THE EFFECTS OF TULSA’S PRE-K PROGRAM ON MIDDLE SCHOOL OUTCOMES

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The Tulsa Public Schools Pre-K Program Boosts School Readiness
Effects of TPS Pre-K on Cognitive Development, in Months

Research Question

Can a strong school-based pre-K program produce lasting beneficial effects for program participants? If so, for whom?
Two Possibilities

- **FADE-OUT** – Short term impacts disappear over time

- **FADE-OUT PLUS PERSISTENCE** – Short-term impacts diminish but do not disappear over time
Fragile Scaffolding
Durable Scaffolding
NEW FOCUS: EFFECTS ON 7th GRADE SCHOOL OUTCOMES

• Cohort – kindergarten students in Tulsa Public Schools, 2006-07
  • 7th & 6th graders combined
  • Include special ed students
  • Students in TPS and three surrounding districts
  • State data for Oklahoma standardized test scores
• A wide range of outcomes
DEPENDENT VARIABLES: Academic Achievement

- Standardized Math Test Scores
- Standardized Reading Test Scores
- GPA
- Enrollment in Honors Classes
- Gifted and Talented Status
DEPENDENT VARIABLES: School Progress & Behavior

- Special education services
- Repeat a grade by 8th grade
- Days absent
- Chronic absenteeism (> 10% days absent)
- Suspensions
  - In school
  - Out of school
CONTROL VARIABLES
Categorized By Data Source

• **Administrative Data** (enrollments, gender, race/ethnicity, school lunch eligibility, academic success, overage at Kindergarten entry (redshirting), school site, district, etc.)

• **Parent Surveys** (mother’s education, presence of biological father at home, Internet access at home, etc.)

• **Census Bureau Data** (neighborhood median income)
SUMMARY OF FINAL SAMPLE

- Approximately 58% of original sample from 2006 (identified in 2014)
  - Original sample and analytic sample have similar gender and school lunch eligibility percentages; differences in race/ethnicity
- Approximately 75% of original sample for state test score data
ESTIMATION

Propensity score weighting

- Goal: identify comparison group members most similar to treatment group members
- Use boosted regression to obtain propensity scores
- Using propensity scores, construct analytic weights to estimate ATT
- Estimate weighted regression (with covariates) to obtain treatment effect
- Missing data (parent survey) with 40 imputed datasets
Pre-K Results
All reported associations were favorable and in the anticipated direction.
Standardized Math Test Results

For students as a whole, we see a modest statistically significant positive relationship between pre-K enrollment and standardized math test scores, for the equivalent effect size of 0.10.
Honors Courses

We also see a statistically significant positive relationship between pre-K enrollment and enrollment in an honors course eight years later.

Pre-K increases honors course enrollment by 10 percent.
# Pattern of Results

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<th>Outcome</th>
<th>Overall</th>
<th>Boys</th>
<th>Girls</th>
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<th>Reduced</th>
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<tr>
<td>Repeat</td>
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<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Days absent</td>
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<td>No</td>
<td>No</td>
<td>No</td>
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<tr>
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<td>No</td>
<td>No</td>
<td>No</td>
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<td>Marginal</td>
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</tr>
</tbody>
</table>

All reported associations were favorable and in the anticipated direction.
Grade Retention

Pre-K is associated with a 7 percentage point reduction in grade retention.
CONCLUSIONS

- The strong positive effects of the Tulsa pre-K program on academic success diminish over time but do not disappear.
- Math effects are more durable, reading effects are more fragile.
- Grade retention effects are substantial and extend to all key subgroups.
- Both disadvantaged and middle class students experience longer term benefits from pre-K.