Introduction
- Speech sound disorders (SSD) are a common problem in school-aged children especially preschool-aged children (Williams, 2003).
- Survey revealed, approximately 75% of the population served in various setting such as preschools, elementary schools, and outpatient clinics are preschoolers demonstrating SSD (Mullen & Schooling, 2010).

Phonological Disorders
- A phonological disorder is difficulty with the rules or patterns for combining sounds intelligibly in speech in English.
- Phonological disorders have the potential to negatively impact a child’s ability to acquire literacy skills and increase frustration during conversational discourse.

Characteristics of Phonological Disorders
- Unintelligible speech
- Errors are more consistent
- Vowel production consistent
- Mild expressive language delay often present
- Ability to imitate

Remembering the Difference: CAS
Apraxia is a neurological speech disorder that affects a child’s ability to plan, execute, and sequence the movements of the mouth necessary for intelligible speech.
Characteristics for CAS
- Reduced intelligibility
- Distorted vowels
- Inconsistent productions of sounds and words
- Difficulty imitating productions after a model
- May have difficulty feeding
- May demonstrate groping

Decisions, Decisions
- SLPs have many options such as the unit to target, target selection, the number of contrasts, and service delivery, and treatment approaches when deciding how to treat children with speech disorder (Crosbie, Holm, & Dodd, 2005).
- Research states (Hodson, 1992), less than 10% of SLPs use phonological principles in the management of phonological disorders.

Various Treatment Options
- Minimal Pairs
  - Target Population: Typically used for children ages 3:0-6:0 with mild to moderately delayed or disordered speech. Errors are consistent; Normal hearing, oromotor, and language skills.
  - Intervention uses contrastive word pairs involving child's error and target sound
  - Targets selected based on developmental norms, frequency of occurrence, and stimulability
  Example-error sound is /b/ and target sound is /f/; Contrastive pairs used would be bat vs fat, fall vs ball, bore vs four, bull vs full, etc

- Cycles Approach
  - Target Population: Ages 2:6-14:0 (primarily used prior to kindergarten); highly unintelligible including CAS
  - Intervention Uses: Phonological patterns within cycles
  - Targets Selected: Developmental; active process (> 40 occurrence); stimulable

- Maximal Oppositions
  - Target Population: Typically used for children ages 3:0-6:0 with mild to moderately delayed or disordered speech. Errors are consistent; Normal hearing, oromotor, and language skills.
  - Intervention Uses: Single contrastive pairings of maximally distinct comparison sound with target sound
  - Targets Selected: maximal contrasting of selected targets
  Examples: moo~dew
  - Involves maximal contrasting of selected targets rather than minimal.
Why does the type of treatment matter?

Research has indicated having unintelligible speech in the preschool years may affect the development of literacy skills.
- Urgency for expediting intelligibility gains for preschoolers with severe SSD

We need to make sure we are providing the most appropriate treatment for children with moderate to severe SSD.

WE NEED TO APPLY EVIDENCE-BASED PRACTICE!!!

What Does the Research State (Overview)

- A survey was conducted on 2084 SLPs across the country to determine what was the preferred method for treating children ages 3-6 with speech sound disorders.
- Results of the study indicated that over half surveyed were not familiar with approaches developed after 1985.
- Most of the SLPs used a traditional interventions (49% of respondents), minimal pairs, or cycles approach (1/2 of respondents) to remediate speech sound disorders.

What is the Multiple Oppositions Approach?

Multiple oppositions is a linguistic method of speech therapy that is highly useful as an intervention for students with moderate to severe phonological disorder.

It is based on a contrastive model of speech therapy. (Williams, 2000).

What is Multiple Oppositions Approach?

This model typically targets the phoneme collapse, which is when a child uses one sound for several adult sounds.

What Does the Research State (Overview)

- Williams (2000a), a case study was presented on a three-year five month old female presenting with an extensive phoneme collapse. A 245-item single-word probe given. The analysis revealed the participant collapsed multiple targets into one phoneme. Two contrastive approaches was implemented over a course of 15 sessions. The results of this case study indicated the multiple oppositions provides a focused, systemic approach to expand the absence of phonemic contrasts for children with severe phonological disorders.

