Journal of Clinical Child and Adolescent Psychology
2003, Vol. 32, No. 2, 215–227

The Better Beginnings, Better Futures Project: A Universal, Comprehensive, Community-Based Prevention Approach for Primary School Children and Their Families

Ray DeV. Peters
Department of Psychology, Queen's University

Kelly Petrunka
Better Beginnings, Better Futures Research Coordination Unit, Queen's University

Robert Arnold
Department of Sociology and Anthropology, University of Windsor

Evaluated a community-based, universal project designed to prevent emotional and behavioral problems and promote general development in young children, while also attempting to improve family and neighborhood characteristics, to link effectively with existing services, and to involve local residents in project development and implementation. The research involved 554 4-year-old children and their families living in 3 disadvantaged neighborhoods in Ontario, Canada. Longitudinal analyses of changes over the first 5 years of project operation indicated significant improvements in children's and parents' social–emotional functioning and physical health, parenting behaviors, and neighborhood and school characteristics. The findings from the Better Beginnings, Better Futures Project are encouraging and provide unique evidence for the extent to which a universal, comprehensive, community-based prevention strategy can promote the longer term development of young children, their families, and their neighborhoods.

There has been growing interest in prevention initiatives in children's mental health (Coie et al., 1993; Mrazek & Haggerty, 1994). In part, this interest has been spurred by epidemiological research indicating that a high percentage of children (15% to 20%) experience major mental health disorders (Bradenberg, Friedman, & Silver, 1990; Costello, 1989; Offord et al., 1987), although very few receive treatment or therapeutic support (Offord et al., 1987; Tuma, 1989). For example, Offord et al. reported in their epidemiological survey of Ontario children ages 4 to 16 that, of the 18% showing major mental health disorders, only 1 in 6 had been in contact with a social service or mental health agency in the past 6 months. Due to the limited treatment services available, there has been growing interest in exploring prevention approaches to young children's mental health and development problems.

This research was funded under contract by the Ministries of Health and Long-Term Care, Education and Training, and Community, Family and Children's Services, Ontario, Canada.

This article reflects the views of the authors and not necessarily those of the Ministries.

Requests for reprints should be sent to Kelly Petrunka, Queen's University, 98 Barrie Street, Kingston, Ontario, Canada K7L 3N6. E-mail: petrunka@post.queensu.ca

Current Knowledge Regarding Effective Prevention Programs for Young Children

Over the past decade, there has been an explosion of reviews of early childhood prevention program research (e.g., Barnett, 1995; Bryant & Maxwell, 1997; Durlak & Wells, 1997; Hertzman & Wiens, 1996; Karoly et al., 1998; Mrazek & Brown, 2002; St. Pierre, Layzer, & Barnes, 1995; Webster-Stratton & Taylor, 2001). These reviews report that few prevention programs for young children have been adequately designed, particularly for children younger than 7 or 8 years old (Mrazek & Brown, 2002; Webster-Stratton & Taylor, 2001). Most of the programs either have not been evaluated at all, or the evaluations have such serious flaws that no meaningful conclusions can be drawn from them. Illustrations of some of these limitations are described later.

Most demonstration studies that have shown effects have employed small samples; for example, the High-Scope Perry Preschool Project (Schweinhart, Barnes, & Weikart, 1993) involved 58 preschool children, and the Carolina Abecedarian Project (Ramey & Campbell, 1984) involved 57 very high risk children. Attempts to expand such small-scale "efficacy" trials to

multiple sites and to more children have been disappointing (see, for example, the Comprehensive Child Development Project; St. Pierre, Layzer, Goodson, & Bernstein, 1997). Few studies have followed the children and parents after the program ended to determine long-term outcome effects. The costs of implementing prevention (or treatment) programs for young children are seldom collected or reported (Karoly et al., 1998). This failure to provide economic analyses makes it particularly difficult for policymakers to make informed decisions.

Another limitation is the narrow focus adopted by program models. There is in social policy discussions much rhetoric about the importance of programs being comprehensive, holistic, ecological, community based, and integrated. However, virtually no well-researched programs for young children have successfully incorporated these characteristics into the program model. In the U.S. studies, focus has been predominately on children's cognitive and academic functioning, not on emotional and behavioral problems, social competence, or physical health. None of these projects has included activities designed to improve the quality of the local neighborhood for young children and their parents. Local community members have had little or no involvement in the development and implementation of the programs. Also, St. Pierre and Layzer (1998) reported that the few studies have examined the effects of prevention programs integrating with local service-providing organizations.

Much of the prevention research on children's behavioral and emotional problems has adopted a targeted or high-risk approach. Studies have attempted to identify important risk factors or to implement targeted prevention programs with children at high risk for mental health problems (e.g., Mrazek & Brown, 2002). A major issue facing programs targeted at high-risk children is the relative strength or importance of the risk variables selected. Of interest here is the concept of the population attributable fraction, discussed elsewhere in this issue. The population attributable fraction indicates the maximum reduction in the incidence of a disorder that could be expected if the effects of the causal risk factor could be eliminated (Offord, 1996). Offord, Boyle, and Racine (1989) identified five family risk factors and, based on an analysis of attributable risk, concluded that, even if it were possible to eliminate these risk factors, the reduction in children's mental health problems would be only from 18% to 14%. These findings suggest that the major risk factors that have been identified for children's mental health problems (e.g., family dysfunction, low income, one-parent family) may have a low population attributable fraction, thus presenting serious challenges to targeted, high-risk prevention interventions. Even if it were possible to eliminate these risk factors from society, the overall reduction in children's mental health problems would not be great. Thus, targeted programs for high-risk children may have little effect on the community rates of these disorders.

Given the limitations of high-risk, targeted interventions for children's mental health problems, there is a need for more research on universal prevention interventions. From a universal prevention perspective, all children are considered to be at risk for emotional and behavioral problems and therefore should receive programs designed to prevent them. Two types of universal programs have been identified, those that focus on particular neighborhoods or settings (e.g., a school or a housing project) and those programs that are state, province, or countrywide (Offord, 1996). There has been little research to date on either type, especially with young children (Mrazek & Haggerty, 1994; Offord, 1996; Webster-Stratton &Taylor, 2001).

To summarize, much of the current knowledge about the long-term effects of prevention programs for young children rests on a few small-scale programs carried out on extremely disadvantaged, high-risk children or their mothers. These programs focused primarily on the intellectual and cognitive development of young children or on improving the quality of life for their mothers. Few reported cost data. None were universal, that is, focused on all children in a particular neighborhood; none involved parents or other local residents in program planning or implementation; and there was little reported attempt to integrate the program with other services or organizations in the community. After reviewing the limitations of prevention programs for young children, the Ontario government created a new prevention program, called Better Beginnings, Better Futures (Government of Ontario, 1990a).

