Comparison of Naturalistic versus Drill-based Intervention for Preschool Children with Phonological Impairments

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### PICO Question (Gillam & Gillam, 2008)
In children with phonological impairments (P), do naturalistic approaches (I) lead to significantly better use of phonemes (O) than drill-based intervention (C)?

### Introduction
- Children use speech and language skills to engage with others. These skills are learned through human interaction.
- As children develop speech and language, they acquire phonological knowledge that supports effective communication.
- If someone does not have phonological knowledge, they may have a communication disorder.
- Children with a communication disorder may participate in either drill-based or naturalistic therapy to improve their speech intelligibility.
- It is unclear if drill-based or naturalistic therapy may be more effective in improving speech intelligibility for children.

### Case Scenario
- **Clinician**: Stephanie is a first year speech-language pathology graduate student who has had minimal exposure to preschool-aged children.
- **Client**: Tyler, a 3-year 9-month-old boy, has phonological errors.
- **Therapy**: Twice a week for 60 minutes each time.
- **Current Goal**: Increase speech intelligibility for Tyler.

### Methods
**Electronic Databases**: PubMed & ASHA.

**Search Terms**: phonological impairments, drill-based intervention, naturalistic phonological therapy, and naturalistic vs. drill therapy.

**Articles**: Of the results, 5 articles were chosen based on their relevance and research evidence.

**Achieved Interrater Reliability**: 90%.

**Coding**: CATE (14 appraisal points), CASM (11 appraisal points).

### Discussion
**External evidence**: Both treatments were effective; however, drill-based therapy was found to better help children with severe phonological impairments. Additionally, frequency and intensity were found to be of more influence than the type of therapy.

**Internal evidence related to patient**: Client does not enjoy drill-based activities, but stated, “I don’t want to say my words”. Parents indicated a preference for a more natural drill-based therapy, hoping for quicker results.

**Internal evidence to clinician**: Clinician has a better understanding of how to implement a drill-based approach but is open to using a naturalistic approach.

**Summary**: Clinician will implement a mix of drill-based and naturalistic approaches to remediate Tyler’s phonological impairment. Tyler has a severe phonological impairment and drill-therapy has been shown to have better outcomes, but his strong aversion to drills makes incorporating naturalistic approaches challenging.

### Results

<table>
<thead>
<tr>
<th>Authors Research Design</th>
<th>Purpose</th>
<th>Participants</th>
<th>Dependent Variables</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denne, Langdow, Pring, &amp; Roy (2005) Experimental</td>
<td>To examine the effectiveness of the clinical setting compared to home parent intervention on phonological awareness for preschool-aged children.</td>
<td>Phonological impairments • Males and Females • Preschool and first grade N = 20</td>
<td>Phonological Abilities Test (PAT) • Grapheme/Phoneme Knowledge • Wortschatz Objective Reading Dimension (WORD) Speech Intelligibility</td>
<td>Phonological awareness • ( p = 0.01, d = 1.74 ) Grapheme/phoneme knowledge • ( p = 0.05, d = 0.55 ) Speech intelligibility • ( p = 0.001, d = 0.98 ) Speech production demonstrated less gains than the others. Responses varied greatly from child to child.</td>
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<td>Lancaster, Keusch, Levin, Pring, &amp; Martin (2010) Experimental</td>
<td>To examine the effectiveness of an eclectic approach (mixing different treatment methods) on phonological awareness for preschool-aged children.</td>
<td>Phonological Delay/Disorder • Males and Females • Preschool N = 27</td>
<td>Speech Intelligibility • Edinburgh Articulation Test (EAT)</td>
<td>Speech intelligibility • ( p = 0.001, d = 1.33 ) (treated group) • ( p = 0.05, d = 0.75 ) (parent group)</td>
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<td>Law, Garrett, &amp; Nye (2004) Meta-Analysis</td>
<td>To examine the effect of clinician and parent interventions on accurate phonemes for young children.</td>
<td>Primary Speech and Language Delay/Disorder • Males and Females • Preschool N = 603</td>
<td>Expressive Phonology • Expressive Vocabulary • Expressive Syntax</td>
<td>Expressive Phonology • ( p &lt; 0.05, d = 0.44 ) (parent/clinician treatment) • ( p &lt; 0.05, d = 0.67 ) (clinician treatment) • ( p &lt; 0.05, d = 0.17 ) (parent treatment) Expressive Vocabulary • ( p &lt; 0.05, d = 0.98 ) (parent/clinician treatment) • ( p &lt; 0.05, d = 0.13 ) (clinician treatment) • ( p &lt; 0.05, d = 1.06 ) (parent treatment) Expressive Syntax • ( p &lt; 0.05, d = 0.70 ) (parent/clinician treatment) • ( p &lt; 0.05, d = 0.28 ) (clinician treatment) • ( p &lt; 0.05, d = 0.88 ) (parent treatment) Results indicated that speech and language therapy might be effective for children with phonological or expressive vocabulary difficulties.</td>
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<td>Lawrence (2014) Experimental</td>
<td>To examine the effect of a naturalistic therapy approach (i.e., storybook reading) on speech intelligibility for preschool-aged children.</td>
<td>Speech Sound Disorders • Males and Females • Preschool N = 6</td>
<td>Percent Correct for Imitations</td>
<td>Percent Correct for Imitations Child 1: PND = 100% (highly effective) Child 2: PND = 100% (highly effective) Child 3: PND = 96% (highly effective) Child 4: PND = 39% (ineffective) Child 5: PND = 100% (highly effective) Child 6: PND = 100% (highly effective) Results indicated that a naturalistic approach through storybook reading was an effective treatment.</td>
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<td>Williams (2000) Experimental</td>
<td>To examine the effect of different models of intervention on speech intelligibility for preschoolers and first graders.</td>
<td>Moderate-to-Profound Phonological Impairment • Males and Females • Preschool and First Grade N = 10</td>
<td>Correct Underlying Representations (CUR)</td>
<td>Correct Underlying Representations (CUR) • ( d = 3.40 ) Results indicated that phonological change was influenced by three factors: intervention model, structure of intervention, and use of systematic factors in target selection.</td>
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**References**