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Evaluation of a Clinic-Based Parent Education Program to Reduce the Risk of Infant and Toddler Maltreatment

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Abstract Community-based parent education programs are a common component of service plans for abusive and potentially abusive parents. Despite their widespread use, few studies have evaluated the effect of such programs to change actual parenting behavior even though this is a key intervention goal. The purpose of this study was to evaluate whether a relatively brief and inexpensive clinic-based education program could benefit parents of infants and toddlers by alleviating parental stress and improving parent–child interaction. Participants were 199 parents of children 1 through 36 months of age who were at risk for parenting problems and child maltreatment due to serious life stress including poverty, low social support, personal histories of childhood maltreatment, and substance abuse. Program effects were evaluated in terms of improvement in self-reported parenting stress and observed parent–child interaction. Positive effects were documented for the group as a whole and within each of three subgroups: two community samples and a group of mothers and children in residential drug treatment. Additional analyses illustrated a dose–response relationship between program attendance and magnitude of gain in observed parenting skills.

Key words: prevention, maltreatment, children, parent education, evaluation.

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INTRODUCTION

Since entering national awareness in the United States in the mid-1960s, child maltreatment has received increasing public, professional, and policy attention. Efforts to protect children from injury and harm have resulted in federal legislation to define maltreatment, state statutes that mandate reporting, and the establishment of public agencies responsible for investigating and responding to allegations of abuse and neglect (Schene, 1998). Unfortunately knowledge of how to prevent child maltreatment has not kept pace with these other efforts (Gelles, 1998).

In the United States, the prevalence of child maltreatment remains alarmingly high. A coordinated tracking system of all states' child protective services (CPS) activity indicates the number of reports increased from 2.6 million in 1990 to 2.9 million in 1994 (English, 1998) and has remained relatively steady since that time. The most recent data, now available for 1999, show that CPS agencies received referrals involving approximately 2,974,000 children that year (U.S. DHHS, 2001). In 1999, and consistent with past years, more than half of all child victims were victims of neglect (58.4%) and the next most frequent type was physical abuse (21.3%). Children are most likely to experience abuse or neglect by family members. In 1999, 87.3% of perpetrators were parents (U.S. DHHS, 2001).

Risk and Consequences of Maltreatment of Young Children

Empirical research has identified numerous economic and psychosocial factors associated with child maltreatment. In addition to the stress of extreme poverty, parental risk factors include personal childhood experiences of

maltreatment, poor mental and physical health, lack of social support, limited education, and limited knowledge of infant development (Belsky & Vondra, 1989; Brunquell, Crichton, & Egeland, 1981; Kotch, Browne, Dufort, & Winsor, 1999; Kotch, Browne, Ringwalt, Stewart, Ruina, Holt, Lowman, & Jung, 1995; National Research Council, 1993). The actual event and type of maltreatment are mediated by multiple influences; no single risk factor can predict child maltreatment. Multivariate models of etiology advanced by Belsky (1980) and Cicchetti and Rizley (1981) posit multiple, transactional relationships among characteristics of the caregiver, the child, and the psychosocial environment that can exacerbate or reduce risk. Complex models such as these are necessary to understand why seemingly similar risk conditions can result in dysfunctional parenting or in adequate care. For example, among adults maltreated as children, most manage to "break the cycle" (Egeland, Jacobvitz, & Sroufe, 1988) and do not go on to maltreat their own children. Prospective studies estimate that the rate of intergenerational transmission of abuse is approximately 30% (Egeland, 1993) to 40% (Kaufman & Zigler, 1993).

Studies in developmental psychopathology have made a significant contribution to identifying the social–cognitive processes involved parents' maltreating behavior (Cicchetti, 1990). We now know that maltreatment is often the result of a parent's inability to cope with his or her own stresses and feelings rather than a willful decision to harm a child (Cantos, Neale, O'Leary, & Gaines, 1997; Sanders & Brown, 1997). Since most parents under stress do not respond by harming their children, it appears that dysfunctional parents cope with frustrating or irritating situations in excessively harsh or inappropriate ways. Pianta, Egeland, and Erickson (1989) as well as others (e.g., Aber & Zigler, 1981) suggest that maltreating parents have difficulty understanding the needs and intentions of their children as separate and more immediate than their own developmental and interpersonal struggles.

Studies of the effects of maltreatment have documented adverse consequences on all aspects of young children's development including physical, cognitive, emotional, and social functioning (Cicchetti, 1990). The negative effects can be severe and long-lasting: children who survive maltreatment are likely to experience serious emotional problems including depression, aggression, and substance abuse; low cognitive achievement; and poor school performance (Briere & Elliot, 1994; Crouch & Milner, 1993; Feldman, Salzinger, Rosario, Alvarado, Caraballo, & Hammer, 1995; Muller & Lemieux, 2000; Prino & Peyot, 1994; Silverman, Reinherz, & Giaconia, 1996). Studies of differential effects by type of maltreatment report both specific and generalized negative effects. For example, longitudinal studies show that neglect, the most common form of maltreatment, is related to avoidance of attachment figures in infancy (Egeland & Sroufe, 1981; Carlson, Cicchetti, Barnett, & Braunwald, 1989) and impaired social competency, behavior control, self-esteem, and problem-solving skills at preschool age (Egeland, Sroufe, & Erickson, 1983).

