



Research-to-Policy Research-to-Practice Brief

May 2009
Publication #2009-15
OPRE Research-to-Policy Brief #1



EARLY CARE AND EDUCATION QUALITY AND CHILD OUTCOMES

Peg Burchinal, Kirsten Kainz, Karen Cai, Kathryn Tout, Martha Zaslow, Ivelisse Martinez-Beck, and Colleen Rathgeb

INTRODUCTION

States and the federal government have invested in early care and education programs with an explicit goal of improving school readiness for low-income children. These investments, aimed at strengthening the quality of care and supporting families' access to high-quality settings, are based in part on a confluence of research findings showing a link between program quality and children's outcomes. Specifically:

- Studies of model programs demonstrate that intensive early childhood services delivered over a period of years can improve children's cognitive, academic, and social skills with gains maintained into adulthood.¹
- Larger and more representative descriptive studies suggest that the effects of early care and education, while smaller than family effects, can be maintained when children go to school.²

While research to date is quite consistent in showing that measures of quality in early care and education settings and measures of children's development are linked when examined in individual research studies, there has not been a systematic examination of the strength of these relationships across multiple studies.

This Research-to-Policy, Research-to-Practice brief series focuses on issues related to the development and refinement of measures to assess the quality of early childhood and school age care settings. This series is supported under contract # HHSP233200500198U to Child Trends from the Office of Planning, Research and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services, under the direction of project officer Ivelisse Martinez-Beck. Support is also provided by the Office of the Assistant Secretary for Planning and Evaluation, U.S. Department of Health and Human Services. Peg Burchinal, Kirsten Kainz, and Karen Cai are researchers at the Frank Porter Graham Child Development Institute at the University of North Carolina, Chapel Hill. Kathryn Tout and Martha Zaslow are researchers at Child Trends. Ivelisse Martinez-Beck, Office of Planning Research and Evaluation and Colleen Rathgeb, Office of the Assistant Secretary for Planning and Evaluation, are Project Officers in the U.S. Department of Health and Human Services. The views represented in this brief are those of the authors and do not reflect the opinions of the Office of Planning, Research and Evaluation of the Administration for Children and Families.

RESEARCH STRATEGY

Two analytic strategies were used to address the research questions of interest. The analytic strategies are described in detail in a chapter by Burchinal, Kainz, and Cai, (in press)³:

- A *meta-analysis* of studies published in peer-reviewed journals or evaluation reports: In a meta-analysis, researchers use quantitative methods to combine findings from a set of related studies. The literature review identified 20 early care and education projects that reported 97 associations between widely used measures of quality and child outcomes and studied at least 10 center-based classrooms. The goal of the meta-analysis was to estimate the magnitude of the association between widely used measures of observed classroom quality and well-established measures of child outcomes.*
- *Secondary analysis* of data from four large studies of early care and education: Carrying out new analyses with existing data made it possible to focus specifically on the low-income children in the study samples and coordinate how the analyses were carried out, for example, controlling for the same background characteristics in each sample (site, maternal education, ethnicity, and gender). The four studies included in the coordinated analyses were:
 - The NICHD Study of Early Child Care:⁴ a prospective study of 1,364 children from birth through high school conducted at 10 sites in the United States,
 - The Cost, Quality, and Child Outcomes Project:⁵ a longitudinal study of 700 3- and 4-year-old children who attended child care centers in four regions of the United States,
 - The National Center for Early Learning and Development Pre-Kindergarten Evaluation:⁶ a short-term evaluation of 1,500 children who attended state-funded pre-kindergarten programs in 11 states, and
 - The Head Start Family and Child Experiences Study⁷ conducted in 1997 and 2000: a descriptive longitudinal study of a nationally representative sample of 3- and 4-year-old children and families enrolled in Head Start.

Similar to the meta-analysis, the goal here was also to look at the magnitude of the relationship between quality and child outcomes, but several further important questions could also be addressed. The four goals for these analyses were to:

1. Estimate the magnitude of the association for preschoolers specifically from low-income families between widely used global measures of observed classroom quality and well-established measures of child outcomes,
2. Consider whether the associations between quality and child outcomes are stronger when specific aspects of quality are examined in relation to specific child outcomes, such as instructional practices and early academic achievement,
3. Test whether there is evidence of threshold effects in the classroom quality-child outcome association for low-income children, for example whether associations of quality and child outcomes are especially strong at certain levels of quality, and
4. Examine the association between individual items and child outcomes for two quality measures used extensively in state quality improvement initiatives.

Using two complementary research strategies allowed the researchers to compare the findings and make recommendations based on a synthesis of results across the two approaches. Both sets of analyses described the extent to which measures of classroom quality predict children’s academic achievement and language skills as measured by standardized individually administered tests and children’s social-behavioral skills as measured by questionnaires completed by classroom teachers.⁸ Analyses controlled for background characteristics such as maternal education, ethnicity, and site to account for pre-existing differences in families related to which families select and can afford higher-quality care and thereby more fully focus on the link between quality and child outcomes.

