Parent-Child Relationship: Impact on the Whole Child

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Conflict of Interest

- AG Bell Board of Directors
- MED-EL Pediatric Advisory Board
- Research agreement - Advanced Bionics
- Research funded by:
  - NIDCD R01 DC04797
  - NIDCD R03 DC014760
Cochlear implants have demonstrated efficacy in young deaf children:
- Speech perception & speech recognition (Cohen et al., 1999; Holt & Svirsky, 2008)
- Expressive & receptive language (Niparko et al., 2010; Baldassari et al., 2009; Dettman et al., 2007; Svirsky et al., 2000)

Substantial variability in outcomes after accounting for child age and length of implant use (Kirk et al., 2000)

What contributions do family factors make?
- Parental language input (Cruz/Cejas et al., 2013; DesJardin & Eisenberg, 2007; Fewell & Deutscher, 2004)
- Parenting stress (Barker et al., 2009; DesJardin, 2003; Quittner et al. 2000)
- Maternal sensitivity (Grimley et al., 2009; Quittner et al., 2013)
- Behavior Problems (Barker et al., 2009)
Developmental Processes: Parent-Child

Child
- Language
- Effortful control
- Behavior problems
- Visual attention
- Social skills

Parent
- Parenting skills
- Maternal sensitivity
- Parenting stress

Communication
Childhood Development after Cochlear Implantation

Cochlear Implant (CI)
n = 188

Normal-Hearing (NH)
n = 97

Baseline: 6, 12, 18, 24, 30, 36

Surgery Activation
**CDaCI Cohort** *(Fink et al., 2007)*

<table>
<thead>
<tr>
<th></th>
<th>CI (n=188)</th>
<th>NH (n=97)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Child</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age (years)</td>
<td>2.2 (1.2)</td>
<td>2.3 (1.1)</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>90 (48%)</td>
<td>37 (38%)</td>
</tr>
<tr>
<td>Female</td>
<td>98 (52%)</td>
<td>60 (62%)</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Hispanic</td>
<td>145 (77%)</td>
<td>86 (89%)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>37 (20%)*</td>
<td>9 (9%)*</td>
</tr>
<tr>
<td><strong>Parent</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age 30-39</td>
<td>96 (51%)</td>
<td>59 (61%)</td>
</tr>
<tr>
<td>College Graduate</td>
<td>92 (49%)*</td>
<td>81 (84%)*</td>
</tr>
<tr>
<td>Income &gt; $100,000</td>
<td>31 (16%)*</td>
<td>49 (51%)*</td>
</tr>
</tbody>
</table>
Parenting Stress
Family Stress Scale (FSS)

The following is a list of things which may be stressful when raising a young child. I would like you to think of stress as meaning something that taxes your resources or is more than you can handle comfortably. Please rate the stressfulness of each item on the scale below.

1. Keeping the hearing aids/cochlear implants on and working
2. Outings in the community (Keeping track of child, managing child’s behavior)
3. Relationships with parents or extended family
4. Discipline
5. Marital relationship
6. Following routines (mealtimes, bedtime)
7. Educational concerns
8. Understanding how to operate hearing aids/cochlear implants (stopping feedback)
9. Safety (crossing the street)
10. Communication (understanding you, speaking)
11. Relationships with other children
12. Behavior problems
13. Helping your child with oral and written language
14. Medical/audiological care
15. Other people’s curiosity or lack of understanding about child’s deafness
16. Finances