Prevention Strategies

The high prevalence and serious consequences of child maltreatment, combined with what is known about identifiable and modifiable risk factors, have led to the creation of numerous preventive intervention programs (Donnelly, 1991). Typically, community-based programs for parents of infants and toddlers work toward the goal of preventing maltreatment by providing parents with education and support. Prevention programs intended for all parents are considered "universal" in scope (Gordon, 1983; Mrazek & Haggerty, 1994). Examples include media campaigns about reducing violent behavior (e.g., American Psychological Association & American Academy of Pediatrics, 1995) and parent-to-parent support groups such as PEPS (*Program for Early Parent Support,* 2000, http://www.pepsgroup.org). Interventions designed for families considered to be at elevated risk for maltreatment are described as "selective" or "indicated" programs (Gordon, 1983; Mrazek & Haggerty, 1994). For families with very young children, the difference between selective and indicated programs is a subtle one; the term *indicated* usually describes efforts to prevent reoccurrence of maltreatment of younger children or improve the parenting behavior of a depriving caregiver. Well-conceived programs for high-risk families tend to be more intensive, of longer duration, and more expensive than universal programs (Schorr, 1988). Beyond this, programs differ widely in terms of setting, timing, content, goals, and professional training of the interventionist (Barnard, Morisset, & Spieker, 1993).

Perhaps in part because of the variability among programs concerned with maltreatment prevention, relatively little is known about their effectiveness. A recent meta-analysis of 56 programs for parents and children up to age 12 years reported greatest benefits from "proactive" programs (i.e., universal or selective approaches) that began prenatally or at birth and provided services for more than 12 visits or greater than 6 months (MacLeod & Nelson, 2000). Examples of successful prevention programs in the United States include a nurse home-visitation program for young, first-time mothers with low social support (i.e., Olds, Henderson, Chamberlin, & Tatelbaum, 1986; Olds, Eckenrode, Henderson, Kizman, Powers, Cole, Sidora,

Morris, Pettitt, & Luckey, 1997) and group programs that offer parent education and support along with center-based child care and early learning activities (i.e., Wasik, Ramey, Bryant, & Sparling, 1990). These exemplary programs are unusual in that they combine comprehensive services with rigorous outcome evaluation. Taken together, their results show that it is possible to reduce the risk of physical and emotional harm and improve the quality of parent–children interaction through sensitive and well-timed intervention. Although intensive models of preventive intervention such as these are gaining in use, less expensive, shorter-term parent education programs remain a more readily available resource in the United States.

Parent Education as a Prevention Strategy

Short-term community-based parent education programs are a common component of service plans for abusive and potentially abusive parents (Berliner & Wheeler, 1987; Cuomo, 1988; Halpern, 1995; National Advisory Mental Health Council, 1990). Depending on the level of risk to the child, a parent's attendance to parenting groups can be urged by health or social service providers or mandated by family court. Despite their widespread use, there are few studies of the effects of education programs for high-risk or abusive parents. Published evaluations that do exist are generally favorable and report positive influences on parent's self-reported stress, knowledge, and attitudes toward child rearing and the perception of their child's behavior as troublesome (e.g., Fennell & Fishel, 1998; Gorzka, 1999; Telleen, Herzog, & Kilbane, 1989; Wolfe, Edwards, Manion, & Koverola, 1988). Less is known about the potential of group-based education to change actual parenting behavior even though this is a key intervention goal.

The purpose of this study was to evaluate whether a relatively brief and inexpensive education program could benefit parents and young children at risk for maltreatment by alleviating parental stress and improving parent–child interaction. The research design was quasi-experimental. The effect of the intervention was evaluated from three perspectives. The first, a test of selective attrition, assessed whether the program was able to attract and maintain the participation of very high-risk parents. The second examined baseline-to-postintervention changes in self-reported parenting stress and observed parent–child interaction for the group as a whole and within three independent subsets of participants. Third, additional analyses examined a potential dose–response relationship in the magnitude of change among parents who dropped out early versus those who completed the entire 8-week intervention.

METHOD

Program Overview

The parenting program was a health-clinic-based selective intervention for high-risk parents of children birth to 3 years of age. The program was guided by a conceptual framework that places child abuse and neglect in the larger context of the caretaking environment. Parent participants were not selected to participate because maltreatment had been detected, but because of individual and family characteristics that increase the probability of parenting difficulties and in the extreme, child maltreatment. Risk indicators most common among program families reflected lifelong hardship including poverty, lack of social support, limited education, substance abuse, and intergenerational patterns of domestic violence and childhood maltreatment. The goal of the parenting program was to lessen insensitive, inconsistent parenting by identifying circumstances that place young children at risk and provide anticipatory guidance, support, and skills training to parents before their child is harmed.

The program was offered three times per year through three inner-city pediatric clinics. The data reported here were accumulated from 12 series of classes over 4 years, from Fall 1995 through Spring 1999. Each series consisted of eight 2-hr class sessions held once per week. The classes took place in small conference rooms at the clinics during daytime hours. Free transportation by taxi or city bus was provided to and from all classes. On-site child-care was available for children under 6 years of age.

