BEYOND SEMANTICS AND SYNTAX: THE DEVELOPMENT OF PRAGMATICS IN CHILDREN WITH HEARING LOSS

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Outcomes of Children who are deaf or hard of hearing: 3rd to 12th grade & 4 to 7 year longitudinal study

ONE FOR ONE: ONE YEARS GROWTH FOR ONE YEAR OF LIFE
CSAP (Colorado State Assessment Project) Reading Performance Growth 2004 vs 2005

- **ONE FOR ONE: ONE YEAR FOR ONE YEAR**
- Reading grades 3-10
- N=751 students
- Adequate Yearly Progress or 1 year growth in 1 year
  - 40% made 1 year growth
  - 40.8% made > 1 year growth
  - 18.7% made < 1 year growth
Vocabulary Comprehension (TACL)

![Graph showing the mean language age in relation to chronological age (months) for hearing and d/hoh individuals. The graph indicates a linear increase in mean language age as chronological age increases.]
Comprehension of Grammar (TACL)

Mean Language Age vs. Chronological Age (months)

- Black line: hearing
- Green line: d/hoh
Comprehension of Elaborated Sentences (TACL)

Mean Language Age vs Chronological Age (months)

- Hearing
- d/hoh
Expressive Vocabulary (EOWPVT)

![Graph showing the relationship between chronological age and mean language age for hearing and d/hoh groups. The graph indicates an upward trend with increasing chronological age.]
Speech Articulation (GFTA)
MCDI-EL and TACL-3 (Baca, 2009)
MCDI-Expressive Language & EOWPVT-2 Language Comprehension

Age Equivalent (months)

Chronological Age (months)

- Mild/Mod
- Severe
- Profound
- Progressive
- Mild
- Severe
- Profound
- Progressive
NECAP:

NATIONAL EARLY CHILDHOOD ASSESSMENT PROJECT: DEAF AND HARD OF HEARING

States collecting outcomes of children identified through UNHS/EHDI programs
NECAP Project Overview

- Collect language outcome data on deaf and hard-of-hearing children birth to 4 across the United States
  - Establish individual state databases
  - Establish national database
  - Explore feasibility of interfacing with existing EHDI databases
NECAP Project Goals

• Support states in assessing outcomes
• Assist states in using results to inform intervention
• Examine feasibility of a national outcomes database
• Determine program, child, and family characteristics related to successful outcomes
Services Provided by Colorado

- Assessments scored
- Profile sheet created
- Written report of results
- Comparison of scores to hearing and deaf/hoh norms
- Database creation and maintenance
- Annual accountability report characterizing state’s performance (including subgroups)
Benefits for Programs and States

- Provides statewide and program-specific accountability data
- Examines outcomes in subgroups of children
- Informs personnel preparation needs and areas for program improvement
- Provides networking opportunities with other states
Assessment Components

- Demographic form
- Release of audiologic information
- Minnesota Child Development Inventory
- MacArthur-Bates Communicative Development Inventories
- Additional assessments on request (e.g., play, listening skills, speech intelligibility, etc.)
Participating States

- Arizona – Arizona School for the Deaf and Blind
- California – Fremont School for the Deaf and Blind, LA Unified Public Schools
- Colorado: Colorado State School for the Deaf and Blind
- Idaho: Idaho State School for the Deaf and Blind
- Indiana: Indiana State School for the Deaf and Blind
- Texas: 5 pilot sites
- Wisconsin: state EHDI program
- Wyoming: state EHDI program
Assessments Completed

- 259 assessments completed (not including Colorado)
- 162 children assessed 1 to 4 times each
- Colorado: 225 assessments per year
Participant Characteristics (excluding Colorado)

- Bilateral loss = 249; Unilateral loss = 10
- Auditory Neuropathy = 7
- English-speaking home = 239; Spanish-speaking home = 20
- No additional disabilities = 229; Have additional disabilities = 30
- Boys = 140; girls = 119
Degree of Hearing Loss
Participant Criteria for Language Outcomes Analysis

- Bilateral hearing loss
- English-speaking home
- No other disabilities that would affect speech or language development
States Represented in Current Language Outcomes Analysis

- Arizona
- Colorado
- Idaho
- New Mexico (previous participant)
- Texas
- Utah (previous participant)
- Wisconsin
- Wyoming

- Note: CA and IN just initiated NECAP; data now being collected
Language Outcomes Analysis: Participant Characteristics

- **Chronological age**
  - Range = 6 to 40 months
  - Mean = 21 months
- **Boys = 130; Girls = 140**
- **Number of assessments = 270**
Assessment 1: Minnesota Child Development Inventory (1992)

- 8 areas of development assessed
  - Language, Motor, Social, Self Help, Pre-Literacy
- Parent report
  - Parents respond “yes” or “no” to a variety of statements about their child
  - Example: “Has a vocabulary of 20 or more words”
- Scales adapted to reflect abilities in both spoken and sign language
Assessment 2: MacArthur-Bates Communicative Dev. Inventories

- Assesses spoken and sign vocabulary
  - Expressive and receptive for younger children
  - Expressive vocabulary for older children
- Parent-report instrument
Determining Language Quotient

- Language Age/Chronological Age x 100
  - If LQ = 100, Language Age = CA
  - If LQ < 100, Language Age < CA
  - If LQ > 100, Language Age > CA

- LQs of 80+ are within the normal range compared to hearing children
Median Language Quotients

- Minn Exp
- Minn Comp
- Mac Vocab

Assessment

Language Quotient

0 20 40 60 80 100
Percent of Scores in the Average Range (LQ = 80+)

