

## A Comparison of Head Start and School-Based Pre-K in Tulsa

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We explored the relative strengths of the high-quality Head Start and state-funded pre-K programs in Tulsa, Oklahoma, by examining cognitive, social-emotional, and health outcomes.

In recent years, the rapid growth in state-funded pre-K programs has changed the landscape of early childhood education. Head Start was once the primary source for government-funded early childhood education services for disadvantaged four-year-olds, but state-funded pre-K programs now serve more four-year-olds than Head Start, and the majority of these children are disadvantaged.

Whereas Head Start was designed as a “comprehensive” program with objectives related to health and social services in addition to education, state-funded pre-K programs serve a more purely educational function. The increasing prominence of state-funded pre-K programs has led to questions about the relative benefits of the two approaches to early childhood education. Are disadvantaged four-year-olds better served by Head Start or by state-funded pre-K programs? What are the comparative advantages of these two approaches—one comprehensive in its goals, the other more clearly focused on early learning—for preparing young children for school? These questions are of considerable interest to both public officials and parents.

Our study addressed these questions by considering evidence from Tulsa, Oklahoma, which boasts both a high-quality Head Start program and a high-quality state-funded pre-K program. Pursuant to Oklahoma’s 1998 universal pre-K law, every classroom in the Tulsa Public Schools pre-K program is led by a college-educated, early childhood certified teacher who is paid the same public school wage as teachers in higher grades. Thanks to assistant teachers, Tulsa pre-K classrooms also meet a 10-to-1 or lower child-staff ratio requirement.

The second largest early childhood program in Tulsa County is the CAP of Tulsa County Head Start

program. Like the Tulsa pre-K program, all lead teachers are college educated, early childhood certified, and receive the same wages and benefits as Tulsa Public Schools teachers. Also like the Tulsa pre-K program, CAP Head Start classrooms maintain a 10-to-1 child-staff ratio.

Provisions in the 1998 law have permitted CAP of Tulsa County to form a collaborative relationship with Tulsa Public Schools, whereby Head Start receives 90 percent of the funding per student that would otherwise flow to Tulsa Public Schools if there were no collaboration. The school district receives the remainder of the funding. In Tulsa, as elsewhere, Head Start is more expensive than state-funded pre-K.

### DATA AND METHODS

We assessed the effects of Tulsa’s early childhood education programs on cognitive development, social-emotional development, and health by using data from:

- Woodcock-Johnson Achievement tests administered in August 2006, just before school began;
- A parent survey administered during testing; and
- Social-emotional assessments by teachers in October 2006, approximately 40 days into the school year. These included the Adjustment Scales for Preschool Intervention and four questions to measure attentiveness.

We assessed kindergarten students, incoming Tulsa pre-K students, and incoming or continuing CAP Head Start students enrolled in the four-year-old program. We obtained data from more than 1,500 pre-K students, more than 500 Head Start students, and more than 3,000 kindergarten students.

For cognitive development, we used a regression-discontinuity design, where we compared students who just completed a particular program to students who were just beginning that program, with controls for date of birth and multiple demographic variables. For social-emotional development, we used propensity score matching, in effect comparing kindergarten students who participated in a particular program to demographically similar kindergarten students who did not participate in that program. We also used a teacher fixed effects model, with covariates, to

control for potential teacher bias in administering the assessment. For health, we used propensity score matching and a linear probability model.

In every instance, we assessed program effectiveness by comparing program participants with a comparable set of non-participants. For example, we compared Head Start program participants (in kindergarten) with Head Start entrants (controlling for age and other variables) or with kindergarten students who participated in neither Head Start nor the Tulsa pre-K program (controlling for many variables). We then calculated effect sizes (regression coefficients divided by the standard deviation for the comparison group), to permit comparisons between Head Start and Tulsa pre-K program participants. By convention, an effect size of .20 is considered small, an effect size of .50 is considered moderate, and an effect size of .80 is considered large. For a detailed summary of our data, instruments, sample sizes, and estimating techniques, see our article in the August 2010 volume of the *Policy Studies Journal*.