1. Not at all stressful
2. A bit stressful
3. Fairly stressful
4. Quite stressful
5. Extremely stressful

Developed in 1990s by Quittner and colleagues
Parents rated how stressful each task is on a 5-point Likert scale
1- Not at all stressful
5 – Extremely stressful
Brief – 16 items
<table>
<thead>
<tr>
<th>Rank</th>
<th>Deaf</th>
<th>Missing</th>
<th>Mean Rating</th>
<th>Hearing</th>
<th>Missing</th>
<th>Mean Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Communication (understanding you, speaking)</td>
<td>2</td>
<td>2.75</td>
<td>Finances</td>
<td>21</td>
<td>2.06</td>
</tr>
<tr>
<td>2</td>
<td>Finances</td>
<td>7</td>
<td>2.71</td>
<td>Discipline</td>
<td>3</td>
<td>2.05</td>
</tr>
<tr>
<td>3</td>
<td>Educational concerns</td>
<td>1</td>
<td>2.49</td>
<td>Safety (crossing the street)</td>
<td>4</td>
<td>1.78</td>
</tr>
<tr>
<td>4</td>
<td>Safety (crossing the street)</td>
<td>5</td>
<td>2.43</td>
<td>Following routines (mealtimes, bedtime)</td>
<td>3</td>
<td>1.76</td>
</tr>
<tr>
<td>5</td>
<td>Keeping the hearing aids/cochlear implants on and working</td>
<td>8</td>
<td>2.27</td>
<td>Outings in the community (Keeping track of child; managing child’s behavior)</td>
<td>4</td>
<td>1.74</td>
</tr>
<tr>
<td>6</td>
<td>Discipline</td>
<td>2</td>
<td>2.13</td>
<td>Marital relationship</td>
<td>6</td>
<td>1.63</td>
</tr>
<tr>
<td>7</td>
<td>Medical/audiological care</td>
<td>1</td>
<td>2.07</td>
<td>Educational concerns</td>
<td>5</td>
<td>1.62</td>
</tr>
<tr>
<td>8</td>
<td>Other people’s curiosity or lack of understanding about child’s deafness</td>
<td>25</td>
<td>2.02</td>
<td>Relationships with parents or extended family</td>
<td>3</td>
<td>1.42</td>
</tr>
<tr>
<td>9</td>
<td>Outings in the community (Keeping track of child; managing child’s behavior)</td>
<td>2</td>
<td>1.96</td>
<td>Behavior problems</td>
<td>4</td>
<td>1.41</td>
</tr>
<tr>
<td>10</td>
<td>Having to be a language teacher for your child (alphabet, numbers)</td>
<td>2</td>
<td>1.93</td>
<td>Relationships with other children</td>
<td>3</td>
<td>1.35</td>
</tr>
</tbody>
</table>

Quittner et al., 2010
Parenting Stress Module: School-Age Version

- Items were developed based on 20 parent interviews
- Final measure consists of 9 items rated on a scale from:
  - Not at all Stressful
  - Very Stressful
- Standardized Scores (0-100)
- Next steps:
  - Validation
  - Translation into Spanish
  - Development of a Parenting Stress Module for parents of children birth to 5

- Visit poster #30 for further details
Parenting Stress

- Generic vs Context-specific stress
  - More context-specific stress (e.g., Family Stress Scale)
  - No clinically significant differences in generic stress (Parenting Stress Index)

- Predictors of parenting stress:
  - Communication
  - Child’s behavior
# Top Stressors

<table>
<thead>
<tr>
<th>Preschool</th>
<th>School-Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Communication</td>
<td>1. CI breaking</td>
</tr>
<tr>
<td>2. Finances</td>
<td>2. CI getting lost</td>
</tr>
<tr>
<td>3. Education Concerns</td>
<td>3. Child getting hurt during sports</td>
</tr>
<tr>
<td>4. Safety</td>
<td>4. Educational placement</td>
</tr>
<tr>
<td>5. Keeping device on</td>
<td>5. Child spending time away from home</td>
</tr>
</tbody>
</table>
What is the top stressor for parents of preschool children?

Start the presentation to activate live content.
Effects of Parenting Stress

Control Variables
Child Age
Parent
Education

Figure 1.
Theoretical model.
Behavior Problems
Behavior Problems

- Externalizing & internalizing behavior problems are consistent risk factors for future behavior, school and social difficulties.

- Prevalence of Externalizing behavior problems:
  - Deaf Children: 11.6% to 44%
  - Hearing Children: 3 to 18%

- Prevalence of Internalizing behavior problems:
  - Deaf Children: 24.6% to 38%
  - Hearing Children: 2 to 17%

- Strong evidence that behavior problems, language and cognitive abilities are related
  - Few studies have directly examined their relationships with one another.
Measures

- **Parent report measures**
  - MacArthur Communicative Development Inventories
  - Child Behavior Checklist 1½ -5
  - Parenting Stress Index-Short Form

- **Performance / observational measures**
  - Reynell Developmental Language Scales
  - Mother-Child Structured Interaction Qualitative Rating Scales from the NICHD Early Child Care Study (20 min.)
  - Solitary Symbolic Play (5 min.)
  - Puppet Task (10 min.)