- Minn Exp
- Minn Comp
- Mac Vocab

Assessment

% of Scores

0 20 40 60 80 100
Minnesota CDI:
Median Language Quotients
MacArthur-Bates: Median Vocabulary Production Quotients

![Bar Graph]

- Language Quotient
- State

- States 1, 2, 3, 5, 7, and 8 have similar quotients around 80.
- State 4 has a significantly higher quotient at around 120.
- State 6 has the lowest quotient at around 60.
Conclusions

- Almost 80% of children scored within the average range on the Minnesota Expressive Language subtest.
- On average, children in all states scored more poorly on cognitive-linguistic items (Minn Lang Comp) compared to more superficial language items (Minn Exp Lang).
Conclusions

- Acquiring an age-appropriate lexicon is a challenge for many children with 43% demonstrating significant delays
- Differences in language outcomes are apparent between some states
- As more assessments are collected, factors predictive of better language outcomes will be identified
THE MISSING LINK:

PRAGMATIC LANGUAGE DEVELOPMENT
## Pragmatics Checklist

<table>
<thead>
<tr>
<th>Pragmatic Objective</th>
<th>Not Present</th>
<th>Uses No Words Preverbal</th>
<th>Uses 1-3 Words</th>
<th>More Complex Language</th>
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</thead>
<tbody>
<tr>
<td>States Needs</td>
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<tr>
<td>(I want...)</td>
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<tr>
<td>Makes polite requests</td>
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<td>Makes choices</td>
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<tr>
<td>Gives description of an object wanted</td>
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<tr>
<td>Expresses a specific personal need</td>
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<tr>
<td>Requests help</td>
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<tr>
<td>Pragmatic Objective Regulatory</td>
<td>Not Present</td>
<td>Uses No Words Preverbal</td>
<td>Uses 1-3 Words</td>
<td>More Complex Language</td>
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<tr>
<td>Gives Commands</td>
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<tr>
<td>(Do as I tell you…)</td>
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<tr>
<td>Gives directions to</td>
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<tr>
<td>play a game</td>
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<tr>
<td>Gives directions to</td>
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<td>make something</td>
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<td>Changes the style of</td>
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<tr>
<td>commands or requests depending</td>
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<tr>
<td>on who the child is speaking</td>
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<tr>
<td>to and what the child wants.</td>
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<tr>
<td>Pragmatic Objective</td>
<td>Not Present</td>
<td>Uses No Words Preverbal</td>
<td>Uses 1-3 Words</td>
<td>More Complex Language</td>
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<tr>
<td>Personal (Expresses Feelings…)</td>
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<tr>
<td>Identifies feelings (I’m happy.)</td>
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<tr>
<td>Explains feelings (I’m happy because it’s my birthday.)</td>
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<tr>
<td>Provides excuses or reasons</td>
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<tr>
<td>Offers an opinion with support</td>
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<tr>
<td>Complains</td>
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<tr>
<td>Blames others</td>
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<tr>
<td>Provides pertinent information on request (2 or 3 of the following: name, address, phone number, birth date)</td>
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<tr>
<td>Pragmatic Objective Interactional</td>
<td>Not Present</td>
<td>Uses No Words Preverbal</td>
<td>Uses 1-3 Words</td>
<td>More Complex Language</td>
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<tr>
<td>Interactional (Me and You…)</td>
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<tr>
<td>Interact with others in a polite manner</td>
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<tr>
<td>Uses appropriate social rules such as greetings, farewells, thank you, getting attention</td>
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<tr>
<td>Attends to the speaker</td>
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<tr>
<td>Revises/repairs an incomplete message</td>
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<tr>
<td>Initiates a topic of conversation (doesn’t just start talking in the middle of a topic)</td>
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<tr>
<td>Maintains a conversation (able to keep it going)</td>
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<tr>
<td>Ends a conversation (doesn’t just walk away)</td>
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<tr>
<td>Interjects appropriately into an already established conversation with others</td>
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<tr>
<td>Makes apologies or gives explanations of behavior</td>
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<tr>
<td>Requests clarification</td>
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<tr>
<td>States a problem</td>
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<tr>
<td>Criticizes others</td>
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<tr>
<td>Disagrees with others</td>
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<tr>
<td>Compliments others</td>
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<tr>
<td>Makes promises</td>
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<tr>
<td>Pragmatic Objective</td>
<td>Not Present</td>
<td>Uses No Words Preverbal</td>
<td>Uses 1-3 Words</td>
<td>More Complex Language</td>
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<tr>
<td>Wants Explanations (Tell me Why…)</td>
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<tr>
<td>Asks questions to get more information</td>
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<tr>
<td>Ask questions to systematically gather information as in “Twenty Questions”)</td>
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<tr>
<td>Asks questions because of curiosity</td>
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<tr>
<td>Asks questions to problem solve (What should I do…?, How do I know…?)</td>
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<tr>
<td>Asks questions to make predictions (What will happen if…?)</td>
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<tr>
<td>Pragmatic Objective</td>
<td>Not Present</td>
<td>Uses No Words Preverbal</td>
<td>Uses 1-3 Words</td>
<td>More Complex Language</td>
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<tr>
<td>Imaginative</td>
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<tr>
<td>Shares Knowledge and Imaginations (I’ve got something to tell you…)</td>
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<tr>
<td>Role plays as/with different characters</td>
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<tr>
<td>Role plays with props (banana as a phone)</td>
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<tr>
<td>Provides a description of a situation which describes the main events</td>
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<tr>
<td>Correctly re-tells a story which has been told to them</td>
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<tr>
<td>Skill</td>
<td>Level 1</td>
<td>Level 2</td>
<td>Level 3</td>
<td>Level 4</td>
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<tr>
<td>Relates the content of a 4-6 frame picture story using correct events for each frame</td>
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<tr>
<td>Creates an original story with a beginning, several logical events, and an end</td>
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<tr>
<td>Explains the relationship between two objects, actions or situations</td>
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<tr>
<td>Compares and contrasts qualities of two objects, actions or situations</td>
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<tr>
<td>Tells a lie</td>
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<tr>
<td>Expresses humor/sarcasm</td>
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Presentation Overview

