The Effects of Childhood Apraxia of Speech on the Development of Phonological Awareness

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Phonological Awareness Deficits in CAS

Previous critiques (Starkweather & Snow, 1992) of CAS research involve the failure to recognize the impact of the disorder on a child's developing language system (as cited in Moriarty & Gillon, 2006). Gillon (2004) established that children with phonologically based speech disorders are at risk for phonological awareness deficits (as cited in Gillon & Moriarty, 2007). These deficits are seen in research conducted by Marquardt, T. P., et al. (2006) who studied CAS children “…simply could not produce rhymes, recognize rhymes, or respond to vocalic nuclei in CVCCs that represented near distance rhymes.” Rhyming tasks are used to assess the integrity of a child’s phonological system as it arrives at a phonologically driven decision (Figure 1) (Marion et al., 1993).

Phonological Representation Hypothesis

In cases of CAS, a phonological representation deficit has been noted to account for phonological awareness, speech production, and motor planning problems (Sussman, S. A., et al., 2002). Elbow (1998) defines a phonological representation as information involving the storage of speech sound information in long-term memory (as cited in McNeill et al., 2009). Stavniciov (2000) explains that appropriate development of phonological awareness skills plays a crucial role in a child’s knowledge of phoneme-grapheme correspondence, thus affecting their literacy development (as cited in Zatorski, Velteniaus, & Currie, 2010). These skills help children to transfer their awareness of smaller linguistic units (syllables, onset, rimes, phonemes) onto concrete visual representations (graphemes) (Zatorski et al., 2010).

Phonological Awareness

Phonological awareness is a child’s awareness of the sound structure of spoken language (Marion & Moriarty, 2006). Phonological awareness is an essential variable used in the development of reading and spelling skills (Marion & Moriarty, 2006). The efficacy of phonological awareness intervention for children with spoken language impairment (Marion & Moriarty, 2006) has gathered evidence that phonological representations are contributing to the speech production and phonological awareness deficits in CAS, it is logical that an intervention program is designed to improve the child’s phonological representation system as a whole (Morrisey et al., 2009). This emphasis on an integrated phonological awareness program is to improve the child’s phonological awareness skills while the child is practicing producing speech after hearing clear and correct models (Gillon, 2000). The following are specifically and simultaneously targeted in a structured and explicit phonological awareness program: Children with knowledge, phoneme awareness, and speech production (McNeill et al., 2009). The production of speech during phonological awareness activities allows children to experience arranging phonemes into larger linguistic structures (Marquardt, T. P., et al., 2006). Findings of Gillon (2000) show that an integrated phonological awareness intervention approach can positively improve a child’s phoneme awareness and speech production simultaneously. Results of this intervention program may increase the specificity of the phonological representations of the words being targeted in therapy (Morrisey et al., 2009).

Table 2: Supporting Evidence

<table>
<thead>
<tr>
<th>Researchers</th>
<th>Therapy Targets</th>
<th>Hypothesis</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>McNeill et al., 2009</td>
<td>1. Speech production</td>
<td>1. Speech accuracy will improve/演讲准确度会增加</td>
<td>1. Generally supported</td>
</tr>
<tr>
<td></td>
<td>2. Phonological awareness</td>
<td>2. Phonological awareness will be within expected age range</td>
<td>2. Supported</td>
</tr>
<tr>
<td></td>
<td>2. Phonological awareness</td>
<td>2. Phonological awareness will be within expected age range</td>
<td>2. Mixed-support</td>
</tr>
</tbody>
</table>

Integrated Phonological Awareness Intervention Approach to CAS

When working to resolve a child’s phonological impairments speech-language pathologists typically work on improving speech articulation and intelligibility (Gillon, 2000). This intervention technique can target phonological awareness knowledge because the child is focused on articulating sounds in words or producing/consuming contrasted sounds (Gillon, 2000). If phonological representations are contributing to the speech production and phonological awareness deficits in CAS, it is logical that an intervention program is designed to improve the child’s phonological representation system as a whole (Morrisey et al., 2009). This emphasis on an integrated phonological awareness program is to improve the child’s phonological awareness skills while the child is practicing producing speech after hearing clear and correct models (Gillon, 2000). The following are specifically and simultaneously targeted in a structured and explicit phonological awareness program: Children with knowledge, phoneme awareness, and speech production (McNeill et al., 2009). The production of speech during phonological awareness activities allows children to experience arranging phonemes into larger linguistic structures (Marquardt, T. P., et al., 2006). Findings of Gillon (2000) show that an integrated phonological awareness intervention approach can positively improve a child’s phoneme awareness and speech production simultaneously. Results of this intervention program may increase the specificity of the phonological representations of the words being targeted in therapy (Morrisey et al., 2009).

Conclusion

Normally, intervention techniques focus on one level of the disorder; according to Moriarty & Gillon (2006), “Findings that speech production in CAS can be positively changed via an intervention focused on two levels of the disorder validates the concept of CAS as a multifaceted impairment.” (p. 730). Although there is increasing support for this integrated therapy technique, it cannot be concluded that it is superior to traditional approaches (Morrisey & Gillon, 2006). Results can differ (as seen above), making it necessary to take into account individual differences (i.e. cognitive deficits).