

Final Report on the Linkages to Learning Program and Evaluation at Broad Acres Elementary School

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University of Maryland, College Park

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Executive Summary

For the past four years, through a grant from the U.S. Department of Education, the University of Maryland has funded a school-based mental health and social service program. This initiative, Linkages to Learning at Broad Acres Elementary School, was a collaborative effort that involved the Montgomery County Public Schools, the Montgomery County Department of Health and Human Services, and several private agencies. The grant from the U.S. Department of Education funded direct services to low income children and their families and an evaluation of the impact of Linkages to Learning program.

Broad Acres Elementary School serves a very diverse community. The parents of the approximately 500 children in grades K-5 come from more than 40 different countries and speak 10 different languages. Most immigrant families come from the Caribbean, Africa, Central America, and Southeast Asia. About 90% of the students at Broad Acres qualify for free and reduced meals.

Since the spring of 1996, the Linkages to Learning program at Broad Acres has provided a range of mental health, social services, and education services to scores of families and hundreds of children. A health center funded by the Robert Wood Johnson foundation was added to the Linkages program during the second year of operation and complements the other services. Children and families during the past three years have participated in individual and group therapy, adult education, recreation activities, and tutoring.

Researchers at the University of Maryland have assessed children and families participating in the Linkages to Learning program at Broad Acres and a comparison group of children and families at another elementary school. Although differences existed between the communities served by the two schools, there were several positive outcomes for 119 children and 69 parents tracked over three years and served by the Linkages to Learning (LTL) Program. Among other things, parents of children in LTL reported significant decreases in their children's negative behavior over time. A related finding was that while children at the comparison school showed an increase in negative behaviors over time, similar gains which might be expected among children at-risk in the Linkages school, did not occur. Other outcomes such as a decrease in emotional distress by the children at LTL and improved parenting practices among parents receiving services occurred.

Background and Introduction

In September 1995, the University of Maryland, College Park received funding from the U.S. Department of Education to replicate and evaluate Montgomery County’s model for the delivery of school-based mental health, health, and social services. This model, entitled Linkages to Learning, was developed as the result of a 1991 County Council resolution calling for increased attention to the mental health and social service needs of at-risk children and their families. The resolution stressed the need for services to be both school-based and collaborative. Consequently, a partnership developed between Montgomery County Public Schools, Montgomery County Department of Health and Human Services, and a number of private agencies serving children and families. The partners in this initiative set as their goal the reduction of social, emotional and somatic health problems that interfere with children’s abilities to succeed in school, at home, and in the community. In order to achieve this goal, a core group of services was identified. These services are listed in Table 1 below.

Table 1. Linkages to Learning Core Services

<i>Mental Health Services</i>
<ul style="list-style-type: none"> • <i>mental health assessments</i> • <i>individual child, parent, and family counseling</i> • <i>consultation with school staff and other agencies</i> • <i>prevention, early intervention and treatment groups for children</i> • <i>support groups for parents</i> • <i>in-service training for teachers</i>
<i>Social Services</i>
<ul style="list-style-type: none"> • <i>family needs assessments</i> • <i>assistance obtaining clothing/furniture, food, housing, etc.</i> • <i>assistance with legal/immigration, medical/dental and employment needs</i> • <i>translation and transportation assistance</i> • <i>assistance accessing day care, summer camps and school system resources</i> • <i>after-school and evening recreation programs</i> • <i>acculturation workshops</i>
<i>Educational Support</i>
<ul style="list-style-type: none"> • <i>academic tutoring for students</i> • <i>SAT preparation</i> • <i>Mentoring</i> • <i>Adult education classes (e.g., ESOL, literacy)</i>

Health Services

- *Delivery of routine school health services (including first aid and emergency care for sick and injured students)*
- *Medication and treatment administration*
- *Hearing and vision screening*
- *Referral and case management for children with physical and medical issues*
- *Health counseling and health education*
- *Assistance for parents to access health care in the community*

The initial plan called for each Linkages to Learning site to be staffed with an interdisciplinary team of service providers, including case managers, mental health therapists, and health care staff (e.g., school nurse and health room technician). While staff members would likely come from different agencies (both public and private), they would work collectively to ensure that each child and family's mental health, health, social service and educational support needs were addressed. Services would be available to any child in the school and his/her family members (with the exception of some somatic health services which were limited to students themselves). The Linkages to Learning team would include key school personnel, such as the school principal, guidance counselor, and pupil personnel worker, so that services would be well coordinated and integrated. The Linkages to Learning case manager would be responsible for coordinating care with outside service providers as well. Programming would be designed in response to community needs, and would build upon community assets and resources. Parents would be seen as partners, and would take an active role in developing solutions to individual, family and community-wide challenges.

Three original Linkages to Learning sites were piloted in 1993, two in elementary schools and one in the Rockinghorse Road School Health Services Center, the entry point into Montgomery County Public Schools for all new international students. In their first few years of operation these sites reported many anecdotal successes. A formative evaluation of the program in one school was conducted by Dr. Peter Leone of the University of Maryland. This evaluation documented some of the strengths and weaknesses of the model, including a discussion of the complexities of treating children and families with multiple social, emotional and physical health needs. In 1995, the University of Maryland, College Park was awarded a grant from the U.S. Department of Education to conduct an even more comprehensive longitudinal study of Linkages to Learning. The project involved replicating the Linkages model in a third elementary school site, and evaluating the effectiveness of this program in improving children's social, emotional and academic functioning.

Funds from the U.S. Department of Education were used to implement the Linkages to Learning program at Broad Acres Elementary School, in Silver Spring, Maryland. The collaborative partners in this endeavor included Montgomery County Public Schools; Montgomery County Department of Health and Human Services; University of Maryland, College Park; CPC Health, Inc. (a private mental health agency subcontracted with the University to provide mental health and social services); and the

Amigo Program of Child Center and Adult Services, Inc. (another private mental health provider supported by Title I funds).

The University of Maryland's program evaluation utilized a pre/post comparison school design, with data collected at Broad Acres and at a non-treatment control school over the course of three years. The leadership of Montgomery County Public Schools selected an elementary school to serve as the control for the study. Attempts were made to match both schools on key demographic and socioeconomic variables.

Broad Acres Elementary School Profile

Broad Acres Elementary School serves children in Kindergarten through 5th grade, with both Head Start and day care programs on-site. There are also two self-contained special education classrooms in the school. At the time the Linkages to Learning program began in the 1995/1996 school year, the total student population at Broad Acres was 505 students. This had risen to 532 by the fall of 1998.

