An Experimental Study of the Effectiveness of Intensive In-Home Crisis Services for Children and Their Families:

Program Outcomes

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In this article, we describe the outcomes associated with a 3-year research demonstration project. It is the second of a two-part article concerned with this research conducted in the Bronx, New York, to examine the efficacy of three models of intensive in-home services—Home-Based Crisis Intervention (HBCI), Enhanced Home-Based Crisis Intervention (HBCI+), and Crisis Case Management—as alternatives to hospitalization for children experiencing a psychiatric crisis. In Part 1 (Evans, Boothroyd, & Armstrong, 1997), we described the features of the three program models, the research design, data collection measures, and the presenting characteristics of the children and families. In Part 2, we describe the success of maintaining children at home (82%) and the increases in family adaptability, children's self-concept, and parental self-efficacy both at discharge and at 6 months postdischarge. Enrollees in two of the models (HBCI and HBCI+) experienced a significant increase in family cohesion, although this was not maintained at 6 months postdischarge. While enrollees in the enhanced program showed significant increase in social support at discharge, all enrollees experienced this at 6 months postdischarge.

LITTLE RESEARCH HAS BEEN CONducted on programs designed to provide intensive, community-based services to children experiencing a psychiatric crisis and their families. One approach to treating children in crisis and supporting their families is to provide in-home services based on family preservation models. These interventions are typically of short duration (e.g., 4–6 weeks), occur in homes and other natural settings, and are designed to teach crisis management and communication skills as well as offer assessment and linkage to services. These services are often viewed as alternatives to hospitalization for children experiencing a crisis (Evans, 1996). As Evans, Boothroyd, and Armstrong (1997) noted, however, these interventions have not been systematically evaluated to assess their outcomes when used for a child mental health population, and little has been written about ensuring the cultural competence of these evaluations.

Two randomized controlled trials of community-based interventions have recently been completed to address the paucity of research in this area. One study was designed to examine the differential system, child and family outcomes associated with three in-home psychiatric emergency intervention programs—Home-Based Crisis Intervention, Enhanced Home-Based Crisis Intervention, and Crisis Case Management (Evans et al., 1997). The second study compared inpatient hospitalization to Multisystemic Therapy for preadolescents and adolescents presenting in crisis in an urban area (Henggeler et al., 1999; Schoenwald, Ward, Henggeler, & Rowland, 2000). The focus of the current article is to examine the child and family outcomes associated with each of the three intervention programs, which

were studied in the Bronx, New York (Evans et al., 1997).

The Program Models

The three program models compared in this experimental study have been described elsewhere (Evans et al., 1997). For purposes of this article, they are described briefly. All three models were intensive, short-term interventions, lasting approximately 4 to 6 weeks and conducted in homes and other natural settings (e.g., schools). The target population was children and youth living in family settings who were at risk for inpatient admission or other out-of-home placement as a result of a psychiatric crisis.

The first model, Home-Based Crisis Intervention (HBCI), was based on the Homebuilder's model of family preservation developed for a child welfare population (Fraser, Pecora, & Haapala, 1991; Kenny, Madsen, Flemming, & Haapala, 1977). Counselors trained in this model carry caseloads of two families concurrently. The goal of this program is to keep children in their home environment through resolving the immediate crisis, teaching caregivers communication and other relevant skills, helping families improve relationships, and linking the child and family to needed services. It is both intensive and short-term. In the geographic area where this study was conducted, HBCI was considered to be the traditional care model offered to children in crisis.

The second model, Enhanced Home-Based Crisis Intervention (HBCI+) had the same programmatic goal as HBCI and offered the same services. Besides training in the HBCI model, HBCI+ service providers' training from nationally known consultants related to cultural competence and working with families in which interpersonal and/or community violence may be an issue. In addition to the counselor, the intervention team in this model used a bilingual, bicultural family advocate who established a parent support group and provided individualized parent support and advocacy. An average of $100 of flexible service money per family was available to meet individualized needs, and in-home and out-of-home respite was available on a planned or emergency basis. The enhancements to the basic HBCI model were based on resources and supports that had been used in an earlier experimental study of a family-centered intensive case management program (Evans, Armstrong, Kuppinger, Huz, & McNulty, 1998).

The third model, Crisis Case Management (CCM), was an adaptation of the existing Intensive Case Management Model and was of particular interest to state level policymakers because it was a less labor-intensive intervention that did not offer clinical treatment services in the home. The program goal was to assess needs, provide concrete services, and link the child and family to needed services in order to keep children in their natural environments. Case managers carried maximum caseloads of eight families: four families in crisis and four requiring generic case management services. They were trained in New York's Intensive Case Management model and in crisis intervention skills. In-home and out-of-home respite and an average of $150 in flexible services money per family were available to meet individualized needs. Additional details regarding these program models, program implementation, and assessment instruments can be found in Evans et al., 1997.

