

Evaluation of a Preventive Intervention for Maltreated Infants and Toddlers in Foster Care

CHARLES H. ZEANAH, M.D., JULIE A. LARRIEU, PH.D., SHERRYL SCOTT HELLER, PH.D., JEAN VALLIERE, M.S.W., SARAH HINSHAW-FUSELIER, M.S.W., YUTAKA AOKI, M.D., AND MICHELLE DRILLING, B.S.

ABSTRACT

Objective: To determine the effectiveness of an intervention designed to improve outcomes for infants and toddlers in foster care. **Method:** Records were reviewed for all children who were adjudicated as in need of care in a specific parish in Louisiana between 1991 and 1998. This period included 4 years before and 4 years after a comprehensive intervention was implemented. Children adjudicated between 1991 and 1994 were the comparison group, and those adjudicated between 1995 and 1998 were the intervention group. **Results:** After the intervention, more children were freed for adoption and fewer children were returned to their birth families than before the intervention. There was no difference in length of time in care before and after the intervention. With regard to the same child returning in a subsequent incident of maltreatment, relative risk reduction for the intervention group ranged from 53% to 68%. With regard to the same mother maltreating another child subsequently, relative risk reduction for the intervention group ranged from 63% to 75%. **Conclusions:** A comprehensive preventive intervention for maltreated infants and toddlers in foster care substantially reduced rates of recidivism but had no effect on length of time in care. *J. Am. Acad. Child Adolesc. Psychiatry*, 2001, 40(2):214–221. **Key Words:** foster care, infants, intervention.

Maltreatment of young children is a serious social and health issue in the United States and throughout the world. Young children are affected by all of the usual risk factors that compromise older children and adolescents, including family and social risk factors that are associated with maltreatment, in addition to the experiences of mal-

treatment itself. Nevertheless, there are reasons to believe that maltreatment in the early years is associated with even greater risks than maltreatment occurring at later ages.

For example, more children die from abuse/neglect during the first year of life than any other year throughout childhood (U.S. Department of Health and Human Services, Administration on Children, Youth and Families, 1999). The first 48 months of life accounts for 77% of childhood mortality from maltreatment, underscoring infants' and toddlers' disproportionate vulnerability to the physical risks of both abuse and neglect. In addition to elevated mortality, long-term developmental consequences from physical abuse, such as in shaken infant syndrome (Duhaime et al., 1996), and from neglect, such as in failure to thrive (Puckering et al., 1995), are examples of morbidities that have been documented almost exclusively in early childhood.

Beyond these physical effects, there are increasing data documenting the psychological and social sequelae associated with maltreatment in the early years. At its core, parent-child abuse or neglect represents a serious disturbance in the parent-child relationship. For children in the first 3 or 4 years, this relationship is of paramount importance in facilitating development and in protection from various

Accepted September 5, 2000.

From the Section of Child and Adolescent Psychiatry, Tulane University School of Medicine, New Orleans.

The intervention was supported by the Office of Community Services of the State of Louisiana, the Sisters of Charity, the Harris Foundation, the Greater New Orleans Foundation, the Louisiana Children's Trust Fund, and the Departments of Psychiatry of Tulane and L.S.U. Schools of Medicine. Preparation of this paper was supported in part by the "Early Experience and Brain Development" Research Network of the John D. and Catherine T. MacArthur Foundation.

The authors acknowledge Brenda Kelly and Leslie Tremaine for supporting and sustaining this project. Sue DuTreil and Danny Curtis also provided essential help. Sue Steib, Charlotte Frilot, and Mary Widmann all provided invaluable help with implementing the intervention. Charlotte Frilot and James Boulware helped the authors gain access to essential data. Finally, the authors thank all of the Infant Team clinicians and other personnel (especially Doris Hughes and Marilyn Jackson) who contributed to the project from 1995 to the present. Dr. Richard Dalton provided helpful suggestions about an earlier version of this paper.

