

## Impact of a Two-Generation Early Education Program on Parenting Processes at Age 18

Robert H. Bradley  
Arizona State University

Leanne Whiteside-Mansell, Patrick H. Casey,  
and Kathleen Barrett  
University of Arkansas for Medical Sciences

The Infant Health and Development Program is a two-generation early education model designed to improve parenting competence and child well-being. As part of an 8-site randomized clinical trial involving low birthweight premature children, assessments of children and parents were gathered at the time of program completion (age 3), with follow-up at ages 5, 8, and 18. Two key parenting processes were assessed at age 18 based on theory stipulating the centrality of parenting to long-term development in children. Analyses based on 283 control group and 178 Infant Health and Development Program treatment group participants revealed that treatment group mothers scored higher on one, the provision of enriching experiences. Evidence of sustained impacts on parenting suggests that carefully structured two-generation early education programs may prove good investments for promoting competence and adaptive functioning in high-risk children.

*Keywords:* early education, parenting, home environment

As a consequence of the current economic downturn, the focus on education as a vehicle for assuring long-term economic prosperity and the general well-being of U.S. citizens has intensified. Front and center in the national discussion of how best to increase educational attainment is early childhood education, based on evidence that there can be good life-time return on investments made during the early years (Duncan & Magnusson, 2006; Heckman & Masterov, 2007). That said, there remain numerous questions regarding what models of early education yield the greatest return on investment.

For more than 40 years (since the inception of Head Start) arguments have been made that sustained impacts on children are more likely when programs target both children and parents, what are called two-generation programs (National Scientific Council on the Developing Child, 2007; St. Pierre, Layzer, & Barnes, 1995; Yoshikawa, 1994). These arguments are buttressed by research showing that parents continue to play an important role in children's education and development throughout childhood and that many parents lack the knowledge and skills to most effectively pro-

mote learning (Bradley, Corwyn, Caldwell, Whiteside-Mansell, Wasserman, & Mink, 2000; Hill & Tyson, 2009). The arguments are also consistent with dynamic systems principles: specifically, that sustained changes in complex systems are more likely if there are changes in multiple system components (i.e., within the child and within the social and physical systems that create experiences for the child) (Lerner, Ma, & Smith, 2005; Ramey & Ramey 1998). While such arguments seem reasonable, there have been very few long-term follow-ups of participants in two-generation programs, and those few have looked almost entirely at child outcomes. In the limited instances where there have been examinations of impacts on parents several years after completion of the intervention, the focus has been on outcomes such as parental attainment of additional education, parental employment status, and parental participation in the child's schooling (Campbell & Ramey, 1994; Reynolds, Oh, & Topitzes, 2004; Schweinhart, 2006). There has been very little attention to long-term impacts on those parenting processes that are presumed to directly affect child learning and adaptive function (i.e., those parenting processes that were the specific targets of early education efforts) even though there is evidence from the Abecedarian study that parenting during infancy and early childhood functions to mediate program impacts on children at least until mid-adolescence (Burchinal, Campbell, Bryant, Wasik, & Ramey, 1997; Campbell, Puggello & Miller-Johnson, 2002).

The failure to examine long-term impacts on parenting processes is problematic. Although there is evidence of sustained impacts on children's competence and adaptive functioning for participants in programs such as Abecedarian, Perry Preschool, and the Chicago Parent Child pro-

---

Robert H. Bradley, Family and Human Dynamics Research Institute, Arizona State University; Leanne Whiteside-Mansell, Patrick H. Casey, and Kathleen Barrett, Department of Pediatrics, University of Arkansas for Medical Sciences.

The authors wish to thank all those participating families and data collectors who made the study possible.

Correspondence concerning this article should be addressed to Robert H. Bradley, Family and Human Dynamics Research Institute, Arizona State University, 931 S. Cady Mall, Mesa, AZ 85287. E-mail: robert.bradley@asu.edu

gram, there is little evidence of sustained child impacts from large-scale programs such as Head Start, Even Start, and the Comprehensive Child Development Program (Ryan, McCall, Robinson, Gorark, Mulvey, & Plemons, 2002; St. Pierre et al., 2003). A good example is the recent report from the Head Start Impact Study that shows very limited impact on first-grade achievement for Head Start graduates (Office of Planning, Research and Evaluation, Administration for Children & Families, 2010). It could be that the very modest impacts observed for children who participate in most two-generation programs is at least partially attributable to lack of sustained impact on parenting behaviors; specifically, those parenting behaviors presumed to mediate sustained impacts on children.