## KEY FINDINGS

In the findings reported below, we summarize four sets of results: (1) program impacts for children who participated in the Tulsa pre-K program; (2) program impacts for children who participated in the CAP Head Start program; (3) program impacts for free lunch-eligible children who participated in the Tulsa pre-K program; and (4) program impacts for free lunch-eligible children who participated in the CAP Head Start program.

The purpose of comparing program impacts for free lunch-eligible children in both programs is to account for the fact that Head Start participants are disproportionately disadvantaged. Disadvantaged children tend to benefit more from preschool programs. Thus, a fairer comparison of Tulsa pre-K and CAP Head Start program effects may involve limiting the sample to more disadvantaged children. Importantly, however, these comparisons involve smaller sample sizes. Also, in the absence of actual income data we cannot be certain that the free lunch samples are equally disadvantaged.

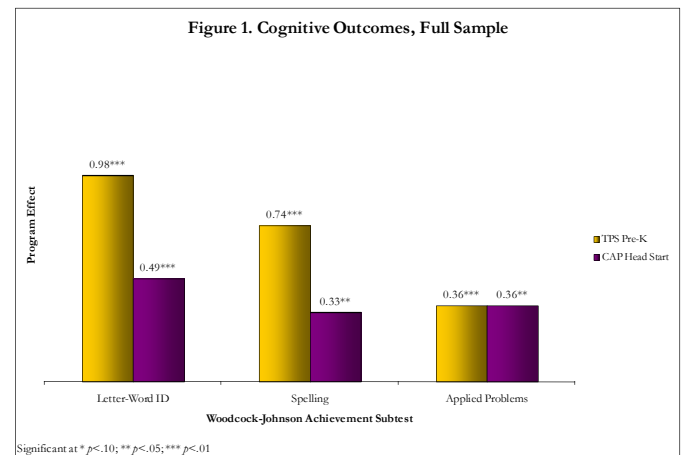
### Cognitive Effects

While both programs have large positive impacts on cognitive development, Tulsa pre-K participants experience larger gains.

As shown in Figure 1, the Tulsa pre-K and Head Start programs both have substantial positive impacts on

cognitive development. Program effects for both programs are positive and statistically significant for each of the three subtests: Letter Word I.D. (pre-reading), Spelling (pre-writing), and Applied Problems (pre-math). However, the Tulsa pre-K program produces larger effects in the areas of pre-reading and pre-writing.

When the samples are restricted to free lunch-eligible children, the Tulsa pre-K advantages for cognitive outcomes remain and increase in magnitude.

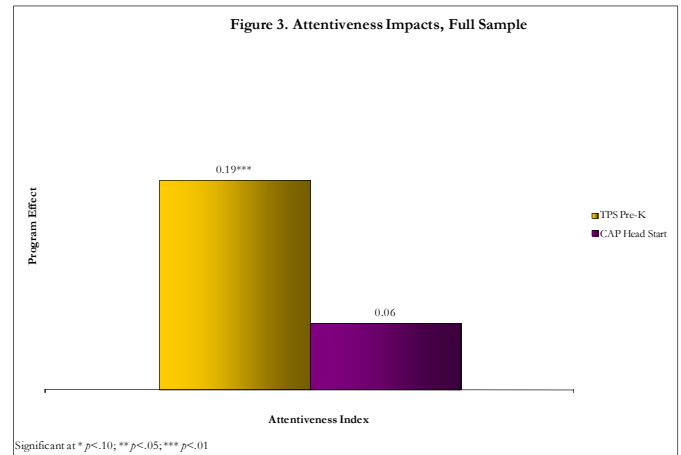
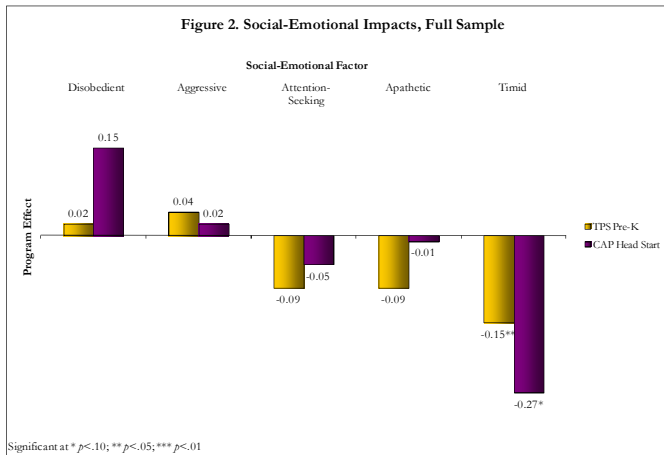