What Does the Research State (Overview)

- Williams (2000b) implemented three models of intervention with ten children with varying degrees of phonological impairment. The results of the study supported the hypothesis that the multiple oppositions was suited for severity ranges of moderate, severe, and profound, but may not be well suited for mild phonological impairments.
What Does the Research State (Overview)

Cathell and Ruscello (2004) presented a case study that included a four-year-old female with a severe SSD to illustrate the multiple oppositions approach. The participant demonstrated deletion errors, hypernasality, and simple syllables. The participant participated in treatment designed to target motor learning for three months with very little progress. The child remained unintelligible. At this point, the multiple oppositions approach was introduced to eliminate the phoneme collapse in the prevocalic position. With the completion of the treatment, the participant showed gains in her consonant inventory, intelligibility, and nasality.

Who can benefit from the multiple oppositions approach?

- Research supports
  - Moderate to Profound SSD
    - At least 6 sound errors across multiple classes
  - 3-6 Years of Age
    - Clinical success seen with slightly older students

**Normal hearing, intelligence, structure/function of speech mechanism

What is the goal of therapy?

- Facilitate the greatest amount of phonological change or generalization
- Make maximum change in least amount of time

Target Selection

The ultimate goal of target selection is to cause the greatest phonological change or generalization in a child’s sound system (Gierut, 2001).

- Maximal pairs resulted in greater improvement in target sounds, more additions of untreated sounds and less overgeneralization to known sounds.

Systemic Approach

1) Knowledge of the child’s unique phonologic organization relative to the adult sound system (relational analysis)

2) Selection of targets that will focus the new information to the restructuring of the child’s original organization

3) Selection of specific targets based on saliency (maximal distinction and maximal classification)

(Williams, 2000)

Definitions

Sonorants:
- Speech sounds produced by vibration of the vocal folds with an open vocal tract
- Vowels, nasal, glides, liquids

Obstruents:
- Speech sounds produced by a constriction in the vocal tract
- Stops, affricates, fricatives

From most sonorant to most obstruent


(Creaghead & Farmham, 2013)
Definitions

**Markedness**: complexity of sound production

**Order of easiest to hardest**

**Obstruents**: stops -- fricatives -- affricates

**Sonorants**: vowels -- nasals -- glides -- liquids

**Order of easiest to hardest for clusters**

➢ most to least distinction between sounds

stop/liquid easier than fricative/liquid

More marked assumes less marked

(Creaghead & Farmham, 2013)

Maximal Distinction and Maximal Classification

Maximal Distinction:
Targets that are maximally different
from child’s error in terms of place,
manner, and voicing

Maximal Classification:
Targets from each of the following:
(a) different manner classes
(b) different places of production
(c) different voicing

Target Selection: Multiple Oppositions

- Contrast two or more errored sounds with the child’s sound substitution
- Based on phoneme collapses within the child’s system
- Can focus on different features at once (include sounds from different classes)

Homonymy

Multiple Oppositions - Homonymy is a central theoretical tenet

- **Homonymy** is a result of loss of contrastivity amongst phonemes, which occurs when phoneme collapses are present in a child’s speech (Williams, 2010).

  ○ Two or more words sound alike but have different meanings

  EXAMPLE

  - Child collapsed the /p f l r s k sl st tr/ phonemes to /t/
  - Therapy targets for the /t/ sound may initially be /l r k tsl /
  - Targets would be selected because they are maximally distinct from the /t/ in terms of voice, manner, place, major class and single sound vs cluster sound.

  /t/ - voiceless alveolar stop - major class (obstruent)

  contrasts most with selected targets ...

  /tl/ - voiced glide - major class (sonorant)

  /tr/ - voiced liquid - major class (sonorant)

  /$l$/ - voiceless velar - major class (obstruent)

  /$tr$/ - voiced liquid cluster - major class (sonorant/obstruent)

http://www.speechlanguage-resources.com/multiple-oppositions-therapy.html
Identifying Phoneme Collapse

**Target word:** pool, fun, light, sun, ran, kite, sleep, stop, try

**Child produces:** tool, ton, tight, ton, tan, tight, teep, top, tie

- Complete phonological probe
- Identify errors in ALL positions
  - Initial, medial, final
- Sound errors to the right
- Draw a line to the sound substitution

Target Selection

- Stimulable/non-stimulable
- Most/least phonological knowledge
- Early/late developing
- Least/most marked (linguistically complex)

Target Selection

Target selection based on sounds with most phonological knowledge provides faster generalization of the target sound to other contexts.

**BUT**

Target selection based on least phonological knowledge provided greater generalization to other sounds and sound classes.

[Dinnsen & Elbert, 1984; Elbert et al., 1984; Gierut et al., 1987]

Target Selection

Targeting stimulable sounds provides faster generalization of production of the target sound in other contexts.