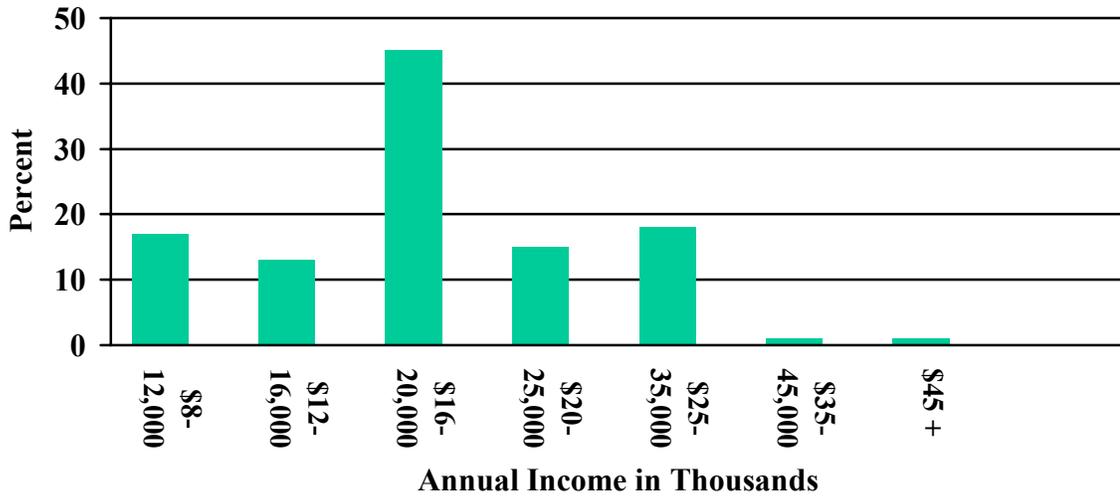
Roughly 95% of the students at Broad Acres live within walking distance of the school. This makes Broad Acres an optimal setting for a school-based program, in that services are easily accessible to a majority of students and their families. However, Broad Acres also has one of the highest mobility rates within the county, with anywhere from 30% to 40% of students entering or leaving the school in a given academic year. (The mobility rate for the 1998/1999 school year was 32%).

Broad Acres also has a culturally diverse student body, representing over 40 nations and 10 languages. Roughly 75% of parents in the Broad Acres community are recent immigrants, with many families coming from Central America, Southeast Asia, Africa and the Caribbean. Of 96 parents interviewed for the research study in 1996, fewer than 6% of mothers reported having been born in the United States. The ethnic composition of the student body at Broad Acres is roughly 55% Hispanic, 27% African American, 18% Asian, and 1% Caucasian. In the 1998/1999 school year, 32% of students received ESOL (English for Speakers of Other Languages) services.

The Broad Acres community is culturally diverse, yet largely economically disadvantaged. During the 1998/1999 school year, 90% of students in the school were eligible for Free and Reduced Meals (FARMS), a frequently cited poverty indicator.

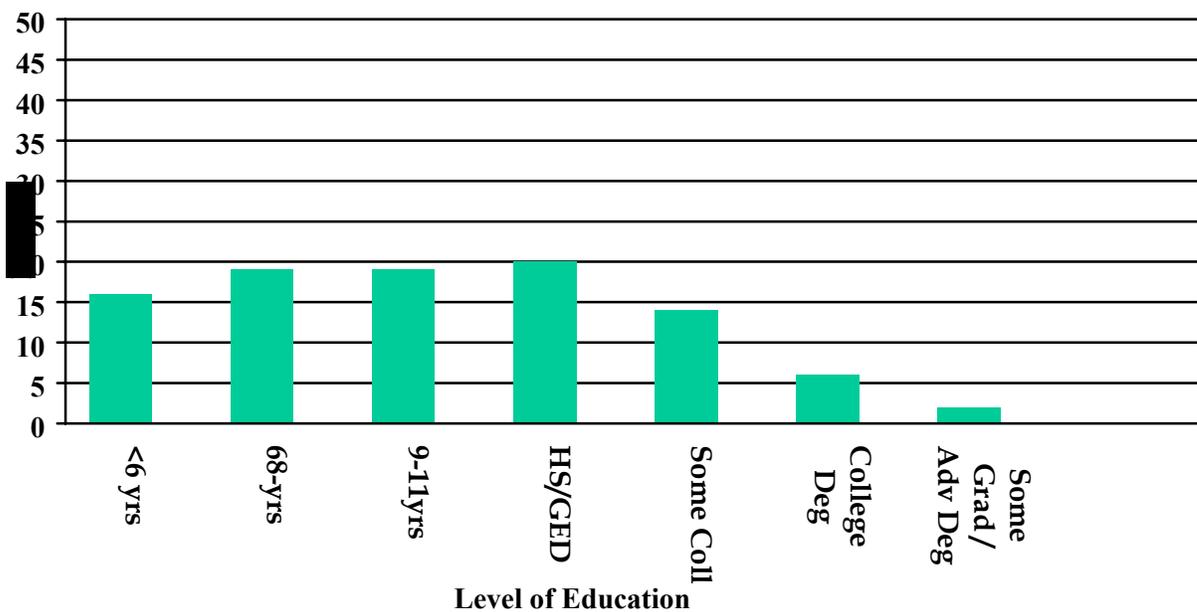
Data from the University of Maryland study provide additional information on socioeconomic status of the families at Broad Acres. Of 96 parents interviewed in the spring of 1996, the mean annual family income reported was in the range of \$12,000 - \$20,000. Only 2% of parents reported an annual family income greater than \$35,000.

Figure 1. Annual Family Income at Broad Acres in 1996 (n = 96 parents)



In terms of educational status, 54% of mothers, and 41% of fathers, did not complete high school. Maternal education levels are displayed in Figure 2 below.

Figure 2. Maternal Education Levels Reported at Broad Acres in 1996 (n = 96 mothers)



Evolution of the Linkages to Learning Program at Broad Acres Elementary School

Year One (April 1996 – August 1997)

The Linkages to Learning program at Broad Acres began in April of 1996. Staff members (all of whom were part-time), included a program coordinator, case manager, mental health therapist, community service aide, school community health nurse, and health room technician. Initially, the mental health and social service staff were housed in a trailer on the front lawn of the school, while the health staff were located in the health room within the school building.

The first phase of Linkages to Learning focused on information gathering, outreach, and planning activities. The staff spent time getting to know the families in the community and learning about their needs and concerns. A formal needs assessment was completed by 60 families, and several informal meetings were held with parents and school staff. The program staff also made efforts to learn about other service providers in the community in order to minimize both overlaps and gaps in services for families. During this initial phase, a great deal of attention went into forming relationships with school staff. Linkages staff learned about the roles of school personnel and school policies. This enabled the school and Linkages team members to collaboratively develop a set of coordinated policies and procedures for the Linkages program, such as mechanisms for program referrals, management of crises, and communication guidelines.

In the fall of 1996 the program moved from a two-room trailer into two portable classrooms beside the school. Two social work interns and a number of community volunteers joined the staff. Program highlights for this first full year of services included the development of a series of early intervention social skills groups for children, acculturation workshops for parents, aerobics classes (in partnership with Montgomery County Recreation Department), and a therapeutic summer camp program for children with emotional and behavioral problems.

During the first year of operation a total of 253 families, representing roughly half of the school population, had at least one contact with the Linkages to Learning program. Seventy families received more than one type of service (e.g. mental health and social services; mental health and educational support). Table 2 shows the number of individuals served in Year One, by type of service received.