Correspondence to Dr. Zeanah, Department of Psychiatry, Tulane University School of Medicine, Tidewater Building TB-52, 1440 Canal Street, New Orleans, LA 70112; e-mail: czeanah@tulane.edu.

0890-8567/01/4002-0214©2001 by the American Academy of Child and Adolescent Psychiatry.

environmental risk factors (Crockenberg and Leerkes, 2000; Sameroff and Emde, 1989; Zeanah et al., 1997).

Perhaps it is not surprising then that a host of adverse developmental consequences have been demonstrated in maltreated children in the first few years of life. Among the problems documented are dramatic increases in disorganized patterns of attachment, serious disturbances in social relatedness and emotion regulation, less autonomous and more conflicted interactions with mothers, problematic peer relations, more negative self-evaluations, and social communicative deficits in descriptions of internal states (reviewed by Cicchetti and Toth, 1995). Cicchetti and Toth (1995) have argued that these abnormalities reflect expectable disturbances in stage-salient developmental tasks in the first 3 years of life, all of which are known to be substantially related to the quality of the infants' primary caregiving relationships.

The major intervention implemented in the past 30 years for serious, and especially life-threatening, maltreatment in the Western world has been foster care. Foster care arose in part as an alternative to institutional care because a host of developmental problems known to be associated with institutional care of children were demonstrated (Provence and Lipton, 1962; Skeels, 1966). Even when care in institutions approached adequacy in terms of staffing levels and individualization, the lack of opportunity for young children to form selective attachments to particular caregivers, as is typical in institutions, was associated with long-term problems in children and adolescents raised there (Hodges and Tizard, 1989; Tizard and Rees, 1975).

Still, foster care as an intervention is problematic. Infants and toddlers in foster care are at increased risk for a plethora of problems, including cognitive, social, and behavioral abnormalities (Clyman, in press; Kaufman, 2000; Klee et al., 1997; Reems, 1999; Rosenfeld et al., 1997). Although many of these problems are believed to arise from the experiences of maltreatment that led to the foster care, there is widespread support for the notion that foster care itself may contribute to poor adaptation, at least for some children.

For this reason, social policy has emphasized the importance of achieving a "permanent plan" for children who have been removed from their families and placed in foster care. Recent federal legislation, the Adoption and Safe Families Act of 1997, mandates faster resolution of foster placement in order to implement a permanent plan, that is, to reunify children with their birth families,

transfer custody to a relative, or terminate parental rights and free them for adoption.

The purpose of this report is to describe the evaluation of an intensive intervention aimed at improving outcomes in young maltreated children in foster care. The program involves a unique partnership between university faculty with expertise in infant mental health and a public sector human services agency. This partnership facilitated application of contemporary infant mental health principles of a relational focus, a multidisciplinary approach, an intergenerational perspective, and a prevention orientation (see Emde et al., 1993), within the context of an agency providing comprehensive services for individuals with mental health problems, developmental disabilities, and/or substance use disorders.

The intervention has been described in detail elsewhere (Larrieu and Zeanah, 1998). Briefly, it was designed specifically to provide assessments and intervention to children younger than 48 months of age who are placed in foster care for abuse or neglect, and to their birth and foster families. The intervention, which begins only after legal adjudication establishing that the child has been maltreated, includes a phase of intensive assessment followed by a phase of intensive treatment, as described below.

The assessment phase, comprising an average of 15 to 20 hours of face-to-face contact with children and all of their important caregivers and contexts, is designed to characterize each of the child's important caregiving relationships, such as birth parent, foster parent, and child care provider. The assessment includes home- and clinic-based observations, standardized procedures and naturalistic observations, structured and unstructured interviews, and self-report measures. The assessment is used to identify strengths and weaknesses in children and families and to address the overarching question of what interventions will be necessary to return the children safely to their parents. The assessment phase culminates in a case conference for involved professionals, a feedback session for parents, and a letter to the juvenile court detailing specific findings and recommendations.