The Better Beginnings, Better Futures Project

This study evaluated the effectiveness of a community-based, universal project designed to prevent emotional and behavioral problems and promote general development in young children, while also improving family and neighborhood characteristics, connecting effectively with existing services, and involving local residents in project development and implementation. In 1990, the Better Beginnings, Better Futures Project was announced by the Ontario government as "A 25-year longitudinal prevention policy research demonstration project to provide information on the effectiveness of prevention as a policy for children" (Government of Ontario, 1990b). There are two variations of the Better Beginnings model, depending on the age of children involved. The first involves children from before birth to age 4 and their families in five sites. The second variation focuses on children between ages 4

and 8 and their families in three sites. This report deals with results from the three older child sites only.

All three sites are located in Ontario, Canada. One site, in Cornwall, focused on four Francophone primary schools containing 530 children. The second, located in Etobicoke, a suburb of Toronto, focused on the Highfield Junior School neighborhood containing 517 children. The third, in Sudbury, focused on one traditionally Anglophone and one traditionally Francophone neighborhood, including a total of 503 children.

These sites were chosen in part because of socioeconomic disadvantage. To illustrate, among those interviewed at the sites before programs were in place, 36% of families were headed by a single parent, and 64% of the families reported annual income below the Statistics Canada Low Income Cut Off level, widely regarded as poverty level. However, all children between the ages of 4 and 8 and their families living in the geographically defined project neighborhoods were considered as potential project participants regardless of the socioeconomic characteristics or structure of the family. Thus, the Better Beginnings Project is a universal intervention implemented in high-risk neighborhoods.

Each selected community was funded to develop a local prevention project that would attempt (a) to reduce emotional and behavioral problems and promote the healthy development of young children; (b) to strengthen parents, families, and the neighborhood in responding to the needs of their children; (c) to develop a local organization to provide programs for children from 4 to 8 years of age and their families that respond effectively to local needs; (d) to encourage neighborhood parents and other citizens to participate as equal partners with service providers in developing and carrying out programs; and (e) to establish partnerships with existing and new service providers and schools and to coordinate programs with these partners.

An independent research coordination unit was selected by competition to carry out the evaluation of the project at all sites, with four research objectives. The first three objectives have been addressed by the research carried out from 1991 to 1998, for which key results are presented here. The fourth, longer term objective will be addressed by following the children into adolescence and young adulthood. The four research objectives were (a) to determine how large an effect could be obtained from the Better Beginnings model in preventing serious emotional and behavioral problems in young children, promoting healthy child and family development, and enhancing the abilities of disadvantaged communities to provide for young children and their families; (b) to investigate the costs of the model; (c) to document how the Better Beginnings communities developed local organizations and how fully they were able to implement programs for children and their families, establish and maintain local resident involvement, and develop partnerships with other agencies; and (d) to determine the long-term effects and cost benefits for children and their families in terms of educational achievement; use of health, social, and correctional services; employment and social assistance; criminal charges and convictions; teen pregnancy; and substance abuse.

Method

Sample

This report is based on a sample of children and their families recruited in 1993 when the children were enrolled in a 1-year prekindergarten (or junior kindergarten [JK]) program offered by the Province of Ontario to all children in local schools. These half-day JK programs involve children who turn 4 years of age in that calendar year. This JK year is followed by a senior kindergarten year, then first grade, and so on. A total of 554 children were involved in the research over the 5 years of research reported here, from JK to Grade 3. Two hundred fifty-five were in one of the three Better Beginnings project neighborhoods (Cornwall, $n = 66$; Highfield, $n = 77$; Sudbury, $n = 112$), and 299 were in one of two comparison neighborhoods, which were selected based on similar demographic characteristics to the three Better Beginnings project sites.

The research sample in the three Better Beginnings sites represented 50% to 60% of the entire birth cohort of children in their neighborhood, based on school records. Sample bias was checked by asking teachers to rate all children in their classrooms, then comparing ratings for children in the research sample and those outside it. These analyses were carried out for each year of data collection from 1993–1994 to 1997–1998, and no significant differences in teacher ratings of mental health problems or social skills were found. Sample attrition for the 5-year period was 7.8%, and analyses of measures comparing children and families who dropped out of the research sample from those who completed all 5 years of data collection yielded no consistent differences between the two groups.

The three project sites differed substantially in language and culture. Cornwall consisted mostly of Franco-Ontarians, in a city with an anglophone majority, many intermarried with francophones. Sudbury included one traditionally French-speaking and one English-speaking neighborhood. At Highfield, 88% of parents were born outside Canada. Of the comparison sites, the first, in Etobicoke ($n = 117$) was selected for its cultural and socioeconomic resemblance to the Highfield site, and the second, in Ottawa-Vanier ($n = 182$) for its resemblance to Cornwall and Sudbury. Another urban site in Ontario, with an appropriate mix of anglophone and francophone families, at the right socioeconomic level, could not be identified, so a rela-

tively large sample, 200 initially, was drawn from Ottawa-Vanier.

Using census data, it is possible to compare the project and comparison sites on mean family income and single parenthood. Approximately 22% of the Ottawa-Vanier sample was led by a single parent compared to 17% Cornwall and 27% Sudbury; the mean family income in Ottawa-Vanier was approximately $41,400 compared to $44,800 in Cornwall and $36,200 in Sudbury. Therefore, on both variables Ottawa-Vanier lies between Cornwall and Sudbury. Both the comparison site in Etobicoke and the project site in Highfield had 23% of the sample led by single parents; the mean family in Etobicoke was approximately $48,900 compared to $43,800 in Highfield. To obtain further control for socioeconomic level, parental education, family income, and single parenthood were used as covariates in all outcome analyses.

Program Descriptions for the Three Sites

Cornwall. At Cornwall, where the project proposal originated in the Francophone school board, much of the program budget was devoted to school-based activities, including full-time school facilitators in four schools, who provided classroom enrichment in JK to Grade 2 classes, homework help, and summer tutoring. A breakfast program was available in each of the four schools as well as a toy library with various resources and materials. Additional programs included activities for children and families during holidays and school breaks, play groups for children, family visits, welcome baskets and home visits to new families, and French initiatives/activities for the community.

Highfield. At Highfield, where the project proposal originated within the neighborhood primary school, most programming was provided on school premises, including enrichment workers in the classrooms from JK to Grade 2 and summer enrichment programming for each summer from JK to Grade 2. The enrichment workers also visited each child's parents on a regular basis, provided information about the child's activities in school and about community resources, and encouraged parent involvement at the school.