### Social-Emotional Effects

The Tulsa pre-K program positively impacts participants' social-emotional development.

Some differences between the Tulsa pre-K and Head Start programs also emerged from the analysis of social-emotional development. As shown in Figures 2 and 3, children who participated in the Tulsa pre-K program are less timid and more attentive than comparable non-participants. In contrast, for Head Start participants as a whole, there is only a marginally significant reduction in timidity.

When the samples are restricted to free lunch-eligible children, Tulsa pre-K participants are more attentive than comparable non-participants, and program participation is associated with a marginally significant reduction in timidity. For Head Start, participants are statistically indistinguishable from comparable non-participants.

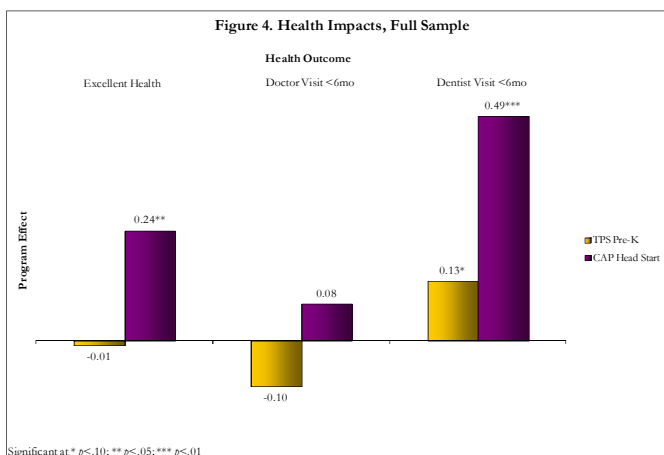


Health Effects

Health outcomes for children who participated in Head Start are better than those for children who participated in the Tulsa pre-K program.

The results follow a different pattern for health outcomes. As shown in Figure 4, children who participated in the Head Start program are more likely to be rated by their parents as having “excellent” health and to have visited a dentist within the last six months than are comparable non-participants. In contrast, participation in the Tulsa pre-K program is associated with only a marginally significant increase in the likelihood of having visited a dentist within the last six months.

Among free lunch-eligible children, the Head Start advantage persists. Head Start participants are more likely to have visited a dentist within the last six months and experience a marginally significant increase in the likelihood of having parent-rated “excellent” health. For Tulsa pre-K participants who are free lunch-eligible, there are no statistically significant health effects.



DISCUSSION

The school system’s strong emphasis on education gives it a comparative advantage on early literacy outcomes, while Head Start’s multiple missions give it a comparative advantage on health.

Although both the Tulsa pre-K and CAP Head Start programs excel at improving cognitive outcomes for young children, the school-based program produces stronger pre-literacy effects. For pre-math, the programs are equally effective. One possible explanation for the school-based program’s pre-literacy advantage is that its predominantly educational focus results in a stronger emphasis on reading and writing skills. In contrast, Head Start’s multiple missions could diminish its educational impact.