The intensive treatment phase involves implementation of the court-ordered case plan for the family. The intervention team attempts to define explicit treatment goals and to design specific interventions to help parents achieve those goals within a time frame that is reasonable for the children. The *sine qua non* of treatment goals is helping parents accept responsibility for their children's maltreatment. From this overarching goal, all other spe-

cific goals and interventions derive. Among other components, the intensive treatment phase often includes individual psychotherapy with parents, dyadic psychotherapy with parents and young children, medication, and crisis intervention. In keeping with our explicitly relational approach, we attempt to identify and remove barriers to what we believe is a biological predisposition for infants' attachment to their parents and for parents' caregiving behavior directed toward their young.

In this preliminary evaluation of the outcome of this intervention, we address three major questions. First, we determined whether the intervention changed types of permanent plan outcomes of young children in foster care. Second, we determined whether the intervention reduced the length of time that young children spent in foster care. Third, we determined whether the intervention reduced maltreatment recidivism, that is, subsequent incidents of maltreatment in the same child or in siblings.

METHOD

Setting

This investigation involved children younger than 48 months old at the time they came into foster care in a specific parish (county) in the greater New Orleans area between January 1, 1991, and December 31, 1998. According to the *Kids Count Data Book on Louisiana's Children*, between 1991 and 1998 the parish had a population of more than 450,000 people, roughly 65% European American, roughly 30% African American, and 5% other (Anonymous, 1996). In the parish, roughly 17% of the total population and 21% of children lived in poverty. Median family income in 1996 was \$38,300. Roughly 15% of live births were to adolescent mothers, and 8.8% of infants were low birth-weight. The infant mortality rate was 7.8/1,000 in 1996. More than 1,300 children were validated as having been maltreated and more than 400 children were in foster care in the parish in 1996.

Subjects

Children in foster care were divided initially into two groups: a comparison group (CG), who came into care before January 1, 1995, and an intervention group (IG), who came into care between January 1, 1995, and December 31, 1998. Only those children who were adjudicated as "in need of care" were included as subjects. Thus, between 1991 and 1994, there were 331 children younger than 48 months of age who were validated as abused or neglected and placed in foster care. The CG comprised the 145 children (43.8%) from this larger group who were adjudicated. Similarly, between 1995 and 1998, there were 299 children who were validated as abused or neglected and placed in foster care. Of these, 120 children (40.1%) were adjudicated. The IG comprised 95 of these children. Characteristics of the CG and the IG are described in Table 1. There were no significant differences between these groups in age (at time of foster care placement), gender, or ethnicity.

Although all children within the catchment area who were younger than 48 months at the time they came into foster care and who were adjudicated were supposed to receive the intervention, 25 children did not. This latter group comprised the nonintervention group

TABLE 1
Characteristics of the Intervention and Comparison Groups

	Intervention Group	Comparison Group
Cohort	1995–1998	1991–1994
No. of children	95	145
Age, months (SD)	21.8 (14.4)	19.2 (13.3)
Gender, % male	47	52
Ethnicity, %		
African American	58	57
European American	39	41
Other	3	2

(NIG). A review of Child Protective Services records indicated that 7/25 (28%) of these cases were not referred because they were in foster care too briefly, 7/25 (28%) were not referred because they occurred early in 1995 before Child Protective Services staff were fully aware of the need to refer children younger than 48 months to the intervention, 2/25 (8%) were not referred because they were quickly transferred to another juvenile court jurisdiction, and 9/25 (36%) were unexplained, that is, they were referral errors. Thus, even though the NIG was small and not determined by random selection, we included it as a comparison group because none of the families received the intervention, despite their eligibility for it.

Procedures

For the CG and the IG, Child Protective Services records and juvenile court records of all children younger than 48 months at the time that they came into care (between January 1, 1991, and December 31, 1998) were reviewed and data abstracted onto standardized data records. IG case records were reviewed for children between January 1, 1995, and December 31, 1998. Data obtained from the record review included age of the child at time of placement in foster care, gender and ethnicity of child, and dates of validation, adjudication, and permanent plan implementation. In addition, type of outcome (reunification, placement with a relative, termination of parental rights, and surrender) was documented. We identified all cases of recidivism, defined in two ways. Child recidivism was defined as the same child being validated as having been maltreated or adjudicated as in need of care in a subsequent incident, and maternal recidivism was defined as the mother having another child who was validated or adjudicated subsequently.