- Background
  - Pragmatic skill development
  - Methods

- Results
  - Normal hearing data
  - Compare pragmatic skills of children with and without hearing loss

- Conclusions

- Future Directions
Research Questions

- When do children with hearing loss master specific pragmatic skills in comparison to their peers with normal hearing?

- How does development differ based on degree of hearing loss?
Pragmatics – Social Language Use

- ASHA Website:
  - Using language for different purposes
  - Changing language according to the needs of a listener or situation
  - Following rules for conversations and storytelling
Pragmatics

- Pragmatic language difficulties increase risk for victimization (Conti-Ramsden & Botting, 2004).
- Pragmatic difficulties increase risk for social and emotional deficits (Ketelaars, et al., 2009)
Children who are deaf or hard of hearing use more directive and less informative communicative functions than their normally hearing age-matched peers (Day, 1986; Nicholas, 2000; Nicholas & Geers, 1997)
Normal Hearing Group: Data Collection

- Pragmatics Checklist

- Online version of Pragmatics Checklist created on SurveyMonkey

- Solicited participants:
  - Posted on Hand and Voices website
  - Through E-mail
Hearing Loss Group: Data Collection

- U.S. Dept. of Education
  - Office of Education #H325D030031A, H324C030074 supported research project on language acquisition of children with hearing loss
  - Parents completed a printed version of the Pragmatics Checklist
  - Children were re-assessed annually
45 items

Parents are asked to indicate whether or not a skill is present by selecting from the following choices:
- Not present
- Preverbal
- 1-3 words
- Complex language
Study Participants

- Normal Hearing Group
  - N=109
  - Age Range: 2-7 years
  - Normal hearing and cognition

- Hearing Loss Group
  - N=126
  - Age Range: 3-7 years
  - All Levels of hearing loss
  - Normal cognition
Study Participants

- Children in both groups were determined to have normal cognition
  - Normal hearing group: based on parent report
  - Hearing loss group: IQ \( \geq 70 \) on the Leiter non-verbal intelligence test
Demographics: Gender

- **Normal Hearing**
  - Male: 40%
  - Female: 55%
  - Not Specified: 5%

- **Hearing Loss**
  - Male: 50%
  - Female: 45%
  - Not Specified: 5%
## Age

<table>
<thead>
<tr>
<th>Years</th>
<th>Age Range (Months)</th>
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<tbody>
<tr>
<td>2 Years</td>
<td>1;6-2;5 years (18-29 months)</td>
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<tr>
<td>3 Years</td>
<td>2;6-3;5 years (30-41 months)</td>
</tr>
<tr>
<td>4 years</td>
<td>3;6-4;5 years (42-53 months)</td>
</tr>
<tr>
<td>5 years</td>
<td>4;6-5;5 years (54-65 months)</td>
</tr>
<tr>
<td>6 years</td>
<td>5;6-6;5 years (66-77 months)</td>
</tr>
<tr>
<td>7 years</td>
<td>6;6-7;5 years (78-89 months)</td>
</tr>
<tr>
<td>8 years</td>
<td>7;6 + years (90+ months)</td>
</tr>
</tbody>
</table>
Demographics: Age

![Bar chart showing age distribution with percentage of normal hearing and hearing loss for different age groups.]
Demographics:
Maternal Level of Education
Demographics:
Languages Spoken

- English Only
- Bilingual
- English & Sign Language
- Bilingual & Sign Language

Percentage:
- Normal Hearing
- Hearing Loss
Demographics:
Degree of Hearing Loss

Hearing Loss Group

- Mild
- Mod & Mod-Sev
- Severe
- Profound

Percentage

0 5 10 15 20 25 30 35

Hearing Loss Group
Mastery Criterion

- Children in age groups were determined to have “mastered” a skill with use of complex language when 75% of the children achieved the skill.
Children with Normal Hearing

- 44% (20 of 45) of the items were mastered using complex language by 3 years of age
- 95.5% (43 of 45) of the items were mastered by 4 years of age
- 98% by 5 years
- 100% by 6 years
Final Items to Master for NH group

- Provides information on request
  - Name, date of birth, address (2 of 3 items)
- Makes promises
Children with Hearing Loss

- 6.6% (3 of 45) of the items were mastered with complex language by six years of age
- 69% (31 of 45) of the items were mastered by 7 years of age
Earliest Items to Master (HL Group)

- Makes polite requests
  - Uses words: please, thank you.
- Expresses needs
- Role plays with props
Items not Mastered by 7yrs (HL Group)

- Provides information on request
- Repairs incomplete sentences
- Ends conversations
- Interjects
- Apologies
- Request clarification
- Makes promises
- Ask questions to problem solve
- Asks questions to make predictions
- Retells a story
- Tells 4-6 picture story in right order
- Creates original story
- Explains relationships between objects-action-situations
- Compares and contrasts
Percentage of Items Mastered by Age for NH and HL groups

- NH
- HL

% Items Mastered:

- 2 years
- 3 years
- 4 years
- 5 years
- 6 years
- 7 years
The proportion achieving 50% or more of the items with complex language
Conclusion

- Children who are deaf or hard of hearing begin to master pragmatic skills at 6 years of age; 3-year-old peers with normal hearing have already mastered nearly half of the checklist skills.

