

This subject-randomized controlled trial in Pittsfield, MA found that participation in ParentChild+ improved high school graduation rates. Among 123 young adults who were eligible for the Program as toddlers, those who completed the full two years were significantly less likely than those from a small group of randomized non-program controls to have dropped out of high school (15.9% vs. 46.2%,  $p = 0.03$ ) and more likely to have graduated (84.1% vs. 53.9%,  $p = 0.01$ ). Their graduation rate matched the nationwide rate (83.7%) of middle-income students. When children who completed only one year of the Program were included, the gains over controls remained statistically significant. The Odds Ratio for high school graduation (a measure of the advantage of Program participants over controls), adjusted for baseline IQ, was 2.12 for the entire group assigned to receive the Program, 2.23 for those with baseline IQ of  $< 100$ , and 2.40 for those with baseline IQ of  $< 90$ , indicating that ParentChild+ provided the greatest advantage for the lowest-IQ toddlers. Initial acceptance rate for the Program had been 100%.<sup>1</sup>

Despite design limitation (small N of controls), there are important findings from this study. It was published in a juried journal and therefore was reviewed by academic experts in the field prior to publication and deemed by the reviewers to be sufficiently compelling to be published. With regard to the issue of the sample size of the control group, it is important to emphasize that while the sample is small ( $n=15$ ), we did manage to re-engage 71% of the initial sample ( $n=21$ ) 16 or more years later. This percentage is well within the range of acceptable re-engagement of subjects in other longitudinal studies. In addition, each of the other cohorts in the study, larger to begin with, had re-engagement rates of over 60%, again well within the acceptable range for randomized control group studies spanning 16-20 years. Other studies of early childhood education interventions with similar designs have been accepted as evidence of effectiveness, while also reporting similar limitations in their designs (Schweinhart et. Al., 1993; Reynolds & Temple, 2006).

### **Key findings**

1. Socio-economically disadvantaged toddlers who complete an authentic two-year ParentChild+ replication bettered their chances of achieving high school graduation.
2. Even incomplete ParentChild+ participation may improve student's chances of graduation.
3. Those toddlers who started in ParentChild+ with the lowest IQs reaped the most benefit.

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<sup>1</sup> Levenstein, P., Levenstein, S., Shiminski, J. A., & Stolzberg, J. E. (1998). Long-term impact of a verbal interaction program for at-risk toddlers: An exploratory study of high school outcomes in a replication of the Mother-Child Home Program. *Journal of Applied Developmental Psychology*; 19, 267-285.

Figure 1 | Increasing high school graduation rates