The purpose of this study was to determine the effectiveness and compare the outcomes of all three models in keeping children who were experiencing a psychiatric crisis in their natural communities, homes, and school environments. The primary research questions were twofold: (a) What were the differential outcomes associated with three in-home psychiatric emergency services for children and their families? and (b) Which children and families experienced the best outcomes with which option?

Method

Design

A randomized multiple treatment group, repeated measures design was used to determine if differential system, child, and family outcomes were associated with the three program interventions. There was not a "no treatment" control group; rather, the outcomes of three interventions were examined by planned comparisons (Brink & Wood, 1998, p. 56). One of these interventions, HBCI, had been established several years earlier as traditional or standard care in the study setting.

Participants

The families of all children meeting eligibility criteria who presented at two emergency service settings in the Bronx were approached about participating in the research. To be eligible for the study, the child must have been between 5 and 17 years of age; living at home with a natural, foster, or adoptive family in the Bronx; and experiencing a psychiatric crisis that would require hospitalization without immediate intensive intervention. The eligibility decision was made by clinicians on child and adolescent teams at the participating hospitals based on their clinical judgment and following use of a risk assessment form called the Children's Psychiatric Emergency Screening Form (C-PES; Gutterman & Levine, 1992). Both the parent and the child must have been willing to receive intensive in-home crisis services. If they agreed to participate, they were randomly assigned to one of the three interventions, and a counselor or case manager visited them within 24 hours to begin services and collect admission data.

Instruments

All data collection instruments were available in English and Spanish. Data were collected at enrollment into service by counselors and case managers, at discharge (approximately 4–6 weeks), and at 6 months postdischarge by trained bilingual interviewers from the Hispanic Research Center. A variety of instruments were used to describe the characteristics of the children and families served and to assess the impact of services on child and family outcomes. Evans and colleagues (1997) reviewed these measures in detail. The primary data collection instruments are briefly described next.

Child and Family Characteristics. The *Client Description Form* (CDF) and the *Supplemental Assessment Form* (SAF) were administered at admission to one of the three in-home programs (i.e., HBCI, HBCI+, or CCM) to obtain child and family characteristics. Both measures were developed by the Bureau of Evaluation and Services Research (BESR) at the New York State Office of Mental Health and conformed to established data standards (Leginski et al., 1989). The CDF contained 32 questions about children served, including basic biographic information about the child (e.g., child's age, race/ethnicity, gender, current living situation), educational information about the child (e.g., special education classification, current educational placement), and information on the child's psychiatric history (e.g., diagnosis, symptoms and behaviors displayed within the past 18 months, prior placements). The SAF consisted of 25 questions pertaining to family and caregiver characteristics such as income, household composition, and maternal and paternal characteristics.

Child and Family Outcomes. Child and family outcomes were assessed using the *Piers-Harris Children's Self-Concept Scale* (Piers, 1984), the *Family Adaptability and Cohesion Scales II* (FACES II; Olson, Portner, & Bell, 1982), *Parent Self-Efficacy Scale* (Boothroyd & Evans, 1996), *Inventory of Socially Supported Behaviors* (ISSB; Barrera & Ainlay, 1983), and the *Child Behavior Checklist* (CBCL; Achenbach, 1991).

The *Piers-Harris Children's Self Concept Scale,* an 80-question child self-report measure, was administered at admission, discharge, and 6 months postdischarge to determine how children felt about their behavior, intellectual, and school status; physical appearance and attributes; popularity; and happiness and satisfaction. The measure has acceptable test/retest and internal consistency reliability and has moderate correlations with other self-concept measures (Piers, 1984).

The FACES II was administered to the primary caregiver at admission, discharge, and 6 months postdischarge to assess family functioning. This 30-question self-report measure describes the cohesion and adaptability that existed within the family and has acceptable reliability (Olson, 1991) and validity (Hampson, Hulgus, & Beavers, 1991).

The *Parent Self-Efficacy Scale* is a measure designed by the BESR to describe how comfortable parents are about selected aspects of their parenting skills and their ability to take care of their children. This 25-question self-report measure was completed at admission, discharge, and 6 months postdischarge and asked parents to indicate how comfortable they were in dealing with issues regarding their child's behavior management, school, advocacy, emotional support, and their ability to provide for their child. Although this measure was developed specifically for this study, examination of the factor structure and reliability of the measure has been promising (Boothroyd & Evans, 1996).

The ISSB was used to assess the informal support network available to families. This 40-question caregiver self-report measure was administered at admission, discharge, and six-months post-discharge and asked caregivers to indicate how often they had received help from different people. Previous research on this measure has demonstrated good reliability and validity (Barrera, 1993; Barrera, Sandler, & Ramsay, 1981).

The CBCL was completed by a parent at admission, discharge, and 6 months postdischarge to assess changes in children's behavioral problems and social competencies related to childhood disorders. The CBCL contains 118 behavior problem items and has good psychometric properties (Freeman, 1985; McConaughy & Achenbach, 1988).