- By age 7, children who are deaf or hard of hearing have mastered approximately 2/3 of the checklist skills; almost all of the skills are mastered by hearing children by age 4.
Future Directions

- Larger sample of normal hearing with better matched experimental and control groups
  - Maternal level of education
  - Age
- Need to support pragmatic skill development in children with hearing loss to reduce risk for socio-emotional deficits and victimization.
Pragmatics

- Children with hearing loss use a lot of resources to simply access information.
- Using language in a socially appropriate manner is the highest level of language functioning and the most difficult.
- Most of our children require specific instruction in these issues.
Strategies

- I don’t understand
- I need more information
- I didn’t get all of the information
- I can’t remember what to do next
- Rehearsal strategies
Parents

- Don’t forget about the parents
- Parents who have been in infant intervention programs are used to focusing on a specific target
- They are eager to know how they can supplement the educational goals
7 Pragmatic Categories

- Instrumental-Request for action/object
- Regulatory-Command
- Interactional-Social rules/poise/politeness
- Personal-Expression of Feelings
- Heuristic-Questions to obtain information
- Imaginative-Pretending
- Informative-Cause and effect, compare/contrast, evaluation
Relationship of Pragmatic Checklist to other language

- Relationships with Minnesota Child Development Inventory subtest ($r=0.45$ to $r=0.84$
- MacArthur subscales, $r=0.55$-$r=0.84$ (4 year level) (Relationship NS at 3 year level)
- Personal-Social subscale ($r=0.49$ to $0.81$) at four year level
Personal-Social had significant relationships to Instrumental ($r=.45$), Heuristic ($r=.59$) and Imaginative ($r=.58$) at the three year age level.

The relationship between personal-social skills and pragmatic language is stronger at 4 years than 3 years as is the relationship between pragmatics and vocabulary.
Study 2: Number of Participants

- Age 2: N=93
- Age 3: N=50
- Age 4: N=102
- Age 5: N=89
- Age 6: N=82
- Age 7: N=67
- Total: 483
Instrumental

- “I want”
- Requests for objects or actions
Makes Polite Requests

![Bar chart showing the percentage of children making polite requests at different ages.

- %Not Present
- %No Words
- %Few Words
- %Complex

Age groups: 2 yrs, 3 yrs, 4 yrs, 5 yrs, 6 yrs, 7 yrs]
Makes Polite Requests- Hearing

- not present
- no words
- 1-3 words
- Complex Lang.

The graph shows the percentage of different age groups (2 yrs to 8 yrs) that make polite requests in hearing. The y-axis represents the percentage, and the x-axis represents the age group.
Makes Choices

[Bar chart showing percentage of children making choices at different ages (2-7 years) for different categories: %Not Present, %No Words, %Few Words, %Complex.]

Marion Downs Hearing Center
Makes Choices - Hearing

- Not present
- No words
- 1-3 words
- Complex Lang.
Description of Objects

![Bar Chart]

- %Not Present
- %No Words
- %Few Words
- %Complex

Age Groups:
- 2 yrs
- 3 yrs
- 4 yrs
- 5 yrs
- 6 yrs
- 7 yrs

Percentage Ranges:
- 0.0%
- 10.0%
- 20.0%
- 30.0%
- 40.0%
- 50.0%
- 60.0%
- 70.0%
- 80.0%
Description of Object - Hearing

![Graph showing the percentage of age groups with various levels of language development. The x-axis represents age groups (2 yrs, 3 yrs, 4 yrs, 5 yrs, 6 yrs, 7 yrs, 8 yrs) and the y-axis represents percent. Colors indicate levels of language development: red for not present, orange for no words, blue for 1-3 words, and green for complex language.](image)

- not present
- no words
- 1-3 words
- Complex Lang.
Expresses Specific Need

![Bar Chart]

- %Not Present
- %No Words
- %Few Words
- %Complex

Years:
- 2 yrs
- 3 yrs
- 4 yrs
- 5 yrs
- 6 yrs
- 7 yrs

Percentages:
- 0.0%
- 10.0%
- 20.0%
- 30.0%
- 40.0%
- 50.0%
- 60.0%
- 70.0%
- 80.0%
- 90.0%
Expresses Specific Need - Hearing

- not present
- no words
- 1-3 words
- Complex Lang.
Requests Help

![Bar chart showing percentage of requests for help over different age groups (2 yrs, 3 yrs, 4 yrs, 5 yrs, 6 yrs, 7 yrs). The chart includes categories: %Not Present, %No Words, %Few Words, %Complex. The data shows a trend with increasing age, the percentage of requests for help increases.](chart-image)
Request help - Hearing

- not present
- no words
- 1-3 words
- Complex Lang.
Regulatory

- “Do as I tell you..”
- polite commands
- giving directions
Arrangement of objects

- Manipulating Objects – Games that require arrangement of objects in a specific sequence
- Spatial: above, under, inside
Gives Directions

- Go get your shoes
- Put the shoes on
- Open the door
- Go to the car
- Open the car door
- Get in the car
Gives Directions

- To play a game
- To make something
  - Cooking activity
  - Steps are listed
  - Pictures to represent
  - Left to right – Chart that says: here’s what it is
  - Cross out each step as you do it
  - Put it back in the right sequence – after they actually have the experience
Gives directions to make something
Directions to make object - Hearing

- Not present
- No words
- 1-3 words
- Complex Lang.
Making something

- Explaining how to make something
- Can the child explain things enough for someone else to make it
  - A picture
  - A snowman
  - A peanut butter and jelly sandwich
  - An arts and crafts activity
Directions to make something

- Kids tell what to do next
- Plan to do something but students need to show another student how to do something in sequence – easier to do with art project
- Visual Schedule – then have them tell what the schedule will be today
Sequential Activities-Making Something

- Making peanut butter and jelly sandwiches
  - Child: Peanut butter
  - Do I put it in my hand? Where's the bread?