Sites and Study Groups

Three inner-city pediatric clinics that serve low-income children participated in the program. The clinics were within a few miles of each other and located in one of the poorest areas within the city limits. Parent participants' data were combined to form three study groups used for the analyses presented in this report. The three study groups are a health department group, a children's clinic group, and a residential drug treatment group; the groups are denoted HD, CC, and DT, respectively.

The HD site was a decentralized health clinic owned and operated jointly by the city and county health departments. The other two clinic sites were university-affiliated health care sites; one was a neighborhood children's health center and the other was a children's clinic within a major teaching hospital. For purposes of data analysis, these two sites were combined and are referred to as "children's clinics" (CC). Due to reasons unrelated to this study, the community hospital withdrew after the first year of the study period.

The third study group is a subgroup of the parents who attended classes at the neighborhood children's health center. Midway through the first year of the study, women enrolled in a nearby residential drug treatment program began attending the program. Although they attended classes with other community-based mothers, because of their unique circumstances, their data were treated separately; this subgroup is denoted residential "drug treatment" (DT).

Recruitment and Eligibility for Study Inclusion

Parents learned of the parenting program in several ways. Social service, health care, and WIC providers at the clinic sites were primary sources of referral. Other parents contacted the clinics directly in response to announcements in a free newsletter or posters and fliers at the clinic sites. Some of these parents chose the program to fulfill part of a CPS plan. Parents were not asked to disclose whether their enrollment was self-initiated or whether they selected the program at the recommendation of CPS.

Program enrollment was not tied to the receipt of health care at the participating facilities. No parent was turned away from parenting services, yet not all parents were eligible for study inclusion. The eligibility criteria required that parents had frequent (at least weekly) contact or reside with a child between 1 and 36 months of age. Adults who attended the program but were not eligible for data collection included friends and relatives of the parent participants (e.g., coparents and other family members), noncustodial parents, pregnant women, and parents of children older than 3 years of age. Eligible parents completed a study consent form during their first class session. The study procedures were approved by the Human Subjects Review Board associated with each of the three clinic sites.

The plan was to enroll about 8–10 parents in each class group; class size was kept to a maximum of 12 families at each site. Based on a count of parents who were eligible and consented to participate in the data collection activities, the average number per group was 8; the range was 5 to 11. The total study sample was 199 primary caregivers.

Intervention

Parents who completed the program received approximately 16 hr of intensive interaction with an interdisciplinary pediatric team consisting of a nurse specialist (a clinical pediatric nurse or public health nurse) or early childhood educator, a social worker, and a registered nutritionist. The core teaching staff held master's degrees in nursing and had extensive experience conducting parenting classes. The curriculum was based on the Systematic Training for Effective Parenting (STEP) program (Dinkmeyer & McKay, 1976). STEP is a skills-training program influenced by psychologist Alfred Adler's view that social–ecological forces within the family influence parent–child interaction and child development. It has been used widely with "typical" parents (Burnett, 1988) and recommended as an intervention strategy for abusive parents as well (Hitchcock, 1987). Just recently, STEP was field tested with 18 abusive parents of school-age children by Fennell and Fishel (1998) who reported a positive effect of the program on parents' perceptions of their children and a decline in scores on a screening inventory for potential physical abuse.

In the present study with parents of infants and toddlers, the curriculum drew from the STEP program "Parenting Young Children" (Dinkmeyer, McKay, Dinkmeyer, Dinkmeyer, & McKay, 1997). The goal was to address, directly, the parent–child interaction process. Topics included day-to-day parental role functioning along with techniques for skill building in problem solving, anger management, communication, and relationships with adults (i.e., spouse, family, and friends) and where to turn for additional support. Discussion of parenting style recognized influences of culture and lifestyle as well as personal goals. Information about child growth and development included milestones of the first 3 years of life, individual differences and temperament, and the goals and intentions of behavior and misbehavior. Additionally, two class sessions were devoted to specific discipline techniques: how to structure the young child's environment to minimize hazards and misbehavior, the natural and logical consequences of different forms of discipline, when and how to use "time out," and a debate about the pros and cons of spanking children.

Program-specific modifications to the STEP program were added to provide information about the appropriate use of medical care and common concerns of the parents. For instance, a popular session, "How to handle CPS," provided information on parental rights and the legal authority of CPS. In addition to these topics, each clinic's nutritionist joined every class during the mealtime to lead discussions about infant feeding, maternal and infant nutrition, and growth. For all topics, parents' cognitive learning was reinforced through skill-building exercises, group discussions, take-home materials and activities, and videotaped illustrations of successful parenting.

Evaluation Strategy

The evaluation employed a quasi-experimental design. A nonrandomized design was chosen because participating clinics would not accept an evaluation plan that delayed

or withheld services to parents in need, nor were alternative programs available to provide a randomized group contrast. Process and outcome analyses consisted of three phases. The first addressed the question of program engagement. Specifically, would high-risk parents enroll in this short-term group program and, if so, what personal and risk characteristics differentiated those who dropped out early from parents with continued attendance. Second, the effect of the intervention was determined by assessing change in self-reported parenting stress and observed parent–child interaction over the program period. Analyses contrasted change overall and within each of three parent subgroups (i.e., HD, DT, and CC). Finally, linear regression was used to evaluate the association between class attendance and incremental improvement over time.

