Learning Objectives

- Describe expected phonological differences in Spanish and English development
- Explain outcome differences between articulation and phonological interventions in English for multilingual students
- Explain rationale and how to include home language in speech interventions for multilingual students
- Disclosure: Salary from Bilingual Therapies

Why bilingual SSD important?

- National SLP Survey (Skahan, Watson, & Lof, 2007)
  - 36% evaluated ELL students for speech disorders
  - Most rely on informal measures or English-only tests
- ASHA 2012 Schools Survey
  - 93% of SLPs served students with articulation and phonological disorders
  - 63% SLPs served ELLs
- Limited # of treatment studies for multilingual students (Holm & Dodd 1999; Holm, Dodd, & Ozanne, 1997; Ray, 2002)

Bilingual Phonological System(s)

1 or 2 phonological systems
  - Barlow & Enriquez, 2007; Ray, 2002)

Interactional Dual Language Systems Model (Paradis, 2001)

- 2 systems which interact (Fabiano-Smith & Barlow, 2010; Hambly, Wren, McLeod, & Roulstone, 2013)

Interaction may be “convergent” or “competitive”
  - Goldstein & Bunta, 2011; Kohnert, 2013)

Dual Language Learners in your area?

- Spanish
- Bosnian
- Other languages

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English-Spanish “R”

English: /ɾ/ /er/

Spanish: trilled /rr/ flap /ɾ/

- Bilinguals had more substitutes [l, r, j, s, t, tj, dr, ld] for trill than Spanish monolinguals [l, r, j] (Goldstein & Washington, 2001)
- Goldstein & Iglesias, 1999; Gonzalo-Bueno, 2005

Spanish & English Phonological Differences

- Spanish consonants < English consonants
- NO English “r”, “h”, “z”, “sh”, or “zh”
- NO word initial clusters with “s” (only “es” → espejo [mirror])
- Only 5 FINAL sounds in Spanish: /d, l, n, s, r /
- Longer words in Spanish (Span = 2.76 syllables, Eng = 1.74 syllables)

(Bilinguals, 2007; Goldstein, 1999; German & Stabile-Kester)

Spanish-influenced English

Consonant Influence or Disorder?
- “choose” for shoes
- “eschool” for school
- “wabbit” for rabbit
- “den” for then

(Goldstein, 2001; Tsuagawa, 2005)

Dialectal Differences

Puerto Rico
- Substitute /l/ for flap /ɾ/ - /kalta/ for “carta” [letter]
- Syllable-final deletion - /do:/ for “dós” [two]
- /s/ ONLY

(Goldstein, 2004; Yavas & Goldstein, 1998)

Bilingual Assessment

Evaluation Bilingüe

Complete assessment in both languages

- Bilingual SLP
- Bilingual liaison
- Interpreter
- Language Line
- Teletherapy
- Collaborate with local university

(Goldstein & Fabiano, 2007; Jackson, Leacox, & Callender, 2010; Yavas & Goldstein, 1998)
Complete assessment in both languages

Thorough assessment in both languages (Goldstein & Fabiano, 2007; Taxos & Goldstein, 1998)

- Complete Case History (language use/proficiency, dialect)
- Collect Single words & Speech Samples (Goldstein, Fabiano, & Wahrhagen, 2005)
- Assess phonetic inventory = Independent Analysis
- Compare to target words = Relational Analysis
- Determine difference or disorder
- Link assessment to intervention goals

Spanish Speech Assessments

- CPAC-S (Contextual Probes of Articulation Competence-Spanish) (Goldstein & Iglesias, 2006)
- SAM (Spanish Articulation Measure) (Mattes, 1995; like GFTA, but no norms)
- Spanish Language Assessment Procedure (Mattes; sentence level word repetitions)
- BAPA (iPad) Bilingual Articulation Phonology (Fernandez, Kester, Bauman, & Prath, 2014)

Spanish & English Phonological Differences

- See Goldstein (1999) chart or CPAC-Spanish for typical patterns of phonological processes.

Example

[Diagrams of English and Spanish articulation norms]
Bilingual SSD & Intervention

Determine initial treatment targets

Yavas & Goldstein (1998)
1) Patterns exhibited with similar rates in L1 & L2. Frequently occurring patterns
   - Cluster reduction
   - Unstressed syllable deletion
2) Unequal frequency between L1 and L2
   - Final consonant deletion
3) Error patterns exhibited in only 1 language
   - Trill errors (Spanish)

Bilingual Intervention

Bilingual Speech Therapy

- Limited research on bilingual speech sound interventions (Holm & Dodd, 1999; Holm & Dodd, 2001; Holm, Ozanne, & Dodd, 1997; Ray, J., 2002)
- Only case studies
- All completed with English therapy
  - Recent ASHA presentations combining languages for bilingual therapy (e.g., Anad & Ramos, 2012)

