Disclosures

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FCT
Fundação para a Ciência e Tecnologia
Ref.: SFRH/BD/98841/2013
Music influence on phonologic development and phonologic awareness in 3 to 6 year-olds with typical development and primary language impairment

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³ Universidade de Lisboa; Faculdade de Letras; Centro de Linguística da Universidade de Lisboa

Dublin, 24th August. 30th World Congress of the IALP
- Share Cognitive processes and resources
- Activate the same brain structures and create the same representations
- Developing highly related abilities

Hannon & Trainor (2007)
- Share mechanisms to learn language and musical categories
- Helping to understand why musical development influences language development

Degé & Schwarzer (2011)
“Musical structure is complex, consisting of a small set of elements that combine to form hierarchical levels of pitch and temporal structure according to grammatical rules.

As with language, different systems use different elements and rules for combination.”

Hannon & Trainor (2007: 466)
Suprasegmental properties (Prosody)

- Broadcast information
- Sound material organization

Duration, Intensity, $F_0$
- The observed relations between both areas can also be due to the development of general, non related abilities

Far Transfer Theory

Corrigal & Trainor (2011)
Music influence on phonologic development and **phonologic awareness** in 3 to 4 year-olds with **typical development** and primary language impairment

<table>
<thead>
<tr>
<th>Ages</th>
<th>Authors</th>
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<td>1. 4-7</td>
<td>Peynircioglu, Durgunoglu &amp; Kusefoglu (2002); Gromko (2005);</td>
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<td>Stanley &amp; Hughes (1997)</td>
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<td>Anvari, Trainor, Woodside &amp; Levy (2002);</td>
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<td>Moreno, Bialystok, Barac, Schellenberg, Cepeda &amp; Chau (2011) ;</td>
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<td>Cutietta (1996) ;</td>
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<td>Overy (2002); Forgeard, Schlaug, Norton, Rosam &amp; Iyengar (2008)</td>
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Music influence on phonologic development and phonologic awareness in 3 to 4 year-olds with typical development and primary language impairment.

**METHODOLOGY**

- **Music classes**: Experimental group
- **Visual Art Classes**: Control group

**Timeline**
- September 2015 to June 2016: 30 classes
- Pre-evaluation and Post-evaluation

**References**

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**METHODOLOGY**

11 tasks applied

1. Lexical awareness
2. Sylable segmentation of words
3. Sylable segmentation of non-words
4. Word Synthesis
5. Non-words Synthesis
6. Final sylable omission
7. Initial sylable omission
8. Sylable inversion
9. Rhyme identification
14. First Phoneme Identification
15. Last Phoneme Identification
Music influence on phonologic development and phonologic awareness in 3 to 4 year-olds with typical development and primary language impairment.

**METHODOLOGY**

- 10 Children
- Mean age: 42.4 / 3:6

- 8 Children
- Mean age: 42.38 / 3:6

Randomized in Random.org; Timestamp: 2015-10-15 15:31:12 UTC
Music influence on phonologic development and phonologic awareness in 3 to 4 year-olds with typical development and primary language impairment.

PRE-EVALUATION RESULTS

Tests of Normality

<table>
<thead>
<tr>
<th>Actividade</th>
<th>Kolmogorov-Smirnov</th>
<th>Sig.</th>
<th>Shapiro-Wilk</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Statistic</td>
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<td>.959</td>
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* This is a lower bound of the true significance.
  a. Lilliefors Significance Correction
Music influence on phonologic development and phonologic awareness in 3 to 4 year-olds with typical development and primary language impairment.

PRE-EVALUATION RESULTS

T-Test

Group Statistics

<table>
<thead>
<tr>
<th>Actividade</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
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<td>9.60</td>
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<td>5.148</td>
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Independent Samples Test

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<thead>
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<th>Sig.</th>
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<th>Mean Difference</th>
<th>Std. Error Difference</th>
<th>95% Confidence Interval of the Difference</th>
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Music influence on phonologic development and phonologic awareness in 3 to 4 year-olds with typical development and primary language impairment.

**POST-EVALUATION RESULTS**

<table>
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<th>Actividade</th>
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<th>Shapiro-Wilk</th>
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<tr>
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Music influence on phonologic development and phonologic awareness in 3 to 4 year-olds with typical development and primary language impairment.

POST-EVALUATION RESULTS

T-Test

<table>
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<tbody>
<tr>
<td>Actividade</td>
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<td>ReAVTotalConfiraB</td>
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<tr>
<td>Musica</td>
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<td>Artes Visuals</td>
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</table>

Independent Samples Test

Levene's Test for Equality of Variances

<table>
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<th>F</th>
<th>Sig.</th>
<th>Mean Difference</th>
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POST-EVALUATION RESULTS

Total Score - Phonologic Awareness Test

PreEvaluation | PostEvaluation

Music | Visual Arts

P = 0.051
Music influence on phonologic development and phonologic awareness in 3 to 4 year-olds with typical development and primary language impairment.

2. Sylable segmentation of words
15. Last Phoneme Identification

POST-EVALUATION RESULTS

Parcical Scores

2. *p = 0.035
15. *p = 0.005
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CONCLUSIONS

- After 30 sessions, Music Group behaves above Visual Art Group – Diferences are not statistacly significant (p = 0.051)

- Almost in every proves, Music Group has an higher result – differences are not statistacly significant

- In initial sylable omission and identification of rhyme, the results are inverted

- Dividing words in sylables and identifying last phoneme have significant and very significant differences
Music influence on phonologic development and phonologic awareness in 3 to 4 year-olds with typical development and primary language impairment.

FUTURE WORK

- Analyse the data related to:
  - Phonetic and phonological development
  - Prosodic development
  - Primary Language Impairment Group

- Repeat the project with a larger sample
References

• Moreno, Bialystok, Barac, Schellenberg, Cepeda & Chau (2011). Short-Term Music Training Enhances Verbal Intelligence and Executive Function. Psychological Science 22 (11), 1425-1433.