; Marschark et al., 1993)
  - Figures, pictures (Liben, 1979; Todman & Seedhouse, 1993)
  - “Different does not mean deficient” (Marschark, 2003)
Claims Made about Deaf Children with Plenty of Evidence to Back Them Up

- Deaf children are less likely to automatically employ basic, integrative learning strategies
  - Apparent in early (18 months) vocabulary learning (Anderson & Reilly, 2002)
Slow Word Learning
Rapid Word Learning
Cognitively Mediated Word Learning
Cognitively mediated word-learning
(Anderson & Reilly, 2002)
Claims Made about Deaf Children with Plenty of Evidence to Back Them Up

- Deaf children are less likely to automatically employ basic integrative learning strategies
  - Apparent in early (18 months) vocabulary learning (Anderson & Reilly, 2002)
  - Learning and problem solving (Ottem, 1980)
Review of 51 studies of problem solving, association, memory, rule-learning, conservation, classification

<table>
<thead>
<tr>
<th></th>
<th>One dimension</th>
<th>Two dimensions</th>
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<tr>
<td>Deaf and hearing similar</td>
<td></td>
<td></td>
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<tr>
<td>Deaf and hearing different</td>
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<td><strong>Deaf and hearing</strong></td>
<td><strong>85%</strong></td>
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<tr>
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<td><strong>15%</strong></td>
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<tr>
<td>different</td>
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<tr>
<td>Deaf and hearing similar</td>
<td>85%</td>
<td>17%</td>
</tr>
<tr>
<td>Deaf and hearing different</td>
<td>15%</td>
<td>83%</td>
</tr>
</tbody>
</table>
Claims Made about Deaf Children with Plenty of Evidence to Back Them Up

• The effects are seen in both learning language and learning through language
  – Reading and studying (Richardson et al., 1999; Strassman, 1997)
  – Concept knowledge (McEvoy et al., 1999; Marschark et al., 2004)
  – Problem solving (Marschark & Everhart, 1999)
  – Academic performance (Blatto-Vallee et al., 2007)
  – “Different does not mean deficient” (Marschark, 2003)
Claims Made about Deaf Children with Plenty of Evidence to Back Them Up

- Deaf children do not understand as much language as they (and we) think they do
Learning in the College Classroom

Proportion Correct

Group

ASL  Signed English  Hearing
Learning in the College Classroom

![Bar Chart showing Proportion Correct for ASL, Signed English, and Hearing, with Written Test and Signed Test categories]

**Proportion Correct**

- ASL
- Signed English
- Hearing

**Categories**

- Written Test
- Signed Test

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**Center for Education Research Partnerships (CERP)**

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**RIT**

**NTID**

National Technical Institute for the Deaf

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**The University of Edinburgh**
Learning in the College Classroom

Proportion Correct

Strong Signers  Oral  Hearing

Group

CERP  Center for Education Research Partnerships
Learning in the College Classroom

Proportion Correct

CI

No CI

CERP Center for Education Research Partnerships
Understanding of Peer Communication
A Trivial Pursuit?

![Bar chart showing comprehension proportions for signers, speakers, and mixed communication.]

- **Signers**: High proportion correct
- **Speakers**: Moderate proportion correct
- **Mixed**: Lower proportion correct

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Claims Made about Deaf Children with Plenty of Evidence to Back Them Up

• Deaf students’ language comprehension in the classroom is not just about (meaning, don’t blame):
  – The modality of instruction
  – Direct vs. interpreted instruction
  – Deaf vs. hearing teachers

• It’s about having teachers who know what deaf students know and how they learn (Marschark et al., 2008)
What Does It All Mean?

- If we want to improve language and achievement of deaf children, we must recognize their individual differences and understand their cognitive foundations.
- Language, cognition, and learning are cumulative – we have to consider the whole child, in real-world contexts.
What Does It All Mean?
(Bonus Conclusions)

• Deaf children are not hearing children who can’t hear
• We are at a threshold…
Raising and Educating a Deaf Child

Marc Marschark

A COMPREHENSIVE GUIDE TO THE CHOICES, CONTROVERSIES, AND DECISIONS FACED BY PARENTS AND EDUCATORS

SECOND EDITION

ENDORSED BY THE AMERICAN SOCIETY FOR DEAF CHILDREN

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