- Cooking activities
  - Peeling the banana before cutting
  - Dip in Chocolate
  - Roll in Nuts
  - Freeze
Gives directions to play games
Gives directions to play a game -

Hearing

- not present
- no words
- 1-3 words
- Complex Lang.
Learning a game

- Duck duck goose
- Everyone sits in a circle
- Chosen child walks around the outside of the circle.
- Child taps each child and says “duck”, “duck”, “duck”
- Child must choose a child to be “goose”
- Child must think about the choice and not tell – it’s a secret. What’s a secret?
Directions to play a game

- Duck Duck Goose or Concentration
- Start out with a chart
- Kids take turns explaining how to play the game.
- Scaffold with questions:
  - What’s first
  - What’s second
  - What’s next
Child description: Tap, Tap, Tap (not enough information for Duck Duck Goose)

Thinking Process – Hmmmm

Who do I want to pick? It’s a secret. Don’t tell

Need more information –

Who?
- Eye Contact
Absurdity – Duck Duck Goose – Need to pick a person not an object
- Tap, Tap, Tap, Table
- Tap, Tap, Tap, Person

Excellent opportunity for parent activities in the home (Concentration, Candyland, Card games, Tag)

Other preschool games
- Doggy Doggy Where’s Your Bone – Someone stole it from my home? Do you have my bone? (ask 3 kids)
Cueing differs by degree of hearing loss

- **Profound hearing loss**
  - Pictures
  - Drawings
  - Written

- **Mild to Severe hearing loss**
  - Picture relationship
  - Pre-literacy vocal/verbal
  - Written
Telling another child how to play a game

- A board game
- A card game
- A game with a ball
- A simple game – like duck duck goose
- A game with teams
Scaffolding

- Redundancy – Repetition
- Letting them make mistakes – if it isn’t in order – they can’t finish it; projects need to require an order
Changes Style of Commands

- %Not Present
- %No Words
- %Few Words
- %Complex

2 yrs 3 yrs 4 yrs 5 yrs 6 yrs 7 yrs

0.0% 10.0% 20.0% 30.0% 40.0% 50.0% 60.0% 70.0% 80.0%
Changes Style of Commands - Hearing

- not present
- no words
- 1-3 words
- Complex Lang.
Interactional

- “me and you…”
- conversational strategies
Contrasts – Body Switching, Perspective Taking - Options

- Why questions
- How did it make them feel
- Options: Does it make you feel angry?
- Does it make you feel sad?
- Does it make you feel disappointed?
- Why is he upset? Are his feelings hurt?
- Which is better – grab it or
- Perspective taking – If I take it from you – how do you feel
Choices - Consequences

- What are the choices?
- What are the consequences?
- Children with highest language levels – learn verbal mediation skills
- Children with lower language levels – pantomime and pictures
Transition from infant/toddler to preschool

- Children demonstrate initiation of topic with parent about here and now

- Transition to social situations
  - Compete with other children
  - Turn-take with the teacher and with other children
  - Personality probably plays
Notebooks that go back and forth

- Telling things that happen at home
- Telling things that happen at school
- Sharing knowledge between parents and teacher
- If child doesn’t initiate the topic for discussion, teacher can question.
- Students can share in a “Show and Tell”
- Can bring an object
Pictures to elicit elaboration

- McDonalds, Kentucky Fried Chicken
- Supermarket
- Gas Station
- Mall
- We went shopping
Problems

- Interruptions
- Changing Topics
- Reminder: What’s the Topic
- Keep that idea in mind
  - Not Yet
  - Later
  - When’s a better time to tell me
- Semantics and Syntax is at age level
- Frequently have topic shifts
Problems maintaining topic

- Tell me at least three things about playing outside last night.
- What kinds of things would I see
- What kinds of things would I hear
- Can you picture that in your head
- In a restaurant
- At the store
Predictions — Stories

- On the Farm
- What would we expect to see
- Absurdities
- Is it real or is it made up
- True or False
- Imagination — pretend or real
Conversational Turn

- Eye Contact
- Signing and Speaking behind someone’s back is usually not productive
- Children get confused, because adults sometimes talk when they are behind the child
Interactive Conversations

- Too much imitation
- Rote memorized knowledge
- Therapized
- Transitions to spontaneous conversations
- My turn
- Now its your turn
- Block passed between partners
Mark when child needs to respond

- Facial and Body language exaggerated
- You are expected to take a turn
- What did you do?
- Underlying piece – Can make choices
- Do you want this or do you want this?
Relevant Answers to Questions

- More than just a response
- Response has to be relevant
- Imitation is not a response to a question
- Modeling both correct and incorrect or absurd responses
Revision of unclear message