The *Child and Adolescent Functional Assessment Scales* (CAFAS; Hodges, 1990) is a clinician-rated instrument used to assess youths' functional impairment in five areas: role performance, thinking, behavior toward self and others, moods and emotions, and substance abuse. Two additional domains associated with the child's caregivers are used to assess their capacity to provide basic needs and family and social support. Each subscale provides a series of behaviors that define the four response categories of severe, moderate, mild, or average. The total score on the CAFAS, reflecting the child's degree of impairment, is the sum of the five child domains. The internal consistency of the CAFAS child total score is .72 (Hall, Cascardi, & Kutash, 1996). Support for the validity of the CAFAS as a measure of functional impairment is available given that a significant difference was found in the CAFAS total score between children assessed in the clinical and nonclinical ranges on the CBCL (Huz, McNulty, & Evans, 1996). Additionally, the CAFAS has demonstrated sensitivity to detect changes in child functioning (Hall, Cascardi, & Kutash, 1996).

Analysis

Imputation methods were used to supply estimates of missing data values. Specifically, the EM (estimated missing) method was used to calculate the variance–covariance matrix and then fill in the missing values with estimated values. Initially, because the study design incorporated multiwave data (i.e., admission, discharge, 6 months postdischarge), growth curve analysis was examined as an analytic approach. Eventually, however, program comparisons were made using two 2-wave repeated measures ANOVAs, one measured change from admission to discharge and the other measured change from admission to 6 months postdischarge because visual inspection of the 3-wave data indicated a curvilinear relationship from admission to 6 months postdischarge (i.e., the greatest change occurred from admission to discharge, with scores at 6 months postdischarge being asymptotic or declining). As the major research question was change at discharge, a simple first-order linear growth model applied to the 3-wave data would underestimate the change at discharge. Nor was it possible to fit a second-order quadratic (i.e., intercept, linear, and quadratic growth factors) change model with only 3 waves of data and 2 degrees of freedom (i.e., maximum number of degrees of freedom for growth factors $= P - 1$, where P = number of waves; Bryk & Raudenbush, 1992).

Within each ANOVA, an alpha level of .05 was used for each planned program comparison. No adjustments for multiple comparisons were made as each comparison had been specified a priori and the multiple measures represented conceptually distinct constructs. Moreover, among the various multiple comparison adjustment procedures, there is no agreement over which procedure should be used for making corrections, and results from all of the proposed adjustments have been found to be inconsistent (Saville, 1990).

Results

Program Referrals

During the study, 638 children who met study eligibility criteria, presented at the two children's psychiatric emergency rooms. Over half of these children (326/54%) were not enrolled in the study because all three program models were at census and no openings existed. Of the 312 children presenting when openings were available, 279 children and their families (89.4%) consented to participate and were randomly assigned among those in-home interventions with openings. Of the 33 children and families not enrolled in the study, 14 refused to participate (4.5%), written consent could not be obtained for 10 children (3.2%) because they were in foster care, 3 children (1.0%) were hospitalized prior to the initial visit, and the reasons the remaining 6 children (1.9%) were not enrolled are unknown. Of the 279 children enrolled, 13 children (4.7%) enrolled twice during the study period, and 49 (17.6%) failed to successfully complete the 4- to 6-week intervention.

Randomization and Attrition

Table 1 summarizes the characteristics of the children and families served by the three program models. These characteristics were compared, and few statistically significant differences were found (see Table 1). Additionally, the admission scores on the various child and family outcome measures were compared, and again few differences were found among the three program models (see Table 2). A significant difference was found in the youth's CBCL Total Problem score, as those assigned to the CCM program had significantly higher scores than those assigned to either the HBCI or HBCI+ models, $F(2, 228) = 4.26$, $p < .02$. In general, the random assignment procedures were effective in controlling for preintervention differences, and the youth enrolled in the three in-home interventions had similar characteristics and levels of emotional and behavioral problems.

With respect to attrition, the overall admission to discharge attrition rate on the assessment instruments was approximately 19% but ranged from 15% on the ISSB to 26% on the *Piers-Harris Children's Self-Concept Scale*. The admission to 6 months postdischarge attrition rate was about 33%, ranging from 28% on the ISSB to 43% on the *Piers-Harris Children's Self-Concept Scale*. An analysis of the attrition rates across program models found no significant differences (all *ps* > .05) in the admission to six-months postdischarge attrition rates on any of the measures. As was previously noted, imputation techniques were used to account for missing data.

Child and Family Characteristics

Characteristics of the Children Served. Table 1 summarizes the characteristics of the children who completed the full course of in-home services. The children ranged from 5 to 18 years ($M = 12.3$ years, $SD = 3.6$ years). Slightly more boys (52.9%) than girls (47.1%) received services. Children were mostly from minority cultures as 58.8% of the children were Hispanic, 33.6% African American, 5.5% White, and 2.1% were other minority children.