The purpose of this study is to determine whether the impacts on parenting processes achieved during the course of early education were sustained throughout the school years. The Infant Health and Development Program (IHDP) was an 8-site randomized comprehensive early childhood education program designed to enhance the development of low birthweight premature infants. IHDP utilized a two-generation approach, with components aimed at enhancing parenting and parental adaptive functioning as well as components aimed directly at children. Infants in both intervention and control groups received basic pediatric services (including periodic medical, developmental, and familial assessments) from 40 weeks corrected age (corrected for prematurity) to 36 months corrected age. The intervention group received weekly home visits from the time of hospital discharge through age 1 and biweekly visits thereafter until age 3. Children in the intervention group also attended a child development center (at least 4 hours per day, 5 days per week) beginning at age 1 and terminating at age 3. The home visit component included using a problem-solving curriculum (Wasik, 1984). A coordinated educational curriculum of learning games and activities was used for both the home visit component and the child development center component (Sparling & Lewis, 1985). There was evidence of positive impacts on mother-child interaction at age 2.5 (Klebanov & Brooks-Gunn, 2008) as well as on the provision of academic stimulation, the variety of enriching experiences, and parental modeling at age 3 (the age of program completion) (Bradley, Whiteside, Mundfrom, Casey, Caldwell, & Barrett, 1994). When children were 5 years old, mothers who participated in the program were more often involved in daily activities with their children, such as playing, eating dinner, watching TV, going shopping, working on projects and hobbies, than was the case with control group mothers (Martin, Brooks-Gunn, Klebanov, Buka, & McCormick, 2008).

An important reason for examining the long-term impact of IHDP on parenting processes pertains to the fact that the program had only small and inconsistent sustained impacts on children's achievement and adaptive behavior (McCormick et al., 2006). Specifically, when children were assessed at age 18 in the areas of vocabulary attainment, reading and mathematics achievement, behavioral maladjustment, and risky behaviors, the only differences noted between treatment and control groups

were in vocabulary attainment, mathematics achievement, and risky behaviors (McCormick et al., 2006). Moreover, even those small impacts were observed only for children with birthweights greater than 2,000 g. The reason for these small long-term impacts remains unclear. Specifically, it is not clear whether some of the impacts on children observed at age three were not sustained into adolescence in whole or in part because positive impacts were not sustained on the parenting mediators initially observed at age three (Bradley et al., 1994).

At the 18-year follow-up, mothers in the IHDP study were interviewed using a modified version of the HOME Inventory used at age three (the interview was done in a clinical setting at age 18 so it was not possible to collect data on items that require direct observation of parenting behavior and the physical environment). The modified HOME included assessments of two of the parenting processes that showed impacts at age three (learning stimulation and provision of enriching experiences); thus, it allowed an examination of sustained impacts on these processes. These two aspects of children's environments have demonstrated modest relations with achievement and, to a lesser extent, overall adaptive functioning during adolescence (Bradley et al., 2000). There were several reasons to suspect that participation in IHDP might have sustained effects on these aspects of parenting, especially provision for enriching experiences. First, during weekly home visits in the first year of life and the biweekly home visits during the second and third years of life, IHDP home visitors implemented the *Partners for Learning* curriculum. It emphasizes cognitive, linguistic and social development through games and activities for the parent to use with the child. As an adjunct to the curriculum, parents were informed about the importance of exposing children to events and situations outside the home that might promote the child's development and they were given information and guidance on how to make use of community facilities and events. These ideas were promulgated during other encounters with the parents as well (e.g., the monthly parent group meetings). Second, there was evidence at age five the treatment group parents were more involved in parent-child activities together than was the case for the control group. Third, research done on another two-generation intervention (the New Hope intervention) showed that children whose mothers participated in the intervention were more likely to be put in structured activities such as organized sports, clubs and religious classes than children whose mothers were in the control group (Miller, Huston, Duncan, McLoyd, & Weisner, 2008). Sustained impacts on Learning Stimulation seemed less likely in that the activities in the *Partners for Learning* curriculum used during the intervention focus on competencies for children during infancy and early childhood. The activities parents undertake with adolescents at home to support learning tend to take a quite different form (e.g., help with home work and class projects, discussion of current events, joint engagement with on-line material, playing sophisticated board games).