- Identify that the message was unclear to conversational partner
- If they identify miscommunication — then you can supply options
- Model – unclear messages
  - Boat
  - Do I want the boat?
  - Do I want to eat the boat?
  - Do you want to get on the boat?
  - Is it a blue boat?
Alternative points of view

- I like this book
- You don’t like this book
- He hates this book
- Why did you like this book — what was your favorite part
- What was my favorite part
- You don’t have to copy mine
What is the other person thinking

- Understanding what is in the mind of the other person
  - Theory of mind activities
  - When you see something happen – but you don’t see the whole thing and something else changes
  - You put something somewhere but while you are not looking – someone moves it
  - One child sees it being moved
  - Where does the first child think the object is?
Activities which surprise

- What’s inside the box
- Crayon boxes with cars instead of crayons
- Surprise endings
  - Johnny thinks everyone has forgotten his birthday
  - But – there’s a surprise party
Personal

- “Here I come…”
- expressions of a state of mind/health/attitude
- expressions of feelings
- explanation of feelings
- offer an opinion
- supply basic identification information
Identifies Feelings

![Graph showing percentages of not present, no words, few words, and complex for different age groups (2 to 7 years).]
Identifies Feelings - Hearing

| not present |
| no words |
| 1-3 words |
| Complex Lang. |
Explains feelings
Explains feelings - Hearing

- not present
- no words
- 1-3 words
- Complex Lang.
Provides Excuses/Reasons

![Bar chart showing provides excuses/reasons over different years]

- **%Not Present**
- **%No Words**
- **%Few Words**
- **%Complex**

Years:
- 2 yrs
- 3 yrs
- 4 yrs
- 5 yrs
- 6 yrs
- 7 yrs
Provides excuses/reasons - Hearing

- not present
- no words
- 1-3 words
- Complex Lang.
Offers opinions with support

- %Not Present
- %No Words
- %Few Words
- %Complex

Years:
- 2 yrs
- 3 yrs
- 4 yrs
- 5 yrs
- 6 yrs
- 7 yrs
Offers Opinion - Hearing

The chart illustrates the percentage of different age groups over time. The x-axis represents age groups (2 yrs, 3 yrs, 4 yrs, 5 yrs, 6 yrs, 7 yrs, 8 yrs), and the y-axis represents the percent. The colors indicate the presence of different linguistic features:
- Red: not present
- Orange: no words
- Blue: 1-3 words
- Green: Complex Lang.
Complains
Complains - Hearing

- not present
- no words
- 1-3 words
- Complex Lang.
Blames Others
Blames others - Hearing

![Age Group vs Percent Chart]

- not present
- no words
- 1-3 words
- Complex Lang.
Defense in face of false accusation

- He took the toy
- I didn’t take the toy
- I wasn’t there
- I don’t have the toy
- I didn’t want the toy
Feelings

- Cause and effect
  - Why
  - How
- Because – Modeling at home and school
- Perspective – taking
- Are you happy because…
- Are you happy because….
Provides Information on Request

- %Not Present
- %No Words
- %Few Words
- %Complex

The diagram shows the percentage of information provided at different ages:

- 2 yrs
- 3 yrs
- 4 yrs
- 5 yrs
- 6 yrs
- 7 yrs

The data indicates that the percentage of information provided increases with age, with the highest percentage at 2 yrs.
Provides information on request - Hearing

- not present
- no words
- 1-3 words
- Complex Lang.
Interacts Politely

![Graph showing the percentage of interactions by age group. The graph indicates that the percentage of interactions increases with age, with the highest percentage at 7 years old. The categories shown are Not Present, No Words, Few Words, and Complex.](image)
Interacts with others politely -

Hearing

- not present
- no words
- 1-3 words
- Complex Lang.
Uses appropriate social rules

The chart illustrates the percentage distribution of social rules use over different age groups (2 to 7 years). The categories are: %Not Present, %No Words, %Few Words, and %Complex. The data shows a trend where the use of appropriate social rules increases with age, particularly in older age groups. The percentages range from 0% to 90%, with the highest percentage in the category of %Not Present for 7 years.
Interacts with others politely - Hearing

- not present
- no words
- 1-3 words
- Complex Lang.
Attends to Speaker

The graph shows the percentage of time children attend to the speaker at different ages:
- %Not Present
- %No Words
- %Few Words
- %Complex

- At 2 years: %Not Present is high, %No Words is moderate, %Few Words is low, %Complex is very low.
- At 3 years: %Not Present decreases, %No Words increases, %Few Words increases, %Complex remains low.
- At 4 years: %Not Present decreases further, %No Words peaks, %Few Words is intermediate, %Complex remains low.
- At 5 years: %Not Present continues to decrease, %No Words starts to decrease, %Few Words decreases, %Complex remains low.
- At 6 years: %Not Present is very low, %No Words significantly decreases, %Few Words decreases further, %Complex remains low.
- At 7 years: %Not Present is very low, %No Words is very low, %Few Words is very low, %Complex remains low.
Attends to the Speaker - Hearing

![Graph showing the percentage of children in different age groups who attend to the speaker, categorized by presence and type of words.](chart)

- Not present
- No words
- 1-3 words
- Complex Lang.
Revises incomplete message
Revises incomplete message - Hearing

- not present
- no words
- 1-3 words
- Complex Lang.
Initiates Topic of Conversation

![Graph showing percentage of each age group initiating topics.](image-url)
Initiates topics of conversation - Hearing

- not present
- no words
- 1-3 words
- Complex Lang.