For purposes of tracking recidivism, it was important to use comparable periods of time for the CG and the IG. Thus, records of children taken into care between January 1, 1991, and December 31, 1994, were coded for recidivism only through December 31, 1995, and records of children taken into care between January 1, 1995, and December 31, 1998, were coded for recidivism only through December 31, 1999.

RESULTS

Results of this investigation are organized to address differences between the IG and the CG with respect to type of permanent plan outcome, length of time in foster care, and rates of recidivism.

Type of Permanent Plan Outcome

The first question was whether age, ethnicity, or gender of the child was related to type of permanent plan out-

come. None of these variables was related to type of outcome for the CG; however, ethnicity was related to outcome for the IG ($\chi^2 [df = 6, n = 95] = 16.48, p < .01$). An examination of the frequency table for the χ^2 analysis demonstrated that the difference in outcome based on ethnicity was with regard to the group of children whose parents surrendered their children to the state's custody. This was a small group overall, as only 8% of the IG children and 11% of the CG children were surrendered. Within the CG, 50% ($n = 8$) of the children were European American and 50% ($n = 8$) were African American. Within the IG, 88% ($n = 7$) of the children were European American and 12% ($n = 1$) were African American.

The second question was whether the frequency rates of outcome type (i.e., reunification, termination, surrender, and placement with relatives) differed between the CG and the IG. A χ^2 analysis demonstrated that the two groups were different ($\chi^2 [df = 3, n = 240] = 16.13, p < .01$). An examination of the frequency table indicated that this difference was due to the fact that the IG had more than twice as many terminations as the CG and the IG had significantly fewer reunifications (Table 2).

Length of Time in Foster Care

The first question with regard to length of time in care was whether age, ethnicity, or gender of the child was related to length of time in foster care. None of these variables was related to length of time in care in either the CG or the IG.

The second question was whether children in the IG were in foster care for a significantly shorter time than children in the CG. The CG children were in foster care for a mean of 18.7 months, with a range of 2 to 67 months. In contrast, children in the IG were in foster care for a mean of 20.5 months, with a range of 8 to 45 months. Differences between the CG and the IG were not statistically significant.

The third question was whether length of time in care was related to type of outcome. A multivariate analysis

of variance (MANOVA) for the CG was statistically significant ($F_{3,141} = 6.27, p < .001$). A post hoc Tukey test for the CG revealed that children whose parents' rights were terminated remained in care significantly longer (mean = 28.6 months) than both children placed with relatives (mean = 16.6 months) and children reunified with their parents (mean = 15.9 months). For the IG, a MANOVA demonstrated that length of time in care also was significantly different for the four outcome types ($F_{3,89} = 9.75, p < .001$). A post hoc Tukey test demonstrated that both surrender (mean = 27.5 months) and termination (mean = 23.2 months) were significantly longer than reunification (mean = 17.0 months) and placement with relatives (mean = 15.1 months). See Table 3 for the means and standard deviations.

Not surprisingly, when cases from the CG and IG were considered together, significant differences remained between type of outcome and length of time in care ($F = 5.58, p < .001$). Post hoc tests indicated that children whose parental rights were terminated spent more time in foster care (mean = 25.5 months) than children who were reunified with their parents (mean = 18.3 months) or those placed with relatives (mean = 18.1 months).

Recidivism

We tracked recidivism for the CG through the end of 1995 and for the IG through the end of 1999. As noted, to make the length of time comparable for the IG and the CG, we used a 4-year period for those entering care in 1991 and in 1995, a 3-year period for those entering care in 1992 and 1996, a 2-year period for those entering care in 1993 and 1997, and a 1-year period for those entering care in 1994 and 1998. We identified two different types of recidivism. First, we examined the number of times that the same child was validated or adjudicated in a subsequent instance of maltreatment (child recidivism). Second, we examined whether the mother was validated or adjudicated for another child in a subsequent instance of maltreatment (maternal recidivism). For all

TABLE 2

Frequency of Outcome Type by Group Membership

Outcome Type	Intervention Group ($n = 95$)	Comparison Group ($n = 145$)
Reunification	34.7	49.0
Termination	44.2	20.7
Surrender	8.4	11.7
Relative placement	12.6	18.6

Note: Values represent percentages within sample.