**BUT**

Targeting non-stimulable sounds provides more widespread generalization to other sounds and sound classes.

[Powell, Elbert & Dinnsen, 1991]

Target Selection

Targeting early developing sounds provided greater generalization of the sound to other contexts.

**BUT**

- Targeting later developing sounds provided greater generalization to other sounds and sound classes.
- Later developing sounds showed more continued improvement post treatment.
- Teaching later developing sounds produced greater system wide change

[Powell & Elbert, 1984]
**ASSESSMENT**

“The selection of treatment targets based on phonological assessment has the potential to maximize treatment outcome, and therefore, plays a major role in treatment efficacy.”

Williams, 2002

- Choose an assessment with a large sample of words and phonemes in multiple contexts
- Phonemic inventory
- Language Sample

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**IT TAKES TIME!!!!!!**

1 additional hour of analysis may result in less than 1 year of therapy, or significant gains within 1 year.
Tools to Make It Easier

SCIP: Sound Contrasts In Phonology

More About SCIP

- 2,350 real words and 6,000 nonsense words
- Widest variety of treatment stimuli and support rapid progress.
- Individual or group sessions with up to 4 students.
- Choose the option to treat word-initial or word-final sounds using pictures or illustrations.
- You can also print illustrations to prepare practice sets to be used away from the iPad or sent home for reinforcement.

https://www.scipapp.com/support/

Phase 1

1) Familiarization of the rule being trained

**If a student is having difficulty marking final sounds, you would train the rule of open sounds versus closed sounds (ba vs. bat)

**Short sound vs long sound (tat vs sat)

Phase 1, Step One

- Make abstract rules concrete
- Use tactile, auditory, and visual associations to teach the rule
- Make activity fun with active participation from the student

Phase 1, Step Two

Familiarization with sound targets.

- Make up a story
- May include nonsense words

**Phase 1 lasts one to two sessions
Phase 1

2) Familiarization of the vocabulary and pictured stimuli
3) Child’s production of the contrasts

Phase 2: Focused Intervention

- Targets that will be presented using stress, intonation, and physical prompts in order to learn the new contrasts.
- Interactive play to target sounds and expose the child to the range and application of the speech sound rules
- Contrasts presented in varying order

***Phase 2 typically last the longest

Phase 3

Production of contrasts will be presented with communicative contexts.

- Print contrast illustrations from SCIP
- Structured activities using treatment stimuli to elicit single-word production
  - Concentration/Memory
  - Student Plays “Therapist”
  - Go Fish
  - Contrastive pairs

Phase 4

Subphase 4: Consists of conversational recasts.
Naturalistic activities that provide frequent opportunities for the child to produce targets

The SLP will provide a recast
- Statement of the child’s error using the correct target sound for immediate feedback

Implementation (Small Group)

- Preparation and organization are key variables to success
- Complete Phase 1 in individual sessions before working with children in small groups
  - Rotations if 1-on-1 not possible
- In a group of 2-3 children
  - (try to group children by similar targets but not necessary)

Implementation (Small Group)

- Group children by grade (similar abilities, maturity, interests)
- Have children take turns producing targets/contrastive set until all 5 sets are complete
  - 1 set per round or all 5 sets each round
What If I Don’t Have the Software?

Teachers Pay Teachers or Create Your Own!

Before Implementation

Case Study: Seven-year-old move-in from Ohio

https://drive.google.com/open?id=0B-3UToa3p8axeDhtbFJQVXhiOU5DNlczemFUT1Q4Z2NJMHBJ

After Implementation

https://drive.google.com/open?id=0B-3UToa3p8axWURodXF3Z19leGlSU2N4aFZKRTFsVVRZV0Fn

Sample Case Study Results (November-April)

Riddle and Stockman, 2009

Dr. Lewis’ Research

Dr. Jones’ Research
Writing IEP Goals

❖ Think in terms of intelligibility

“During a spontaneous language sample of at least 50 utterances, at least 70% of words spoken will have all phonemes (sounds) produced correctly.” PWC = percent of words correct

“Student will increase speech intelligibility from 57% to 75% “

Percent Consonant Correct

CREATE THE PHONEME COLLAPSE

● Sound child produced on left

● Sound the child SHOULD produce on the right

<table>
<thead>
<tr>
<th>Target Word</th>
<th>Fred’s Production</th>
<th>Target Word</th>
<th>Fred’s Production</th>
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<td>gaʔo</td>
<td>Santa</td>
<td>dædə</td>
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<td>go</td>
<td>Christmas tree</td>
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References


References


References