[Bar chart showing percentage of age groups for each category]
Maintains a conversation

![Bar chart showing percentage of maintained conversations across different age groups (2 yrs, 3 yrs, 4 yrs, 5 yrs, 6 yrs, 7 yrs). The chart compares four categories: %Not Present, %No Words, %Few Words, %Complex. The percentages vary for each age group with a general trend showing an increase in the %Complex category and a decrease in the %Not Present category as age increases.]
Maintains a conversation - Hearing

<table>
<thead>
<tr>
<th>Percent</th>
<th>0%</th>
<th>20%</th>
<th>40%</th>
<th>60%</th>
<th>80%</th>
<th>100%</th>
</tr>
</thead>
</table>

Age Group

- 2 yrs
- 3 yrs
- 4 yrs
- 5 yrs
- 6 yrs
- 7 yrs
- 8 yrs

Legend:
- not present
- no words
- 1-3 words
- Complex Lang.
Ends a conversation

[Bar chart showing percentages of conversation endings across different age groups: 2 yrs, 3 yrs, 4 yrs, 5 yrs, 6 yrs, 7 yrs. Categories include %Not Present, %No Words, %Few Words, %Complex.]
Ends a conversation - Hearing

- not present
- no words
- 1-3 words
- Complex Lang.

[Bar chart showing the percentage of age groups ending conversations with different terminations across different age groups from 2 years to 8 years.]
Interjects appropriately

%Not Present
%No Words
%Few Words
%Complex

2 yrs 3 yrs 4 yrs 5 yrs 6 yrs 7 yrs
Interjects conversations appropriately - Hearing

![Bar chart showing percentage of age groups with different levels of conversation interjection: not present, no words, 1-3 words, Complex Lang.](image)
Makes apologies/explanations

![Bar chart showing the percentage of children making apologies/explanations at different ages (2 yrs, 3 yrs, 4 yrs, 5 yrs, 6 yrs, 7 yrs). The chart includes categories for %Not Present, %No Words, and %Few Words.]

Marion Downs Hearing Center
Makes apologies/explanations-

Hearing

- not present
- no words
- 1-3 words
- Complex Lang.
Requests clarification

Bar chart showing the percentage of requests for clarification at different ages:
- 2 yrs
- 3 yrs
- 4 yrs
- 5 yrs
- 6 yrs
- 7 yrs

Categories: %Not Present, %No Words, %Few Words, %Complex
Requests clarification - Hearing

<table>
<thead>
<tr>
<th>Age Group</th>
<th>2 yrs</th>
<th>3 yrs</th>
<th>4 yrs</th>
<th>5 yrs</th>
<th>6 yrs</th>
<th>7 yrs</th>
<th>8 yrs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent</td>
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<td>20%</td>
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</tr>
<tr>
<td>40%</td>
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<td>60%</td>
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<td>80%</td>
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<tr>
<td>100%</td>
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</tr>
</tbody>
</table>

Legend:
- not present
- no words
- 1-3 words
- Complex Lang.
Provides information on request
Provides information on request - Hearing

![Bar chart showing percent of age groups with different language abilities: not present, no words, 1-3 words, Complex Lang.](chart.png)
States a problem

[Chart showing data on the percentage of states with problems across different years for %Not Present, %No Words, %Few Words, and %Complex.]
States a problem - Hearing

- not present
- no words
- 1-3 words
- Complex Lang.
Criticizes others

![Bar chart showing the percentage of children who criticize others at different ages (2 yrs, 3 yrs, 4 yrs, 5 yrs, 6 yrs, 7 yrs). The chart includes categories such as %Not Present, %No Words, %Few Words, and %Complex. The data indicates an increase in the percentage of children who criticize others as they age.]
Criticizes others - Hearing

- not present
- no words
- 1-3 words
- Complex Lang.
Disagrees with Others

![Bar chart showing the percentage of individuals who disagree with others at different ages (2-7 years). The categories are Not Present, No Words, Few Words, and Complex. The percentages range from 0% to 90%. The chart indicates a significant increase in the percentage of children who disagree with others as they grow older.]
Disagrees with others - Hearing

- not present
- no words
- 1-3 words
- Complex Lang.
Compliments others - Hearing

- not present
- no words
- 1-3 words
- Complex Lang.
Makes Promises

![Bar chart showing the percentage of children who make promises in different age groups. The chart includes data for 2, 3, 4, 5, 6, and 7 years old children. The data is categorized into %Not Present, %No Words, %Few Words, and %Complex. The percentage values range from 0% to 100%. The chart indicates that the percentage of children making promises increases with age.](chart.png)
Makes promises - Hearing

[Bar chart showing the percentage of age groups (2 yrs to 8 yrs) by year and the presence of promises, not present, no words, 1-3 words, and Complex Lang.]

