

K-8 Programs to Reduce the Intergenerational Transmission of Poverty: A Review

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The Problem (Duncan and Magnuson 2011)

- Children from the lowest SES quintile begin kindergarten more than 1SD lower than children in the top SES quintile in both reading and math.
- They are about 0.60SD below children in the top SES quintile in academic work habits.
- They are about 0.25SD higher than children in the top SES quintile in antisocial behavior.
- These gaps either remain unchanged or increase as students move through their schooling careers.

Possible Tools to Close the Gaps

- Preschool and kindergarten interventions -- to reduce achievement gaps at the very beginning
- Instructional innovations and interventions
- Social and emotional learning programs
- Summer instructional programs
- Accountability and Choice

- Supplemental Educational Services, particularly after school tutoring
- Intensive tutoring during the school day
- Whole School Reform, including charter schools, comprehensive programs, and complete reorganizations.

- My Goal:
- To give an opinionated review of the research findings
- Perhaps to spark discussion and debate

Preschool and Kindergarten Programs

- Head Start effects too small, and none persist. 0.1SD (Puma et al.). HS uses ineffective curricula. Improving the instruction delivered by Head Start is a major issue.
- State Pre-K Potentially More Effective than Head Start. But effectiveness uncertain. Yes in Oklahoma (Gormley et al.), No in Tennessee, particularly beyond the end of treatment (Lipsey, Farran Hofer 2015).

- Chicago Child-Parent Centers (Reynolds et al. 2002) for children ages 3-9. Positive cost-benefit. But this age range overlaps with Head Start and regular school, and these programs unlikely to be funded at scale.
- Boston Pre-K (Weiland and Yoshikawa 2013). Effective at end of pre-K, perhaps because used Building Blocks and OWL Curricula. But still need to worry about fade out.

- Full Day Kindergarten: For literacy, $d = .31SD$ (Gibbs 2014, lottery data). Larger effects for Hispanics ($d = .7SD$) and low performers. This should be part of a solution. But already 70% of kids are getting this (ECLS: 2011).
- Double Dose Kindergarten (Holub 2016): Letter word ID, $d = .50SD$; Phonemic awareness $d = .31SD$; Applied Problems, $d = .25SD$. Transitional kindergarten already exists widely. Some version of extra kindergarten for kids who need it should be part of any solution.

- This may come down to using effective curricula such as Building Blocks and OWL.
- However, Building Blocks has an effect of .7SD in kindergarten and yet by third grade the effect is completely gone.
- The problem is alignment of pre-K and K+ curricula, and inability of teachers to differentiate instruction to kids with and without the pre-K boost.

- Effective preschool and kindergarten programs for low-income children should be part of the overall strategy to achieve our goals.
- But we need effective pre-K based on well-implemented proven curricula and either
- Universal pre-K so that K-3+ curricula can take advantage of the pre-K gains
- (or)
- Training K+ teachers to differentiate instruction depending on where the kid is starting from.

- Effects on early achievement need to be large, and lead to a **cascade of positive events that prevent fade out.**
- This is becoming a major theme – one or two year interventions produce effects that fade out.
- Really effective interventions are likely to be multi-year and have a mechanism to catch up students who fall behind in later years.

- But some say we don't even know how to run effective preschool programs at scale.
- Farran (2015) summarizes preschool research:
- “Lack of evidence about which skills and dispositions are most important to effect in pre-K, and what instructional practices would affect them.”
- “None of the widely used measures of classroom and center quality relate strongly, if at all, to child growth on the school readiness outcomes on which most pre-K programs are focused.”

- **Conclusions Re Pre-K and K**
- Narrowing achievement gaps at school entry is important.
- We have curricula capable of doing so, but they are not widely used.
- The largest program -- Head Start -- doesn't use them, and must be improved or replaced.
- Even if we achieve good sized effects, we have to worry about later fade-out.

• **Instructional Innovations and Interventions in Grades 1-8.**

- We have had the Reading and the Math wars.
- The peace treaty for reading called for a combination of phonics and whole language in the early grades. Unfortunately, the whole language curricula put in phonological exercises but didn't always use decodable text books. This disadvantages lower performers.
- Also, unfortunately, phonics instruction, while effective with beginning readers, has failed to improve comprehension for older readers. Research suggests we also need to work on oral language for these students.

- The math war is still in progress. I fear that constructivist math is winning. There is little valid evidence that it is effective. Direct or explicit instruction is generally best for low performers.
- Building Blocks (Clements/Sarama) preschool math curriculum produces very large (.7) effects after one year. But they fade out to zero by 3rd grade.

- Positive effects for individualized reading instruction in K-3 (Connor et al. 2013).
- Algebra for All, Double Dose Algebra – mixed results (Cortes et al. 2015; Domina et al. 2015). But the Cortes study suggested the importance of “staying on track” in high school.

- Cohen and Ball (2000) summarized studies by saying that “instructional innovations generally fail.” For several reasons:
- Inadequate teacher professional development and implementation
- Teachers typically use only selected elements of the designed intervention.
- Variability in portions that teachers adopt
- Rapid turnover of innovations.
- **Conclusion: There is little evidence that innovations in K-8 classroom instruction alone will solve the problem.**

Social and Emotional Learning Programs (SEL)

- Durlak (2011) reviews evidence
- Academic Performance $ES = .27SD$. Possibly due to tutoring. Not large enough to close even half the gaps.
- Fast Track intervention has positive effects for those most at risk (Dodge et al. 2007).
- Effects modest, programs not at scale, fade out of effects is likely.
- **Conclusion: SEL Interventions Added to Routine Schooling Unlikely to Solve Problem**

- **Summer Instructional Programs**
- Kim and Quinn (2013) summer program effects meta-analysis overall mean ES of $d = .10SD$ for total reading achievement.
- Significant positive effects for reading comprehension, fluency, decoding. No significant effects for reading vocabulary. Overall, positive effects are attained, but not very large.