The children referred for in-home services had significant emotional and/or behavioral problems. In terms of diagnosis, 35.8% were diagnosed with disruptive behaviors, 19.8% had adjustment disorders, 14.6% mood disorders, 11.8% psychotic disorders, 10.4% anxiety disorders, and 7.6% other disorders. Most children (81%) were judged as somewhat dangerous to themselves (45.8%) and/or others (37.8%) and more than half of the children (52.5%) met the criteria for serious emotional disturbance. Additionally, 70.6% of the children were assessed as having at least one functional impairment (i.e., self-care, self-direction, cognitive, social, or motor functioning) and 40% were judged as having two or more functional impairments. The most frequent behaviors and symptoms children displayed were suicide ideation (56.7%), depression (55.0%), temper tantrums (45.0%), verbal aggressiveness (41.2%), anxiety (33.6%), and destruction of property (32.4%). Substance (7.1%) and/or alcohol-related (4.2%) problems were less frequently reported, presumably reflecting the ages of children presenting for services.

Characteristics of the Families Served. The characteristics of families served are also summarized in Table 1. Almost 72% of the children lived in single parent households, and women were typically the primary caregivers. Because caregivers were almost always women, only the characteristics of the maternal caregiver are summarized. More than 80% of the households had at least 2 children, and 54% had 3 or more (data not shown); the average number was 2.8 ($SD = 1.5$).

Caregivers' ages ranged from 22 to 83, averaging 38.5 years old ($SD = 10.0$), and their race/ethnicity mirrored those of the children. Almost 29% were single, 23.9% married, and 33.4% were either separated or divorced. Most caregivers (76.5%) were not working. They had either less than a high school education (52.2%) or had received a high school diploma or GED (26.8%). Annual incomes were typically less than $20,000 (77.9%), and many families received some form of public assistance such as AFDC (33.9%), food stamps (57.0%), Medicaid (60.4%), Social Security income (16.1%), and other programs (14.3%).

Program Comparisons

Maintaining Children at Home. Overall, 82.4% of the children who were enrolled in one of the in-home models were successfully maintained in the commu-

TABLE 1
Comparison of Child and Family Characteristics

Characteristics	CCM (*n* = 63)	HBCI (*n* = 90)	HBCI+ (*n* = 85)	Overall (*N* = 238)	*p*
Child age					
M	12.6	12.4	11.9	12.3	*ns*
SD	3.5	3.6	3.7	3.6	
Age classification					
Children (> 13)	39.7	43.3	43.5	42.4	*ns*
Youth (13 +)	60.3	56.7	56.5	57.6	
Child gender					
Boy	50.8	52.2	55.3	52.9	*ns*
Girl	49.2	47.8	44.7	47.1	
Child race					
White	6.3	5.6	4.7	5.5	*ns*
Black	33.3	34.4	32.9	33.6	
Hispanic	60.3	56.7	60.0	58.8	
Other	0	3.3	2.4	2.1	
Child diagnosis					
Disruptive behavior	35.2	29.6	42.9	35.8	*ns*
Adjustment disorder	16.7	25.9	15.6	19.8	
Mood disorder	14.8	17.3	11.7	14.6	
Psychotic disorders	14.9	9.9	11.7	11.8	
Anxiety disorder	11.1	9.9	10.4	10.4	
Other disorders	7.3	7.4	7.7	7.6	
Functional impairments					
None	49.2	28.9	15.3	29.4	.000
One	20.6	34.4	34.1	30.7	
Two or more	30.2	36.7	50.6	39.9	
Dangerousness (% yes)					
Self	33.3	53.3	47.1	45.8	.048
Others	25.6	37.8	38.8	37.8	*ns*
Presenting problems					
Suicide ideation	46.0	60.0	61.2	56.7	*ns*
Depression	49.2	54.4	60.0	55.0	*ns*
Temper tantrums	68.3	38.9	34.1	45.0	.000
Verbal aggressiveness	41.3	40.0	42.4	41.2	*ns*
Anxiety	17.5	32.2	47.1	33.6	.001
Destruction of property	36.5	33.3	28.2	32.4	*ns*
Substance	14.3	2.2	7.1	7.1	.017
Alcohol	7.9	2.2	3.5	4.2	*ns*
Met SED criteria (% yes)	57.1	48.9	52.9	52.5	*ns*
Household composition					
Single parent	66.0	70.6	77.0	71.6	*ns*
Two parents	34.0	29.4	23.0	28.4	
Children in household					
M	2.6	2.9	2.9	2.8	*ns*
SD	1.2	1.5	1.8	1.5	
Maternal employment status					
% working full- or part-time	25.9	25.0	20.0	23.5	*ns*

(table continues)

(Table 1 continued)