- not present
- no words
- 1-3 words
- Complex Lang.
Heuristic

- Tell me why
- Requests for information
Questions for more information
Asks questions for clarification - Hearing

- Not present
- No words
- 1-3 words
- Complex Lang.
Questions to systematically gather information

![Bar chart showing %Not Present, %No Words, %Few Words, %Complex over different age groups (2 yrs, 3 yrs, 4 yrs, 5 yrs, 6 yrs, 7 yrs).]
Asks questions for clarification - Hearing

- not present
- no words
- 1-3 words
- Complex Lang.
Questions for curiosity

%Not Present
%No Words
%Few Words
%Complex

2 yrs  | 3 yrs  | 4 yrs  | 5 yrs  | 6 yrs  | 7 yrs

90.0%  | 80.0%  | 70.0%  | 60.0%  | 50.0%  | 40.0%  | 30.0%  | 20.0%  | 10.0%  | 0.0%
Questions for curiosity - Hearing

- not present
- no words
- 1-3 words
- Complex Lang.
Questions to problem solve

[Bar graph showing percentage of not present, no words, few words, and complex questions from ages 2 to 7 years.]
Ask questions to problem solve - Hearing

- not present
- no words
- 1-3 words
- Complex Lang.
Questions to make predictions
Asks questions to make predictions -
Hearing

- not present
- no words
- 1-3 words
- Complex Lang.
Twenty questions

- May have to teach child how to play
  - What does the answer to the question eliminate?
  - Is it an animal?
  - Is it alive?
  - Easiest to learn with a closed set of answers—rather than everything in the room
  - May have to cross out the things that it can’t be after getting an answer to a question
Twenty Questions

- Closed Set of pictures
- Mother is thinking of a picture
- Child asks questions – Model yes/no questions
- Is it alive – cross out all the things it can’t be
- Is it white? - cross out all the things that it can’t be
Twenty Questions

- Holding information in your head to use for the next question
- Categorizing things
- Categorization often begins with visual characteristics – name of the category
  - What pictures are things that are alive?
  - What pictures are things that are big?
  - How do the animals move? – do they fly, swim, walk?
Imaginative

- “Let’s pretend”
- The creative strategy
- role playing
- creating a story
Role plays with different characters

- %Not Present
- %No Words
- %Few Words
- %Complex

- 2 yrs
- 3 yrs
- 4 yrs
- 5 yrs
- 6 yrs
- 7 yrs
Role plays with different characters
- Hearing

- not present
- no words
- 1-3 words
- Complex Lang.

![Graph showing role plays across different age groups](image)
Role plays with props

![Bar chart showing percentage of children engaging in role plays with props at different ages (2 yrs to 7 yrs)].

- %Not Present
- %No Words
- %Few Words
- %Complex

Marion Downs Hearing Center
Role plays with props - Hearing

- not present
- no words
- 1-3 words
- Complex Lang.
Informative

- “I’ve got something to tell you”
- organized description of a situation or object
- observations of cause/effect
- compare and contrast
- improve story quality after modeling
Provides description of situation

[Bar chart showing percentage distribution of different language complexity levels across different age groups (2 yrs, 3 yrs, 4 yrs, 5 yrs, 6 yrs, 7 yrs). The chart indicates the percentage of 'Not Present', 'No Words', 'Few Words', and 'Complex' for each age group.]
Provides description of situations - Hearing

- not present
- no words
- 1-3 words
- Complex Lang.
Correctly retells story
Correctly re-tells a story - Hearing

| not present | no words | 1-3 words | Complex Lang.

![Graph showing the percentage of age groups indicating correct story re-telling.](image)
Relates 4-6 frame picture story

![Bar chart showing the percentage of not present, no words, few words, and complex for different age groups (2 yrs, 3 yrs, 4 yrs, 5 yrs, 6 yrs, 7 yrs).]
Correctly re-tells a story - Hearing

![Diagram showing percent of age groups in different language levels: not present, no words, 1-3 words, Complex Lang.](image)
Creates original story: beginning, middle and end
Creates original story - Hearing

- not present
- no words
- 1-3 words
- Complex Lang.

![Bar chart showing the percentage of age groups that create original stories by age. The x-axis represents age groups (2 yrs, 3 yrs, 4 yrs, 5 yrs, 6 yrs, 7 yrs, 8 yrs), and the y-axis represents the percentage.]
Expresses relationships between two objects
Explains relationship b/w 2 objects - Hearing

- not present
- no words
- 1-3 words
- Complex Lang.
Compares and contrasts similarities and differences of objects/actions/situations
Compares and contrasts - Hearing

- not present
- no words
- 1-3 words
- Complex Lang.
Tells a lie

The bar chart shows the percentage of children aged 2 to 7 years who tell lies, with categories for not present, no words, few words, and complex. The percentages are displayed for each age group.
Tells a lie - Hearing

- not present
- no words
- 1-3 words
- Complex Lang.

![Graph showing the percentage of children telling lies by age group, with different categories represented by colored bars.](image-url)
Expresses humor/sarcasm

![Bar chart showing the percentage of children expressing humor/sarcasm by age from 2 to 7 years. The chart indicates that the percentage increases with age, peaking at 7 years with the highest percentage. The chart includes categories for not present, no words, few words, and complex expressions.](image-url)
Expresses humor/sarcasm - Hearing

- not present
- no words
- 1-3 words
- Complex Lang.

![Graph showing the percentage of age groups expressing humor/sarcasm in different age groups.](image)
Recognizing a falsehood

- Understanding truth versus a lie
- Understanding a trick
- Learning not to be gullible — preventing social victimization
- Pretending to be “coyote” — the trickster
- Should I believe coyote — how do I know when to believe someone
Persuasion

- In social situations — when you want to convince your parents to let you go to a party, a game?
- How do you persuade your parents to let you go?
- You want to persuade some children to let you play — what do you do?
Elaboration

- Knowing vocabulary words
- Learning more about the concept
- Learning the schema
  - Thanksgiving
  - Football
  - Church
  - Holiday
  - No School
  - Meal
  - Activity
  - Regionally specific-Macy’s parade, skiing
Summary

- Children with hearing loss need services that will enable them to maintain age-appropriate or cognitive appropriate language levels.
- Modifications and adaptations that are appropriate and beneficial to many subgroups of typically developing children will help them in their development.
References