Table 2. Summary of Services Provided in Year One

Adult Services		Child Services	
Type of Service	# of Adults Served	Type of Service	# of Children Served
social service assistance	83		
mental health & psycho-educational services	48	mental health & psycho-educational services	133
adult education (English classes)	31	classroom-based social skills training	64

Year Two (September 1997 – August 1998)

In the spring of 1997, a grant from the Robert Wood Johnson Foundation (Making the Grade) provided funds to expand the Linkages to Learning program into a full-fledged school-based health center. Building upon the strong mental health and social service components of the program, the RWJ funds permitted a significant increase in the scope of somatic health care services available to children at the school, and eventually expanded to include some family members as well. New partners at the site as a result of the RWJ grant included Children’s National Medical Center, Holy Cross Hospital, and The Catholic University of America, School of Nursing. Expanded somatic health services provided through the RWJ funds include:

- primary health care for students (including physical exams and immunizations)
- laboratory testing
- prescription and dispensation of medications
- diagnosis, treatment, referral and case management for children with acute and chronic illnesses
- physical exams for siblings and mothers of enrolled students

Also during this year, a Community Development Block Grant was used to construct a semi-permanent structure for the Linkages to Learning School-Based Health Center. This building enabled all of the staff (mental health and somatic health) to be housed in one location for the first time, and fostered better integration and coordination of services.

Program highlights from the second year included the development of a comprehensive mental health assessment protocol, weekend sports clinics for children and parents (co-sponsored by the Recreation Department), an SAT preparation class for Vietnamese teens, and English classes for parents (with simultaneous tutoring and recreation activities available for children two nights a week). Parents and children also participated in monthly Family Learning Nights that helped parents become more actively involved in their children’s education.

A total of 37 children received ongoing individual therapy services in Year Two. Twenty-four children participated in prevention and early intervention groups, with an additional 19 children participating in intensive therapy groups for children with diagnosed social/emotional problems. Nineteen families received family therapy services. In total, there were over 4,000 visits to the Linkages School-Based Health Center during the 1997/1998 school year. Table 3 highlights some of the services provided during Year Two.

Table 3. Selected Services Provided in Year Two

Type of Service	# of Visits
Mental Health	
child therapy	387
classroom-based prevention group	381
parent support group	193
early intervention group (child)	181
family therapy	53
Somatic Health	
sick care	315
immunizations	189
physical exams	118
Educational Support	
English Classes for Parents	1602
Social Service Assistance	
(all types)	248

Year Three (September 1998-August 1999)

The third year of operations for the Linkages program involved many changes and continued growth. Unfortunately, the departure of the case manager/therapist in September 1998, and the inability to fill this vacancy until January 1999, left a rather substantial void in the staff. This not only meant a greater burden for other team members trying to manage in the interim, but also led to lower productivity overall for the year. This is reflected in decreases in the number of social service and adult mental health visits during the third year of operation. On the positive side, several innovative changes also occurred during this year. The collaborative relationships among team members continued to deepen, and new interdisciplinary projects were launched. For example, somatic health and mental health staff members collaborated on several initiatives to address the needs of children with ADHD and their families. The school and program staff also continued their collaboration to help students prepare for the transition into middle school. Staff conducted classroom-based groups for 5th graders, and smaller groups for students who were having difficulty with this transition.

The third year of operation also involved some exciting developments in the social service and adult education programs. An internal assessment of the English

classes for parents led to the conclusion that parents needed smaller classes and more opportunities for conversation and practice of daily interaction skills. As a result, a conversation class was piloted in the spring, with plans to expand to more classes by the fall of 1999. In addition, several computers were acquired and loaded with educational software. These computers, located in the Linkages waiting room, were used by students for homework and school projects, and by parents who wanted to practice English language or basic computer skills. The case manager offered computer orientation classes on an ongoing basis.

In the spring of 1999, the School-Based Health Center hosted several site visits. Linkages visitors included the newly-appointed President of the University of Maryland, College Park, the Superintendent of Montgomery County Public Schools, and participants at the annual conference of the National Assembly on School-Based Health Care.

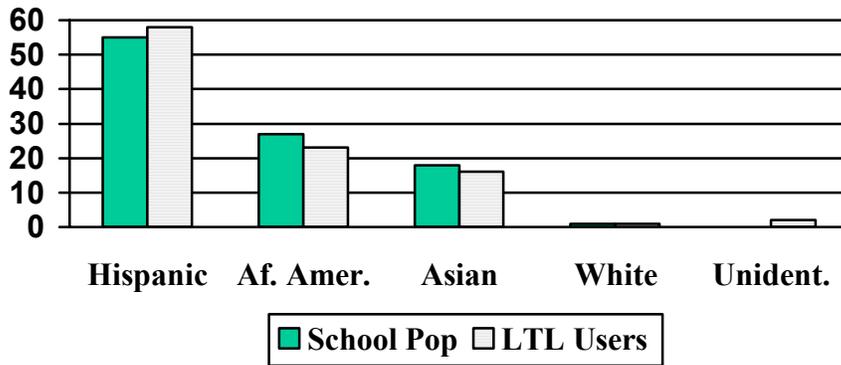
Summary of Three Years of Services

The research team at the University of Maryland examined service utilization data from the first three years of the program. The research cohort used for this analysis included all children in three grades (kindergarten through 2nd grade at the time the study began in the Spring of 1996). These children represent roughly half of the total school population.

A total of 331 children were members of this cohort between 1996 and 1999. Of these children, 61% used Linkages services at some time. An analysis of ethnicity indicates that there are few differences between Linkages service users and the general school population. Figure 3 depicts this comparison. As can be noted, among 202 children in the cohort who received Linkages services, slightly more were Hispanic, and slightly fewer were Asian and African American, than in the general school population. However, these differences were small.

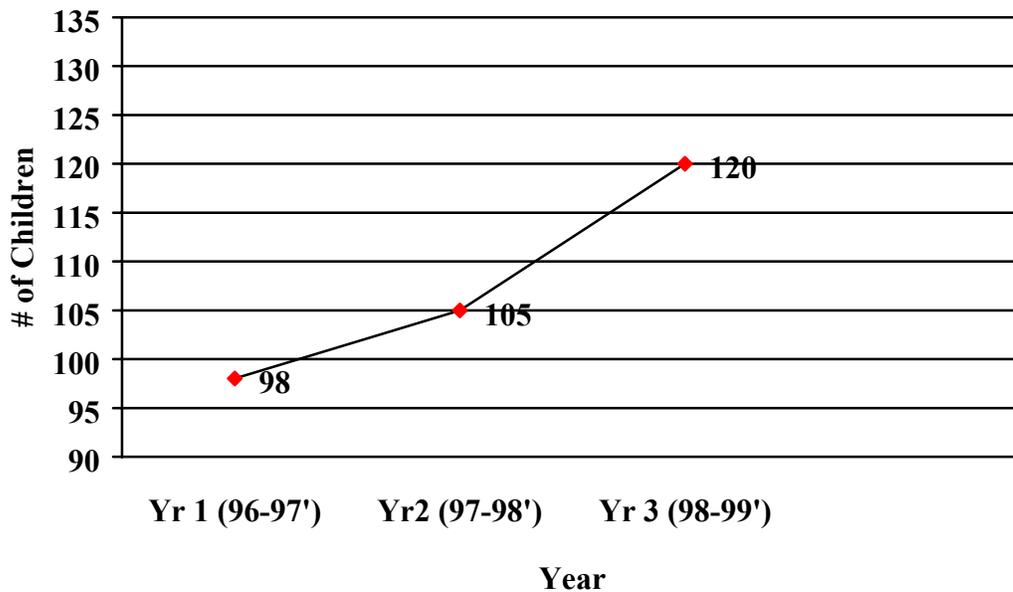
Figure 3.