TABLE 3

Group Means (Standard Deviations) for Length of Time (Months) in Care by Outcome Type

Outcome Type	Intervention Group	Comparison Group
Reunification	17.0 (6.7)	15.8 (12.0)
Termination	23.2 (6.7)	29.6 (13.7)
Surrender	27.5 (10.8)	19.0 (14.1)
Relative placement	15.1 (5.7)	16.6 (18.1)
Overall	20.5 (7.9)	18.7 (14.6)

types of recidivism, we calculated relative risk reduction, using the following formula:

$$\frac{\text{Expected occurrence} - \text{observed occurrence}}{\text{Expected occurrence}}$$

or

$$\frac{\text{CG recidivism} - \text{IG recidivism}}{\text{CG recidivism}}$$

Child Recidivism

In the CG, we found that 19/145 (13.1%) children were validated as maltreated in a subsequent incident of maltreatment. We also found that 14/145 (9.7%) were adjudicated as "in need of care" in a subsequent incident. In contrast, we found that 4/95 (4.2%) children in the IG were validated in a subsequent incident of maltreatment and 3/95 (3.2%) children were adjudicated as "in need of care" in a subsequent incident. Thus, the relative risk reduction for the IG was 67.9% for validation of the same child in a subsequent incident of maltreatment and 67.0% for subsequent adjudication of the same child in another incident of maltreatment.

As a more conservative test of risk reduction, we examined recidivism only in cases of children returned to their birth parents and those placed with relatives. Although it is hardly impossible for children to be maltreated while in foster care, we assumed that it was more likely that maltreatment would occur again in those returned to their birth parents or placed with relatives. In fact, all of the documented cases of recidivism in the IG occurred in children returned to their birth parents or placed with relatives. In the CG, 71 children were returned to parents and another 27 were placed with relatives. The recidivism rate for subsequent validation for these 98 children was 19/98 (19.4%) and for subsequent adjudication in these children was 14/98 (14.3%). In the IG, by contrast, 31 children were returned to parents and 14 were transferred to relatives. Thus, in the IG, the recidivism rate was 4/45 (8.9%) for subsequent validation and 3/45 (6.7%) for subsequent adjudication. The relative risk reduction for recidivism with regard to subsequent validation was 54%, and the relative risk reduction for recidivism with regard to subsequent adjudication was 53%.

As the most conservative test, we examined recidivism only in children returned to their parents. We found a recidivism rate of 18/71 children (25.4%) in the CG for subsequent validation and 14/71 children (19.7%) for subsequent adjudication. In the IG, we found rates of 4/33 children (8.9%) for subsequent validation and

3/33 children (6.7%) for subsequent adjudication. This yielded a relative risk reduction of the intervention of 52.4% for subsequent validation and 53.8% for subsequent adjudication.

Although the numbers were small, we also examined child recidivism in the NIG. For young children who came into care between 1995 and 1998 and did not receive the intervention, we found a child recidivism rate of 4/25 (16%) for subsequent validation and 3/25 (12%) for subsequent adjudication. Relative risk reduction for the IG compared with the NIG was 73.8% for subsequent validation and 73.3% for subsequent adjudication.

Maternal Recidivism

We also examined whether mothers who had children adjudicated were subsequently validated or adjudicated for another incident of maltreatment with another child. For the CG, the rate of maternal recidivism for subsequent validation was 13/92 (14.1%) and for subsequent adjudication was 10/92 (10.9%). In contrast, the IG had a rate of maternal recidivism of 4/77 (5.2%) for subsequent validation and 3/77 (3.9%) for subsequent adjudication. Thus, relative risk reduction for maternal recidivism provided by the intervention was 63.1% for subsequent validation and 64.2% for subsequent adjudication.

