Using The SCALES Model To Examine Complex Cases

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Associate Director
Center for Childhood Deafness

Auditory Consultant Resource Network
Boys Town National Research Hospital
Using The SCALES Model To Examine Complex Cases

The Compass

Outline

• Human Connections
• Comprehensive Assessment
• Differentiated Models

Premise 1

Human Connections Are At the Foundation Of Effective Early Education.
Using The SCALES Model To Examine Complex Cases

Creating Holding Environments

- Identify the Challenge
- Regulate Stress
- Good Sonar
- Pay Attention To the Pace
- Hold Steady
- Give Work Back
- Challenge Work Avoidance
- Come To The Balcony

Hold Complexity
Tolerate ambiguity
Focus on What's Important
Suspend Judgment
Obtain Multiple Viewpoints


A Mother’s Holding Environment

They’re in denial...
AGAIN!!

Kubler-ross: Five Stages Of Loss

- Denial
- Anger
- Bargaining
- Depression
- Acceptance

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**Ecological Perspective**

- Confirmation
- Contradiction
- Continuity


**Complexity & Continuity**


**Premise 2**

The Early Education Process Is Guided By Comprehensive Individual Assessment.
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**Assessment: It’s This…..**

- Timelines and Compliance
- Information From Multiple Sources
- Strengths and Weaknesses
- Standard, Authentic, Ecological Measures
- Standard Scores and Percentiles
- Eligibility
- Classifications
- Technology/Modality/Placements Options

**AND It’s This…**

Discovery of Child’s Individual Nature

Exploration of Child’s Human Potential

Honoring of The Developing Child Who Will Show Us the Way
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IT’s This

Background Information

Auditory
Speech
Language
Oral Motor

Vision
Gross Motor
Fine Motor
Organization

Attention Cognition Memory

AND IT’s This....

DREAMING

AND IT’s ALL OF This...
Potential & Promise
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Assessments Sometimes....

- Irregular or Infrequent Intervals
- Segmented Focus
- Variable Components
- Scattered Information

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Assessment

Comprehensive Assessment
- Auditory Testing
  - Audiological Testing
  - Speech Perception
  - Functional Auditory
- Language Testing
  - Across Domains
  - Receptive/Expressive Skills
- Speech/Oral Motor Testing
- Developmental Testing

PRAGMATIC SEMANTIC SYNTAX MORPHOLOGY PHONOLOGY

SCALES

S Social Emotional C Cognition A Auditory L Language E Extra: Executive Function, Organization, Memory, Motor Skills, Sensory, Attention...
S Speech

Home School Community

A Balanced Approach

<table>
<thead>
<tr>
<th>Scales</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soc-Emotional</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cognitive</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auditory</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Language</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extra: Executive function, Organization, Memory, Motor Skills, Sensory, Attention...</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Speech</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

DAP = Developmentally Appropriate Progress
DAS = Delayed Acquisition of Skills
DAC = Different and Additional Challenges

(ACRN, 2011)
What Is Needed?

- Assessment Frameworks Addressing Essential Components
- Partnered Conversations To Confirm, To Inform and To Address Contradictions
- Honoring of the Past & Present with Eye on Future & An Eye on The Whole

Premise 3

Based On The Diverse Population Of Children Served, Educational Models Need To Be Highly Differentiated.
### Additional Disabilities In Children With SNHL

<table>
<thead>
<tr>
<th>Disability</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>No Additional Disabilities</td>
<td>60.1%</td>
</tr>
<tr>
<td>Cognitive Impairment</td>
<td>9.8%</td>
</tr>
<tr>
<td>Learning Disability</td>
<td>10.7%</td>
</tr>
<tr>
<td>ADHD</td>
<td>6.6%</td>
</tr>
<tr>
<td>Blindness and Low Vision</td>
<td>3.9%</td>
</tr>
<tr>
<td>Emotional</td>
<td>1.7%</td>
</tr>
<tr>
<td>Other</td>
<td>12.1%</td>
</tr>
</tbody>
</table>

From 2011 Gallaudet survey

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### Communication Continuum

- **A**: Fully Auditory Communicator
- **AV**: Mostly Auditory Communicator
- **VA**: Mostly Visual Communicator
- **V**: Fully Visual Communicator

(McConkey-Robbins, 2001; Nussbaum, Scott, Waddy-Smith, Koch, 2004)
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Communication Options