Comparison of Children Using LTL Services to Those in the General School Population



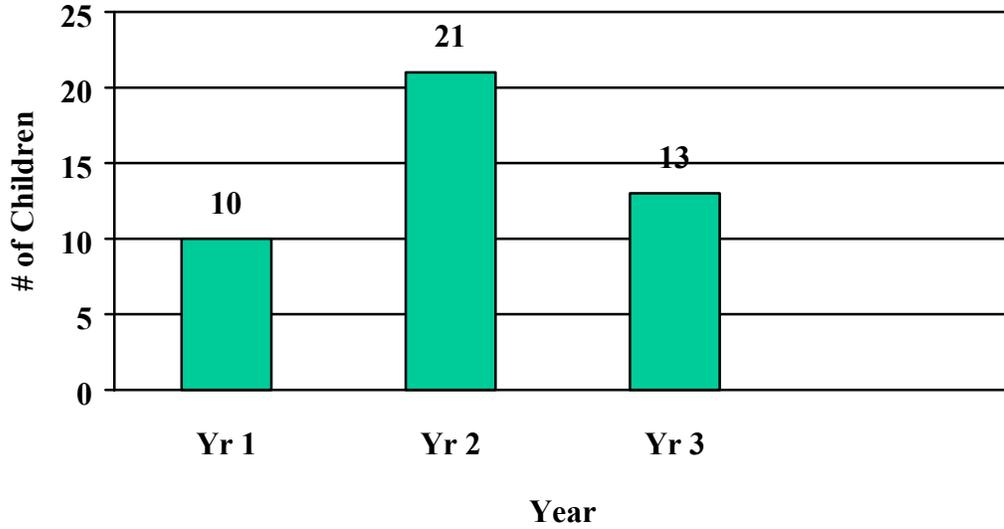
Further analysis of the cohort data indicates that the number of children and parents receiving Linkages to Learning services has increased each year. As Figure 4 indicates, the number of children in these three grades who received some form of service increased from 98 in Year One, to 120 in Year Three. This is probably explained in part by the addition of somatic health care services during Year Two.

Figure 4. Number of Children in the Research Cohort Receiving Services: 1996 - 1999



The frequency of services received also changed some over the course of the three years. Figure 5 illustrates the change in the number of children receiving intensive services (defined as greater than 20 visits per year), over the course of the three years.

Figure 5. Number of Children in the Research Cohort Receiving Intensive Services (>20 visits/year): 1996 - 1999



Goals and Objectives

Researchers at the University of Maryland identified specific program goals for the first three years of operation of the Linkages to Learning program at Broad Acres Elementary School. These objectives, and progress towards meeting them, are described below. They include 3 outreach and 8 direct service objectives.

Outreach Objective 1.

Increase parental knowledge and awareness of the full range of health and human services available to them and their children.

Throughout the life of the Linkages to Learning program at Broad Acres, the staff has focused on helping parents to learn more about the services that are available to them both through the Linkages program itself, and within the wider community. Each fall Linkages staff members attended a number of school events for parents and teachers in order to become familiar to the community and to conduct outreach activities. These included Kindergarten Orientation, Back-to-School Night, first day of school events, and school staff meetings. During the first year of operation the Linkages staff also held a number of Open Forums for parents specifically for the purpose of getting to know the community better and hearing about their concerns and needs. These meetings also offered parents the opportunity to learn more about program services.

On a day to day basis, the Linkages to Learning case manager, community service aide and social work interns all played pivotal roles in helping parents to access a variety of services in the community. A key aspect of their work involved learning about and establishing relationships with a number of agencies and organizations that serve parents in this community. Phone contacts, site visits and trainings on community programs were all avenues for creating such relationships. Staff members then shared this knowledge with parents and with other staff.

Acculturation workshops also proved to be an excellent means of sharing knowledge with parents. These workshops covered subjects such as understanding the school system, using public transportation, and finding summer camps for kids. Workshops were conducted in Vietnamese and Spanish.

In its first year of operation, the Linkages program at Broad Acres established a Community Advisory Board to help provide program oversight and direction. This Board included members of many community organizations serving children and families in Silver Spring and surrounding areas. One of the functions that the Board assumed was to keep program staff informed of new services available to families, as well as changes in policy or programming in the county that may affect this community. This information has been valuable to the staff in keeping parents informed and educated as well.

Finally, the Linkages to Learning program hosted two Community Health Fairs. These day-long events were opportunities for all members of the Broad Acres community to learn more about a wide range of health and mental health issues. Activities included

fitness demonstrations, games, music, healthy cooking seminars, blood pressure screening, and depression screening for adults. Information booths provided literature, discussions and videos on topics such as heart disease, AIDS, cancer, immunizations, and dental care. These Health Fairs also provided an opportunity for families to learn about the Linkages to Learning program. Attendees at the first Health Fair included over 250 individuals, including Montgomery County Council members, U.S. Representative Albert Wynn, and U.S. Senator Paul Sarbanes.

Outreach Objective 2.

Assist students and parents in recognizing their need for services.

Since elementary school-age children generally do not refer themselves for mental health and social services, most referrals come either from parents or school personnel. Therefore, a second outreach objective was to increase awareness and knowledge about the need for services among parents and educators. Some education of children, such as through classroom-based presentations on health and mental health issues, also occurred.

A year-long series of workshops for teachers was aimed primarily at educating school staff about common mental health problems experienced by children. At these sessions experts talked about normal development as well as warning signs that teachers might observe which could indicate a need for mental health services. These included behaviors associated with depression, anxiety, and ADHD. An emphasis was also placed on providing teachers with classroom strategies to help children exhibiting such behaviors.

In addition to these workshops, one of the Linkages therapists conducted weekly “drop in sessions” with the school counselor to provide teachers with an opportunity to informally discuss concerns they had about particular students. The therapist and counselor worked with teachers to determine whether a formal referral to the Linkages program was appropriate, or whether classroom-based strategies (devised by the teacher and counselor) might be useful.