Measures

At the first class session, parents completed a study consent form and an intake questionnaire. The intake questionnaire asked for sociodemographics and information about current sources of support and conflict. In addition, four questions asked parents whether they had experienced physical abuse, sexual abuse, neglect, or emotional abuse as children. The questions about childhood maltreatment were direct, included brief examples, and could be answered *yes* or *no*.

Outcome measures included the Parenting Stress Index/Short Form (PSI/SF; Abidin, 1995), the Home Observation for Measurement of the Environment (HOME) Inventory (Caldwell & Bradley, 1978), and the NCAST scale (*NCAST Caregiver/Parent–Child Interaction Teaching Manual,* 1994). Each is described below. Parents completed the PSI/SF at the first class session and again during the last class session. Public health nurses certified and reliable in the use of the evaluation tools completed the Teaching and HOME assessments in the parents' homes within 2 weeks of the start of parenting classes and within 4 weeks following the end of the class series. The home-visiting nurses knew that parents were enrolled in the parenting program, but were unaware of parents' actual attendance.

PSI/SF (Abidin, 1995). Program effects on parenting stress were evaluated in terms of baseline to postprogram changes on the PSI/SF. The PSI/SF is a self-report measure composed of 36 Likert scale items. The items are taken verbatim from a longer, 101-item version of the PSI. The PSI has been used as a screening tool and a measure of treatment outcome. It has been used with abusive and nonabusive parents and with families at risk for parenting problems. Ages of parents in the norming sample ranged from 16 to 61 years and children's ages ranged from 1 month to 12 years (Abidin, 1990); thus the PSI/SF is appropriate for use with this study's population.

A strength of the PSI/SF is that its subscales tap multiple sources of stress due to characteristics of the parent (e.g., sense of competence and depression), child temperament (e.g., demandingness, adaptability, mood), and the parent–child dyad (e.g., attachment and acceptability of child). In the present study, standardized item alphas for the overall score, parent, parent–child, and child domain scores at baseline were 0.97, 0.89, 0.96, and 0.91, respectively.

HOME (Caldwell & Bradley, 1978). The HOME measures aspects of an infant's environment associated with favorable early development: emotional and verbal responsiveness of the mother, avoidance of restriction and punishment, organization of the environment, provision of appropriate play materials, maternal involvement with the child, and opportunities for variety in daily stimulation. The HOME is based partly on observation and partly on a semistructured interview. The entire inventory consists of 45 binary choice items. In the present study, internal consistency of the total score at baseline, based on Cronbach's alpha, was 0.85. Higher HOME total scores indicate a more stimulating environment. Previous studies have used a cutoff score of 32 points to indicate low scores within the "worrisome" range of the HOME (Barnard & Hammond, 1989; Morisset, Barnard, & Booth, 1995).

Nursing Child Assessment Teaching scale (NCAST; Barnard, 1978). The NCAST Teaching scale describes parent–infant interaction during a mildly stressful teaching situation. The specific teaching tasks used for assessment are similar to motor items on standardized developmental scales such as the Bayley Scales of Infant Development and are appropriate for children from birth through age 3. The total score is composed of 73 items grouped into 50 items that reflect the parent's contribution to the interaction—sensitivity to the infant's cues, response to the child's distress, emotional growth fostering, and cognitive growth fostering—and 23 items that pertain to infant behavior—clarity of cues given to the parent and responsiveness to the parent.

A normative database of NCAST Teaching scale observations has been established with a sample of over 2100 mother–child dyads drawn from across the United States. Internal consistency, based on Cronbach's alpha, is reported to be high: 0.87 for the total score, 0.87 for the parent subtotal, and 0.81 for the child subtotal (*NCAST Caregiver/Parent–Child Interaction Teaching Manual,* 1994). In the present study, standardized item alphas for

TABLE 1. *Characteristics of Participants in the Total Sample and by Parent Subgroup*

	Total sample, *M* (*SD*) or %	Health department (HD), *M* (*SD*) or %	Drug treatment (DT), *M* (*SD*) or %	Children's clinic (CC), *M* (*SD*) or %	*p*
Range of cell sizes	$183 < n < 200$	$80 < n < 85$	$51 < n < 57$	$50 < n < 60$	
Sociodemographics					
Parent's sex (female)	94.9	93.9	100.0	91.2	0.093
White (vs. all other)	35.1	17.1	51.8	43.1	0.000[a]
Black (vs. all other)	32.5	32.9	23.2	41.4	0.129
Age (years)	27.55 (7.44)	24.94 (7.78)	30.71 (5.48)	28.21 (7.35)	0.000[a]
Schooling (years)	11.65 (2.26)	11.46 (2.30)	11.33 (1.90)	12.23 (2.44)	0.065
Government assistance (% yes)	68.9	57.5	92.9	59.6	0.000[b]
Married (% yes)	11.3	13.4	8.9	10.7	0.705
Sees coparent (% yes)	81.5	88.9	69.2	82.4	0.017[c]
Classes completed (of eight)	5.59 (2.17)	5.27 (2.24)	6.23 (1.56)	5.42 (2.46)	0.029[c]
Infant characteristics					
Age (months)	8.46 (8.68)	6.80 (7.61)	8.61 (8.27)	10.68 (10.04)	0.034[d]
Parity (% first born)	54.2	68.3	24.1	62.5	0.000[b]
Range of cell sizes	$141 < n < 187$	$69 < n < 78$	$33 < n < 55$	$37 < n < 56$	
Parent's maltreatment as a child					
None (vs. any)	37.7	38.9	22.5	48.9	0.039[e]
2+ types (vs. 0 or 1)	39.0	30.6	60.0	34.0	0.006[b]
Parenting at baseline					
Parenting stress (PSI)	77.14 (27.54)	85.72 (28.67)	65.31 (16.94)	77.04 (30.43)	0.000[c]
Environment (HOME)	29.61 (7.02)	25.50 (6.42)	32.38 (4.58)	34.71 (5.15)	0.000[a]
Teaching (NCAST total)	49.92 (8.92)	45.90 (8.40)	51.46 (6.56)	55.51 (8.63)	0.000[a]

