Developmental trajectory in reading achievement among boys with non-syndromic oral clefts

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INTRODUCTION

- Oral Clefts – lip, palate, or both
  - Risk for learning disabilities
  - Need for special services
  - Lower grades/ rate of graduation
- Previous theories
  - Correlation between speech, hearing, reading
  - Incorrect – More common in males with cleft palate
  - Sex and cleft differences show flaw in theory
  - Hearing and Speech issues doesn’t affect only males with cleft palate
  - Deprived sensory input does not affect academic achievement
- New studies record reading progress
  - Language skills related to reading
    - Phonological awareness, phonological memory, rapid naming
  - Various reading skills
    - Accuracy, fluency, and comprehension
  - Cognitive function
  - Full-Scale IQ

RESEARCH QUESTIONS

1. Do CLP participants have significantly different neuropsychological skill scores in comparison to the controls in reading?
2. What language measures is reading associated with for kids with cleft?
3. What trajectories of growth are found in reading abilities?

HYPOTHESIS

We hypothesize that children with oral clefts will perform lower in all measures of reading, and this will be associated with measures of language. As children age, improvements in growth of reading accuracy will improve quicker than as compared to reading fluency.

PARTICIPANTS (N = 34)

<table>
<thead>
<tr>
<th></th>
<th>Control</th>
<th>CL/P</th>
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<tbody>
<tr>
<td>Age</td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td></td>
<td>11.13</td>
<td>2.21</td>
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<tr>
<td>Social-Economic Status (SES)</td>
<td>Mean</td>
<td>SD</td>
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<td></td>
<td>2.13</td>
<td>0.44</td>
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<tr>
<td>Full-Scale IQ (FSIQ)</td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td></td>
<td>111.42</td>
<td>8.68</td>
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</table>

METHODS

- Combine two studies- Compare boys with and without cleft palate
  - Ages: Eight to sixteen
  - Full-day testing: Neuropsychological, Language, Reading skills
    - WAIT-II or WISC-V
    - CTOPP
    - WRMT-III
  - Reading measures (decoding, fluency, comprehension) compared between groups
    - ANCOVAs - univariate analyses of covariance
    - SES was controlled
  - Pearson correlations (Controls v. Affected)
  - Compare Language Composite Score to Reading outcomes
    - Language: Phonological Awareness, Phonological Memory, and Rapid Naming
  - Compare developmental trajectories of growth in reading skills

RESULTS (Continued)

Demographics and Reading

<table>
<thead>
<tr>
<th></th>
<th>Control (Mean [SD])</th>
<th>CL/P (Mean [SD])</th>
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<th>p-Value</th>
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<tbody>
<tr>
<td>Age</td>
<td>11.13 (2.21)</td>
<td>11.02 (2.52)</td>
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<td>Socioeconomic Status</td>
<td>2.13 (144)</td>
<td>2.61 (4.65)</td>
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<td>Full Scale IQ</td>
<td>111.42 (9.10)</td>
<td>100.86 (15.15)</td>
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<td>Word Identification*</td>
<td>101.266 (2.245)</td>
<td>95.913 (2.460)</td>
<td>2.370</td>
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<td>Fluency*</td>
<td>100.611 (2.011)</td>
<td>94.339 (2.258)</td>
<td>3.975</td>
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<td>Passage Comprehension*</td>
<td>105.703 (2.087)</td>
<td>103.215 (3.381)</td>
<td>.271</td>
<td>.605</td>
</tr>
</tbody>
</table>

*Means Adjusted for Socioeconomic Status (SES) and Standard Error (SE) listed

With age, both control and CLP groups demonstrated improvement in all reading achievement measures. Sample correlations were then computed, through Fisher Z-Transformations, showing that the developmental trajectory of Word Identification, Reading Fluency, and Passage Comprehension were not statistically different between the control and CLP groups. (Word Identification Z = –.079, p = .468; Oral Reading Fluency Z = .204, .373; Passage Comprehension Z = .278, p = .350).

CONCLUSION

Participants with an oral cleft had slower reading fluency, but not statistically different word decoding or reading comprehension compared to unaffected control participants. Relationships of language skills to reading outcomes were similar between groups. Additionally, the developmental trajectory of reading skills for children with an oral cleft were also similar to controls. While low power with a small sample size may have an impact on this study’s ability to detect differences, initial findings suggest that there are differences in reading abilities between the two groups.

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REFERENCES
