Disclosures

- Financial disclosure
  - iPAD app: SCIP
  - Book: "Interventions for Speech Sound Disorders in Children"
  - Salary from East Tennessee State University
- Non-Financial disclosure

Workshop Objectives

- Implications of time for clinicians and children
- Contrastive phonological intervention approaches
- SCIP app as a tool to bridge the research to practice gap
- Wrap up
ASHA (2000) identified "organizing and time management" as one of nine skills that graduate students in SLP/A need to learn in addition to their "technical knowledge" of the field (Long, 2001).

**Traditional Approaches vs Phonological Approaches**

- **Less time**
  - Less training and linguistic expertise required to complete analyses and develop treatment materials
  - Availability of commercial materials

- **More time**
  - More training and linguistic expertise to complete analyses and develop treatment materials
  - Currently no commercial materials available for newer treatment models

*Longer periods of time in treatment for clients (5-6 years; Hudson, 1998)*

*Shorter periods of time in treatment for clients (2-3 years or less; Williams, 2000)*
Time

Work Smarter, NOT Harder!

- Less time required for SLPs
- Shorter periods in treatment for clients (2-3 years or less; Williams, 2000)

It’s Also About Time for Our Clients

- Critical age hypotheses for remediating unintelligible speech:
  - Unintelligible speech must be resolved by age 5;6 in order to significantly reduce academic problems associated with speech disorders (Bishop & Adams, 1990).
  - Unintelligible speech during early school years may affect literacy development.
It’s Also About Time for Our Clients

- Critical age hypotheses for remediating unintelligible speech:
  - Given that many children do not come to SLP for treatment until age 4 (Castrogiovanni, 1999), there is a significant need for efficient and effective therapies to remediate the speech disorder within a short time period (e.g., 18 months)

Clearly …

Neither our clients or speech-language pathologists have time to waste!

Classification of SSD
Classification of SSD

<table>
<thead>
<tr>
<th>Linguistic Profile</th>
<th>Characteristics</th>
<th>Prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phonological Delay</td>
<td>Phonological rules or processes are evident and are characteristic of younger TD children</td>
<td>47%</td>
</tr>
<tr>
<td>Consistent Deviant Phonological Disorder</td>
<td>Presence of both unusual errors and typical errors, which signal the child has impaired understanding of the ambient phonological system</td>
<td>30%</td>
</tr>
<tr>
<td>Inconsistent Deviant Phonological Disorder</td>
<td>Exhibit delayed and non-developmental error types and variability of production of single word tokens (&gt;40%)</td>
<td>12%</td>
</tr>
<tr>
<td>Articulation Disorder</td>
<td>Unable to produce particular perceptually acceptable phones</td>
<td>11%</td>
</tr>
<tr>
<td>Childhood Apraxia of Speech (CAS)</td>
<td>Deviant surface speech production patterns that may sound similar to Incon Dev Phono Dis, but difference is the proposed level of breakdown and symptomatology</td>
<td>&lt;1%</td>
</tr>
</tbody>
</table>

**Intervention**

**Traditional or Phonological?**

- Traditional approaches focus on *individual sound learning*
  - Emphasis is on placement and sound production accuracy
- Phonological approaches focus on *system-wide change*
  - Emphasis is on generalization and system shifting
Moderate to Severe SSD

- For children who have moderate to severe speech disorders, it is not uncommon for them to produce one sound for several different adult sounds, resulting in a one-to-many correspondence.

Contrastive Phonological Intervention Approaches

- There are 4 contrastive phonological intervention approaches.
- All utilize single contrastive word pairs except for the larger treatment sets of multiple oppositions.
- In multiple oppositions, it is assumed that treatment of the whole is greater than the sum of its parts.

Comparison of Contrastive Approaches

<table>
<thead>
<tr>
<th></th>
<th>Minimal Pairs</th>
<th>Multiple Oppositions</th>
<th>Max Opp</th>
<th>Empty Set</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rationale</td>
<td>Minimal or maximal</td>
<td>Maximal -&gt; minimal</td>
<td>Maximal</td>
<td>Maximal</td>
</tr>
<tr>
<td>Severity</td>
<td>Mild-mod</td>
<td>Severe</td>
<td>Severe</td>
<td>Severe</td>
</tr>
</tbody>
</table>
Homonymous or Non-homonymous?