One unique aspect of the Highfield program was that the training and support provided by the enrichment workers was focused entirely on children and their families in the research cohort, that is, children in JK in 1993–1994, senior kindergarten in 1994–1995, Grade 1 in 1995–1996, and Grade 2 in 1996–1997. Although the other program activities were available to children in all four grades and the families each year, the classroom enrichment workers limited their activities to the 1 year birth cohort of children and their families who were involved in the longitudinal research. This provided more intensive and continuous programming for this cohort of children than for other children in Highfield, or for the longitudinal research cohorts in the other two sites. Highfield also was unique in being able to concentrate its resources in a large, single-school catchment area, whereas the Cornwall and Sudbury sites each contained four primary schools. Additional major program activities included the Lion's Quest Skills For Growing social skills program (Quest International, 1990) delivered by all classroom teachers; health and nutrition programming (including a snack program, hot lunch program, and a breakfast program); and programs for parents and children (including parent–child drop-in, parent relief, before- and after-school programs, a toy library, and programs during school breaks and summer holidays).

Sudbury. The Sudbury project, unlike the other two sites, did not originate within the school system. Those who developed it were very interested in community development and came together under the aegis of the Native Friendship Center. Nearly 60% of the Better Beginnings program budget was devoted to before- and after-school and holiday programs. These programs included games, craft activities, outings, and the provision of nutritious snacks. The focus on community development processes in creating the project organization, programming, and working with the neighborhood was very strong. Community kitchens, community gardens, environmental enhancement, as well as other community initiatives all reflected the strong community development orientation at this site. Additional project activities included several school-based activities such as a Peaceful Playground Program (e.g., project staff ran cooperative games, children discussed anger management), a Native Cultural Program, and a Multicultural Program in the Francophone schools. Only 8% of the program budget was spent on in-school activities.

Because each site was able to develop programs to best meet local needs, there were substantial differences in the programs offered that may be related to the differences in site outcomes reported later. This study was designed to evaluate the effects of a universal, community-based intervention strategy, not of specific program components. As L. J. Schweinhart (personal communication, November 1999) observed, this research is evaluating not a specific program or set of programs, but rather a general intervention strategy or "meta-program."

Measures

Information about children, parents, families, and neighborhoods was collected in a variety of ways: annual 2-hour, in-home parent interviews carried out by

local site researchers employed by the Research Coordination Unit; annual direct child measures also collected by Research Coordination Unit researchers; annual teacher reports; and federal and provincial databases (e.g., Statistics Canada Census data, Ontario Principals' Reports of Special Education Instruction).

Children's mental health and development. To reflect the holistic view of the child emphasized in the Better Beginnings model, a wide range of measures was collected. To measure children's social behaviors, ratings on three subscales (self-control, cooperation, and assertiveness) from the Social Skills Rating Scales (Gresham & Elliott, 1990) were collected from teachers and parents when the children were in Grades 1, 2, and 3. At the same time, teachers and parents rated children's behavioral and emotional problems using the child behaviors problems subscales of the Revised Ontario Child Health Study (Boyle et al., 1993). This scale contains two behaviors problem subscales (attention deficit and oppositional behaviors) and two emotional problems subscales (overanxious and depressed behaviors). Cognitive and academic performance measures, administered individually by site researchers, included a measure of receptive vocabulary (the Peabody Picture Vocabulary Test; Dunn & Dunn, 1981), a measure of nonverbal problem solving (the Block Design from the Wechsler Intelligence Scale for Children–Revised; Wechsler, 1974), standardized measures of reading and mathematics achievement (the Wide Range Achievement Test [Jastak & Wilkinson, 1984]; the Key Math Test [Connolly, 1991]), and a teacher-rated Scale of Reading Attitude (Rowell, 1972). The parent interview also included questions about the child's health, limitations with daily activities, medical conditions, injuries, poisonings, and hospitalizations.

Parent and family functioning. A variety of parent and family measures were collected from a parent, typically the mother, during the annual 2-hour in-home interview. These included several subscales of parenting behaviors (consistent, hostile–ineffective, and positive parenting) used in the Canadian National Longitudinal Survey of Children and Youth (1994) and a measure of parenting attitudes (Parenting Sense of Competence Scale; Johnston & Mash, 1989), which consists of two subscales, parenting efficacy and parenting satisfaction. Also included in the parent interview were measures of stressful life events in the preceding year (Institute for Social Research, 1981), social support (Cutrona & Russell, 1987), parental depression (Center for Epidemiologic Studies Depression Scale; Radloff, 1977), general family functioning (Epstein, Baldwin, & Bishop, 1983), and marital satisfaction (Institute for Social Research, 1977). A series of individual health questions adopted from general health surveys concerning smoking and alcohol use and ratings of their physical health and health practices were included.

Community characteristics. Parents were asked a series of questions about their use of community resources and perceptions of their neighborhood (Institute for Social Research, 1981). Two sources of information were analyzed concerning the schools in the Better Beginnings sites and comparison sites: parent ratings of their satisfaction with their child's school and teacher and the Ontario Governments' Principals' September Reports concerning use of special education resources.

Project development and program model analysis. Local site researchers were trained to write descriptive reports on program development and implementation at each site using a common protocol. These local site reports were summarized in comprehensive cross-site reports covering (a) how the Better Beginnings initiative was developed; (b) how communities generated proposals for the original competition in 1990; (c) how local residents were involved in project decision making; (d) how local service providers and educators were involved in project decision making and resource provision; (e) specific program activities and components, as well as staffing patterns; (f) the formal and informal decision-making structures and values, committee structure, and management procedures in each project site; and (g) personal stories from program participants, staff, and local residents concerning their experiences with the Better Beginnings Project.

Economic analysis. Costs were collected using a common accounting system and software at each site. The cost data collected included both direct dollar expenditures and other costs of operating the programs, particularly volunteer time (so-called service in kind or opportunity costs). These latter costs typically have not been measured in projects of this sort.

Design

Funding of the project sites began in April 1991. It took more than 2 years for local organizations to develop programs to the point where evaluation could begin in the fall of 1993. Determining the effects of the first 5 years of program implementation (1993–1998) required ongoing collection of a wide range of child, family, and community measures. Due to the process adopted by the government for selecting project communities, a randomized controlled trial design was not feasible. Two quasi-experimental designs incorporated in the research plans were (a) a baseline-focal design and (b) a longitudinal comparison site (or nonrandom control group) design. The baseline-focal design in-

volved comparing 206 second-grade children and their families in the Better Beginnings sites in 1992–1993 before the local programs were fully operational (baseline group) with a group of 255 second-grade children and their families in 1997–1998, who were part of the focal longitudinal research group described later (focal group). For the longitudinal comparison site design, a group of children and their families were recruited in the three project sites and in the two comparison neighborhoods. Children who turned 4 years of age in 1993 and their families constituted the focal research group, and data were collected on children at ages 4, 5, 6, 7, and 8 between 1993–1994 and 1997–1998. In the final year, 562 families were interviewed. Longitudinal analyses contrasted changes over time in measures from the Better Beginnings sites relative to those that occurred in the comparison sites. Results from both of these designs are presented in this report.

