Phonemic awareness and segmental properties in the performance of oral and reading/writing tasks

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Introduction

1. Goals

1. To identify the initial state of a segmental hierarchy in the development of phonological awareness in European Portuguese (EP).
2. To identify the impact of internal properties of segments in 1st grade children’s performing phonemic awareness tasks (oddity tasks).
3. To compare our results with the order of acquisition of manner of articulation (MoA);
4. To relate the degree of success under the performance of phonemic awareness tasks with the degree of success in writing and reading tasks.

2. Hypotheses


H1: The identification of the left-edge segment in the odd word is promoted if the MoA is [-continuant] (oral or nasal plosives) and demoted if the MoA is [+continuant] (fricatives or liquids).

H2: The accuracy associated to MoA classes in phonemic awareness mirrors the one exhibited in reading/writing skills.

3. Method

1. Subject

- 71 children from 1st (n=22), 2nd (n=28) and 4th (n=21) years of reading instruction;
- 35 children female (1st (n=10), 2nd (n=17), 4th (n=8)); and 36 male (1st (n=12), 2nd (n=11), 4th (n=13)).
- All children have started the process of formal reading and spelling (phonetic method).
- No speech or language disorders
- 100% of success in all tasks of articulation and auditory discrimination
- Four groups based on levels of reading/spelling:
  - Group 1: 8 children (average age 6;07) Group 1: 12 children (average age 9:00)
  - Group 2: 9 children (average age 7:04)
  - Group 3: 46 children (average age 9:09)

2. Stimuli

- For the sequence <data, meta, bota>, the child has to exclude the odd word.
- The child presses the "tweety-button" under the picture of the odd word; this procedure automatically registers the reaction time through the E.Prime software (version 1.0).

Procedure

- The sequence <data, meta, bota>, the child has to exclude the odd word.
- The child presses the "tweety-button" under the picture of the odd word; this procedure automatically registers the reaction time through the E.Prime software (version 1.0).

Results

1. In phonemic awareness tasks, is the identification of the segment at the left edge of the odd word promoted if the MoA is [-continuant] (oral or nasal plosives) and demoted if the MoA is [+continuant] (fricatives or liquids)?

- Figure 1 - Phonemic Awareness - values for [-/+] continuant (%) success

Consider that [+continuant] includes fricatives and liquids, the following question arises:

1.1. In phonemic awareness tasks, is the identification of the left-edge segment in the odd word promoted by [+continuant] or by the confluence of different properties inherent in a specific natural class?

2. In phonemic awareness tasks, is the identification of the left-edge segment in the odd word promoted by [+continuant] or by the confluence of different properties inherent in a specific natural class?

- Figure 2 – Phonemic Awareness - values for MoA, natural classes (% success)

Considering that [-continuant] includes fricatives and liquids, the following question arises:

2.1. In phonemic awareness tasks, is the identification of the left-edge segment in the odd word promoted by [-continuant] or by the confluence of different properties inherent to a specific natural class?

- Figure 3 – Phonemic Awareness - values for [-/+] sonorant (%) success

Considering that [-sonorant] includes nasal and [-sonorant] (nasal) segments, the following question arises:

1.2 - In phonemic awareness tasks, is the identification of the left-edge segment in the odd word promoted by [-sonorant]?

Figure 4 shows that [-continuant] segments are easier to identify (fricatives and liquids: 43% of success) than [-continuant] ones (oral and nasal plosives: 27% of success).
- Significant main effect (p = 0.001)

Figure 5 – Phonemic Awareness - per task and per type of linguistic unit (% success)

Considering that [-continuant] includes fricatives and liquids, the following question arises:

2.2. In reading/writing tasks, is the identification of the left-edge segment in the odd word promoted by [-sonorant]?

- Figure 6 – Phonemic Awareness - values for [-/+] sonorant (%) success

Figure 7 – Phonemic Awareness - values for MoA, natural classes (% success)

Figure 8 – In reading/writing skills, [-sonorant] plosives (20% of success) are easier to identify than [-sonorant] ones (8% of success).
- Significant main effect (p = 0.009)

Conclusion

H1: phonemic awareness does not mirror the order of emergence of natural classes in phonological acquisition.

Hypothesis phonic awareness:

- [-sonorant] plosives>liquids>fricatives
- [-continuant] plosives>liquids>fricatives

- The success is promoted if the MoA is [-continuant] (fricatives/liquids) and demoted if the MoA is [+continuant] (plosives). Phonemic awareness does not mirror the order exhibited by phonemic awareness:

References