Auditory
  Verbal
  Oral
  Cued Speech
  Simultaneous Communication
  ASL

AUDITORY

VISUAL

McConkey Robbins, 2001; Nussbaum, Scott, Waddy-Smith, Koch, 2004

A Balanced Approach

Social
Emotional
Cognitive
Auditory
Language
Extra
Speech

School
Home
Community

A      AV      V
O      OS      S
W      WV      V
P      PS      G
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A        AV        V
O         OS        S
W         WV        V
P         PS        G

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Bilateral CI's: Detection

INPUT: LISTENING
INPUT: LISTENING
INPUT: LISTENING

SENTENCES

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A SCALES Approach

<table>
<thead>
<tr>
<th>School</th>
<th>Home</th>
<th>Community</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scales</td>
<td>Sight</td>
<td>Sound</td>
</tr>
<tr>
<td></td>
<td>AV</td>
<td>OS</td>
</tr>
<tr>
<td></td>
<td>W</td>
<td>WV</td>
</tr>
</tbody>
</table>

SCALES Model:
- Sight
- Sound
- Auditory
- Visual
- Oral
- Written
- Executive Function

Cochlear Implant: Comprehension

INPUT: SEEING

INPUT: LISTENING

WORDS/SENTENCES

SIGHT

A AV V O OS S W WV V
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SCALES Model: A Multidisciplinary Approach

<table>
<thead>
<tr>
<th>SCALES Model</th>
<th>School</th>
<th>Home</th>
<th>Community</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speech</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Auditory</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Language</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Motor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vision</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Vowels & simple consonants:
- A, AV, V
- W, WV, V

Profound loss: left normal hearing: right
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*Bilateral CI's:
Comprehension

<table>
<thead>
<tr>
<th>SCALES Weight</th>
<th>A</th>
<th>O</th>
<th>W</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speech</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Language</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auditory</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hearing</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vision</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motor</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temperament</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oral/Oral</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*TEMPERAMENT

INPUT - SEEING

WORLD APPORTATIONS

SIGNS/PAD

OUTPUT - LISTENING

Bilateral CI: Comprehension

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Let's Watch Two Children Develop........
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What Areas Are We Assessing?

Comprehensive Communication Assessment explores all aspects of a child’s development

A Balanced Approach

Communication Continuum

Child 4

Clips collected during longitudinal study at BTNRH (M. P. Moeller, Ph.D., PI)
Child 4

- Age at time of profile: 7;3
- Hearing loss identified at age 0;9
- Hearing aid initially fit at age 0;10
- 1st Cochlear implant at age 1;5
- 2nd Cochlear implant at age 6;9
- Years of implant use 5;10

Pre-Op 1

Post-Op
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Understanding of Auditory/Visual/Sign

<table>
<thead>
<tr>
<th>Auditory</th>
<th>AV</th>
<th>Visual</th>
</tr>
</thead>
</table>

Use of Spoken Language and/or Sign

<table>
<thead>
<tr>
<th>Oral</th>
<th>OS</th>
<th>Sign</th>
</tr>
</thead>
</table>

(McConkey Robbins, 2001; Naumburg, Scott, Waddy-Smith, 2004)

Speech Sound Inventory

Child 4: 11 months

Child 4: 18 months

Speech Sound Inventory
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Child 4:
26 months

Understanding of Auditory/Visual/Sign

Auditory - AV - Visual

Use of Spoken Language and/or Sign

Oral - OS - Sign

(ACRN’s, 2011 adaptation of Waddy-Smith, 2004)

Child 4:
20 months

Understanding of Auditory/Visual/Sign

Auditory - AV - Visual

Use of Spoken Language and/or Sign

Oral - OS - Sign

(ACRN’s, 2011 adaptation of Waddy-Smith, 2004)

Speech Sound Inventory

Child 4:
26 months

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Speech Sound Inventory

Child 4:
26 months

Speech Sound Inventory

Child 4:
26 months

Speech Sound Inventory

Child 4:
26 months
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<table>
<thead>
<tr>
<th>Understanding of Auditory/Visual/Sign</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auditory - - A - - AV - - V - - Visual</td>
</tr>
<tr>
<td>Use of Spoken Language and/or Sign</td>
</tr>
<tr>
<td>Oral - - O - - OS - - S - - Sign</td>
</tr>
</tbody>
</table>

(McConkey Robbins, 2001; Nassef, Scott, Winkie/Smith, Koch, 2004)

Child 4: 42 Months (3;7 Yrs.)