Statistical Analyses

Two sets of analyses were performed on all available outcome variables corresponding to the two research designs. The number of cases available for analyses varied. Sometimes parents would agree to be interviewed but not to allow their child's teacher to do ratings of the child, or vice versa. A few measures were available only in English or in French. Those who had left a Better Beginnings neighborhood could not be asked to rate it or the services within it. For the baseline-focal analysis, the median *n* for the two samples in Cornwall was 100, for Highfield 95, and for Sudbury 176. For the longitudinal design, Cornwall's median *n* was 43, and that of its comparison site in Ottawa-Vanier was 149. Using the same comparison site, Sudbury had a median *n* of 52. Highfield's median *n* was 37, and that of its comparison site in Etobicoke was 83.

Because cases were heavily clustered, within-sites and sites were chosen nonrandomly, for the baseline-focal analyses covariate effects were estimated within PC-CARP (Fuller, Kennedy, Schnell, Sullivan, & Park, 1986) or SUPER CARP (Hidiroglou, Fuller, & Hickman, 1980), which yield standard errors allowing for clustering, and on the understanding that inferences should not be drawn beyond the set of sites from which data were available. Covariate-adjusted residuals were then used to compare the baseline and focal groups in each site and also across the three sites combined using randomization tests. For the longitudinal analyses, the intercepts, slopes, and, if necessary, quadratic terms for individual cases were tested for covariate effects in PC-CARP. The covariate-adjusted residuals were then tested using randomization tests between each Better Beginnings and comparison site and then between the combined demonstration and combined comparison sites. Two-tailed tests of significance ($\mu = .05$) were employed for all analyses.

For all dependent variables, a standard set of covariates was tested, including sex and birth year of the interview respondent (typically the mother), number of parents in the home, respondents' education and family income, cultural category (anglophone, francophone, Native, and other), and immigrant status. Also, the sex of the child and number of siblings were used as covariates with measures of behavioral and emotional problems, cognitive development, and academic performance, and length of residence was employed with analyses of all neighborhood measures.

Given the differences in programs among the three Better Beginnings sites, a strategy to distinguish cross-site effects from site-specific effects was required. First, an "all-site" analysis was performed on each of the outcome measures, in which data across all sites were pooled. Cross-site patterns were identified by first selecting measures for which the all-site analyses for both designs (baseline-focal and longitudinal) were in the same direction and at least one of the two was significant. Due to the limited number of sites, a standard sign test would have so little power as to be impractical. Therefore, for measures meeting this criterion, scores were assigned to the individual site test results according to the following formula: 2 points for results that were significant in the same direction as the all-site effects, 1 for nonsignificant results in the same direction, –1 for nonsignificant results in the opposite direction, and –2 for significant results in the opposite direction. These scores were summed for each measure, and this summed score was compared to its probability distribution under the null hypothesis that the individual site test results were independent.

For measures where six tests were available (three sites, two designs), a summed score of 6 or greater was required for identifying a significant cross-site pattern. A summed score of 6 ($p < .05$) could result from a series of six tests in the dominant direction (all six receiving a score of 1), or from a set of five in the dominant direction with two being significant, and one nonsignificant result in the opposite direction (i.e., two scores of +2, three of +1, and one of –1 = 6). For measures in which data had been collected for only one design, only three individual site tests were available. For these measures, a summed score of 4 or greater was required for identifying a significant cross-site pattern, that is, when at least one result was significant and the other two were in the same direction ($p < .05$).

Within-site patterns were identified when a set of outcome measures for a topical domain were similar for a specific site. The same statistical test employed for identifying cross-site patterns was employed. The number of tests involved rose as high as 10 (i.e., five measures in a domain and two designs). However, no more than one nonsignificant result in the direction op-

posite to the majority was allowed, regardless of the number of tests performed.

Table 1 presents the significant patterns resulting from the analyses of all measures. Plus and minus signs indicate whether the observed result was favorable or unfavorable to Better Beginnings, and asterisks indicate the level of significance obtained. Effect sizes are shown only for significant cross-site and within-site patterns.

The effect sizes reported are based on strategies outlined by Cohen (1977). For the baseline-focal design, the effect size was calculated by dividing the covariate-adjusted differences between cohorts by the standard deviation of the dependent variable in the baseline cohort. For the longitudinal design, the denominator was the standard deviation of the sample in the initial year. The numerator was the estimated difference between the Better Beginnings project sites and their comparison sites over the data collection period. For example, if the slope of the trend lines for a demonstration site and its comparison site differed by .25, then over the 4 years from JK to Grade 3 a site difference of 4(.25) = 1.0 would be produced. This figure would be the numerator for effect size calculation.[1] For dichotomous outcome measures, covariate-adjusted percentage changes were converted to effect sizes by Cohen's transformation. Following Cohen's conventions, an effect size of .20 is referred to as small, .50 as moderate, and .80 as strong. In program outcome research, effect sizes are typically small (Hundert et al., 1999; McCartney & Rosenthal, 2000).

Results

Children's Emotional and Behavioral Problems

As shown in Table 1, teacher ratings of children's overanxious emotional problems showed a significant cross-site pattern of decline, that is, across all three Better Beginnings sites and for both designs ($p < .01$). Across the two designs, teacher ratings of the five measures of emotional and behavioral problems in Cornwall showed a significant within-site pattern of decline ($p < .001$). Nine of the 10 comparisons showed a decline, and the 1 comparison in the opposite direction (i.e., oppositional behaviors in the baseline-focal analysis) was very small (effect size = –.03). Parent ratings on the four measures of emotional and behavioral problems showed a strong within-site pattern of decrease in Highfield ($p < .001$), whereas they unexpectedly showed a pattern of increased problems in Sudbury ($p < .01$).

Children's Social Functioning

Teacher ratings on the self-control subscale of social functioning showed a cross-site pattern of improvement ($p < .001$). All six comparisons were in the positive direction, and three were statistically significant. Also, in Highfield, teacher ratings showed a pattern of increase on all three subscales of social functioning ($p < .001$), with five of the six comparisons showing significant increases with substantial effect sizes ranging from .44 to 1.21. The one comparison in the opposite direction was not significant (effect size = –.17). Parent ratings of children's social functioning showed a significant within-site pattern of improvement in Highfield ($p < .01$), with all six comparisons in the positive direction, two of which were significant.

Children's Cognitive Functioning

There were no patterns of improvement on any of the measures of cognitive development or on measures of reading or mathematics achievement.

Children's Health

A significant pattern of improved parent ratings of their children's general health occurred in all three Better Beginnings sites ($p < .05$), although this effect was clearly strongest in Highfield. Also, a pattern of improvement occurred on measures of timely immunizations, parents' sense of control over their children's health, and parental encouragement to wear a bicycle helmet in both Cornwall ($p < .001$) and Sudbury ($p < .01$). These positive outcomes suggest an increase in parents' knowledge and actions taken to prevent injury and disease in their children. These same measures in Highfield, however, showed a significant pattern of decrease ($p < .01$).