## Method

### Sample

The 985 participants in IHDP study were consecutively born preterm ( $\leq 37$  weeks gestational age), LBW ( $\leq 2,500$  g) infants enrolled from hospitals in eight cities (Little Rock, AR, Bronx, NY; Boston, MA; Miami, FL; Philadelphia, PA; Dallas, TX; Seattle, WA; New Haven, CT). Two thirds of the infants weighed  $<2,000$  g at birth; the remaining one third weighed between 2,001 g and 2,500 g. Within each weight category, children were randomly assigned to intervention and control groups. The groups were also balanced for sex, maternal education, race, primary language spoken in the home. Given that the purpose of the original study was to evaluate the IHDP intervention, children who had an illness or neurological deficit too severe to participate in the intervention were excluded.

Of the 985 participants in the initial IHDP evaluation study (birth to 36 months), 512 mothers involved in the intervention at 36 months were interviewed when the target child was 18 years of age (ranged from 17 to 18 years). Of these, 461 were still living with the mother. Consistent with the study design, about one third of children (39%) of this subsample were in the treatment group (283 control and 178 IHDP treatment) and about one third of children (34.9%) were higher birthweight group and two thirds (65.1%) in the lower birthweight group.

Mean years of maternal education at baseline was 12.56 ( $SD = 2.45$ ). 52.5% were African American, 34.9% White, 9.8% Hispanic, 2.8% other or unknown. At the time of the child's birth, 61% of mothers were married or lived with a partner. Mother's age ranged from 13 years to 43 years at the birth ( $M = 25.29$ ,  $SD = 6.66$ ). At the time of assessment, 78% of mothers were employed; 80% children were in school at the time of 18-year assessment. About half (47.5%) of children were male. Each of the eight sites had similar representation in the study with the percent of participants from each site ranging from 10.2 to 15.0%.

Because the purpose of this study was to examine continued impacts on key parenting processes, we selected only those children whose mothers were their primary caregivers during the time of the intervention (i.e., mothers below age 16 at the time of the child's birth were not included) and children who were living with their mothers at the time of the 18-year assessment. In preliminary analyses, we investigated the extent to which missing and excluded data resulted a study sample ( $n = 461$ ) that was demographically different from the original IHDP sample ( $N = 985-461 = 524$ ). The analysis revealed that the study sample was similar to the excluded sample with respect to treatment group status, birthweight group, race, child gender, and child neonatal health index. The study sample had higher rates of mothers living with a partner,  $\chi^2(3) = 18.70$ ,  $p < .00$ , college educated mothers,  $\chi^2(4) = 16.26$ ,  $p < .003$ , and mothers that were older,  $t(968) = 2.01$ ,  $p < .04$ .

## Measures

The measures used in the IHDP evaluations at ages 3, 5, 8, and 18 years have been described in previous publications (Brooks-Gunn et al., 1994; Infant Health and Development Program, 1990; McCormick et al., 2006). As in previous analyses of IHDP, a standard set of prerandomization variables was used to compare participants and nonparticipants in this study and to adjust the outcomes for differences across sites and birthweight strata. These variables include birthweight, maternal age, race/ethnicity, child gender, maternal educational attainment at the time of the child's birth, and the Neonatal Health Index. The 18-year assessments were all completed in 2004 as part of a standard clinic visit lasting  $\sim 1.5$  hr.

**HOME Inventory.** As part of the 18-year assessment, mothers were interviewed concerning the home environment and children's daily experiences using an adapted version of the Early Adolescent HOME Inventory (Bradley et al., 2000). From the interview items, we constructed two scales analogous to those where significant treatment impacts at age three were observed (Bradley et al., 1994).

**Learning Stimulation.** Thirteen interview items were identified as materials and activities intended to stimulate learning. The items included those contained in the Learning Stimulation from HOME, plus several additional ones involving parental actions aimed at encouraging learning (e.g., family member reads the newspaper at least a few times a week, family has magazines in the home, parent discusses current events and TV programs with child, parent assists child with homework). Based on responses, items were scored either 0 or 1 depending on whether the response was above or below the cut-point established for scoring on the HOME. A summary score was computed from the 13 dichotomous items ( $M = 9.77$ ,  $SD = 1.94$ ) with high scores indicating more stimulation (Chronbach  $\alpha = .651$ ).

