IMPACT ANALYSIS OF VISION TO LEARN

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Vision is Important for Learning

• Students with vision problems tend to have lower academic performance, as measured by test scores and grades.
The Education-Health Connection

• How students perform in school impacts their overall life trajectory:
  • Employment, earnings
  • Health behaviors, outcomes, life expectancy
  • Impacts on the next generation

• Interventions to support school function can have a profound effect on a child’s life
Impact of Vision to Learn

• We hypothesized that VTL improves
  • Student focus and behavior in the classroom
  • Student ease and ability to complete schoolwork
  • School engagement and academic achievement

• Other potential benefits:
  – Classroom management
  – Family finances
  – Student self-esteem
  – Sports performance

There are virtually no published studies describing the impact of corrective lenses on children’s academic performance.
Impact Analysis

- We performed a mixed-methods evaluation
  - Qualitative study to understand how receiving glasses through VTL impacts students, families, and teachers.
  - Quantitative study to determine whether receiving glasses was associated with improved academic performance.
Qualitative Study

• Methods:

  • 9 focus groups with 21 K- 8th grade students, 20 parents and 25 teachers who had been served by VTL

  • Focus groups took place 3-12 months after students received corrective lenses.

  • On average, teachers had more than 16 years of teaching experience
Qualitative Study

• Results:

• Before they got glasses
  • students had difficulty focusing, poor class participation; struggled to complete their work, often to the point of giving up.
  • Parents, students and teachers described significant stress related to coping with poor vision and poor school function

• After receiving glasses
  • Students were able to pay attention in class, were more engaged, and were more willing to complete their schoolwork, contributing to better overall school performance.
  • Parents, students, and teachers reported improved psychosocial wellbeing
Qualitative Study

• Results:
  • Serving students in school increased both access to and use of glasses by
    • Addressing logistical barriers to accessing vision care
    • Changing the school culture to decrease the stigma associated with wearing glasses.
Quantitative Study

• Methods

• We examined the school records of 887 2nd-6th grade students attending 30 different public schools in Los Angeles who received glasses from VTL.

• We conducted piecewise regressions to compare their grades from each grading period in math and reading for the 2 years before they got glasses to 1 year after they got glasses.
Quantitative Study

• Results

  • before they got glasses, students on average had a downward trajectory in their math grades
  • After they received their glasses, their math grades began to improve.
  • The improvement in their math grade trajectory was statistically significant
    • 0.1 GPA points per year or +4% over 1 year.
Math GPA among All Students

Math GPA among All Students over Time

<table>
<thead>
<tr>
<th>Time Interval</th>
<th>Slope</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-intervention</td>
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<td>Post-intervention</td>
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<tr>
<td>Pre vs. Post</td>
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Glasses Received
Quantitative Study

• Results

• Compared to girls, boys showed a more dramatic improvement in their math grade trajectory.
  • For boys, the estimated difference in their trajectory was 0.2 GPA points per year or +8% over 1 year.
Math GPA among Boys

<table>
<thead>
<tr>
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<tbody>
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Glasses Received
Quantitative Study

• Results

• In reading, students also had an improved trajectory in their grades after receiving glasses, though this was not statistically significant.

• Prior to receiving glasses, students’ grades in reading increased by an average of 0.03 GPA points/year.

• After receiving glasses, the average annual GPA change increased to 0.05 GPA point over 1 year.

• There was no significant difference in these results when comparing boys versus girls.
Reading GPA among All Students

Change in Reading GPA over Time

<table>
<thead>
<tr>
<th>Time Interval</th>
<th>Slope</th>
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<td>Pre-intervention</td>
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<td>Post-intervention</td>
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Glasses Received
Limitations

- Only data for 1 year after being served
- Does not account for prescription strength or whether students actually wear glasses
- GPA may be subjective and is difficult to compare across classes, grades, and schools
- No good comparison group
  - Though results look favorable when compared to students who were referred to VTL and did not need glasses
Next Steps

- Compare academic trajectory of VTL students with “typical” students.
- Evaluate whether there is a dose response with greater academic gains seen in students requiring higher strength prescriptions.
- Determine whether the impact varies by age/grade level or academic performance prior to being served.
- Quantify the cost-savings to the education and healthcare system as well as potential economic impact of the delivery model.
- Develop intermediate outcome measures for quantifying the impact on classroom behavior and school function.
Acknowledgements

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• AMAZING VISION TO LEARN STAFF!