Note: Significant post hoc comparisons: [a]HD vs. DT, CC; [b]DT vs. HD, CC; [c]HD vs. DT; [d]HD vs. CC; [e]DT vs. CC.

the total, mother, and infant scores from the baseline observations were 0.85, 0.80, and 0.81, respectively. The Teaching scale has been used widely by clinicians and researchers (Barnard, Hammond, Booth, Bee, Mitchell, & Spieker, 1989). Teaching total scores are known to differ for parents of higher and lower education and between abusing and nonabusing mothers. Total scores below 47 points, with infants less than 13 months of age, and below 54 points with older children are indicative of potential problems with the caregiver–child interaction (*NCAST Caregiver/Parent–Child Interaction Teaching Manual,* 1994).

RESULTS

Psychosocial Risk and Parenting Skills at Baseline

The intervention was designed for parents of infants and toddlers at risk for maltreatment due to a parent's difficult life circumstances and lack of financial and personal resources to cope with the demands of a young child. Table 1 describes the study sample in terms of these parental risk factors. As a group the parents were poor (68.9% relied on government assistance), had low school achievement (the average was less than high school graduation), and were unmarried (88.7%). Relatively few adolescent parents attended the program; approximately half of all parents had older children. The average age of the child for whom the parent sought parenting support was less than 1 year; the range was from newborn to 36 months of age. Although few parents were married, most (81.5%) reported that their infant saw his or her coparent at least weekly. The majority, but not all, parent participants were women (95%).

In addition to socioeconomic hardship, nearly two thirds of the parents (62.3%) reported childhood experiences of maltreatment (i.e., physical punishment leading to injury, sexual abuse, neglect, or emotional abuse). Sixty percent reported two or more types of abuse or neglect. Perhaps not surprisingly, many participants reported feeling stressed in their role as parent as indicated by high scores on the PSI/SF. At baseline, the average total score was 77.14. Twenty-three percent scored in the range of clinical concern due to psychological distress, 24% scored above the cutoff due to dysfunctional parent–child relationships, and 14% saw their child's mood and activity level as a significant

source of stress. In addition to those who admitted high levels of stress, 27 parents (14.5%) responded to items on the PSI/SF in a way that is characteristic of someone "faking good" or an absent parent who is not familiar with their child (Abidin, 1995).

Observational assessments conducted by public health nurses in the home corroborated the high-risk nature of the study sample. Scores below recognized cutoffs were considered general indicators of parenting problems and potentially harmful situations. In this study over half of the parents and children were at high risk based on one or both observational assessments. At baseline, 61% of families earned HOME scores within the high-risk range, sample M (SD) = 29.61 (7.02), and 37% earned Teaching scores in the range of clinical concern, sample M (SD) = 49.92 (8.92).

In addition, it was possible to review CPS records of parents enrolled in the second half of the study period. Of these, 70 parents consented to the study procedures. The record review showed that 22 of 70 (31%) had CPS cases opened before or during their participation with the parenting program. The most common reasons were drug use during or postpregnancy and failure to provide adequate supervision of their children. CPS involvement was not unique to any one of the three study groups but was more common among women in the drug treatment group.

Comparison of Participants by Group

Univariate tests were used to compare the three parent groups (health department, children's clinic, and residential drug treatment) on sociodemographics, maltreatment history, and baseline parenting ability. Tabled and reported statistics reflect parametric tests of continuous variables and chi-square tests of categorical variables. When the omnibus test was statistically significant, post hoc comparisons by Scheffe or chi-square were conducted to determine significant differences between groups.

Analyses of the sociodemographic variables revealed significant differences in parents' race, age, poverty status, and number of class sessions completed (see Table 1). The pattern was that the residential drug treatment group included proportionately more European American women (51.8% of the DT group were European American), more older mothers, more women who relied on government financial assistance, and fewer who saw the father of their baby on a regular basis. Also, women in the residential drug treatment program completed slightly more parenting sessions than parents in the other two groups. Children of parents in the three groups differed in terms of age and parity. Children of parents in the health department group were younger on average than those in the other two groups. Proportionately more of the women in drug treatment had other, older children.