Efforts to help parents recognize their needs for services focused mainly on presentations during PTA and other parent meetings. A Spanish-language Parent Support group that met for two years frequently focused on topics such as child development, nutrition, women’s health, and parenting practices. This group, which was co-led by the Linkages case manager and the school’s parent outreach worker, provided parents with both knowledge about healthy practices and access to services through the program.

Outreach Objective 3.

Encourage students and parents to seek services for self-identified needs.

An ongoing goal of the program at Broad Acres was to reduce the stigma associated with “needing help” (especially mental health services), and addressing the barriers to services which are often cited by parents in this community. During the past three years Linkages staff members tried to attend as many school and PTA sponsored events as possible in order to get to know parents informally. Program staff also worked

to create opportunities for parents to come to the Linkages to Learning offices so that they would feel comfortable seeking assistance when they had needs.

Direct Service Objective 1.

Assist parents in coping with and resolving household management problems by providing them with necessary housing, transportation, finance, legal, and child care services.

A primary role of the case manager, community service aide and first-year social work intern was to assist parents in dealing with social service needs. Linkages staff members provided information about resources, and made referrals to other agencies for services. Linkages staff members also worked with families to ensure that they could successfully make connections with outside agencies. For example, staff members drove parents to appointments when other transportation was not available. Linkages staff also helped parents learn how to use public transportation. Frequently Linkages staff members assisted families in completing applications for services such as immigration, employment and housing. During the 1997/1998 school year, a total of 370 visits to the Linkages program were for social service assistance. The breakdown of visits by type of service provided is illustrated in Table 4 below.

Table 4. Social Service Visits to the Linkages Program (1997/1998 School Year)

Type of Service Provided	# of Visits
translation	54
eligibility determination	46
employment	43
legal/immigration	27
housing	21
transportation	19
mental health referral	7
food/nutrition	6
financial	4
clothing/furniture	4
day care	3
camp	1
Total Visits (all types)	370

An important philosophical shift in the provision of social services has also occurred over the three years that the program has been in operation. Over time the Linkages staff has concentrated its energies less on providing services for parents, and more on helping parents to develop the skills and resources necessary for greater empowerment and self-sufficiency. As an example of this shift, initially the Linkages staff members spent a significant portion of their time translating materials for parents who did not have the English skills to read these documents themselves. Staff members also frequently accompanied parents to appointments in order to translate for them. Over time, the Linkages program instituted English classes, conversation groups, tutoring and computer programs to help parents learn English so they would no longer be dependent

on others for these services. During the 1997/1998 school year, 76 parents participated in English classes. This past year, smaller conversation groups were piloted in order to give parents the opportunity to role play real life situations (such as applying for a job), and get feedback on both their verbal and nonverbal communication skills.

Direct Service Objective 2.

Provide parents with needed counseling and training to enhance their parenting skills and motivation.

There were several mechanisms through which parents received counseling and parenting skills. Each year, several parents participated in individual, couples, or family therapy. However, because parents (particularly those from other cultures) are often deterred from seeking help by the stigma associated with therapy, services were often provided to parents informally (e.g. talking with a parent about parenting issues when the original reason for the visit may have been a social service or health need), or through parent support groups. As noted above, the Linkages to Learning program had much success with parent support groups which gave parents the opportunity to cover topics of interest to them in a “non-threatening” and supportive atmosphere. The most frequently addressed issues raised by parents receiving Linkages services during the 1997/1998 school year were: family/marital issues, parenting issues, and acculturation issues.

Direct Service Objective 3.

Provide parents with direct counseling to reduce social and emotional problems.

As noted above, each year some parents received individual, couples, and family therapy through the Linkages program. In addition, many parents were referred to outside agencies to address needs that were beyond the scope of this program, such as substance abuse counseling, psychiatric services, or intensive, long-term therapy. An important component of the mental health program at Linkages involved helping parents cope with the psychological stresses of acculturation. The Linkages to Learning staff became increasingly aware of the difficulties many parents experienced in working through the losses (of family, culture and identity) associated with immigration, as well as the challenges of adapting to life in a new country. Program activities designed to help parents with the process of acculturation were continually developed. Services included discussion groups on acculturation; parent support groups on “bi-cultural parenting practices;” and educational and recreational field trips for parents and children that explored the differences between American culture and other cultures.

Direct Service Objective 4.

Provide students with direct counseling to reduce social and emotional problems.

Addressing the mental health needs of children with social and emotional problems has been a central focus of the Linkages program at Broad Acres. Key initiatives in this area included developing an efficient and effective referral system; implementing a comprehensive assessment protocol which included gathering data from parents, school staff, medical and educational records, and direct observation; and designing a number of groups that ranged in scope and intensity from classroom-based prevention groups to therapy groups for children with significant social and emotional problems.

Direct Service Objective 5.**Provide students with social skills training, coping skills, and empathy building to promote their social adjustment.**

As noted above, the Linkages program offered a number of skill-building groups for children. During the first year the program offered a number of classroom-based groups which focused on increasing students' knowledge and awareness of their own emotions, and developing skills for appropriate expression of feelings. These groups were co-led by a therapist and a classroom teacher. In addition, each year for the past three years, the Linkages staff has met with school staff to design prevention and/or early intervention groups. Out of these meetings came a series of 10 - 15 week groups. For example, the PALS group was developed for children in the early grades who displayed a marked deficit in social skills. Over the last two years groups have been developed for children who were identified by teachers as shy and withdrawn. These groups have also been opportunities for therapists to observe children who may need more intensive treatment, and to make recommendations for services based on these observations.

Direct Service Objective 6.**Provide students with needed mentoring and tutoring to improve their academic skills and motivation to excel in school.**

Although tutoring and mentoring activities were not formal aspects of the original Linkages model, most Linkages to Learning sites have developed educational support services. At Broad Acres, the school itself had a number of tutoring and mentoring programs in place (e.g., homework club, a senior citizen reading program, a Vietnamese tutoring program), and therefore the demand for additional services was somewhat limited. The Linkages to Learning program did, however, try to fill in some gaps where they existed. For example, the Linkages community service aide worked with a community member who organized an SAT preparation course for Vietnamese high school students. University of Maryland volunteers and undergraduate interns served as tutors for students with unmet needs. In addition, a small state grant that helped to fund English classes for parents also enabled the development of tutoring and recreational activities for children two nights a week while their parents were in class. During the 1997/1998 school year, 35 children participated in weekly tutoring sessions, while 28 children participated in recreational activities ranging from board games to team sports.

Direct Service Objective 7.**Support for teachers to assist in improving classroom atmosphere, student interest, and student on-task behavior.**

The Linkages staff offered a series of in-service workshops for teachers focusing on social and emotional disturbances, behavior management strategies, and Linkages to Learning services. Workshops also focused on the challenges of working in a multicultural school setting. On a smaller scale, Linkages staff members worked to keep in close touch with teachers of students served by the program. While being very careful to respect the confidentiality of students and families, program staff periodically met with teachers about classroom performance and treatment progress. Feedback from teachers about this communication has been positive.