In a previous study, reported in *Science* (June 27, 2008), we found that Tulsa pre-K teachers devoted more classroom time to math activities and, at a marginal level, to writing activities, while Head Start teachers devoted more time to social studies activities and fantasy play. These patterns may help explain the Tulsa pre-K program’s pre-literacy advantage over Head Start. However, it is unclear why the pre-K program’s greater time spent on math does not translate into a pre-math advantage. One possibility is that factors other than the allocation of classroom time, such as the use of well-chosen examples rather than repetition, matter more for improving math outcomes. We also found that CAP Head Start teachers had an average of 2.5 undergraduate math courses, compared to 1.9 for Tulsa pre-K teachers, which may result in higher-quality math instruction.

Unlike the early literacy effects, in the area of social-emotional development we did not find strong evidence for a programmatic advantage. For the majority of outcomes, neither program has a significant effect.

Nevertheless, it is noteworthy that Tulsa pre-K participants have a small advantage with respect to increased attentiveness and, to a lesser extent, reduced timidity. Though these effects are modest in size, the findings for attentiveness are important in light of evidence that this dimension of social-emotional development predicts school performance.

One possible explanation for the school-based program's small attentiveness and timidity advantages is that 68 percent of Tulsa pre-K participants continue to attend the same school for kindergarten, compared to only 19 percent of CAP Head Start participants. Continuity may be comforting and reassuring, and familiarity with an actual school setting may be beneficial for the pre-K program's alumni even if they go on to other schools. Another contributing factor may be the pre-K program's pre-literacy advantage, described above. Because Tulsa pre-K participants are better prepared academically, they may experience less anxiety and thus greater attentiveness and lower timidity in kindergarten classrooms.

For health effects, there is evidence of program impacts in the areas of dental care and overall health status. In both cases, and in contrast to the cognitive and social-emotional findings, the programmatic advantage is for Head Start. CAP Head Start program participation is positively associated with parent-reported "excellent" health status and with the likelihood of having had a dental visit within the last six months. In contrast, for the Tulsa pre-K program there is only a marginally significant positive impact on dental visits.

The Head Start program's positive impacts on dental visits and health status make sense in light of the health services it provides. All children enrolled in the program receive developmental screenings at the start of each school year, and most also receive a free lunch that is subject to nutritional guidelines. Head Start participants at all sites receive dental screenings twice a year, and students with dental problems are referred to a dentist. Since most Head Start students are covered by Medicaid, parents are able to act on the referrals relatively easily.

Though much smaller and only marginally significant, the positive effects for dental visits for the Tulsa pre-K program are also understandable. Like CAP Head Start, the Tulsa pre-K program provides dental screenings and referrals. These services are not provided at every school, but they are more likely to be provided at schools with greater numbers of disadvantaged students. When we divided our Tulsa pre-K sample into two groups—schools that provide dental screening through an organization called Ocean Dental and schools that do not—we found statistically significant, positive effects on dental visits for the former group only.

## POLICY IMPLICATIONS

Our comparison of the effects of two high-quality early childhood education programs in Tulsa, Oklahoma, indicates that the school-based program is more effective in promoting early literacy learning, while Head Start is more successful in improving health outcomes. These results suggest that state governments with high-quality, school-based pre-K and Head Start programs should consider them as having important lessons to learn from each other. Head Start can benefit from the stronger early literacy environments and outcomes that derive from the Tulsa pre-K program, while the Tulsa pre-K program can learn from the health advantages of the Head Start program.

High-quality Head Start and school-based pre-K programs can learn from each other.

The Tulsa programs may benefit from the coexistence of two high-quality programs in the same city, as friendly competition encourages both to excel rather than to lose ground to the other program. For example, the relatively high salaries for teachers in the CAP Head Start program, which help the program compete for the most capable teachers, are certainly a direct response to the relatively high salaries of the Tulsa Public Schools.

The presence of two high-quality programs with different strengths may also advantage children, as parents can select programs based on their children's needs. Given the comparative advantages of the two programs, parents of children with precarious health may prefer Head Start, while parents of children with lagging literacy skills may prefer the public schools. Ultimately, both programs offer important benefits for young children and their families.

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