Well over half of parents in each group reported that they had been abused or neglected as children by their caregivers. Childhood maltreatment was most common among mothers in the drug treatment program; 78% reported experiencing at least one type of maltreatment and 60% reported experiencing two or more types (i.e., physical harm, sexual abuse, neglect, or emotional abuse).

Although sociodemographic disadvantage and childhood maltreatment were more common within the drug treatment group, assessments of self-reported parenting stress and observed parent–child interaction showed greater parenting risk among those in the health department group. Their average score on the PSI/SF was 20 points higher (indicating more stress) than parents in the drug treatment group. Also, they scored significantly lower on the HOME and Teaching scale than either the drug treatment or the children's clinic groups.

Program Attrition

Despite efforts to maintain parents' involvement through the choice of curriculum, provision of transportation, on-site child care, and a meal, program attrition was relatively high. The median number of classes attended was six of eight. Fourteen percent of parents attended only one or two classes, 66% attended three to seven, and 20% attended all eight classes. The reasons for attrition are not completely known. For some, attendance was interrupted by family tragedies including serious accidental injuries and deaths; others moved out of the service area during the program period. A few parents dropped out due to positive changes such as the return to school or a new job. Parenthetically, all parents who did not complete the program within a single class series were invited to finish the program in the future and many did return.

The relatively large number of families who dropped from the program makes it important to determine if those who remained differed from those who did not. Chi-square and t tests were used to evaluate the presence of selective attrition. The results showed no significant difference between parents who dropped out early (after one or two classes) versus those who completed three or more classes in terms of baseline scores on the PSI/SF or the Teaching scale. The groups were significantly different on the baseline HOME score; however, the average score of each group was well within the high-risk range (Table 2). Comparisons of family demographics and psychosocial risk characteristics showed that parents who dropped out early were fairly similar to other parents in terms of ethnicity, age, education, and

TABLE 2. *Associations Between Parental Characteristics and Program Attrition*

	One or two of eight sessions		Three or more of eight sessions		
	M (*SD*) or %	*n*	*M* (*SD*) or %	*p* value	*n*
Sociodemographics					
Parent's sex (female)	92.3	26	95.3	169	0.626
White (%)	23.1	26	36.9	168	0.169
Black (%)	42.3	26	31.0	168	0.249
Age (years)	25.92 (7.81)	26	27.80 (7.37)	169	0.407
Schooling (years)	11.96 (2.54)	25	11.60 (2.21)	165	0.540
Government assistance (% yes)	61.5	26	69.5	167	0.393
Married (% yes)	0	26	13.1	168	0.049
Sees coparent (% yes)	91.7	24	80.0	160	0.259
Infant characteristics					
Age (months)	6.92 (8.57)	26	8.70 (8.70)	168	0.295
Parity (% firstborn)	76.9	26	50.6	166	0.012
Parent's maltreatment as a child					
Neglect (% yes)	15.4	26	32.7	168	0.073
Emotional abuse (% yes)	20.8	24	48.8	160	0.010
Physical injury (% yes)	20.8	24	32.7	159	0.242
Sexual abuse (% yes)	19.2	26	31.5	168	0.202
Parenting at baseline					
Parenting stress (PSI)	82.72 (35.59)	23	76.33 (26.75)	159	0.300
Environment (HOME)	26.00 (6.33)	17	30.10 (6.99)	125	0.023
Teaching (NCAST total)	46.77 (8.84)	17	50.31 (8.89)	140	0.123
Residential program (vs. % community)	0.07	28	0.32	171	0.008

Note: Chi-square or Fisher's Exact tests were used to compare the groups on nominal-level variables; *t* tests were used with continuous variables.

poverty status. The groups differed in that parents who dropped out were more likely to be parenting their first child and less likely to be married. In addition, parents who dropped out early were less likely to report having been maltreated as children; however, group differences were statistically significant only for emotional abuse (21% vs. 49%, respectively, $p = 0.01$). Finally, compared with community-based parents, fewer women from the residential drug treatment program dropped out early. The residential program was a highly structured living situation that promoted parent participation by urging attendance, integrating the program in its weekly schedule, and providing mothers transportation by van.

Baseline to Postsession Changes in Parenting

All enrolled parents were eligible for postprogram home assessments regardless of their actual program attendance; assessments at baseline and following the program period were obtained for 72% of the total sample. Fewer sets of self-reported parenting stress scores were available because the second PSI/SF form was completed in class during the last session of each series. If parents dropped before class 8, or were unable to attend class 8, they did not complete the second PSI/SF.

Paired *t* tests were used to compare baseline to postsession change for the sample as a whole and within the three study groups. All parents were included in this analysis regardless of their actual class attendance. The justification is similar to that of analysis by "intention to treat" used with randomized designs (Hulley & Cummings, 1988). Here, by analyzing all subjects, the results more closely estimate the average change that could be expected for groups of parents under real-world conditions, including conditions that can interfere with parents' ability to attend eight weekly class sessions.