KEY FINDINGS

The meta-analysis summarized the 97 findings from 20 research projects. The correlations in these projects described the extent to which children in higher-quality care tended to have better outcome scores. The studies included children of different ages so the findings are presented separately by age.

* See table in a chapter by Burchinal, Kainz, and Cai (in press) for specific quality measures, child outcomes, and covariates used in each of the studies included in the meta-analysis.

Key Finding: For all ages, the meta-analysis indicated that children in higher-quality early care and education programs tended to have modestly higher academic and language outcomes and better social skills, controlling for background characteristics. Somewhat larger associations were detected for academic and language outcomes than for social outcomes and for 2- and 3-year-olds than for 4-year-olds.

The secondary data analysis of the large projects that included a substantial number of low-income children addressed several questions. First, we looked at the association between classroom quality and child outcomes in a similar manner to that described above, but we included only preschoolers from low-income families.

Key Finding: The analyses indicated that the various quality measures showed modest, but mostly statistically significant, associations with achievement, language, and social skills for low-income children after controlling for background characteristics, and different quality measures tended to provide slightly better prediction for different outcomes.

Second, we described associations between child outcomes and measures of quality tapping *specific* interactions or features of the classroom thought to promote positive outcomes.

Key Finding: Analyses support the premise that measures of specific practices are slightly better predictors of the outcomes for children than are global quality measures, particularly when there is a close “match” between the practices and the outcomes. For example, controlling for background characteristics, the CLASS Instructional Climate subscale tended to be more successful in predicting academic and language skills than other measures, and the CLASS Emotional Climate subscale tended to be more successful in predicting social skills than other measures. However, the associations emerging in these analyses were small.

Third, we tested whether we could identify thresholds that indicated either that quality had to be at a certain level before associations with child outcomes would be detected or that children no longer seemed to benefit when quality exceeded a certain level.

Key Finding: Analyses suggest that, at least for those who are from low-income families, children benefit from higher-quality care overall in both their

language and social skills, but larger benefits tend to accrue when quality is in the good to high range.

Fourth, we examined the correlations between the items on the ECERS and CLASS with child outcomes using the National Center for Early Development and Learning (NCEDL) data because some states are now using these instruments as the basis for quality improvement initiatives. These initiatives include Quality Rating Systems (QRS) that provide information to parents and incentives to practitioners to improve the quality of their programs.

Key Finding: Overall, the ECERS items describing interactions and program structure tended to show stronger, albeit modest, correlations with child outcomes than other ECERS items. The CLASS items describing productivity, teacher sensitivity, negative climate, and positive climate showed the strongest associations with all outcomes, while the items describing behavioral management also predicted social outcomes as rated by the teacher.

CONCLUSIONS

The findings highlighted above suggest the following conclusions:

- The quality of children’s early care and education, measured by widely used observational tools, is related to children’s academic, cognitive, language, and social skills after taking background characteristics into account.
- However, the associations are modest. With some notable exceptions, the magnitude of the relationships between quality and child outcomes tended to be small by statistical standards.**
- In the meta-analysis, associations were stronger for 2- and 3-year-olds than for 4-year-olds and were stronger for academic and language outcomes than for social outcomes.
- In the secondary analysis, the strength of the association between quality and child outcomes was slightly greater when the dimension of quality (for example, a measure of interactions or of the quality of instruction) was more closely aligned with the outcome examined, though this was not consistent across all the studies.
- Evidence emerged suggesting that there were larger benefits in terms of children’s development when quality was in the good to high range.

** The statistics reported on were effect sizes, partial correlations, or correlations, depending on the analyses. See detailed description of each analysis in the chapter by Burchinal, Kainz, and Cai (in press).

- Finally, examining individual items in the ECERS and CLASS indicated that the relationship between quality and child language, academics, and social development was stronger for items focusing on interactions and instruction.

IMPLICATIONS

The results of the analyses presented in this research brief suggest at least three interpretations that have implications for policy and programs and for informing new developments in the measurement of quality.

One possible explanation of the findings is that the true association between quality and child outcomes is so small that it is inconsequential. This explanation seems unlikely given the results of demonstration studies showing lasting impacts of intensive early childhood services on children's development, especially for low-income children.⁹

A second explanation is that associations are small when children's exposure to a particular level of quality is much more limited than in the studies of model programs (in which "dosage" of high-quality care was carefully planned), but that quality still has practical importance for children's development

even at these more widely varying levels and dosages.¹⁰ A logical next step of this interpretation is continued examination of children's outcomes as a result of quality initiatives. Longitudinal studies in particular could provide insight into the longer-term consequences for children of early care and education quality and efforts to improve it. Such research could further explore the possibility that improvements to a certain level of quality that are sustained over time are needed as the basis for positive child outcomes.