Characteristics	CCM (*n* = 63)	HBCI (*n* = 90)	HBCI+ (*n* = 85)	Overall (*N* = 238)	*p*
Maternal marital status					
Never married	36.8	25.9	26.3	28.8	*ns*
Married	17.5	28.2	23.7	23.9	
Separated/divorced	29.8	34.1	35.0	33.4	
Widowed	7.0	9.4	8.8	8.6	
Unknown	8.8	2.4	6.3	5.4	
Maternal caregiver age					
M	37.6	39.0	38.8	38.5	*ns*
SD	8.5	10.9	10.3	10.0	
Maternal caregiver education					
Less than high school	61.4	41.5	57.1	52.2	.006
High school or GED	21.1	40.2	15.7	26.8	
More than high school	17.5	18.3	27.1	21.1	
Family income					
Less than $20,000	84.6	75.0	73.2	77.9	*ns*
$20,000 to $30,000	7.7	17.3	22.0	15.2	
More than $30,000	7.7	7.7	4.9	6.9	

Note. CCM = Crisis Case Management; HBCI = Home-Based Crisis Intervention; HBCI+ = Enhanced Home-Based Crisis Intervention.

nity when they were discharged from the intervention. Six percent of the children remained living in the community but moved from living with a primary caregiver to the home of a relative. About 8% of the children required hospitalization during the course of the intervention, and 5% of the children were discharged to some type of out-of-home placement.

No significant difference was found across program models regarding the percentage of children who were successfully maintained in the community. In the CCM model, 78.4% of the children were in the community at discharge, and 83% of the children in HBCI remained in the community. This figure was 85.7% for children enrolled in HBCI+. A slightly lower percentage of children in the HBCI program model remained with their primary caregiver (74%) compared to the CCM and HBCI+ programs (82% each), whereas a slightly higher percentage of children enrolled in HBCI were living with relatives at discharge (9%) compared to the CCM and HBCI+ programs (approximately 5% each). Ten percent of the children in the HBCI and HBCI+ programs were hospitalized during the intervention compared to 5% of the children who received CCM. Children in CCM, however, were somewhat more likely to be placed out-of-home (9%) compared to children who were assigned to HBCI (6%) and HBCI+ (3%).

Child Outcomes: Changes in Status, Admission to Discharge. The children enrolled in each of the three intensive in-home programs demonstrated significant improvement between admission and discharge on some of the child outcome measures (see Table 2 for outcome means and standard deviations; see Table 3 for tests of significance). Specifically, children assigned to each program showed significant gains in self-concept, as measured by the *Piers-Harris Children's Self-Concept Scale*, $F(1, 444) = 16.98, p < .01$, d (Cohen, 1992) = .25. Significant changes were found in CBCL internalizing scores with CCM enrollees showing a significant decrease relative to HBCI and HBCI+ enrollees who showed an increase in their scores (planned comparisons: HBCI vs. CCM, $F(1, 458) = 7.11, p < .01, d = .48$; HBCI+ vs. CCM, $F(1, 458) = 8.79, p < .01, d = .43$. No significant changes, however, were found in any program from admission to discharge regarding externalizing or social competency scores.

Family Outcomes: Changes in Status, Admission to Discharge. The families of children assigned to each program demonstrated significant gains from admission to discharge in adaptability, $F(1, 450) = 28.98, p < .01, d = .40$, while their primary caregivers exhibited significant gains in self-efficacy, $F(1, 434) = 5.31, p > .05, d = .19$.

Families of children who received HBCI or HBCI+ services also showed significant admission to discharge gains in cohesion (FACES II), although these gains were not noted for families of children assigned to CCM, main effect for admission to discharge, $F(1, 450) = 4.09, p < .05, d = .16$; planned comparisons: HBCI vs. CCM, $F(1, 450) = 4.71, p < .05, d = .39$; HBCI+ vs. CCM, $F(1, 450) = 8.32, p < .01, d = .43$. Finally, improvements in informal social supports were only found among families of children assigned to the HBCI+ intervention, which was the only one of the three interventions to target this area of social life; planned

TABLE 2
Outcome Means and Standard Deviations by Program at Admission, Discharge, and 6 Months Postdischarge