Within the NIG, we found a recidivism rate of 4/23 (17.4%) for maternal recidivism for subsequent validation and 3/23 (13.0%) for subsequent adjudication. Thus, relative risk reduction for the IG compared with the NIG was 70.1% for subsequent validation and 70.0% for subsequent adjudication.

As with child recidivism, we also calculated a more conservative test of maternal recidivism by examining recidivism only in mothers whose parental rights were terminated, expecting these to be least likely to have benefited from the intervention and most likely to maltreat another child. For the CG, we found 6/19 (31.6%) instances of recidivism in the group of mothers whose parental rights were terminated both for subsequent validation and adjudication for maltreatment of another child subsequently. In the IG, we found that 4/38 (10.5%) mothers whose parental rights were terminated experienced validation with a subsequent child and 3/38 (8.0%) experienced adjudication with a subsequent child. This yields a relative risk reduction for maternal recidivism of 66.8% for subsequent validation and 74.7% for subsequent adjudication.

DISCUSSION

A comprehensive, multimodal, and individualized intervention for infants and toddlers in foster care was implemented and evaluated by comparing outcomes in eligible children in the same geographic area for 4 years before and 4 years after the intervention was implemented. Changes were apparent in two of three outcomes examined.

The first finding was that the intervention led to changes in types of permanent plan outcomes made by the judicial and child welfare systems. Specifically, terminations of parental rights increased and return of children to their birth parents decreased after the intervention was implemented.

Although it is difficult to know precisely why this change occurred, we suspect that the more intense scrutiny of parents afforded by the intervention, with its focus on psychological accountability, may have led to an increase in the number of terminations compared with before the intervention. It was not uncommon for the intervention team to hear from protective services workers or even from attorneys that a parent who showed up for appointments was “working the case plan” or “doing all that we have asked them to do.” In contrast, the intervention team argued that progress toward specified goals in treatment was necessary and that attendance was a necessary but not sufficient indication of progress. This standard was upheld in a recent decision by the Louisiana Supreme Court (*State of Louisiana in the Interest of S.M. et al.*, 1998).

The second finding was that length of time in care was not significantly different in the comparison and intervention groups. There may be a number of reasons for this finding. Reducing length of time in care requires major changes in the legal system as well as the child welfare system. Although the intervention included conscious efforts to reduce length of time in care, many aspects of the legal process (over and above the well-known problems of large case loads for case workers, attorneys, and judges) worked against rapid permanency planning and against demonstrating differences between the IG and the CG. For example, children spent an average of more than 3 months in foster care before the adjudication hearing, thus, before the intervention even began. Also, we noted a tendency for the court to grant continuances in order to afford birth parents maximum opportunity to prove their fitness, especially in cases headed for termination. Finally, Child Protective Services attorneys themselves might delay filings

in order to accumulate longer track records of inconsistent visitation, lack of progress in treatment, etc., reasoning that as more time passed the case against the parents became even stronger. In fact, because terminations took longer than reunifications or placements with relatives, and because the intervention doubled the number of terminations, the IG might be expected to have a longer time in foster care than the CG.

A closer examination of the data, in fact, suggests that the intervention actually both increased *and* decreased the length of time in care. The range for the CG was from 2 to 67 months, whereas the range for the IG was from 8 to 45 months, with a standard deviation in the CG almost twice as large as that in the IG (Table 3). This means that the length of time from shortest to longest permanent plan was only 37 months for the IG but 65 months for the CG. What might explain these differences?

We speculate that the intensive assessments used as part of the intervention (averaging 15–20 hours of face-to-face contact), and the treatments they led to, prolonged the stay of some children in foster care who previously might have had permanent plans implemented more rapidly. In addition, we note that seven cases in the NIG were not referred to the intervention because they were in foster care for such a short time. Similar cases in the CG were included and contributed to a shorter mean length of stay in that group. Omitting 18 children who spent less than 5 months in foster care in the CG changes the mean length of stay in that group to 20.7 months—virtually identical with the average of 20.5 months in the IG.