Parent Health

A number of measures of parents' health and health-risk behaviors showed improvements. In Highfield, there was a significant pattern of improvements across all of the parent health measures ($p < .01$). Concerning measures of the health-risk behaviors of smoking, a significant cross-site pattern occurred for reduced smoking by the responding parent ($p < .05$), although this pattern was strongest in the Cornwall site. In Sudbury, a significant pattern of reduction occurred across both measures of smoking as well as parent alcohol consumption ($p < .01$).

[1]This strategy was adopted by Boyle et al. (1999) in an earlier Ontario study, with which comparison was very desirable. One limitation is that an unusually low initial standard deviation can inflate apparent effect sizes inappropriately, and a high initial standard deviation can deflate them.

Table 1. *Patterns and Effect Sizes: Baseline-Focal and Longitudinal Analyses of Better Beginnings, Better Futures*

	Baseline-Focal Analyses Better Beginnings Site				Longitudinal Analyses Better Beginnings Site			
Measures	**Cornwall**	**Highfield**	**Sudbury**	**All**	**Cornwall**	**Highfield**	**Sudbury**	**All**
Child Emotional and Behavioral Problems								
Teacher-rated:								
Decreased passive victimization	+0.08	+	–	+	+0.74**	+	+	+*
Decreased overanxious behavior	+0.16	+0.16	+0.01	+0.03	+0.74**	+0.43	+0.22	+0.47**
Decreased depression	+0.22	–	–	–	+0.36	+	+	+
Decreased attention deficit	+0.23	+	–	–	+0.12	+	–	+
Decreased oppositional behavior	–0.03	–	+	–	+0.23	+	+	+
Parent-rated:								
Decreased overanxious behavior	+	+0.66**	–0.18	+	–	+0.56**	–0.22	+
Decreased depression	–	+0.93**	–0.32	+	–	+0.63**	–0.02	+
Decreased attention deficit	–	+0.48*	–0.46**	–	–	+0.52**	–0.17	+
Decreased oppositional behavior	–	+0.22	–0.13	+	+	+0.58**	–0.09	+
Children's Social Functioning								
Teacher-rated:								
Increased self-control	+0.12	+0.46**	+0.08	+0.18	+0.63**	+0.55*	+0.25	+0.46**
Increased cooperation	–	+0.44*	–*	–	+**	+1.21**	+	+**
Increased assertiveness	–	–0.17	–	–	+	+0.59*	+	+*
Parent-rated:								
Increased self-control	–	+0.34	–	–	–	+0.20	+	+
Increased cooperation	+	+0.38*	+	+**	–	+0.23	+	+
Increased assertiveness	+	+0.48*	–	+	–	+0.09	–	–
Child Cognitive Functioning								
Improved receptive language:								
For English-speaking children	na	+	–**	–	na	+	+	+
For French-speaking children	–	na	+*	+	+	na	–	+
Improved nonverbal problem-solving	+	+	–	–	–	–	+	+
Improved reading skills (English-speaking children)	na	+	–**	–	na	+*	–	–
Improved attitude toward reading	–	–	+	+	–	+	–	+
Improved math skills	–	+	–**	–**	–	+	–	+
Child health								
Improved general health ratings				na	+0.28	+1.02**	+0.14	+0.37*
Fewer health-related limitations				na	+	+	–	+
Reduced asthma				na	+	–	+	+
Reduced injuries				na	+	+	+	+
Child Health Promotion and Prevention of Injuries and Illness								
Child immunized on time				na	+0.55**	–0.06	+0.06	+
Improved parent sense of control over child health				na	+0.49**	–0.21*	+0.48**	+**
Greater parental encourage of bicycle helmet use				na	+0.24**	–0.15*	+0.24**	+

Parent Health								
Improved self-rated health	–	+0.02	–*	–	+	+0.55	+	+
Decreased limitations in daily activities from:								
Emotional problems				na	+	+0.30	+*	–
Pain				na	+	+0.05	–	–
Physical health problems	+	+0.59**	+	+				na
Reduced types of prescriptions use	–	–0.16	+	–	–	+0.48**	–**	–
Reduced amount of prescription for pain				na	+	+0.40**	–	+
Parent Health-Risk Behaviors								
Reduced smoking	+0.36*	+0.11	+0.25	+0.30**	+0.50**	–0.05	+0.15	+0.19*
Fewer smokers in the home	–	+	+0.28*	+*	+	+	+0.29	+
Reduced alcohol consumption	+	+**	+0.46	+**	–*	+	+0.07	–
Parenting								
More consistent parenting				na	–	+0.80**	+	+
Less hostile-ineffective parenting				na	–	+1.73**	+	+**
More positive parenting				na	+	+0.30	+	+
Increased sense of parenting efficacy				na	+	+0.57	+	+
Increased sense of parenting satisfaction				na	–	+0.40*	–	+
Parent and Family Social and Emotional Functioning								
Reduced stressful life events	+0.17	+0.48**	– 0.17	+0.07	+0.21	+0.59**	+0.00	+0.23*
Improved social support	+	+0.13	–	+	–	+-.61*	–	+
Reduced depression	–	+0.12	–	+	–*	+0.37	+	–
Improved marital satisfaction	+0.19	+0.22	+0.07	+0.18	+0.44	+1.60**	+0.30	+0.72**
Improved family functioning	–	+0.23	+	+	–	+0.16	–**	–**
Increased use of community resources								
Toy-lending library	na	+	–	–	–	+**	+	+
Library	–	–*	–	–	+	+**	–	+*
Playground or recreation programs	+	+	+	+*	–	+	+*	+*
Sports/clubs	+	–	–*	–	+*	+*	–	+**
Parent/child drop-in center	+	+*	+*	+	–	+**	–	+
Parent resource center	–	–	–	–	+	+**	+	+**
Neighborhood Ratings								
Increased satisfaction with condition of dwelling	+0.25	+0.48*	–0.01	+0.25*	+0.39	+ 0.63*	+0.36	+0.43**
Increased general neighborhood satisfaction	+	+0.14	–	+	+	+0.51	+	+*
School Ratings								
Reduced % of special education students				na	+0.30**	+0.10**	–0.02	na
Improved parent ratings of child's school	–	+0.37*	+	+	–	+0.22	–	+
Improved relationship with child's teacher/involvement in school	–0.38	+0.56**	+0.16	+0.13	+0.28	+0.49*	+0.15	+0.20*

Note. A "+" or "–" symbol indicates whether the tested difference favored Better Beginnings or the control group from 1993 to 1998. A "+" represents a desirable or beneficial effect for Better Beginnings, and a "–" represents an undesirable or nonbeneficial effect. Shaded areas reflect patterns of outcome effects *across* the Better Beginnings sites (horizontal shading) or *within* a site (vertical shading). An effect size was calculated for each variable in a shaded area. An effect size of 0.2 is considered small, 0.5 moderate, and 0.8 or above large.