- Homonymous approaches *directly* confront child’s rule by contrasting his/her error with the new target sound(s) to be learned.
  - Minimal Pairs and Multiple Oppositions
- Non-homonymous approaches *indirectly* address child’s rule with assumption that greater contrastive distinction of word pairs facilitates learning.
  - Maximal Oppositions and Empty Set

Designing Treatment for Tom

**Minimal Pairs:** contrasts the child’s error with the target sound

error ~ target

example: t ~ s / #

- toe ~ sew
- two ~ Sue
- T ~ see
- tie ~ sigh
- team ~ seam

**Maximal Oppositions:** Contrasts a “known”, independent, and maximally different sound with the target sound

correct ~ target

Example:

- w ~ s / #
- woo ~ Sue
- white ~ sight
- whip ~ sip
- way ~ say
- we ~ sea
Designing Treatment for Tom

Empty Set: Contrasts two target sounds that are unknown, independent, and maximally different from each other.

Target 1 ~ Target 2
Example: r ~ s / #
row ~ sew
ray ~ say
rye ~ sigh
run ~ sun
ram ~ Sam

Designing Treatment for Tom

Multiple Oppositions: Contrasts child’s error with several target sounds from across an entire rule set.
error ~ targets
Sue ~ sick
two ~ tie
chip ~ trap
trip
Kai ~ sam
Kip ~ sap
ck ~ chap
true ~ try
top

Multiple Oppositions

Assumes learning is facilitated by the size and nature of linguistic “chunks” presented to the child (learning of the whole is greater than the sum of its parts).
Assumes learning is a dynamic interaction between child’s unique sound system and intervention.
Predicts learning will be generalized across a rule set (i.e., learning will generalize to obstruents and clusters collapsed to [t] in the 1:8 phoneme collapse) and result in system-wide restructuring.
Multiple Oppositions Intervention

- NIH R03 intervention study on multiple oppositions included 24 children (mean age=4.9) with moderate to profound phonological impairment.
- After a maximum of 42 treatment sessions (approximately 8 months), statistically significant system-wide changes occurred resulting in phonological restructuring on both trained and untrained aspects of the children's sound system.

Research-to-Practice Gap

- These results are important given the high prevalence and long-term effects of speech disorders in children.
- Although phonological models, such as multiple oppositions, result in more efficient remediation often in 2 years or less as compared to 5-6 years for traditional approaches, only about 10% of SLPs incorporate phonological principles into their clinical practice.

Closing the Gap

- Technology, such as the SCIP app, can remove the barrier that currently exists in the disproportionately low percentage of SLPs who use the newer, more efficacious treatment models that significantly decrease the amount of time that children with moderate to severe phonological disorders will require treatment.
- By addressing the time needs of both SLPs and the children they serve, this change in intervention practices could potentially create a significant decrease in the 5-6 year length of intervention that is typical for children with multiple sound errors.
SCIP provides a “better, faster, cheaper” approach in the development of intervention materials to increase SLP access to newer models of phonologic intervention, decrease SLP time and effort in developing individualized treatment materials, and potentially have a profound impact on the nature of phonological intervention.
Wrapping Up

- Have you ever felt:
  - overextended?
  - overwhelmed?
  - not enough hours in your day?

- Who wouldn’t want to have evidence-based treatment options at your fingertips?

“Are you doing what you’re doing today because it works or because it’s what you were doing yesterday?”

TV Host Dr. Phil McGraw
Let’s Revolutionize Therapy!

- Hodson (1998) indicated that only about 10% of SLPs were incorporating phonological principles in their practice.
- We can bridge the gap between research and practice with access to newer models of intervention.
- And … decrease the time that children are on our caseloads.

**SCIP** the Work …
Work smarter, not harder!

Turbocharge your therapy … and your tx outcomes!

**SCIP: IT’S ABOUT TIME!**

A. Lynn Williams, Ph.D.
Associate Dean
College of Clinical and Rehabilitative Health Sciences
East Tennessee State University
williamL@etsu.edu