<table>
<thead>
<tr>
<th>PLS-3</th>
<th>SS</th>
<th>%ile</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC</td>
<td>98</td>
<td>45</td>
</tr>
<tr>
<td>EC</td>
<td>89</td>
<td>23</td>
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</table>

Child 4: 60 Months (5 Yrs.)

<table>
<thead>
<tr>
<th>PLS-3</th>
<th>SS</th>
<th>%ile</th>
<th>LA</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC</td>
<td>103</td>
<td>58</td>
<td>5;8</td>
</tr>
<tr>
<td>EC</td>
<td>111</td>
<td>77</td>
<td>6;5</td>
</tr>
<tr>
<td>TLS</td>
<td>108</td>
<td>70</td>
<td>5;11</td>
</tr>
</tbody>
</table>

(ACRN’s, 2013 adaptation of Winkie/Smith, 2004)
### Using The SCALES Model To Examine Complex Cases

**Child 4: 60 Months (5 Yrs.)**

<table>
<thead>
<tr>
<th>GF</th>
<th>RS</th>
<th>SS</th>
<th>%ile</th>
<th>AE</th>
</tr>
</thead>
<tbody>
<tr>
<td>32</td>
<td>73</td>
<td>5</td>
<td>2;7</td>
<td></td>
</tr>
</tbody>
</table>

**Child 4: 71 Months (5;11 Yrs.)**

<table>
<thead>
<tr>
<th>GF</th>
<th>RS</th>
<th>SS</th>
<th>%ile</th>
<th>AE</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>85</td>
<td>8</td>
<td>3;9</td>
<td></td>
</tr>
</tbody>
</table>

**7 yrs., 3 mos.**
**Using The SCALES Model To Examine Complex Cases**

**Child 4 Continuum**

<table>
<thead>
<tr>
<th>Understanding of Auditory/Visual/Sign</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cold - AV - V - Visual</td>
<td></td>
</tr>
</tbody>
</table>

*McConkey Robbins, 2001; Nussbaum, Scott, Waddy-Smith, Koch, 2004*

<table>
<thead>
<tr>
<th>Use of Spoken Language and/or Sign</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral - O - OS - S - Sign</td>
<td></td>
</tr>
</tbody>
</table>

*ACRN’s, 2011 adaptation of Waddy-Smith, 2004*

<table>
<thead>
<tr>
<th>Use of Words and/or Vocalizations</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>W - VW - VV - V - Vocalizations</td>
<td></td>
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</tbody>
</table>

*ACRN, 2011*

<table>
<thead>
<tr>
<th>Use of Pictures/Signs and/or Gestures</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A - Picture/Signs - P/S - Gestures</td>
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</tbody>
</table>

*ACRN, 2011*

---

**Child 4**

**A Balanced Approach**

<table>
<thead>
<tr>
<th>SCALES Weight</th>
<th>Home</th>
<th>Community</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soc - Emotional/Behavior</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Cog/Curriculum</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Auditory</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Language</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Extra-Memory, Organization, Fine Motor</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Speech</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DAP</th>
<th>DAS</th>
<th>DAC</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

DAP = Developmentally Appropriate Progress  
DAS = Delayed Acquisition of Skills  
DAC = Different and Additional Challenges

---

**Child 4**

- Age/Grade: 10;5, 4th grade, mainstreamed
- Communication:  
  - Spoken language
- Current supports at school:  
  - Speech-language therapy (30 min/1x/wk)  
  - Technology (FM)  
  - Pull out for Higher Achievement Program
- Current Goals:  
  - Proficiency in academic areas  
  - Focus on w/l and r sounds  
  - Increase auditory skills for new R-side CI

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**Boys Town National Research Hospital**
Child 2

- Age at time of profile: 6;2
- Hearing loss identified at age 0;1
- Hearing aid initially fit at age 0;3
- Cochlear implant at age 1;6
- Years of implant use 4;8

Child 2

- Two older siblings with hearing loss
  - Enlarged vestibular aqueduct & cochlear malformations
  - Progressive hearing loss
- Failed newborn hearing screen
- ABR at 5 days old
  - No response to clicks or 1000 Hz, AU
  - Threshold for 250 Hz at 80 dB HL, AU
- CT scan at 16 mos.
  - Absent middle and apical turns of cochlea
  - Enlarged vestibular aqueducts (EVA)
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Child 2

Pre-Op

Post-Op

Understanding of Auditory/Visual/Sign

- Auditory - - - A
- Auditory - Visual - V
- Oral - - - O
- Oral - Sign - S

(McCoy, Robbins, 2001; Nucleobarm, Scott, Waddy-Smith, Koch, 2004

Use of Spoken Language and/or Sign

(ACRN, 2011 adaptation of Waddy-Smith, 2004)
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Child 2: 12 months

