

Phonological and Articulation Therapy in Portuguese Children with Language Impairment

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Background

- **Portugal:** articulation therapy = SLT routine clinical practice for children with phonological impairments
- Limited use of phonological therapy or phonological awareness
- The effectiveness of phonological and articulation therapy with children with Language Impairment (LI), and the role of phonological awareness is conflicting.
 - Phonological awareness intervention was more effective on speech production than articulation therapy (Gillon 2000).
 - In contrast, Hesketh et al. (2000) did **NOT** find differences in speech production between metaphonologically and articulation interventions.

Which approach may we select?

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Aim of the study

- To explore the effectiveness of two types of intervention in a group of 14 pre- or early school-aged children (between 4.0 to 6.7 years) with LI using a randomised control intervention study:
 - **An articulation approach** (AA) (Riper and Emerick 1984) and
 - **A phonological approach** (PA), that includes phonological awareness therapy (Gillon and McNeill 2007), listening and discrimination activities (Lancaster 2008).

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Method

Subjects

14 Portuguese children with LI

- Subject selection criteria included:
 - greater than 1.5 SD below the mean on a standardised language test (kay and Tavares, 2007);
 - audition of 20dB in the frequencies 500Hz, 1000Hz and 2000Hz;
 - an absence of social or emotional problems and obvious neurological damage
 - Children with non-verbal IQ above and below 85 were included
- Non-verbal IQ: children were divided into two groups:
 - a group (5 children) was identified as having a specific language impairment (non-verbal IQ above 85) (Leonard 2008);
 - a group (9 children) had significant language problems coexisting with various levels of non-verbal IQ (non-verbal IQ below 85 and above 62).

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Method

- **Phonological assessment**

- Single-words
 - Phonological test (Mendes et al. 2009)
- Spontaneous speech
 - Picture description task (Figure 1) →



- **Reliability**

- In addition to the phonetic transcriptions made by first author, the production of 1 child (randomly selected) was annotated and transcribed by another trained SLT.
- Point-to-point interrater reliability was 90.3% (pre-treatment) and 93.7% (post-treatment).

Method

- **Intervention**

- The LI children were randomly assigned to two treatment groups:
 - a group of 7 children was treated with an AA,
 - a group of 7 children was treated with a PA.
- The intervention for both groups consisted of 25 weekly sessions of 45 minutes over a period of 6 months.
- Both groups were treated by the same SLT.
- After 25 sessions of therapy, the children were assessed with the same materials.
- The effectiveness of the two treatments was compared.

Method

- **Treatment Fidelity**
 - To analyse the fidelity of the treatment the first author and another SLT separately observed 6 sessions (3 of AA and 3 of PA) and filled in an observational rating scale.
 - An analyses of these observational rating scales showed that the target interventions were administered as intended and reported.

- **Qualitative Assessment**
 - A questionnaire was developed to evaluate the effectiveness of each intervention from the perspective of the children's parents in order to enhance the ecological validity of any results obtained.

- **Outcome measures**
 - PCC score
 - Percentage of occurrence of phonological processes
 - Level of intelligibility of speech (percentage of intelligible words)

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Results

- A Mann-Whitney U test compared the PCC of the groups pre-therapy and showed no significant differences ($p > 0.05$).
- Change scores for PCC from pre-treatment to post-treatment were calculated (Table 1).

Table 1. PCC at the pre-treatment and post-treatment assessment for PA and AA groups

		PCC (%)		
		Pre-treatment	Post-treatment	Change pre to post
PA group (n=7)	Mean	49.04	67.23	18.18 *
	Min-Max	16.04 - 73.80	35.29 - 89.30	7.49 - 27.81
	SD	22.89	20.83	6.15
AA group (n=6) (1 child is still receiving therapy)	Mean	41.18	49.20	8.02 *
	Min-Max	21.39 - 71.66	28.88 - 77.01	0.54 - 19.79
	SD	19.41	20.53	6.40

* $p < 0.05$

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Results

- The Wilcoxon test was used to compare change scores for PCC from pre- to post-treatment in PA and AA groups.
- A significant difference was shown in PA ($p < 0.05$) and in AA group ($p < 0.05$) pre-to post-treatment.
- A Mann-Whitney U test compared PCC change between groups and showed that there was a significant difference ($p < 0.05$) between groups, **with the children receiving PA showing a more significant improvement.**

Parental reports

- All of the parents reported that the intervention applied had contributed to the improvement of their children's speech and language. No differences were noted in parental report across the two interventions.

Conclusions

- The results suggest that children of both groups improved, and that both intervention approaches were effective in enhancing speech production.
- However, the PA was found to be more effective than AA.

Future work

- Analyze level of intelligibility of spontaneous speech from the picture description task.

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