	Intake						Discharge						Follow-up					
	HBCI		HBCI+		CCM		HBCI		HBCI+		CCM		HBCI		HBCI+		CCM	
Variable	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Piers-Harris[a] *Children's Self-Concept*	49.98	11.40	49.36	12.47	46.61	12.43	52.69	11.00	51.71	9.26	51.55	10.55	53.07	9.25	52.38	8.76	53.14	9.32
FACES II-Adaptability	49.30	8.07	47.04	9.28	47.59	6.65	51.53	7.38	51.86	7.48	50.35	6.12	50.83	5.93	51.35	6.81	49.56	7.07
FACES II-Cohesion	53.18	11.15	52.36	13.68	53.66	11.31	55.76	9.56	56.41	10.39	51.88	10.44	53.97	7.94	53.33	8.68	53.00	7.96
Parental Self-Efficacy	77.17	10.49	76.58	11.96	75.56	11.46	79.95	11.27	78.64	12.07	76.79	13.20	79.56	10.10	81.85	11.44	79.44	14.22
Socially Supportive Behaviors	88.76	30.10	77.89	29.19	84.72	26.75	91.60	32.12	86.00	30.70	80.95	30.82	76.26	23.89	75.83	27.53	73.65	27.88
CBCL-Total Problems	69.83	8.59	68.37	10.66	72.98	8.91	72.02	6.68	70.67	9.63	71.56	9.50	68.16	10.04	66.92	9.08	70.06	10.50
CBCL-Internalizing	66.82	8.05	65.84	10.80	69.16	11.03	68.30	7.41	67.85	10.07	66.49	10.51	63.92	9.72	63.50	9.10	65.65	10.80
CBCL-Externalizing	68.58	10.14	66.73	12.13	71.22	9.87	70.17	8.02	67.93	10.12	71.02	9.00	67.38	9.89	65.50	9.86	68.42	11.44
CBCL-Social Competency	32.44	5.99	31.63	6.99	33.29	7.90	33.00	7.58	32.97	6.64	33.74	7.52	33.47	6.67	33.17	4.93	32.96	6.03
CAFAS	66.56	40.17	72.17	32.98	65.15	25.43	+	+	+	+	+	+	+	+	+	+	+	+

Note. HBCI = Home-Based Crisis Intervention; HBCI+ = Enhanced Home-Based Crisis Intervention; CCM = Crisis Case Management; FACES II = *Family Adaptability and Cohesion Scales II* (Olson, Portner, & Bell, 1982); CBCL = *Child Behavior Checklist* (Achenbach, 1991); CAFAS = *Child and Adolescent Functional Assessment Scales* (Hodges; 1990); + = Data missing and of poor quality not reported.
[a]Piers, 1984.

TABLE 3
F Tests of Significance for Admission to Discharge

Variable	*df*	Time	HBCI vs. CCM	HBCI+ vs. CCM	HBCI vs. HBCI+
Piers-Harris Children's Self-Concept[a]	1, 444	16.98**	1.30	2.04	**0.12**
FACES II-Adaptability	1, 450	28.98**	0.12	1.79	**3.48**
FACES II-Cohesion	1, 450	4.09*	4.71*	8.32**	**0.65**
Parental Self-Efficacy	1, 434	5.31*	0.49	0.14	**0.13**
Socially Supportive Behaviors	1, 428	1.03	1.26	3.90*	**0.94**
CBCL-Total Problem *T*-Scores	1, 458	3.19	6.27*	6.49*	**0.01**
CBCL-Internalizing *T*-Scores	1, 458	0.20	7.11**	8.79**	**0.05**
CBCL-Externalizing *T*-Scores	1, 458	1.73	1.20	0.72	**0.07**
CBCL-Social Competency *T*-Scores	1, 458	1.82	0.01	0.37	**0.36**

Note. HBCI = Home-Based Crisis Intervention; HBCI+ = Enhanced Home-Based Crisis Intervention; CCM = Crisis Case Management; FACES II = *Family Adaptability and Cohesion Scales II* (Olson, Portner, & Bell, 1982); CBCL = *Child Behavior Checklist* (Achenbach, 1991).
[a]Piers, 1984.
*$p < .05$. **$p < .01$.

comparison: HBCI+ vs. CCM, $F(1, 428) = 3.90$, $p < .05$, $d = .41$.

Child Outcomes: Changes in Status, Admission to 6 Months Postdischarge. Outcome means and standard deviations and tests of significance are shown in Tables 2 and 4, respectively. All of the gains that were common across the three program models were maintained through the 6 months postdischarge period. The improvements children exhibited in self-concept from admission to discharge were still present 6 months postdischarge, $F(1, 444) = 24.53$, $p < .01$, $d = .32$. Significant reductions in children's internalizing scores, $F(1, 458) = 16.85$, $p < .01$, $d = .28$, were also found between admission and 6 months postdischarge. Additionally, significant reduction was observed from admission to 6 months postdischarge in children's externalizing behaviors, $F(1, 458) = 5.10$, $p < .01$, $d = .15$; reductions that were not present at discharge.