The intervention also appeared to reduce the length of time in care for some children, as no children from the IG spent more than 45 months in care. Careful documentation of progress or lack of progress in treatment toward specified goals may have shortened the length of stay of some children who previously would have remained in foster care much longer.

Perhaps the most important finding of this study was that the intervention dramatically reduced maltreatment recidivism. This was true whether using a subsequent incident of validated maltreatment or the more serious subsequent adjudication of the same child as in need of care as an index of recidivism. Furthermore, the rates of recidivism for the preintervention CG of 13.1% (subsequent adjudication) is roughly comparable with the rate of foster care reentry of 15% (Goerge and Wulczyn, 1999) for children in this age group in other states. This makes the rates of the IG even more impressive.

One way to dramatically decrease rates of recidivism, of course, would be to terminate parental rights in every case. Because the intervention did increase the proportion of children freed for adoption, it was important to determine whether this was why recidivism rates diminished so strikingly. The fact that impressive rates of risk reduction for subsequent maltreatment of the same child were apparent even when examined only in the children returned to birth parents or relatives demonstrates that the reduction in risk cannot be explained solely, or even largely, by changes in types of outcomes. In addition, the reductions in maltreatment recidivism that we demonstrated are compatible with the idea that the intervention led to enhanced judicial and child welfare decision-making regarding permanent plans for maltreated infants and toddlers in foster care. That is, the change in permanent plan outcomes in the IG compared with the CG are associated with reduced rates of recidivism.

Perhaps even more impressive were the reductions in maternal recidivism, as these effects were not necessarily anticipated. They suggest generalization of effects of the intervention on mothers beyond the target child(ren) in the IG and could represent a "sleeper effect" of the intervention on mothers' relationships with children born subsequent to the target children in the IG.

Limitations

The limitations and weaknesses of this study are important to underscore. First, there was not random assignment to intervention and comparison groups, and designs such as the one used are susceptible to cohort effects. It is not possible to argue from the design we used that the intervention is causally related to outcomes. Second, the positive findings with regard to recidivism are tempered by the fact that the absolute number of children involved is small. This increases the possibility that even small changes in these numbers might lead to disproportionately large changes in rates of recidivism and risk reduction. Furthermore, following the sample longer could lead to changes in recidivism rates. On the other hand, the average length of time each child and each mother was followed was 2.5 years, and the levels of risk reduction demonstrated were robust. A third possible limitation was that the intervention was multimodal and individualized rather than standardized and manual-driven. This was a conscious decision on our part because of the number, heterogeneity, and complexity of the

problems in the families and children involved and because no previous intervention with infants and toddlers that we could identify had demonstrated an impact on the outcomes we assessed in this study. Although standardized interventions are not necessarily more effective than individualized interventions, standardization facilitates generalization and increases the possibility in future studies of teasing apart which aspects of the intervention were more or less important in leading to the changes demonstrated. Finally, the study was limited to examining outcomes related to type of permanent plan, length of time in care, and rates of recidivism. Although important, these child welfare outcomes do not address the complex medical, developmental, and mental health problems of young children in foster care (Clyman, *in press*; Reems, 1999; Rosenfeld et al., 1997). More child-centered outcomes, focusing on development and psychopathology in these young children, could usefully enhance our understanding of the effects of this intervention.

Clinical Implications

The clinical implications of these findings also are clear. A multimodal and individualized intervention for infants and toddlers in foster care, which included efforts to enhance all of the child's caregiving relationships, was associated with reduced rates of maltreatment recidivism. We suggest that the benefits we demonstrated derived from several characteristics of the intervention. First, the emphasis on clear and specific treatment goals, especially having parents accept responsibility for their children's maltreatment, was important in focusing treatment efforts and in aiding decision-making regarding permanent plans. Second, the comprehensive relationship-focused nature of the intervention, which was designed explicitly to reduce fragmentation of care for disenfranchised families, probably was important. If the intervention team could not provide a specific intervention, they offered appropriate referrals and coordinated and monitored adjunctive treatments so that the intervention remained integrated and coherent. Third, the explicit emphasis of the intervention on systems meant that communication was enhanced across disparate disciplines of professionals concerned with the well-being of these young children and families. We urge that these characteristics be maintained in future related efforts so that the risks to vulnerable children may be minimized and the opportunities for their recovery from early adversity enhanced.