*$p < .05$.**$p < .01$.

Parent and Family Functioning

There were no consistent changes in parenting practices across the three sites, but in Highfield there was a very strong within-site pattern of improvement in all measures of parenting practices ($p < .001$), especially in the measures of consistent parenting, hostile–ineffective parenting, and reported satisfaction with the parenting role. A significant cross-site pattern occurred for reduced stressful life events ($p < .05$), although the effect was most notable in Highfield. Similarly, the significant cross-site pattern on improved marital satisfaction ($p < .01$) was strongly influenced by the longitudinal effect in Highfield. Overall, the strongest Better Beginnings effects on measures of parent and family social and emotional functioning occurred in Highfield, yielding a highly significant pattern of improvements on measures of stress, social support, depression, marital satisfaction, and general family functioning ($p < .001$).

The Quality of Local Neighborhoods and Schools

A significant cross-site pattern occurred on the measure of increased satisfaction with the condition of the family dwelling ($p < .05$), although this effect was largely due to the within-site pattern on the two neighborhood ratings in Highfield ($p < .01$). Schools in two of the three Better Beginnings sites, Cornwall and Highfield, showed significant decreases in the number of students identified for special education instruction relative to schools in the comparison sites over the study period ($p < .01$). These were students identified with exceptionalities such as learning disabilities and behavioral problems who required special services. The largest relative decreases occurred in the Cornwall schools between 1992 and 1994 with a decrease from 20% to 8% of the students receiving special education instruction, and the percentage continued to decrease until 1997. In Highfield, the percentage of students receiving special educational services was the lowest of all sites beginning in 1992 at 5%. Despite this, however, the percentage decreased slowly but significantly over the 5-year period until 1997. No changes appeared in the Sudbury schools. A significant ($p < .05$) cross-site pattern emerged for the measure of the parent's relationship with the child's teacher and involvement in the school. However, this seems to have resulted primarily from Highfield's pattern of increased satisfaction ratings concerning both their children's teacher and school ($p < .05$).

Summary of Patterns

A total of eight significant cross-site patterns were identified in Table 1, all eight reflecting a relative improvement in the Better Beginnings sites. For five of these eight patterns, the clearest results were found at Highfield, and for two of them at Cornwall. A total of 14 significant within-site patterns were identified, 12 of which indicated an improvement in a Better Beginnings site. Of these, 8 favorable and 1 unfavorable pattern occurred in Highfield, 2 favorable patterns occurred in Cornwall, with Sudbury showing 2 favorable and 1 unfavorable pattern. It is clear from these results that the Better Beginnings programs in Highfield were associated with greater improvements in child, parent, and neighborhood functioning than those in Cornwall or Sudbury.

Project Development and Program Model Analysis

Developing a viable local organization was a formidable challenge at each site. Because of the breadth of the project mandate and its innovative nature, putting in place stable organizations and programs took at least 2 years. Each Better Beginnings steering committee and subcommittee was required to contain at least 50% local residents as members. Challenges in establishing this level of resident involvement included unfamiliar terms and procedures used by professionals, feelings of intimidation and power imbalances felt by residents in relation to professionals, ethnic tensions, failed expectations for residents not hired for project positions, and language barriers in bilingual and multilingual communities. Residents became involved as active members of major project committees, often as chair or co-chair, and in program management and support. Personal benefits reported by participating residents included greater confidence, self-knowledge, assertiveness, awareness of rights, political awareness, and public speaking skills.

All the Better Beginnings sites involved representatives from local organizations in the original proposal development process in 1990. Service providers became involved because they held objectives similar to those of Better Beginnings, Better Futures, because they saw ways to increase their resources, improve their services through partnership, or both. The creation of partnerships has resulted in significant new resources and programming being created in each Better Beginnings community through joint programming, finding of new sources of funding, encouragement of agencies to locate in the neighborhood, and mutual enrichment of programming. (More information on these topics is available through the project web site: http://bbbf.queensu.ca.)

Economic Analysis

Each Better Beginnings site received an annual budget allocation from the Ontario government based on the number of children ages 4 to 8 in the project neighborhood. By dividing this allocation by the number of children, an average annual cost per child was calcu-

lated. In Cornwall, this figure was $1,098 per child per year, and in Sudbury it was $1,308. As mentioned earlier, in Highfield certain programs were delivered only to children and families in the 1-year longitudinal research cohort, whereas other programs were available to all 4- to 8-year-old children and their families. For the research cohort children, the annual budget allocation was $1,938 per child, whereas for the rest of the children the figure was much smaller—$667 per child per year. Thus, for the children and families in the research cohort, the average program resources allocated per child in Highfield was 76% higher than in Cornwall and 48% higher than in Sudbury. Taken together, the average annual allocation across the three Better Beginnings sites was $1,475 per child. A second source of resources allocated to the programs in each site was the services-in-kind, particularly volunteer time, which averaged approximately $300 per child per year or the equivalent of three full-time staff positions per year.

Discussion

A major focus of this universal prevention project was on the social–emotional functioning of young children. Improvements in children's emotional problems, behavioral problems, and social skills and decreases in the need for special education services were larger and more widespread in the two sites that provided in-classroom individual and group support to all children continuously from JK to Grade 2. Although all sites provided some programming in the schools, school-based programming in the Highfield and Cornwall sites was substantially more intensive and continuous than in the Sudbury site. In Highfield, educational assistants worked with the research cohort children in their classrooms from JK to Grade 2. Similar classroom workers in Cornwall also dealt with children at the same four grade levels although not as intensively as in Highfield. These results are consistent with those presented recently in reviews of effective programs. For example, St. Pierre and Layzer (1998) concluded that recent evaluations

> call into question the wisdom of relying too heavily on indirect intervention impacts on children, especially when compared with the larger effects of more child-focussed, developmental programs. Most researchers conclude that children are best served by programs that provide intensive services to children directly for long periods of time, instead of trying to achieve those effects by delivering parenting education to parents. (p. 18)

It is interesting to compare the improvements in children's social–emotional functioning in this study with those of the Helping Children Adjust Project, also funded by the Ontario government (Hundert et al., 1999). That project involved 1 year of teacher-provided social skills training and enhanced reading instruction and parent training in kindergarten through Grade 2 for 1,400 children attending 30 primary schools in disadvantaged neighborhoods. Children receiving social skills training showed significant improvements in ratings of prosocial behaviors on the playground as well as decreases in parent and teacher ratings of behavioral problems over a 3-year period relative to comparison groups that received no social skills training. However, the effect sizes for teacher ratings of children's emotional problems found in the Better Beginnings sites were nearly three times larger than those for the same measures in the Helping Children Adjust Project. In Highfield, the effect sizes for parent-reported decreases of both emotional and behavioral problems and improved social skills in their children also were substantially larger than those reported by parents in the Helping Children Adjust Project over a similar period of time.