A third explanation is that existing measures of quality are not detecting adequately the dimensions of interactions and the environment that are most strongly linked to children's outcomes. Refining and strengthening measures of quality using psychometric techniques could result in the detection of stronger effects, especially if new measures are designed to tap specific practices that align with desired child outcomes. Furthermore, stronger measures of quality that specify aspects of practice and caregiving that are important for children could be used to inform more effective professional development strategies for teachers and caregivers of young children.

- 1 Campbell, F. A., Ramey, C. T., Pungello, E. P., Sparling, J., & Miller-Johnson, S. (2002). Early childhood education: Young adult outcomes from the Abecedarian Project. *Applied Developmental Science* 6, 42–57; Reynolds, A. J., Temple, J. A., Ou, S., Robertson, D. L., Mersky, J. P., Topitzes, J. W., & Niles, M. D. (2007). Effects of a school-based, early childhood intervention on adult health and well-being: A 19-year follow-up of low-income families. *Archives of Pediatric and Adolescent Medicine*, 161(8), 730-739; Schweinhart, L. J., Barnes, H. V., & Weikart, D. P. (1993). *Significant benefits: The High/Scope Perry preschool study through age 27*. Ypsilanti, MI: High/Scope Press.
- 2 Lamb, M. (1998). Nonparental child care: Context, quality, correlates, and consequences. In W. Damon, I. E. Sigel, & K. A. Renninger (Eds.), *Handbook of child psychology, Vol. 4: Child psychology in practice*. New York: Wiley; NICHD Early Child Care Research Network (2006). Child care effect sizes for the NICHD Study of Early Child Care and Youth Development. *American Psychologist*, 61(2), 99-116; Peisner-Feinberg, E.S., Burchinal, M.R., Clifford, R.M., Culkin, M.L., Howes, C., Kagan, S.L., & Yazejian, N. (2001). The relation of preschool child care quality to children's cognitive and social developmental trajectories through second grade. *Child Development*, 72, 1534-1553; Vandell, D. (2004). Early child care: The known and the unknown. *Merrill-Palmer Quarterly*, 50, 387-414.
- 3 Burchinal, M., Kainz, K. & Cai, Y. (in press). How well are our measures of quality predicting to child outcomes: A meta-analysis and coordinated analysis of data from large scale studies of early childhood settings. In Zaslow, M., Tout, K., Halle, T., & Martinez-Beck I. (Eds.). *Next steps in the measurement of quality in early childhood settings*. Baltimore: Brookes Publishing.
- 4 NICHD Early Child Care Research Network. (2006). Child care effect sizes for the NICHD Study of Early Child Care and Youth Development. *American Psychologist*, 61(2), 99-116.
- 5 Helburn, S. (1995). *Cost, quality and child outcomes in child care centers*. Denver: University of Colorado, Department of Economics, Center for Research in Economic and Social Policy.
- 6 Howes, C., Burchinal, M., Pianta, R., Bryant, D., Early D. M., & Clifford, R. (2008). Ready to learn? Children's pre-academic achievement in pre-kindergarten programs. *Early Childhood Research Quarterly*, 23, 27-50.
- 7 Head Start Quality Research Consortium (2003). *Head Start FACES: A whole-child perspective on program performance*. Washington, DC: U.S. Department of Health and Human Services.
- 8 Measures for these studies included the Early Childhood Environmental Rating Scale (ECERS): Harms, T., Clifford, R. M., & Cryer, D. (1998). *Early childhood environment rating scale: Revised edition*. New York: Teachers College Press; Classroom Assessment Scoring System (CLASS): Pianta, R. C., La Paro, K. M., & Hamre, B. K. (in press). Classroom Assessment Scoring System. Baltimore: Brookes Publishing; Caregiver Interaction Scale (CIS): Carl, B. (2007). *Caregiver Interaction Scale*. Unpublished doctoral dissertation, Indiana University of Pennsylvania; Observational Record of the Caregiving Environment (ORCE): NICHD Study of Early Child Care and Youth Development Phase I Instrument Document: Toronto: Ablex Publishing. Available online at <http://secc.rti.org/instdoc.doc..>
- 9 See endnote 1.
- 10 McCartney, K., & Rosenthal, R. (2000). Effect size, practical importance, and social policy for children. *Child Development*, 71, 173–180.

This research brief reports on the findings of coordinated analyses examining the strength of associations between early childhood program quality and children's development in the multiple research studies and to reflect on the implications for policy, programs, and the measurement of quality. A more detailed version of these findings will be part of a chapter in a forthcoming book entitled *Next Steps in the Measurement of Quality in Early Childhood Settings* which will be published by Brookes Publishing, Baltimore, MD.