**Variety of enriching experiences.** Seven interview items were identified as assessing the degree to which the family and adolescent spend time together in productive activities. Most were taken from the Family Companionship scale of the Early Adolescent HOME. The items include such experiences as taking the adolescent somewhere and sharing and outdoor activity at least once a month, taking the adolescent to a public place like a zoo or museum, going on a trip more than 50 miles from home two or three times a year, taking the adolescent to a live performance at least once a year, taking the adolescent on a trip using public transportation at least once a year, and having a meal as a family 5 days a week in the last week. A summary score was computed from the 7 items ( $M = 3.89$ ,  $SD = 1.71$ ; Chronbach  $\alpha = .594$ ). Assessors were trained to administer and score the adapted HOME at a central location. Studies show that the Early Adolescent HOME is reliable (assessors generally demonstrate at least 90% inter-scorer agreement on the items) and valid in the sense of showing low to moderate levels of correlation with measures of family circumstances such as maternal education, family income, and household crowding and child achievement and adaptive behavior (Bradley, in press; Bradley et al., 2000). The correlation

between Learning Stimulation and Variety of Enriching Experiences was  $r = .374$ . For these two adapted scales, we also ran correlations with the total HOME score assessed at age three. The correlations were  $r = .313$  for Learning Stimulation and  $r = .340$  for Variety of Enriching Experiences.

**Adolescent outcomes.** During the 18-year lab assessment, children were given a variety of measures. The child outcome measures included the Woodcock-Johnson Tests of Achievement-Revised (Reading and Broad Mathematics scores) (WJR-Reading, WJR-Math), the Peabody Picture Vocabulary Test-III (PPVT-III), and the Youth Risk Behavior Surveillance System (YRBSS; Kolbe, Kann, & Collins, 1993). For the YRBSS, risky behaviors included anti-social behavior, suicidal ideation and attempts, smoking, alcohol use, marijuana use, and sexual activity.

## Results

### Primary Analysis

As in the previous study (Bradley et al., 1994), and consistent with analyses performed on 18-year child outcomes (McCormick et al., 2006), two analyses were conducted to determine the impact of the IHDP treatment on HOME scores at age 18. First, a preliminary test (an  $8 \times 2 \times 2$  ANOVA) was executed to determine the equality of effects across all sites and by birth-weight group and treatment status. If the effects did not appear to be homogeneous, then follow-up analysis within birth-weight groups was planned, an approach especially important for the age 18 parenting outcomes given that IHDP treatment effects on age 18 child outcomes were only observed for children with birth-weights between 2,000 and 2,500 g (McCormick et al., 2006). As expected, and as was observed at age three (Bradley et al., 1994), there were no differences in scores for the two birth-weight groups on either Learning Stimulation or Variety

of Experiences. Second, we then ran regression models like those performed on 3-year parenting outcomes (Bradley et al., 1994); specifically, we conducted multiple linear regression analyses controlling for baseline maternal education, age, race, neonatal health status, gender, birthweight, and study site for each of the two parenting variables.

Results from the regression analysis indicated that the IHDP treatment did not have a significant impact on Learning Stimulation at age 18. Further, no initial status variable acted as a moderator of treatment impact (i.e., each control variable was examined in an interaction with treatment status). However, as Table 1 shows, a significant treatment impact was found for Variety of Enriching Experiences, with scores for treatment families higher (3.69,  $SE = .19$ ) than follow up families (3.37,  $SE = .16$ ). The effect size was, however, quite small (partial  $\eta^2 = .01$ ).

### Correlations between HOME scores and child outcomes.

Because the IHDP intervention showed only scattered, small impacts on child outcomes at age 18 and then only for adolescents with birthweights  $>2,000$  g, the conditions for examining parenting as a possible mediator of treatment impacts were not sufficiently met to conduct mediational analyses. Nonetheless, as part of our larger aim to understand how sustained impacts on parenting might be implicated in long-term effectiveness of two-generation programs, we looked at the simple bivariate correlations between 18-year HOME scores and 18-year outcomes on the PPVT, WJR-Math, WJR-Reading, and the YRBSS. Correlations between Learning Stimulation at these outcomes were  $r = .27, .16, .18,$  and  $-.02$ , respectively. Correlations between Variety of Enriching Experiences and these outcomes were  $r = .32, .18, .17,$  and  $-.15$ , respectively. All but one of the coefficients was statistically significant (i.e., the correlation between Learning Stimulation and YRBSS).