Staff members also provided limited consultation services to the school, while working closely with the school counselor. Consultation activities included classroom observation of particular students, as well as providing feedback to teachers about strategies for improving their effectiveness in the classroom, particularly in the area of behavior management.

Each spring the Linkages staff members held a forum with the school staff in order to get feedback from teachers about their experiences working with the program over the past year. Teacher comments were recorded and then discussed by the program staff, and attempts were made to incorporate this feedback into planning for the next year.

Direct Service Objective 8.

Provide students and their families with health and nutrition information and primary prevention services.

One of the most fortunate developments over the course of the past three years has been the expansion of the Linkages to Learning program into a full-fledged school-based health center. Expansion of primary health care services was key to dealing with some of the most critical barriers to children's academic and social growth. This expansion also created rich opportunities for collaboration. For instance, this past year the mental health and somatic health care staff teamed up and offered a group for children with ADHD, with a corresponding group for their parents. While parents received information about managing ADHD (including medication management, nutrition, and parenting techniques), children developed new anger management and impulse control skills, and practiced age-appropriate social interactions.

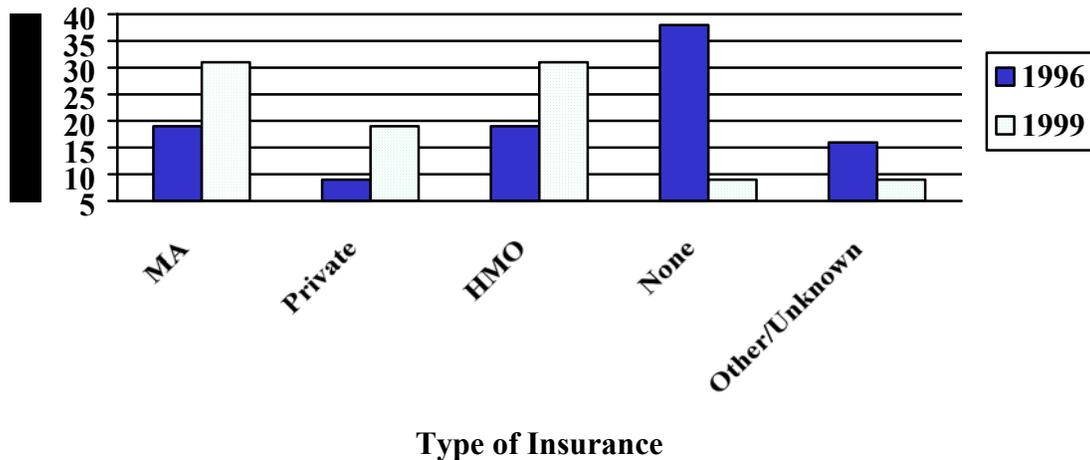
One of the major initiatives of the Linkages program over the last three years was to increase the number of children at Broad Acres who had a primary medical provider. Of 95 parents interviewed in 1996, 53% reported that their child had no health care coverage. In 1997, over 50% of parents enrolling their children in the School-Based Health Center reported the same.

Data also suggested, however, that many of these uninsured children might be eligible for County, State or Federal health care programs. (For example, Care for Kids, Kids Count or Medical Assistance). It was believed that many children were uninsured because parents did not know about available programs, were fearful about applying for services, and/or were deterred by practical problems such as lack of transportation or child care. As a result, a collaboration developed between the Linkages program, the Montgomery County Health Department (Service Eligibility Unit), and the School Health Services Department of the Montgomery County Department of Health and Human Services. The goal of the program was to increase the number of children with a primary medical home. Initially, this was accomplished by bringing eligibility workers from the Department of Health on-site two days a week. These workers, along with Linkages staff members, answered parents' questions, helped to determine eligibility for various programs, and assisted with the application process.

During the third year of the program this process was made even easier as a result of two changes. First, the initiation of the Maryland Children’s Health Insurance Program (the state’s version of the national initiative to provide health insurance for all American children) simplified the application process significantly. Secondly, a project was launched which involved training parents (called Health Promoters) to assist other parents in applying for health care programs. A total of 43 parents were trained as Health Promoters in Montgomery County (roughly half in the Silver Spring area). These Health Promoters helped 188 families to complete applications for coverage, with fewer than 5% of applications denied.

Data from the research cohort at Broad Acres suggests that the efforts of the Service Eligibility workers, Linkages staff members, and Health Promoters have paid off significantly. More and more children in this community have been able to identify a primary medical provider each year. Of 95 parents interviewed in 1996, 53% reported that their child had no health care coverage. In 1999, however, only 10% of the 53 parents interviewed reported no coverage for their child. In a sample of 32 families followed from 1996 to 1999, the percentage of uninsured children dropped from 38% to 9% during this three-year period. Of the three types of insurance identified (private, HMO, and medical assistance), the percentage of children covered by each type of insurance increased roughly 10%. Figure 6 illustrates these changes in insurance status from 1996 to 1999.

Figure 6. Health Insurance Coverage for Longitudinal Sample of Broad Acres Children (n=32)



Research Methods

In addition to funding the Linkages to Learning program, the U.S. Department of Education grant awarded to the University of Maryland also supported a four-year empirical evaluation of the impact of Linkages to Learning on children and families at

Broad Acres Elementary School. As part of this evaluation, information was collected over four years on the social/emotional and academic functioning of children from two schools: Broad Acres, which received the Linkages to Learning program, and a matched control school. The design of the study was to collect pre-test, or baseline data at both schools just prior to the initiation of the Linkages program at Broad Acres, and to then collect subsequent data at yearly intervals from children in both schools. This included three years of post-test data collected each Spring concluding with 1999. Children and their families in grades K-2 were chosen to participate in the evaluation since they would be in 3-5th grades by the end of the evaluation period, and still in the elementary school.

Research Sample

The participants in the original sample included 156 parents and 213 children enrolled in grades K-2 at two suburban Maryland public schools during the 1995-1996 academic year. The experimental group included 144 children (63 girls, 81 boys) and 95 parents (84 mothers, 9 fathers, 2 other primary care givers), and 11 teachers. The control group included 69 children (31 girls, 38 boys) and 61 parents (54 mothers, 6 fathers, 1 other primary caregiver), and 6 teachers. The difference in the sample sizes between the two schools reflects differences in the total school populations. Broad Acres has approximately 1/3 third more students and teachers than the control school. Approximately 65% of the eligible families at the experimental school, and approximately 45% of families at the control school, consented to participate in the study. The mean age for both groups of children was 6 years 7 months.

Over the four years, a total of 119 children and 69 parents were followed and included in the longitudinal sample. The longitudinal sample consisted of families from whom data were collected both at baseline and at Time 3. The relatively smaller size of the longitudinal sample reflects not only the typical problems of attrition, but also the unusually high mobility rates at both the experimental and control schools. For example, in the 1995-1996 school year, the mobility rate at the experimental school was 40% and 34% at the control school. Mobility is a measure of the percent of children in the total school population who entered or left the school during a given academic year. Tables 5 and 6 present the demographic characteristics of the longitudinal sample at baseline.