There are several possible explanations for these differences. Classroom programs in the Cornwall and Highfield schools were provided for 4 years, compared with 1 year in the Helping Children Adjust study. This points to the potential value of continuous, longer term programs. A second relevant factor may be differences in the way in which the school-based programs were designed. In Helping Children Adjust, Hundert et al. (1999) reported there was very little contact between the research team and teachers. Engagement of principals, teachers, parents, and project personnel in developing the programs was central at the Highfield and Cornwall Better Beginnings sites. This community-based feature of the project may have been an important influence on the size of the desirable changes that occurred. The finding in Highfield that parents increased in satisfaction both with their child's teacher and school again suggests the potential value of programs designed to actively forge parent–school connections and involvement.

It is possible that the in-classroom supports provided through the Better Beginnings programs from JK to Grade 2 in both Cornwall and Highfield may also have contributed to reducing the number of special education students in these schools. As described previously, in Sudbury the major programs for early school-age children were outside the classroom, and many were outside of school hours, which might account for the smaller overall reductions of special education students in that site. It is important to note that reductions in the numbers of special education students reported by schools in the Cornwall and Highfield Better Beginnings sites occurred over the same time period when numbers were increasing in schools in the two comparison sites. The possibility that school-based Better Beginnings programs reduced or replaced the need for special education resources has important implications for future cost benefits of the project.

The lack of improvements in cognitive functioning or academic achievement is consistent with findings from other projects focusing on the early primary grades. For example, the Helping Children Adjust Project (Hundert et al, 1999), despite the enhanced reading instruction provided by the project, found no positive effects on the same reading achievement measure as employed in this study. Likewise, the Abecedarian Project (Ramey & Campbell, 1984) reported no improvements on academic or intellectual measures in a group of children who received specialized in-school programming from school entry to Grade 2. One possible reason is that all children in these projects were receiving regular primary school education programs throughout the implementation period. For a positive effect to show, programs would have to improve on what was accomplished by regular kindergarten, Grade 1, and Grade 2 educational activities. It is unlikely that any of the Better Beginnings programs were intensive enough to accomplish this.

As was the case with child outcomes, the most consistent effects on parent, family, school, and neighborhood measures occurred in Highfield, including improved parenting, decreased stress and parental depression, improved marital, school and neighborhood satisfaction, and social support. None of these measures showed significant within-site patterns of improvement in Cornwall or Sudbury (with the exception of parent health-risk behaviors in Sudbury). Reasons for these differential outcomes may include the fact that the school enrichment workers in Highfield worked exclusively with children in the research cohort and also carried out regular home visits with those children's parents. Such visits were not routinely done in either Cornwall or Sudbury. Also, the Skills for Growing social skills program offered in the Highfield classrooms throughout the school year by teachers of all primary grades included systematic parent involvement. These activities and supports for parents in Highfield may have yielded the pattern of positive parent, family, neighborhood, and school outcomes in that site. The combination of programs in Highfield, providing intensive and continuous skill training for all children and a variety of supports for their parents, provides a strong model for a universal and comprehensive approach to prevention and promotion activities with early primary school children and their families.

The estimated annual allocation per child for the Better Beginnings Project was $1,100 in Cornwall, $1,300 in Sudbury, and $1,940 in Highfield. This yields an average annual per-child allocation of approximately $1,500 across the three sites (or $1,800 if in-kind services are included). One way to put these figures in perspective is to compare them with other prevention programs. (All figures are reported in 1997 Canadian dollars.) The Elmira Home Visiting Project (Olds, 1997) cost $4,300 per family per year, the Comprehensive Child Development Project cost $21,000 per family per year (St. Pierre et al., 1997), and the Perry Preschool Project cost $8,600 per family per year (Karoly et al., 1998). From these comparisons, the annual costs of the Better Beginnings project are quite modest, particularly considering the fact that many of the programs were new to these neighborhoods and were so broad. Further, the substantially greater outcomes in Highfield suggests that an allocation of at least $2,000 per child per year, dedicated to providing continuous, intensive supports to children and their parents, may be required for effective universal prevention programming for young primary school children in disadvantaged neighborhoods. An important challenge for the follow-up research currently underway will be to determine whether these improvements can be maintained or enhanced and what long-term consequences these changes will have on the children who have experienced them.

The hallmark of the Better Beginnings, Better Futures Project is the eight locally developed and operated organizations. Faced with an extremely broad and complex mandate, high expectations, and relatively little explicit direction, each of the communities has developed an organization characterized by significant and meaningful local resident involvement in all decisions. This alone represents a tremendous accomplishment in neighborhoods in which, 10 years ago, many local residents viewed government programs and social services with skepticism, suspicion, or hostility. In developing their local organizations, Better Beginnings projects have not only actively involved many local residents but have also played a major role in forming meaningful partnerships with other service organizations. They have developed a wide range of programs, many designed to respond to the locally identified needs of young children and their families and others to the needs of the neighborhood and broader community. As they strengthened and stabilized over the 7-year demonstration period from 1991 to 1998, each Better Beginnings project increasingly gained the respect and support not only of local residents, service providers, and community leaders, but also of the Provincial Government which, in 1997, transferred all projects from demonstration to annualized funding, thus recognizing them as sustainable. The short-term findings from these projects are encouraging and provide a unique foundation for determining the extent to which a universal, comprehensive, community-based prevention strategy can promote the longer term development of young children, their families, and their local neighborhoods.

References

Barnett, W. S. (1995). Long-term effects of early childhood programs on cognitive and school outcomes. *The Future of Children, 5,* 25–50.

Boyle, M. H., Cunningham, C. E., Heale, J., Hundert, J., McDonald, J., Offord, D. R., et al. (1999). Helping Children Adjust–A

Tri-Ministry Study: Evaluation Methodology. *Journal of Child Psychology and Psychiatry, 40,* 1051–1060.

Boyle, M. H., Offord, D. R., Racine, Y., Fleming, J. E., Szatmari, P., & Sanford, M. (1993). Evaluation of the revised Ontario Child Health Study Scales. *Journal of Child Psychology and Psychiatry, 34,* 189–213.

Bradenberg, H. A., Friedman, R. M., & Silver, S. E. (1990). The epidemiology of childhood psychiatric disorders: Prevalence findings from different studies. *Journal of American Academy of Child and Adolescent Psychiatry, 29,* 76–83.

Bryant, D., & Maxwell, K. (1997). The effectiveness of early intervention for disadvantaged children. In M. Guralnick (Ed.), *The effectiveness of early intervention* (pp. 23–46). Baltimore: Brookes.

Cohen, J. (1977). *Statistical power analysis for the behavioral sciences* (rev. ed.). New York: Academic.

Coie, J. D., Watt, N. F., West, S. G., Hawkins, J. D., Asarnow, J. R., Markman, H. J., et al. (1993). The science of prevention: A conceptual framework and some directions for a national research program. *American Psychologist, 48,* 1013–1022.