Table 1  
Regression Analyses for Variety of Enriching Experiences

Model	Unstandardized coef.		Standardized coef.		Sig.
	<i>B</i>	<i>SEB</i>	$\beta$	<i>t</i> -value	
Constant	2.435	.807		3.017	.003
Maternal education	.181	.038	.261	4.763	.000
Maternal age	-.014	.015	-.050	-0.943	.346
Neonatal Health Index	.009	.005	-.083	-1.815	.070
Site 1	.283	.280	.038	0.653	.514
Site 2	.582	.310	.120	1.877	.061
Site 3	.450	.310	.080	1.448	.148
Site 4	-.162	.320	-.031	-0.505	.614
Site 5	.019	.325	.004	0.600	.952
Site 6	.122	.326	.023	0.374	.709
Site 7	-.031	.304	-.006	-0.103	.918
Child gender	.388	.152	.114	2.548	.011
Birthweight group	-.100	.159	-.028	-0.628	.530
African American	-.325	.224	-.095	-1.451	.148
Hispanic	-.950	.336	-.166	-2.825	.005
Treatment group	.332	.157	.095	2.116	.035

Note.  $R^2 = 1.60, p < .01$ .

### Conclusions

Results from this study indicate that the positive impact on Variety of Enriching Experiences observed at age three for participants in IHDP was sustained for 15 years, albeit the effect size was small. The long-term impact on parenting behavior is notable given evidence that involvement in potentially enriching experiences with parents is connected to achievement during adolescence (Bradley et al., 2000; Hill & Tyson, 2009). That said, it is important not to overstate the significance of the positive impact on Variety of Enriching Experiences given that findings from this and other studies tend to show only modest associations.

It is not surprising that there were no sustained impacts on learning stimulation given that participants in the intervention were trained on how to offer learning stimulation to infants and toddlers, skills that do not as readily apply to the learning needs of adolescents. Precisely what the failure to observe a sustained effect on learning stimulation means as regards the likelihood that the IHDP program would otherwise have improved adolescent outcomes is hard to determine. Findings from this study show a small but significant relation between access to stimulation and measures of child competence and behavioral adjustment, as have some prior studies (Bradley et al., 2000). However, a meta-analysis has shown relatively little relation between parental efforts to provide direct instruction to adolescents and their school achievement (Hill & Tyson, 2009). Rather, the meta-analysis showed a relation between parental communication of expectations for school attainment and actual school success, issues not addressed in the IHDP program from birth to age three. In fact, previous analyses of IHDP showed that the program did not impact parental expectations (Martin & Brooks-Gunn, 2008). Thus, those interested in constructing two-generation programs that have sustained impacts on child functioning may need to consider additional avenues of promoting parental involvement in adolescents' lives, ways that are better matched to adolescent needs. In that regard it is not clear that programs that focus on improving parental employability, even if they include provisions for child care, are likely to produce lasting improvements in parenting practices or child academic achievement (Miller et al., 2008).

To our knowledge, this study is the first to examine long-term effects on parenting behavior for two-generation programs implemented during the first three years of life. The long-term impact of the IHDP two-generation early education program on parenting processes (specifically Variety of Enriching Experiences) was modest, but noteworthy. Evidence from the Early Head Start National Evaluation study (Love et al., 2005) and the Abecedarian project (Campbell et al., 2002) also showed positive impacts on similar parenting processes when children were young. Findings from these two programs and early findings from IHDP (Bradley et al., 1994) showed that such parenting processes function to mediate positive outcomes for children during early and middle childhood. That said, the weak long-term impacts on child outcomes observed for IHDP (McCormick et al., 2006), together with the modest corre-