Table 5. Child Demographics (longitudinal sample)

	Ethnicity/Race					Grade		
	Hispanic	African Amer	Asian	Anglo		K	1st	2nd
Exper.	66.7%	13.3%	20%	0%		37.3%	24%	38.7%
Control	50%	4.5%	4.5%	41%		40.9%	15.9%	43.2%

Table 6. Parent Demographics (longitudinal sample)

	Maternal Length of Time in Country					Income Level						
	<3 yrs	3-7 yrs	7-10 yrs	>10 yrs	US Citiz	<12 K	12-20	20-35	35-45	45-75	>75 K	missing data
Exper.	0%	13%	44%	44%	0%	31%	25%	22%	0%	0%	0%	22%
Control*	3%	5%	8%	22%	59%	3%	11%	24%	14%	11%	30%	8%

* 2.7% missing data for maternal length of time in country for control group

	Maternal Education						
	<6 yrs	6-8 yrs	9-11 yrs	H.S/GED	Some College/ College Degree	Some Grad/ Grad Degree	missing data
Exper.	28.1%	21.9%	21.9%	12.5%	12.6%	3.1%	n/a
Control	5.4%	13.5%	2.7%	10.8%	29.7%	32.4%	5.4%

Because this project was designed as a comparison-school study, we expected that children and families at both schools would have relatively similar demographic profiles. Unfortunately, as Tables 5 and 6 indicate, major differences existed. Not only were there differences in ethnicity, income level, education and length of time in the U.S., but other school-wide demographic differences were also found. The population at the two schools also differed in mobility, FARMS (Free and Reduced Meals) participation (92% experimental, 56% control school), ESOL participants (26% experimental, 21% control school) and international students (22% experimental, 12% control school). Overall, the experimental school served a population at greater-risk for difficulties than the control school.

Measures of child behavior problems and academic performance from the pre-test also showed children at Broad Acres having more difficulties than children at the control school. For example, we found that according to teachers, the children at Broad Acres demonstrated more acting-out behaviors, such as being disruptive in class, and more learning difficulties, such as poor concentration than students at the control school. According to mothers, children at Broad Acres demonstrated more total problem behaviors, such as aggression and depressive symptoms, than children at the control school. And, Broad Acres students demonstrated poorer academic performance on measures of math, reading and writing abilities.

Procedure

During the fall of the 1995-1996 school year, all parents with children in grades K-2 at the experimental and control schools were introduced to the Linkages to Learning Evaluation Project. Bi-lingual staff distributed informational flyers and answered questions at parent meetings, PTA functions, and other school activities. All flyers and consent forms were available in English, Spanish and Vietnamese. Additionally, teachers in grades K-2 distributed to all children in their classrooms consent forms and endorsement letters from the principals.

Based on consent forms received, parents were initially contacted in early Spring 1996 and then again every Spring including 1999, to complete the parent interview questionnaires. Face to face interviews, included administration of nine different measures, lasted 1 to 2 hours and were conducted either at the subject's home or at the school. Upon completion of the interviews, parents at Broad Acres were compensated with grocery store gift certificates, while control school parents received field-trip coupon books. Appropriate compensation items were selected with input from each school principal.

Child interviews, also conducted annually during the Spring, were split into two sessions and conducted at the school. Each session lasted approximately 30-45 minutes and took place during the school day. Children were rewarded with stickers, a certificate, or decorated pencils upon completion of their interview.

In addition to parent and child interviews, teachers completed two questionnaires each year. One asked teachers to assess the behavior of each child in his or her

classroom, and the other measured each teacher’s stress and burnout level. A summary of all research instruments is found below.

Each year, approximately 8-10 trained undergraduate and graduate students from the University of Maryland and other local universities collected data from both parents and their children. Several research assistants were Spanish or Vietnamese bilingual speakers who conducted interviews with participants in their native language. All questionnaires were translated and back-translated independently into both Spanish and Vietnamese to ensure accuracy.

Measures

The parent measures were designed to assess the overall functioning of families (e.g., health and mental health functioning of parents, demographics, social supports, family environment, marital satisfaction, etc.). All questionnaires, with the exception of the LTL Parent Questionnaire, have been used in previous studies. The LTL Parent Questionnaire, the only non-normed instrument, was used to collect demographic information on each family. The table below outlines each instrument and the areas it assessed.

Table 7. Summary of Parent Research Instruments

Parent Instruments	Areas of Assessment
LTL Parent Questionnaire	<ul style="list-style-type: none"> ◆ Demographic information ◆ School, mental health, and health service utilization and barriers
Child Behavior Checklist (Achenbach, 1988)	<ul style="list-style-type: none"> ◆ Behavioral syndromes (e.g., somatic complaints, anxiety/depression, social problems, etc.) ◆ Externalizing and internalizing problems
Recent Life Events (Life Experiences Survey; Sarason et al., 1978)	<ul style="list-style-type: none"> ◆ Major life stressors within past year (e.g., financial changes, changes in family, personal events, etc.)
Personal Resource Questionnaire (Brandt & Weinert, 1981)	<ul style="list-style-type: none"> ◆ Parents’ perceptions of own social support resources
Family Environment Scale (Moos & Moos, 1981)	<ul style="list-style-type: none"> ◆ Social environment of the family (e.g., family cohesion, conflict, control and expressiveness)
Brief Symptom Inventory (Derogotis, 1993)	<ul style="list-style-type: none"> ◆ Self-report of health and mental health symptoms within past 7 days

Childrearing Inventory (Parenting Dimensions Inventory; Slater & Power, 1987)	<ul style="list-style-type: none"> ◆ Levels of parental support of child ◆ Levels of parental control ◆ Levels of consistency and organization of parenting
Partner Relationship Scale (Dyadic Adjustment Scale; Spanier, 1976)	<ul style="list-style-type: none"> ◆ Marital adjustment ◆ Levels of stress/conflict vs. support in marital relationship

The child interviews consisted of a nationally normed academic achievement screen in addition to five self-report instruments designed to measure childrens' perceived social competencies, emotional distress symptoms, exposure to violence and peer relations.

Table 8. Summary of Child Research Instruments

Child Instruments	Areas of Assessment
The Pictorial Scale of Perceived Competence & Social Acceptance for Young Children (ages 4-7) (Harter & Pike, 1983)	<ul style="list-style-type: none"> ◆ Self perceptions of competence and peer acceptance (e.g., maternal, scholastic, physical/athletic & social acceptance)
The Self-Perception Profile for Children (ages 8-13) (Harter, 1985)	<ul style="list-style-type: none"> ◆ Self perceptions of competence and general self-worth (e.g., scholastic, athletic competence, physical appearance, behavioral conduct, cognitive & social acceptance)
Levonn-Modified Version (Richters, Martinez & Valla, 1990)	<ul style="list-style-type: none"> ◆ Self-reported emotional distress (e.g., depression, anxiety, and fear)
VEX-Violence Exposure Questionnaire (Revised Version) (Fox & Leavitt, 1995)	<ul style="list-style-type: none"> ◆ Self-reported exposure to violence as victim and witness
Woodcock-McGrew-Werder Mini-Battery of Achievement (1994)	<ul style="list-style-type: none"> ◆ Academic achievement in areas of reading, writing and mathematics
Class Play/Peer Nominations (Masten, Morison & Pellegrini, 1985)	<ul style="list-style-type: none"> ◆ Peer nominations on dimensions of social competence, rejection, and aggression

Two teacher questionnaires were completed. The first consisted of a 22 item questionnaire which assessed the degree to which teachers experience symptoms of burnout such as emotional exhaustion and client depersonalization. The second was a checklist questionnaire which assessed positive and negative behaviors exhibited by children in a class. Both measures have been published previously with considerable literature concerning their reliability and validity.