Speech Sound Inventory

Child 2: 20 months

Understanding of Auditory/Visual/Sign

Auditory - - AV - - Visual

Use of Spoken Language and/or Sign

Oral - - OS - - Sign

Child 2: 24 months

Speech Sound Inventory
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Understanding of Auditory/Visual/Sign

<table>
<thead>
<tr>
<th>Auditory</th>
<th>AV</th>
<th>V</th>
<th>Visual</th>
</tr>
</thead>
</table>

Use of Spoken Language and/or Sign

<table>
<thead>
<tr>
<th>Oral</th>
<th>OS</th>
<th>S</th>
</tr>
</thead>
</table>

Child 2

36 months

Child 2: 36 months (3 yrs.)

<table>
<thead>
<tr>
<th>GFTA</th>
<th>RS</th>
<th>SS</th>
<th>%ile</th>
<th>AE</th>
</tr>
</thead>
<tbody>
<tr>
<td>66</td>
<td>55</td>
<td>23</td>
<td>&lt;2;0</td>
<td></td>
</tr>
</tbody>
</table>
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Child 2: 48 Months (4 Yrs.)

<table>
<thead>
<tr>
<th>PLS-3</th>
<th>SS</th>
<th>%ile</th>
<th>LA</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC</td>
<td>103</td>
<td>58</td>
<td>4;3</td>
</tr>
<tr>
<td>EC</td>
<td>97</td>
<td>42</td>
<td>4;1</td>
</tr>
<tr>
<td>TLS</td>
<td>100</td>
<td>50</td>
<td>4;1</td>
</tr>
</tbody>
</table>

Child 2: 48 Months (4 Yrs.)

<table>
<thead>
<tr>
<th>GFTA</th>
<th>RS</th>
<th>SS</th>
<th>%ile</th>
<th>TA</th>
</tr>
</thead>
<tbody>
<tr>
<td>53</td>
<td>57</td>
<td>3</td>
<td>&lt;2;0</td>
<td></td>
</tr>
</tbody>
</table>
### Child 2: 60 Months (5 Yrs.)

<table>
<thead>
<tr>
<th>GF</th>
<th>RS</th>
<th>SS</th>
<th>%ile</th>
<th>TA</th>
</tr>
</thead>
<tbody>
<tr>
<td>33</td>
<td>72</td>
<td>5</td>
<td>2:7</td>
<td></td>
</tr>
</tbody>
</table>

### Child 2: 72 Months (6 Yrs.)

<table>
<thead>
<tr>
<th>PLS-3</th>
<th>SS</th>
<th>%ile</th>
<th>LA</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC</td>
<td>92</td>
<td>30</td>
<td>6:1</td>
</tr>
<tr>
<td>EC</td>
<td>108</td>
<td>63</td>
<td>6:10</td>
</tr>
<tr>
<td>TLS</td>
<td>98</td>
<td>45</td>
<td>6:9</td>
</tr>
</tbody>
</table>
Using The SCALES Model To Examine Complex Cases

**Child 2 Continuum**

Understanding of Auditory/Visual/Sign

- Auditory - AV - Visual

Use of Spoken Language and/or Sign

- Oral - O - OS - Sign

Use of Words and/or Vocalizations

- Words - VW - Vocalizations

Use of Pictures/Signs and/or Gestures

- N/A - Picture/Signs - P/S - Gestures

**Child 2**

**A Balanced Approach**

**School**

- Scales: Weight
  - Social/Emotional Behavior: X
  - Cognitive/Curricular: X
  - Auditory: X
  - Language: X
  - Extra: Memory, Organization, Fine Motor: X
  - Speech: X

**Home**

**Community**

**Child 2**

- Age/Grade: 9 years old, 3rd grade, mainstreamed
- Communication:
  - Spoken language for peer exchanges and smaller group situations
  - Sign support: instruction and large group/noisy environments
- Current supports at school:
  - Speech-language therapy (30 min/3x/wk)
  - Sign language interpreter (all instructional hours)
  - Technology (FM, captioning)
- Current Goals:
  - Proficiency in academic areas
  - Increase speech intelligibility
  - Increase auditory comprehension

---

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(ACRN, 2011 adaptation of Waddy-Smith, 2004)

(ACRN, 2011)

(ACRN, 2011)
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References


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