Therapy Outcomes

- Therapy provided in English, transfer will occur in 1st language
  - Articulation errors is across languages
  - Phonological errors: decreased in English but not Cantonese (Holm & Dodd, 2001)
- Transfer more likely to occur when phonological components of 2 languages are similar (Yavas & Goldstein 1998)

Cognates

- Words which share meaning and linguistic similarity across languages (Harley, 2008)

- baby
  - bebé

Cognate Facilitation = features of one language influences another (Kalyuzhny, 2001; Kroll & Stewart, 1994; van Hell & Dijkstra, 2002)

- Bilingual adults
  - Quicker to recognize and fewer errors on cognates than non-cognates (Hoshino & Kroll, 2008; Sunderman & Kroll, 2006)
  - Positive effect during case study for patient with aphasia in naming cognates (Kohnert, 2004)
- May occur due to simultaneous activation (Colmez, 2001; Hermans, Bongaerts, de Bot, & Schredlue, 1998; Kroll, Gerfen, & Dussias, 2008)
Cognate Facilitation

- Older bilingual children
  - sensitivity to cognates (Kelley & Kohnert, 2012; Malabonga et al., 2008)
  - increased learning with instruction to recognize cognates (Carlo et al., 2004; Nagy, García, Buntangeļu, & Henry-Shispat, 1993; Proctor & Mo, 2009)

- Young children
  - Pérez, Mendez, & Bedore (2010) found perform better on cognate items than noncognates.
  - Leacox et al. (2011) found young children named cognates with higher accuracy than noncognates.

Research to Practice

- Screened 8-year old student in BOTH languages (Goldstein & Fantini, 2007)
  - "pyato" [plato]
  - "plate"

Single Subject Study

- 8:10 male, 3rd grade

  Parent Questionnaire
  - Spanish-English bilingual
  - Mexican heritage

Language exposure
  - Home: Parents (20% English)
  - School: 1-way dual-language (50% Spanish - 50% English)

Method: Assessment

- Language Samples (English, Spanish)
- Spanish Articulation Measure (Mattes, 1995)
- Goldman Fristoe Test of Articulation (Goldman & Fristoe, 2000)
- Create Cognate and Noncognate Probes

Error Patterns

<table>
<thead>
<tr>
<th></th>
<th>Spanish (L1)</th>
<th>English (L2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liquid Errors</td>
<td>&quot;pyato&quot; [plato]</td>
<td>Occasional Final /l/ omission</td>
</tr>
<tr>
<td>Consonant Cluster Reduction</td>
<td>&quot;tes&quot; for tres [three]</td>
<td>Occasional omission in conversation</td>
</tr>
<tr>
<td>Trilled /rr/</td>
<td>Substitute bilabial for alveolar trill</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Cognate-Noncognate Probes

<table>
<thead>
<tr>
<th>Sample  &quot;L&quot; Words</th>
<th>Cognates</th>
<th>Noncognates (untrained)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spanis</td>
<td>English</td>
<td>Spanish</td>
</tr>
<tr>
<td>lámpara</td>
<td>lamp</td>
<td>lágrima</td>
</tr>
</tbody>
</table>

- matched on word frequency (Cuetos et al., 2011) and phoneme length.
- Black and white pictures (Frederick, 2005)
Method: Intervention

- 1 individual session/week for 4 weeks
- 40 minutes per week (80-100 practices)
  1. Weekly probe testing
  2. Practice games, 1 metaphon activity
  3. Weekly homework
- 5 Cognates targeted in Spanish each session
- Words and phrases
- Combination of phonetic strategies and self-checking

Primary Findings

- Assessment: Asymmetric speech sound errors
- Intervention: Increased accuracy in /l/ productions
- Student did not identify cognate similarity between languages until week #3
  Need explicit cognate instruction (Nagy et al., 1993)

Discussion

- Exploratory study:
  - Children are sensitive to cognates (Leacox et al., 2011; Perez et al., 2010).
  - Cognates targeted in Spanish, transfer occurred to untrained noncognates
  - Single subject
  - Not enough evidence
  - No preliminary evidence for using cognates vs. noncognates
  - Errors primarily present in Spanish and not English

Future Research

- Additional participants
- Explicit instruction between L1 and L2
  - Include orthography
  - Select errors patterns of equal frequency (Yavas & Goldstein, 1998)
  - English, Spanish, or Bilingual Intervention

Bilingual Options for Therapy

- English first (or Spanish) to some criterion and then in Spanish (or English) to some criterion
- 1 week in English and 1 in Spanish
- English (or Spanish) for a set number of sessions and then Spanish (or English) for a set number of sessions
- Monitor generalization to the other language
  - Use Spanish probes (Spanish Articulation Measure)
  - Ask parent, teacher, or bilingual liaison to help create probe list

Free Resources

- Teachers Pay Teachers
- 1-4 syllable words in Spanish

References

- References, cont’d.