lations observed between HOME scores and adolescent outcomes in this study, leave uncertain the role parenting processes like involvement in enriching activities might play in sustaining impacts for well-designed two-generation programs. What does seem clear, however, is that it was not failure to sustain impacts on aspects of parenting that earlier mediated positive impacts on child development that accounts for the weak long-term impacts on children themselves. In that regard two things come to mind, each of which pertains to theories of change regarding the construction of two-generation programs. First, to leverage whatever power later parenting may have on sustaining child impacts into adulthood, it may be necessary that programs produce far stronger early impacts on parenting processes like providing enriching experiences, which have only modest correlations with key outcomes in adolescence. To accomplish this goal may require far more intensive and personally targeted work with parents than is typically the case with two-generation programs. Second, sustained impact on children who participate in two-generation early education programs may require concentrated follow-up supports to both the child and parents, an argument that has been made previously but for which there has been almost no research (Barnett & Ackerman, 2006).

One additional comment should be made regarding the observed small impact on Variety of Enriching Experiences; specifically, the findings do not make clear what the actual carrying mechanism for the sustained effects is. It is conceivable that the IHDP parents continued to involve their children in potentially enriching experiences because they themselves attained more education, maintained more fruitful employment, or involved themselves more in community activities and resources. Such long-term impacts on the parents themselves have been noted for early childhood programs that include a component for parents (Campbell et al., 2002; Karoly et al., 2005; Miller et al., 2008). It is also conceivable that it reflects a more general impact on family cohesion. Exploring such potential mechanisms might be useful to more fully explicate how certain types of two-generation programs influence parent involvement long-term.

Another potentially useful avenue to explore in future studies of two-generation programs would be to examine possible reciprocal influences between parenting processes and children's functioning, as is implied by notions of *complementarity* in system functions (Heckman & Masterov, 2007). There is both theory and evidence that children influence parenting processes (Lerner et al., 2005); thus, it may well be critical that to assure long-term positive impacts on children, two-generation programs need to show positive impacts on both the child and the parent.

Although findings from this study add to a small, but growing understanding of how two-generation programs affect families and children, it is limited in a number of ways. First, there was significant attrition from age 3 to age 18. The level of attrition observed in this study is similar to that seen in many longitudinal studies that include participants from diverse social strata; namely, there was greater loss of participants from low SES backgrounds. Second, at

age 18 a small but meaningful number of children were no longer living with the same primary caregiver who was a participant in the IHDP intervention. Third, 15 years elapsed between assessments involving use of HOME items and not all the components assessed at age three were re-assessed at age 18, making it difficult to tightly track the long-term impact of the intervention on other aspects of parenting that might be productive in supporting children's development. Fourth, all the home environment data at age 18 was gathered via interviews with the mother (albeit, sometimes the target adolescent was also present during the interview). Even though findings from this study and elsewhere show relations between the home factors analyzed and child behavior (Bradley et al., 2000), gathering data on home experiences solely from mothers via interview rather than having some direct observations as well may limit the meaning of the findings.