Family Outcomes: Changes in Status, Admission to 6 Months Postdischarge. Similarly, the significant gains found in each program model in family adaptability and caregiver self-efficacy were also present 6 months postdischarge, $F(1, 450) = 21.35$, $p < .01$, $d = .32$, and $F(1, 434) = 15.32$, $p < .01$, $d = .34$, respectively. Although no significant increases in family adaptability existed for HBCI versus CCM, $F(1, 450) = 0.10$, $p > .05$, and HBCI+ versus CCM, $F(1, 450) = 2.67$, $p > .05$, significant increases were present for children in HBCI+ relative to children in HBCI, $F(1, 450) = 4.64$, $p < .05$, $d = .34$. However, the gains found in cohesion among families of children assigned to the HBCI and HBCI+ programs dissipated and were not found 6 months postdischarge; planned comparisons: HBCI vs. CCM, $F(1, 450) = 0.47$, $p > .45$; HBCI+ vs. CCM, $F(1, 450) = 0.59$, $p > .05$; and HBCI vs. HBCI+, $F(1, 450) = 0.01$, $p > .90$. Overall increases in social supports from admission to 6 months postdischarge were noted among all families who received in-home services, $F(1, 428) = 11.50$, $p < .01$, $d = .29$.

DISCUSSION

Review of Findings

The first outcome to be examined was the success with which each group of children was maintained in community settings. All three interventions were successful in maintaining a great majority of the enrollees in the community (HBCI 82%, HBCI+ 85.7%, and CCM 78.4%)—noteworthy because clinicians had made the judgment on initial screening that these children were eligible for enrollment because they were at immediate risk of hospitalization or out-of-home placement. Regarding the other outcomes for children at discharge, children in all three interventions experienced positive outcomes in their self-concept that were sustained at the 6 months postdischarge period. Compared to children enrolled in HBCI and HBCI+ programs, children in the CCM program showed significant reductions in their CBCL internalizing scores from admission to discharge (see Table 2), while children in all three programs demonstrated these reductions in internalizing behaviors from admission to 6 months postdischarge. In terms of CBCL externalizing scores, although no significant reduction was found from admission to discharge, all children demonstrated significant reduction between admission and 6 months postdischarge.

It should be noted that 5% to 10% of the children enrolled in the in-home services did require hospitalization during the intervention period. These in-home

TABLE 4
F Tests of Significance for Admission to 6 Months Postdischarge

Variable	*df*	Time	HBCI vs. CCM	HBCI+ vs. CCM	HBCI vs. HBCI+
Piers-Harris Children's Self-Concept[a]	1, 444	24.53**	2.75	3.17	0.03
FACES II-Adaptability	1, 450	21.35**	0.10	2.67	4.64*
FACES II-Cohesion	1, 450	0.19	0.47	0.59	0.01
Parental Self-Efficacy	1, 434	15.32**	0.36	0.31	1.63
Socially Supportive Behaviors	1, 428	11.50**	0.05	1.97	3.25
CBCL-Total Problem *T*-Scores	1, 458	8.87**	0.56	0.75	0.02
CBCL-Internalizing *T*-Scores	1, 458	16.85**	0.12	0.42	0.11
CBCL-Externalizing *T*-Scores	1, 458	5.10**	0.70	0.66	0.00
CBCL-Social Competency *T*-Scores	1, 458	1.65	0.85	1.61	0.15

Note. HBCI = Home-Based Crisis Intervention; HBCI+ = Enhanced Home-Based Crisis Intervention; CCM = Crisis Case Management; FACES II = *Family Adaptability and Cohesion Scales II* (Olson, Portner, & Bell, 1982); CBCL = *Child Behavior Checklist* (Achenbach, 1991).
[a]Piers, 1984.
*$p < .05$. **$p < .01$.

programs did not eliminate the necessity of hospitalization for some children who posed a danger to themselves. Some of these children and youth had presented initially with suicide ideation or an attempt at suicide and repeated this behavior following enrollment in the study.

At discharge, families in all three interventions showed significant increases in adaptability and parental self-efficacy. Although all families enrolled showed significant increases in cohesion at discharge, those enrolled in HBCI and HBCI+ programs showed significantly greater increases in cohesion relative to those in the CCM program. Families enrolled in HBCI+ were the only ones to show a significant increase in socially supported behaviors at discharge, which was hypothesized because of the use of a parent advocate and support groups in the HBCI+ intervention and the lack of systematic efforts to link families with social support groups in the other two interventions, but all families demonstrated gains at 6 months postdischarge. Several of the caregiver gains, however, appeared to be fragile and were not sustained at the 6 months postdischarge assessment. Reductions were noted for family cohesion in both the HBCI and HBCI+ enrollees and for social support for those enrolled in HBCI+.

Of particular interest is the fact that on enrollment the level of socially supported behaviors is very low across all treatment conditions. The enhancements to HBCI+ that were designed to improve social support and connectedness (i.e., the family advocate and linkage to family support groups) had only limited (i.e., short-term) success. Additionally, when counselors and case managers were asked to evaluate their work with families, the area where they rated themselves as least successful was in their ability to use informal social supports. For more than 60% of the cases on which they evaluated themselves, counselors or case managers said that it was not true that they were able to use informal supports, and only slightly more than 20% believed it was somewhat true that they were able to use these supports. Because of the brief nature of the intervention and the crisis focus of the problems that are the target of these interventions, perhaps 4 to 6 weeks is an insufficient amount of time to identify sources of informal support and fully develop them before the intervention ends. A similar ecologically based intervention, Multisystemic Therapy, for example, lasts 3 to 5 months per family depending on the seriousness of the problems and the success achieved by the intervention (Henggeler, Schoenwald, Bordiun, Rowland, & Cunningham, 1998). Additional research is needed in the area of facilitating social support in poor urban families exposed to multiple stressors.