- Some evidence that the effects are simply to reduce or eliminate summer loss. But this suggests relatively quick fade out during school year.
- Summer programs might be part of an overall strategy but unlikely to contribute a great deal.
- **Conclusion: Summer Programs are unlikely to have large enough effects to contribute much to solving the problem.**

- **Accountability**
- Mixed evidence on the effects of NCLB accountability on achievement and narrowing gaps.
- Dee and Jacob (2011) find positive effects. So do Ahn and Vigdor (2014). Claim that school management is key.
- But Reardon et al. (2013) say that achievement gaps were already narrowing when NCLB began. Not clear that NCLB made any difference (Reardon et al. 2013).
- **Conclusion: Unlikely that accountability alone will achieve the goal.**

- **Supplemental Educational Services (SES), particularly after-school tutoring**
- Under NCLB, school districts fund these with their Title I funds.
- After school tutoring is not usually implemented well. Difficulty assembling kids after 3:00, settling them down, engagement. Kids are not in mood. Only 2 hours or so available after school. Typically provides too few total contact hours per student over the school year.
- Mathematica study of 21st Century after school tutoring (James-Burdumy et al. 2005) found no effects on achievement. Some negative effects on behavior.

- Heinrich et al (2014), Deke et al (2014) and Farkas and Durham (2007) found little evidence of positive achievement effects as SES is currently implemented.
- **Conclusion: Not likely to be very helpful.**
- **SES are a candidate for saving money to put it where it may be more effectively spent.**
- **Tutoring during the school day is potentially more effective (see below).**

- **Intensive and Extensive, Structured, Very Small Group Tutoring During the School Day**
- One-to-one reading tutoring has been shown to be effective when enough sessions (more than 60) are delivered (Wasik and Slavin 1993; Farkas 1998).
- Jens Ludwig and others (Cook et al. 2015) have shown that 2:1 math tutoring can be effective with tutors who are elite college graduates paid a \$19K stipend for 10.5 months work.

- This program concept was developed by Match Charter Schools in Boston. Roland Fryer showed success with such tutors in Houston.
- Ludwig, Guryan and others brought SAGA to Chicago to implement an RCT in 12 very low income Chicago schools.
- TOT effect estimates on a math achievement test are about $.3SD$; on math grades about $.5SD$, and reduced math course failures by half.

- Students receive up to 150 hours of individualized math instruction each school year.
- **Conclusion:** Such 2:1 tutoring during the school day, every day for a total of perhaps 150 hours per school year, for students below grade level from K – 12, could help narrow achievement gaps.
- Continuous intervention, for those who need it, at all grade levels, might remove the fade out problem.

- **Whole School Reform**
- **Success for All** (Slavin and Madden)
- The entire district signs up. Focus on professional development, early reading instruction, cooperative learning, reading tutoring by teachers after school. Includes a family support team.
- Borman (2002) finds that after 4 years in the program, an effect of .25SD in reading. No special effort to raise math scores.
- **Conclusion:** Modest effects, expensive program. Helpful, but not the solution.

- **Charter Schools in General**
- Their quality varies greatly. They need to be monitored and regulated.
- Clark, Gleason, Tuttle and Silverberg (2015) used lottery data from 33 charter middle schools across 13 states. No significant difference in achievement, although positive impacts for more disadvantaged schools and students.
- Epple, Romano, and Zimmer (2015) reviewed the literature and found no average difference in achievement.
- However, some charters are very effective.

- **Small High Schools**

- Bloom and Unterman (2014) found that small high schools of choice in NYC, after learning from experience, increased graduation rates for disadvantaged students by 9.5 percentage points.
- This closes $\frac{1}{2}$ the Black-White graduation gap. So these schools may well be part of the solution.
- It also raises the point that test scores aren't everything.

- **“No Excuses” Schools**
- “Contracts” between the school and both students and parents
- A culture of college-going and high expectations
- Strong disciplinary and dress codes
- A longer school day and/or school year
- Targeted instruction for students who fall behind their peers

- These schools enroll a very high percentage of low income and minority students, and have an intense focus on reducing achievement gaps.
- Cheng, Hitt, Kisida and Mills (2015) perform a meta-analysis of lottery studies of their effectiveness. These include well known studies by Angrist, Fryer and their colleagues.
- They estimate gains of .25SD on math and .16SD on literacy for winners of the lottery in one year of attendance.

- These estimated effects, which presumably would apply every year as students move up the grades, **seem the most promising of all the options reviewed.**
- These schools use tutoring during the school day for those falling behind, which should perhaps be in every school.
- I created Reading One-to-One, a paraprofessional tutoring program using college work-study students that survives as “America Reads.”

- KIPP Schools are an example of a large and growing network of no excuses charters that have shown good-sized effects (papers by Angrist et al and the Mathematica group).
- **Most promising: Widely implement the attributes of KIPP schools in schools serving low income students.**
- **A major research question: The sustainability and scalability of this strategy.**

- **Other than program evaluation, what research would be most useful?**
- Research on program effect fade-out and how to prevent it.
- Studies on how to implement 1-1 tutoring and KIPP school characteristics in all low-income public schools.
- **THANK YOU**