### References

- Barnett, W. S., & Ackerman, D. J. (2006). Costs, benefits, and long-term effects of early child care and education programs: Recommendations and cautions for community developers. *Community Development, 37*, 86–100.
- Bradley, R. H. (in press). The HOME Inventory. In L. C. Mayes & M. Lewis (Eds.), *A developmental environment measurement handbook*. New York: Cambridge University Press.
- Bradley, R. H., & Corwyn, R. F. (2007). Externalizing problems in 5th grade: Relations with productive activity, maternal sensitivity, and harsh parenting from infancy through middle childhood. *Developmental Psychology, 43*, 1390–1401. doi:10.1037/0012-1649.43.6.1390
- Bradley, R. H., Corwyn, R. F., Caldwell, B. M., Whiteside-Mansell, L., Wasserman, G. A., & Mink, I. T. (2000). Measuring the home environments of children in early adolescence. *Journal of Research on Adolescence, 10*, 247–289. doi:10.1207/SJRA1003\_1
- Bradley, R. H., Whiteside, L., Mundfrom, D. J., Casey, P. H., Caldwell, B. M., & Barrett, K. (1994). Impact of the Infant Health and Development Program on the home environments of low birthweight premature infants. *Journal of Educational Psychology, 86*, 531–541. doi:10.1037/0022-0663.86.4.531
- Brooks-Gunn, J., McCarton, C. M., Casey, P. H., McCormick, M. C., Bauer, C. M., Bernbaum, J. C., . . . Meinert, C. I. (1994). Early intervention in low-birth-weight premature infants. *Journal of the American Medical Association, 272*, 1257–1262. doi:10.1001/jama.272.16.1257
- Burchinal, M. R., Campbell, F. A., Bryant, D. M., Wasik, B. H., & Ramey, C. T. (1997). Early intervention and mediating processes in cognitive performance of children of low-income African-American families. *Child Development, 68*, 935–954. doi:10.2307/1132043
- Campbell, F. A., Pungello, E. P., & Miller-Johnson, S. (2002). The development of perceived scholastic competence and global self-worth in African American adolescents from low income families: The roles of family factors, early educational intervention, and academic experience. *Journal of Adolescent Research, 17*, 277–302. doi:10.1177/0743558402173004
- Campbell, F. A., & Ramey, C. T. (1994). Effects of early intervention on intellectual and academic achievement: A follow-up study of children from low-income families. *Child Development, 65*, 684–698. doi:10.2307/1131410
- Duncan, G. J., & Magnuson, K. (2006). Costs and benefits from early investments to promote human capital and positive behavior. In N. F. Watt, C. Ayoub, R. H. Bradley, J. E. Puma, & W. A. LeBoeuf (Eds.), *The crisis in youth mental health* (pp. 27–51). Westport, CT: Praeger Publishers.
- Heckman, J. J., & Masterov, D. V. (2007). The productivity argument for investing in young children. *Review of Agricultural Economics, 29*, 446–493.
- Hill, N. E., & Tyson, D. F. (2009). Parental involvement in middle school: A meta-analytic assessment of strategies that promote achievement. *Developmental Psychology, 45*, 740–763. doi:10.1037/a0015362
- Infant Health and Development Program. (1990). Enhancing the outcomes of low-birth-weight, premature infants. *JAMA, 263*, 3035–3042.
- Karoly, L. A., Kilburn, M. R., & Cannon, J. S. (2005). *Early childhood interventions, Proven results, future promise*. Available from: <http://www.rand.org>
- Klebanov, P. K., & Brooks-Gunn, J. (2008). Differential exposure to early childhood education services and mother-toddler interaction. *Early Childhood Research Quarterly, 23*, 213–232. doi:10.1016/j.ecresq.2007.12.001
- Kolbe, L. J., Kann, L., & Collins, J. L. (1993). Overview of the Youth Risk Behavior Surveillance System. *Public Health Reports, 108*(Suppl. 1), 2–10.
- Lerner, R. M., Ma, L., & Smith, L. M. (2005). Developmental systems theories. In C. B. Fisher & R. M. Lerner (Eds.), *Applied developmental science: An encyclopedia* (pp. 356–359). Thousand, CA: Sage.
- Love, J., Kisker, E. E., Ross, C., Raikes, H., Constantine, J., Boller, K., . . . Vogel, C. (2005). The effectiveness of Early Head Start for 3-year-old children and their parents. *Developmental Psychology, 41*, 885–901. doi:10.1037/0012-1649.41.6.885
- Martin, A., Brooks-Gunn, J., Klebanov, P., Buka, S. L., & McCormick, M. C. (2008). Long-term effects of early childhood intervention: Findings from the Infant Health and Development Program. *Applied Developmental Psychology, 29*, 101–117. doi:10.1016/j.appdev.2007.12.007
- McCormick, M. C., Brooks-Gunn, J., Buka, S., Goldman, J., Yu, J., Salganik, M., . . . Casey, P. H. (2006). Early intervention in low birth weight premature infants: Results at 18 years of age for the Infant Health and Development Program. *Pediatrics, 117*, 771–780.
- Miller, C., Huston, A. C., Duncan, G. J., McLoyd, V. C., & Weisner, T. S. (2008). *New hope for the working poor, Effects after eight years for families and children*. New York: MDRC. Available from [http://www.merc.org/publications\\_byyear\\_2008.html](http://www.merc.org/publications_byyear_2008.html)
- National Scientific Council on the Developing Child. (2007). *A science based framework for early childhood policy*. Retrieved from: [http://www.developingchild.harvard.edu/content/downloads/Policy\\_Frameworks.pdf](http://www.developingchild.harvard.edu/content/downloads/Policy_Frameworks.pdf)
- Office of Planning, Research and Evaluation, Administration for Children & Families. (2010). *Head start impact study, final report*. Retrieved from [https://www.acf.hhs.gov/programs/opre/hs/impact\\_study/reports/impact\\_study/hs\\_impact\\_study\\_final.pdf](https://www.acf.hhs.gov/programs/opre/hs/impact_study/reports/impact_study/hs_impact_study_final.pdf)
- Ramey, C. T., & Ramey, S. L. (1998). Early intervention and early experience. *American Psychologist, 53*, 109–120. doi:10.1037/0003-066X.53.2.109
- Reynolds, A. J., Ou, S., & Topitzes, J. W. (2004). Paths of effects of early childhood intervention on educational attainment and delinquency: A confirmatory analysis of the Chicago Child-Parent Centers. *Child Development, 75*, 1299–1328. doi:10.1111/j.1467-8624.2004.00742.x
- Ryan, C. S., McCall, R. B., Robinson, D. R., Groark, C. J.,