Connolly, A. J. (1991). *Canadian edition of KeyMath–revised: A diagnostic inventory of essential mathematics.* Toronto, Canada: Psycan Corporation.

Costello, E. J. (1989). Developments in child psychiatric epidemiology. *Journal of the American Academy of Child and Adolescent Psychiatry, 28,* 836–841.

Cutrona, C. E., & Russell, D. W. (1987). The provisions of social relationships and adaptation to stress. In W. H. Jones & D. Perlman (Eds.), *Advances on personal relationships* (Vol. 1, pp. 37–67). New York: JAI.

Dunn, L. M., & Dunn, L. M. (1981). *Peabody Picture Vocabulary Test–revised.* Circle Pines, MN: American Guidance Services.

Durlak, J. A., & Wells, A. M. (1997). Primary prevention mental health programs for children and adolescents: A meta-analytic review. *American Journal of Community Psychology, 25,* 115–152.

Epstein, N. B., Baldwin, L. M., & Bishop, D. S. (1983). The McMaster Family Assessment Device. *Journal of Marital and Family Therapy, 9,* 171–179.

Fuller, W. A., Kennedy, W., Schnell, D., Sullivan, G., & Park, N. (1986). *PC CARP.* Ames: Iowa State University, Statistical Laboratory.

Government of Ontario. (1990a). *Better Beginnings, Better Futures: An integrated model of primary prevention of emotional and behavioural problems.* Toronto, Canada: Queen's Printer for Ontario.

Government of Ontario. (1990b). *"Better Beginnings, Better Futures" Project: Policy research demonstration project: Primary prevention. Request for Proposals: Research sites.* Toronto, Canada: Queen's Printer for Ontario.

Gresham, F. M., & Elliott, S. N. (1990). *Social skills rating system manual.* Circle Pines, MN: American Guidance Services.

Hertzman, C., & Wiens, M. (1996). Child development and long-term outcomes: A population health perspective and summary of successful interventions. *Social Science and Medicine, 43,* 1083–1095.

Hidiroglou, M. A., Fuller, W. H., & Hickman, R. D. (1980). *SUPERCARP.* Ames: Iowa State University, Statistical Library.

Hundert, J., Boyle, M. H., Cunningham, C. E., Duku, E., Heale, J., McDonald, J., et al. (1999). Helping Children Adjust—a Tri-Ministry study: II. Program effects. *Journal of Child Psychology and Psychiatry, 40,* 1061–1073.

Institute for Social Research. (1977). *Social change in Canada series.* Toronto, Canada: York University Press.

Institute for Social Research. (1981). *Social change in Canada series.* Toronto, Canada: York University Press.

Jastak, S., & Wilkinson, G. S. (1984). *Wide Range Achievement Test–revised.* Wilmington, DE: Jastak Associates.

Johnston, C., & Mash, E. J. (1989). A measure of parenting satisfaction and efficacy. *Journal of Clinical Child Psychology, 18,* 167–175.

Karoly, L. A., Greenwood, P., Everingham, S., Houbé, J., Kilburn, M., Rydell, C., et al. (1998). *Investing in children: What we know and don't know about the costs and benefits of early childhood interventions.* Santa Monica, CA: RAND.

McCartney, K., & Rosenthal, R. (2000). Effect size, practical importance, and social policy for children. *Child Development, 71,* 173–180.

Mrazek, P. J., & Brown, C. H. (2002). An evidenced-based literature review regarding outcomes in psychosocial prevention and early intervention in young children. In C. C. Russell (Ed.), *The state of knowledge about prevention/early intervention* (pp. 42–144). Toronto, Canada: Invest in Kids Foundation.

Mrazek, P. J., & Haggerty, R. J. (1994). Illustrative preventive intervention research programs. In P. J. Mrazek & R. J. Haggerty (Eds.), *Reducing risks for mental disorders. Frontiers for preventive intervention research* (pp. 215–313). Washington, DC: National Academy Press.

National Longitudinal Survey of Children and Youth. (1994). *Parenting scale.* Department of Human Resources Development, Canada.

Offord, D. R. (1996). The state of prevention and early intervention. In R. DeV. Peters & R. J. McMahon (Eds.), *Preventing childhood disorders, substance abuse and delinquency* (pp. 329–344). Thousand Oaks, CA: Sage.

Offord, D. R., Boyle, M. H., & Racine, Y. A. (1989). *Children at risk.* Toronto, Canada: Ontario Ministry of Community and Social Services.

Offord, D. R., Boyle, M. H., Szatmari, P., Rae-Grant, N. I., Links, P. S., Cadman, D. T., et al. (1987). Ontario Child Health Study II: Six month prevalence of disorder and rates of service utilization. *Archives of General Psychiatry, 44,* 832–836.

Olds, D. L. (1997). The Prenatal Early Infancy Project: Preventing child abuse in the context of promoting maternal and child health. In D. A. Wolfe, R. J. McMahon, & R. DeV. Peters (Eds.), *Child abuse: New directions in prevention and treatment across the lifespan* (pp. 130–156). Thousand Oaks, CA: Sage.

Quest International. (1990). *Lions-Quest Skills for Growing.* Granville, OH: Author.

Radloff, L. S. (1977). The CES–D scale: A self-depression scale for research in the general population. *Journal of Applied Psychological Measurement, 1,* 385–401.

Ramey, C. T., & Campbell, F. A. (1984). Preventive education for high-risk children: Cognitive consequences of the Carolina Abecedarian Project. *American Journal on Mental Deficiency, 88,* 515–523.

Rowell, C. G. (1972). An attitude scale for reading. *The Reading Teacher, 25,* 442–447.

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.

St. Pierre, R. G., & Layzer, J. I. (1998). Improving the life chances of children living in poverty: Assumptions and what we have learned. *Society for Research in Child Development Social Policy Report, 12,* 1–25.

St. Pierre, R. G., Layzer, J. I., & Barnes, H. V. (1995). Two-generation programs: Design, cost, and short-term effectiveness. *The Future of Children, 5,* 76–93.

St. Pierre, R. G., Layzer, J. I., Goodson, B. D., & Bernstein, L. S. (1997). *National impact evaluation of the Comprehensive Child Development Program: Final report.* Cambridge, MA: Abt Associates.

Tuma, J. M. (1989). Mental health services for children: The state of the art. *American Psychologist, 44,* 188–199.

Webster-Stratton, C., & Taylor, T. (2001). Nipping early risk factors in the bud: Preventing substance abuse, delinquency, and violence in adolescence through interventions targeted at young children (0–8 years). *Prevention Science, 2,* 165–192.

Wechsler, P. (1974). *Wechsler Intelligence Scale for Children–revised (WISC–R).* New York: Psychological Corporation.

Received February 22, 2002
Accepted November 19, 2002