REFERENCES

- Anonymous (1996), *Kids Count Data Book on Louisiana's Children*. New Orleans: Agenda for Children
- Cicchetti D, Toth S (1995), Developmental psychopathology of child maltreatment. *J Am Acad Child Adolesc Psychiatry* 34:541-565
- Clyman RB, Hardin BJ, Little C (in press), Assessment, intervention and research with infants in out of home placement. *Infant Ment Health J*
- Crockenberg S, Leerkes E (2000), Infant social and emotional development in family context. In: *Handbook of Infant Mental Health*, 2nd ed, Zeanah CH, ed. New York: Guilford, pp 60-90
- Duhaime AC, Christian CW, Moss E, Seidl T (1996), Long-term outcome in infants with the shaking-impact syndrome. *Pediatr Neurosurg* 24:292-298
- Emde RN, Bingham R, Harmon RJ (1993), Classification and the diagnostic process in infancy. In: *Handbook of Infant Mental Health*, Zeanah CH, ed. New York: Guilford, pp 225-235
- Goerge RM, Wulczyn F (1999), Placement experiences of the youngest foster care population: findings from the multistate foster care data archive. *Zero to Three* 19:8-13
- Hodges J, Tizard B (1989), Social and family relationships of ex-institutional adolescents. *J Child Psychol Psychiatry* 30:77-97
- Kaufman J (2000), Exposure to violence and early childhood trauma. In: *Handbook of Infant Mental Health*, 2nd ed, Zeanah CH, ed. New York: Guilford, pp 195-207
- Klee L, Kronstadt D, Zlotnick C (1997), Foster care's youngest. *Am J Orthopsychiatry* 67:290-297
- Larrieu JA, Zeanah CH (1998), Intensive intervention for maltreated infants and toddlers in foster care. *Child Adolesc Psychiatr Clin N Am* 7:357-371
- Provence S, Lipton R (1962), *Infants in Institutions: A Comparison With Family Reared Infants During the First Year of Life*. New York: International Universities Press
- Puckering C, Pickles A, Skuse D, Heptinstall E, Dowdney L, Zur-Szpiro S (1995), Mother-child interaction and the cognitive and behavioral development of four-year-old children with poor growth. *J Child Psychol Psychiatry* 36:573-595
- Reems R (1999), Children birth to three entering the state's custody. *Infant Ment Health J* 20:166-174
- Rosenfeld AA, Pilowsky DJ, Fine P et al. (1997), Foster care: an update. *J Am Acad Child Adolesc Psychiatry* 36:448-457
- Sameroff AJ, Emde RN, eds (1989), *Relationship Disturbances in Early Childhood*. New York: Basic Books
- Skeels HM (1966), *Adult Status of Children With Contrasting Early Life Experiences: A Follow-up Study* (Monographs of the Society for Research in Child Development, 31, Serial no. 105). Chicago: University of Chicago Press
- State of Louisiana in the Interest of SM et al. (1998), No. 98-CJ-0922, October 20
- Tizard B, Rees J (1975), The effects of early institutional rearing on the behavior problems and affectional relationships of four-year-old children. *J Child Psychol Psychiatry* 27:61-73
- US Department of Health and Human Services, Administration on Children, Youth and Families (1999), *Child Maltreatment 1997: Reports From the States to the National Child Abuse and Neglect Data System*. Washington, DC: US Government Printing Office
- Zeanah CH, Boris N, Larrieu J (1997), Infant development and developmental risk: a review of the past 10 years. *J Am Acad Child Adolesc Psychiatry* 36:165-178