- Mulvey, L., & Plemons, B. W. (2002). Benefits of the Comprehensive Child Development Program as a function of AFDC receipt and SES. *Child Development, 73*, 315–328. doi:10.1111/1467-8624.00408
- Schweinhart, L. J. (2006). The high/scope approach: Evidence that participatory learning in early childhood contributes to human development. In N. F. Watt, C. Ayoub, R. H. Bradley, J. E. Puma, & W. A. LeBoeuf (Eds.), *The crisis in youth mental health* (pp. 207–227). Westport, CT: Praeger Publishers.
- Sparling, J., & Lewis, I. (1985). *Partners for learning*. Winston-Salem, NC: Caplan Press.
- St. Pierre, R., Ricciuti, A., Tao, F., Creps, C., Swartz, J., Lee, W., & Parsad, A. (2003). *Third national Even Start evaluation: Program impacts and implications for improvement*. Cambridge, MA: Abt Associates.
- St. Pierre, R. G., Layzer, J. I., & Barnes, H. V. (1995). Two-generation program: Design, cost, and short-term effectiveness. *The Future of Children, 5*, 76–93.
- Wasik, B. (1984). *Coping with parenting through effective problem solving: A handbook for professionals*. Available from Frank Porter Graham Child Development Center, University of North Carolina at Chapel Hill, Chapel Hill, NC.
- Yoshikawa, H. (1994). Prevention as cumulative protection: Effects of early family support and education on chronic delinquency and its risks. *Psychological Bulletin, 111*, 28–54. doi:10.1037/0033-2909.115.1.28

Received July 2, 2009

Revision received May 4, 2010

Accepted May 10, 2010 ■

**Call for Papers**  
*Psychology of Violence*  
Special Issue: Theories of Violence

*Psychology of Violence*, a new journal publishing in 2011, invites manuscripts for a special issue on theories of violence.

Topics will include but are not limited to:

- ◆ New theoretical models
- ◆ Extensions of existing models either to violence for the first time or to new forms of violence
- ◆ Evaluations and critiques of existing theoretical models for a particular type of violence
- ◆ Papers that compare and contrast theoretical models for more than one form of violence
- ◆ Comparisons of theoretical models which examine how social and cultural factors affect the way violence develops and manifests under different conditions.

Manuscripts that explore theories related to both risk of perpetration and vulnerability to victimization are welcome.

The submission deadline for first drafts is September 15, 2010. Manuscripts should not exceed 6,000 words, including references and tables. Manuscripts can be submitted through the journal's submission portal at <http://www.apa.org/pubs/journals/vio>. Please note in your cover letter that you are submitting for the special issue.

Manuscripts for regular, full-length articles are also being accepted. *Psychology of Violence* publishes articles on all types of violence and victimization, including but not limited to: sexual violence, youth violence, child maltreatment, bullying, children's exposure to violence, intimate partner violence, suicide, homicide, workplace violence, international violence and prevention efforts. Manuscripts addressing under-served or disenfranchised groups are particularly welcome. More information about the journal can be found at: <http://www.apa.org/pubs/journals/vio>.

Inquiries regarding topic or scope for the special issue or for other manuscripts can be sent to Sherry Hamby, Editor, at [sherry.hamby@sewanee.edu](mailto:sherry.hamby@sewanee.edu).