Limitations and Future Research

This research demonstration had limited funding to establish and evaluate the outcomes of three resource-intensive interventions. Not all children and families who were eligible could be entered in the study because of the limited number of service providers, and we were unable to follow those who were eligible for enrollment but not enrolled due to lack of staff resources.

The study did not include a no-treatment control group, as is traditional in most clinical trials. Instead we used planned comparisons of three interventions. One of these interventions, HBCI, was considered treatment as usual in the area of the Bronx from which we drew our sample. It is unlikely that many other areas of the country have such an intensive, in-home intervention as standard care for children

in psychiatric crisis and their families. This limits generalization of our findings. Additional studies need to be conducted in various geographic areas using different treatments to determine the effectiveness of short-term, intensive, in-home interventions for this target population.

Again, due to limited resources, we were unable to follow families for more than 6 months after discharge to determine out-of-home placement rates, representations at emergency departments, and other significant changes in status. Although a vast majority of the children were able to continue living at home during the intervention and for at least 6 months afterward, it would be useful and important to follow a similar group of children and youth over a longer period of time to see if this pattern continues or if children receiving short-term in-home services and those receiving more traditional services end up with similar out-of-home placement rates. This equality in out-of-home placement has been noted for children in the child welfare system (Evans, 1996). Future research should be focused on the children who were hospitalized or placed out-of-home. A larger sample and/or a different approach to studying the likelihood of hospitalization is needed in order to understand factors differentiating those requiring and not requiring inpatient care. Henggeler et al. (1999) and Schoenwald, Ward, Henggeler, and Rowland (2000) reported outcomes of a study in which pre-adolescents and adolescents identified for inpatient care were randomly assigned to in-hospital care or Multisystemic Therapy (MST) in the community. The study showed that at a 4-month postdischarge follow-up, MST decreased hospitalization for 57% of the sample and reduced the overall number of days hospitalized by 72%, thus questioning the conventional wisdom regarding the necessity of hospitalizing youth presenting in crisis.

The data obtained from use of the *Child and Adolescent Functional Assessment Scales* (CAFAS; Hodges, 1990) were not of high quality, and this instrument was the least likely to be completed at follow-up. Therefore, this important child outcome data were not used in the analysis. Further research should be designed to follow families for 1 year and include a broader array of outcomes such as progress in school, incarceration, and other measures of child functioning. Better results in using the CAFAS could be expected in future projects when clinicians are responsible for completing this instrument rather than trained, nonclinical interviewers.

Finally, it would be worthwhile to investigate whether the outcomes of intensive, in-home interventions would differ if the programs were embedded within a system of care versus a traditional, segmented approach to care. Theoretically, in a system of care, having intermediate services and longer-term services available for a treatment team to use in meeting child and family goals could improve the outcomes (U.S. Department of Health and Human Services, 1999).

Implications

The families who were enrolled in this study were predominately poor and lived in some of the poorest, most violent neighborhoods in the United States. These families experience the frequent occurrence of life events such as unemployment and loss of housing that can negatively affect the quality of family life. Despite this situation, the majority of the families did experience gains in parental self-efficacy and adaptability. The failure to maintain the gains in cohesion experienced by families in HBCI and HBCI+ and the larger gains in social support experienced by families in HBCI+ calls for the investigation of using "booster doses" of the services and/or enrolling children and families in longer-term services or providing transitional services following this type of intensive intervention.

The results of this study indicate that intensive, in-home interventions of several types can result in children experiencing a psychiatric crisis being maintained in their natural environments. The programs did show several differential outcomes that policy makers and program developers may want to consider, for example, the significant increase in social support in the HBCI+ program when a parent advocate is included in the program. The study also showed that some family gains like cohesion seem to lessen over time and that booster doses of the intervention might be needed to sustain the program's positive outcomes.

One of the challenges of the present study was that, following the short-term intervention, some of the children were identified as needing longer-term services such as case management. It was difficult to get children admitted to these services because of limited capacity and/or because of the brief time available for planning during a crisis period. This has implications for the systems of care that are being established in many communities across the country.

Additional research is needed regarding the effectiveness of crisis interventions. The present study showed some positive outcomes by program type and, as is reported elsewhere (Evans, Boothroyd, Greenbaum, Brown, & Armstrong, 2001), some differential outcomes by clinical profile of the enrolled children. Many aspects of the variety of crisis services that are in use and their outcomes for children and families, however, remain unexplored.

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