For the total sample, there was statistically significant improvement as measured by each of the three outcome assessments (see Table 3). Changes from baseline values included an average decline of 8.19 points in overall parenting stress, an increase of 1.86 points in the HOME scale, and an increase of 3.70 points on the Teaching scale. These improvements translate to effect sizes of 0.42, 0.26, and 0.45, respectively, and indicate a shift in

TABLE 3. *Baseline to Postsession Change in Parenting Ability for the Total Sample and by Parent Subgroup*

	Total sample mean change (*n*), *t* value significance	Health department (HD) mean change (*n*), *t* value significance	Drug treatment (DT) mean change (*n*), *t* value significance	Children's clinic (CC) mean change (*n*), *t* value significance
Self-reported parenting stress				
Overall stress (PSI)	−8.19 (122)	−7.24 (53)	−6.17 (35)	−11.77 (34)
	−4.17***	−2.59*	−3.60***	−2.23*
Parent score	−2.16 (125)	−1.52 (54)	−3.57 (37)	−1.62 (34)
	−3.03**	−1.50 *ns*	−3.75***	−0.91 *ns*
Parent–child score	−3.06 (123)	−2.47 (54)	−1.11 (35)	−5.98 (34)
	−3.83***	−2.66**	−1.98 *ns*	−2.53*
Child score	−2.36 (122)	−2.01 (53)	−1.13 (35)	−4.17 (34)
	−3.08**	−1.67 *ns*	−1.18 *ns*	−2.38*
Observed parenting ability				
HOME (total)	+1.86 (132)	+1.84 (68)	+1.09 (32)	+2.69 (32)
	+5.92***	+5.26***	+1.51 *ns*	+3.47**
Teaching (total)	+3.70 (143)	+4.17 (71)	+4.11 (38)	+2.27 (34)
	+6.69***	+6.26***	+3.36**	+1.78 *ns*
Parent's score	+2.25 (143)	+2.82 (71)	+1.55 (38)	+1.85 (34)
	+5.49***	+6.41***	+1.62 *ns*	1.86 *ns*
Child's score	+1.45 (143)	+1.35 (71)	+2.55 (38)	+0.41 (34)
	+4.65***	+2.88**	+4.46***	+0.76 *ns*

*$p \leq 0.05$; **$p \leq 0.01$; ***$p \leq 0.001$.

the distribution of scores from baseline to postintervention of between one quarter (0.25) and one half (0.50) of 1 *SD*.

Interestingly, the pattern of improvement within each outcome domain differed by parent group. For example, on the PSI/SF, parents in both community-based groups (HD and CC) reported significant improvement due to decreased stress in the parent–child relationship. In addition, parents in the children's clinic group felt less stress due to the temperament and behavior of their child (−4.17 points). Only mothers in the drug treatment group reported a significant decline in parenting stress due to their feelings about themselves and about themselves as parents. The magnitude of change, −3.75 points, was highly statistically significant.

There was a small but statistically significant increase in the average HOME scores of families in the two community-based groups, but not within the drug treatment group. In contrast, the pattern of improvement within the two community groups differed on the Teaching scale. The health department group showed significant gain in the parent, infant, and Teaching total scores; the gain was smaller within the children's clinic groups and did not reach statistical significance. Teaching scores of mother–infant dyads in the drug treatment group improved also, but for this group, the area of greatest increase was the infant's subscore (+2.55) points.

Association Between Number of Class Sessions Completed and Improvement over Time

Hierarchical regression analysis was used to examine the strength of the association between class attendance and improvement in the three outcomes of interest: parenting stress (PSI/SF), quality of the home (HOME), and quality of parent–child interaction during teaching (NCAST). The purpose of this analysis was to increase the internal validity of the study results by ruling out a simple testing threat. That is, if improvement from baseline to the postsession scores was due to parents' familiarity with the assessments or due to the nurse evaluators' familiarity with the families, and unrelated to program attendance, there is no reason to expect greater improvement among parents who attended more of the class sessions (Cook & Campbell, 1979).

Each hierarchical model consisted of four steps: (1) Step 1 estimates the independent effects of individual and familial risk characteristics on the postsession score; (2) Step 2 adds the parenting class group (drug treatment vs. not); (3) Step 3 adds the baseline PSI/SF, HOME, or Teaching score to control for individual differences prior to the intervention; and (4) Step 4 adds the number of class sessions completed (one through eight of eight sessions) to the model. The results, displayed in Table 4, showed a positive effect of program attendance on each of the three outcome scores after controlling for individual differences in intake risk, class group, and baseline

TABLE 4. *Hierarchical Regression Models of the Association Between Attendance and Intervention Outcomes*

	Model 1,[a] parenting stress		Model 2,[b] HOME total		Model 3,[c] Teaching total	
	R^2 total	R^2 change	R^2 total	R^2 change	R^2 total	R^2 change
Step 1: Government assistance, father involvement, maternal education, parity, and mother maltreated as child	0.11	0.11†	0.06	0.06 *ns*	0.14	0.14**
Step 2: Parenting group (drug treatment vs. not)	0.21	0.10***	0.10	0.03†	0.17	0.03***
Step 3: Baseline PSI, HOME, or Teaching	0.40	0.19***	0.75	0.66***	0.53	0.36***
Step 4: Class attendance (1 through 8)	0.41	0.00 *ns*	0.77	0.02*	0.57	0.04**
Adjusted R^2 total	0.35		0.75		0.53	

[a]For full model, $F(8, 89) = 7.57$, $p < 0.001$.
[b]For full model, $F(8, 96) = 40.05$, $p < 0.001$.
[c]For full model, $F(8, 107) = 17.49$, $p < 0.001$.
†$p < 0.10$; *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

parenting skill. The effect was statistically significant for gains in the HOME and Teaching scores but not the PSI/SF score.