Barker et al., 2009
Behavior Problems

Children In At-Risk Range

<table>
<thead>
<tr>
<th></th>
<th>HI</th>
<th>NH</th>
</tr>
</thead>
<tbody>
<tr>
<td>CBCL Internalizing</td>
<td>**</td>
<td>15</td>
</tr>
<tr>
<td>CBCL Attention</td>
<td>*</td>
<td>10</td>
</tr>
<tr>
<td>CBCL Aggressive</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>PSI Difficult Child</td>
<td>11</td>
<td>3</td>
</tr>
</tbody>
</table>

Children Showing Negativity

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Child Negativity</td>
<td>70</td>
<td>27</td>
</tr>
</tbody>
</table>

*p = .05 **p < .01
**Attention**

**Child Persistence**

* $p = .05$  ** $p < .01$
Relationship: Language & Behavior

- Attention
- Parent-Child Communication
- Externalizing Behavior
- Language
- Hearing Status
Facilitative Language Techniques (FLTs)
Facilitative Language Techniques

- Strategies parents and therapists use to promote spoken language in deaf children
  - 1) Lower-level and 2) Higher-level

- Prior studies have investigated these techniques in children with CIs (Cruz/Cejas et al., 2013; DesJardin et al., 2009; DesJardin & Eisenberg, 2007)
  - Higher-level techniques (recast, open-ended questions) positively associated with language, phonological awareness, and reading
  - Lower-level techniques were negatively associated with these variables
Higher-level FLTs

- **Open-ended question**
  - Question or phrase child can answer using more than one word

- **Expansion**
  - Parent fills in the missing parts of the child’s utterances while retaining the child’s meaning

- **Expatement**
  - Parent repeats the child’s utterance and adds new information

- **Recast**
  - A form of expansion, involving a change in mood or voice; parent changes child’s utterance into a question

- **Parallel Talk**
  - Provides linguistic labels that describe the parent and/or child’s activities or aspects of the environment to which the mother and/or child is attending
Impact of Parent Use of FLTs on Child Language

- Most common lower-level strategies:
  - Directives
  - Comments
  - Closed-ended questions

- Most Common higher-level strategies:
  - Parallel talk
  - Open-ended questions

- Higher-level FLTs vs lower-level FLTs predicted growth in expressive & receptive language across 3 years post-implantation

- Word types were positively related to growth in receptive language
Maternal Sensitivity
Parent-child interactions were measured during 3 videotaped tasks lasting 20 minutes

- Free Play (10 min)
- Problem-Solving (5 min)
- Art Gallery (5 min)

Interactions were coded using the Mother-Child Structured Interaction Qualitative Rating Scales developed for the NICHD Early Child Care Study (2003)

- Rated on a 7-point Likert scale (1=Low MS, 7 = High MS)

20% of tapes were coded by 2 independent raters: intraclass correlation coefficients of .74 - .93, indicating good reliability
Maternal Sensitivity

* $p = .05$  ** $p < .01$
Child Affection

Child Enthusiasm

* $p = .05$  ** $p < .01$
Maternal sensitivity was as predictive as age at implantation.

True

False

Start the presentation to activate live content
If you see this message in presentation mode, install the add-in or get help at PollEv.com/app
NIDCD R21 awarded to pilot intervention

10 session intervention implemented by a LSL specialist

Later session:
- 7/28 at 4:37pm (Continental 1-4)
Hearing loss impacts the entire family system
- Individual
- Parent-child relationship

Families are experiencing increased parenting stress related to their child’s hearing loss
- Related to the child’s language, behavior, and attention

We need to optimize our CI outcomes

How do we measure and intervene?
- New context-specific measures
- Brief interventions that can be incorporated into clinic
  - PEARLS: coaching parents on increasing sensitivity & language strategies
  - PCIT: improving behavior problems
Save The Date

July 11 – 13 2019

The world famous Diplomat Beach Resort will be the host site for CI2019 which features Ft Lauderdale and Miami Beach.
See you in South Florida in 2019.