In the regression of postsession HOME scores, the model estimated a gain of 0.46 points ($B = 0.457$) for each class completed. That is, after statistical control for the variables entered on Steps 1 through 3, the prediction equation estimated a gain of 2.7 points in the total HOME score with the completion of six classes (the group median) and a gain of 3.7 points with the completion of all eight classes. In the regression of the postsession Teaching scores, the estimate was 0.84 ($B = 0.838$) for each class completed, yielding estimates of 5.0 points gained with the completion of six classes and 6.7 points with the completion of all eight classes. The effect size associated with attending six classes is in the range of small to medium (estimated effect sizes = 0.39 and 0.61, respectively).

DISCUSSION

This study evaluated the effect of an 8-week support and education program for parents with children ages 1 to 36 months of age. Participants were considered very high risk for parenting problems and potential child maltreatment due to numerous life stresses including poverty, low social support, personal histories of childhood maltreatment, and substance abuse. On average, parents completed six of the eight classes. Attrition was not systematically related to sociodemographics or intake risk characteristics. Those who dropped early, after completing just one or two classes, were similar to those who stayed in terms of ethnicity, age, educational attainment, and poverty status. They differed in that those who dropped out early were more likely to be mothers of firstborn children, less likely to be married, and less likely to report having experienced emotional abuse as children.

Outcome evaluation using three different research measures and two different information sources showed significant effects of the program on the parent, the parent–child relationship, and the child. These benefits were documented for the group as a whole and within each of three high-risk subgroups: two community samples and a group of mothers and children in residential drug treatment.

For the group as a whole, parents reported a significant decline in parenting stress, especially stress emanating from the parent–child relationship. Home-based assessments completed by public health nurses who were not otherwise involved with the intervention indicated improvement in the quality of the family environment and in parent–child interaction. The magnitude of improvement was in the range of a small (0.26) to medium (0.45) effect size. According to Cohen's guidelines, a medium effect size, 0.50, is one large enough to be noticeable "to the naked eye," such as the magnitude of difference in height between 14- and 18-year-old girls (Cohen, 1977). With regard to the present study, parents' improvement over time was both statistically significant and clinically noteworthy, especially considering the high-risk nature of all participating families and the brevity and low cost of the intervention.

Findings from the subgroup analyses revealed an interesting pattern of effects among the mothers who lived with their children at a residential drug treatment facility. Unlike the two community samples, this group showed relatively little improvement on the HOME Inventory. HOME total scores were low at baseline and gained only 1

point on average over time, suggesting that the environment of the residential facility was less than optimal for young children's social and cognitive development and yet, perhaps, parents had relatively little power to change it. Greater consideration should be given to the needs of children living within adult-focused treatment programs. Similar to other parents, mothers in the drug treatment group showed significant improvement in the PSI/SF; unlike the other groups, however, they showed the greatest decline in stress related to how they viewed themselves. Anecdotally, mothers in the drug treatment group commented that they appreciated the parenting program because it helped them realize that other parents were struggling too and that they were doing a "pretty good job." Perhaps an advantage of mixed-group parenting programs such as this is that they normalize some of the stress and guilt all parents, including parents in drug treatment, feel about themselves as parents.

The quasi-experimental design of this study leads one to wonder if the positive outcomes were due to the intervention per se or whether they could be the result of parents' familiarity with the assessment tools, maturational trends, or the nurse's familiarity with parents whom she met (only) once at the baseline home visit. To address these possibilities, hierarchical regression was used to assess the strength of the association between number of class sessions attended and postsession parenting scores. After statistical adjustment for variation in intake characteristics of the parents and their baseline PSI/SF, HOME, or Teaching scores, there remained differences favoring those who attended more of the parenting class sessions. The differences were statistically significant for changes in the HOME and Teaching scores and were comparable in magnitude to that of other more intensive intervention programs designed to prevent maltreatment and promote family wellness (MacLeod & Nelson, 2000).

Without follow-up data, it is not possible to judge possible long-term effects of the parenting program. Follow-up data are important, but admittedly difficult to collect. Pilot data from previous years showed approximately half the program families could not be located for follow-up assessments just 3 months after program completion. Given the establishment of Medicaid-managed care, future studies in the United States might be able to track long-term outcomes of clinic-based prevention services by working directly with parents' health care plans.

A final caution about the study findings is warranted. Although the effects of the intervention described here were impressive, some participants continued to have considerable problems with parenting during and following program completion. Often the most serious problems were related to parents' drug addiction and relapse. Realistically, short-term interventions such as this might not be strong enough for parents struggling with addiction or mental illness. For these parents, prevention strategies of greater complexity, longer duration, and greater expense might be necessary (Barnard et al., 1993). Indeed, universal, selective, and indicated strategies are linked conceptually; failure to respond to less-intensive interventions, such as the parenting program, could be used to identify individuals who require more comprehensive programs (Reiss & Price, 1996). An ongoing task of prevention research is to establish sufficient knowledge of the processes and outcomes of preventive interventions to make an optimal match between effective programs and clients in need.

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