Table 9. Summary of Teacher Research Instruments

Teacher Instruments	Areas of Assessment
Maslach Burnout Inventory (Maslach & Jackson, 1986)	<ul style="list-style-type: none"> ◆ Emotional exhaustion ◆ Client depersonalization ◆ Lack in personal accomplishment
Teacher-Child Rating Scale (TCRS) (Hightower, Work, Cowen, Lotyczewski, Spinell, Guare & Rohrbeck, 1986)	<ul style="list-style-type: none"> ◆ Behavior problems and competencies of each child in the class

Data Management

During the summer and fall of each year, the data collected from the previous Spring were coded and entered into SPSS (Statistical Package for the Social Sciences) program files. All data were entered twice and reliability checks were conducted for every question using a syntax file created by the researchers. Discrepancies were checked, discussed if necessary, and corrected. Working systems files, consisting of scored subscales from each measure, were created and used for all analyses. Additionally, follow-up forms completed by each interviewer for all interviews were reviewed. These follow-up forms were completed at the time of the interview, and gave interviewers an opportunity to note any circumstances that may have compromised the validity of the data collected. For instance, interviewers noted whenever there were substantial disruptions during the interview session, when participants did not appear to understand a question or scale, or when participants did not seem to be paying attention or taking the time to think about their answers. All items judged to be potentially invalid were flagged and those items and/or subjects were excluded from relevant analysis. All analyses were conducted by one of three data analysts using SPSS.

Results/ Discussion

Child Outcomes

A series of repeated measures analyses of variance were completed on data collected from three different sources: primary caregivers, teachers, and children. Analyses compared longitudinal changes in child behaviors at the experimental and control schools from baseline 1996 to August 1999. Scores were obtained from parents on the Child Behavior Checklist (CBCL, Achenbach, 1991), teachers on the Teacher-Child Rating Scale (T-CRS, Hightower, et al., 1986), and from the children themselves on the Levonn Scale of Children's Emotional Distress (Richters, Martinez, & Valla, 1990). Analyses compared differences in the average scores between children in the two schools, and differences among children in the experimental school who did or did not receive services through the Linkages to Learning program.

Each of the following sections begins with a concise summary of the major findings. This is followed by a more detailed explanation of the data analyses. In addition, graphs are included to clarify the results pictorially.

A. Emotional and Behavioral Outcomes: Parent Report

Findings:

Parents in the school with the Linkages to Learning program reported a significant decrease of children's negative behaviors over three years. Decreases were reported on both the externalizing and internalizing subscales. At baseline, children in the experimental school exhibited more negative behaviors than children in the control school. However, by the end of the third year of the Linkages to Learning program, children at the experimental school had fewer negative behaviors than those at the control school. This suggests that Linkages may have had a positive, school-wide impact on the prevalence of parent-reported behavior problems.

The CBCL assessed parent perceptions of children's emotional and behavioral difficulties. The overall ANOVA results and simple effects at baseline and again at the end of the third year indicated no significant differences between the two schools on either of the two major subscales: externalizing and internalizing problem behaviors. There was an overall decrease in the mean problem behaviors on both subscales over time and this main effect was significant. In addition, there were similar significant Time x School interactions for both the externalizing ($F(2,66) = 13.43, p < .001$) and internalizing ($F(1,67) = 6.38, p < .014$) subscales. Figures 7 and 8 graphically illustrate these interactions. As can be noted for both internalizing and externalizing behaviors, there was a sharp reduction in problem behaviors among children at the experimental school. While there was some reduction in behavior problems reported by parents at the control school, this change was considerably smaller.

Figure 7. Parent Reported Child Externalizing Behaviors by School

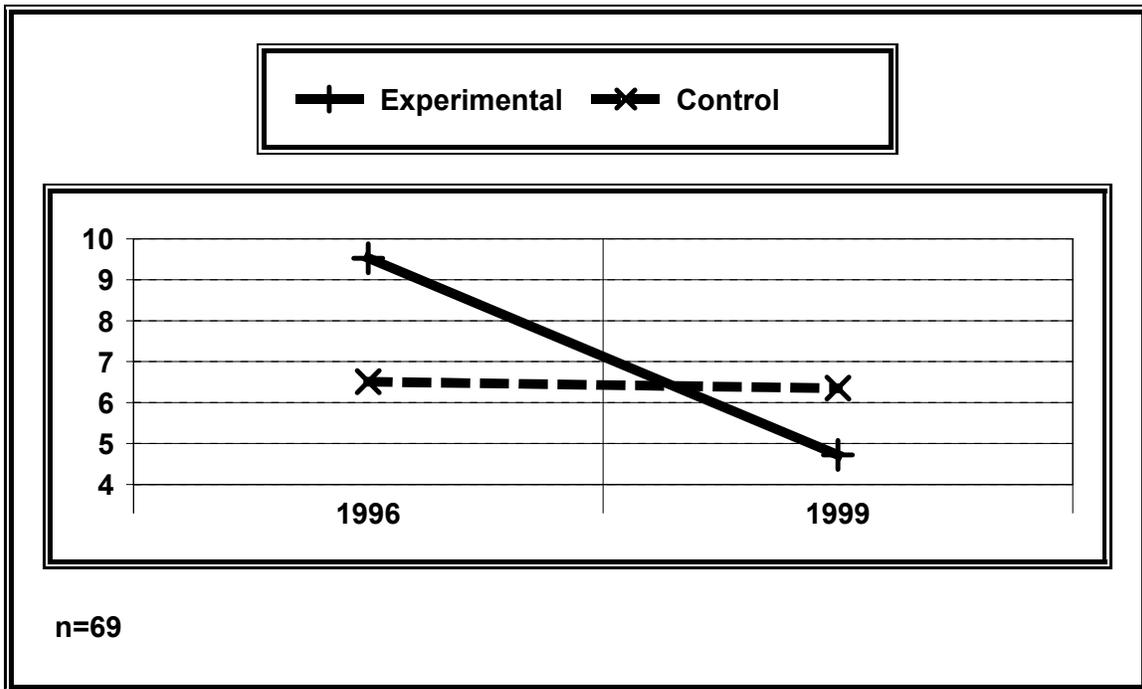
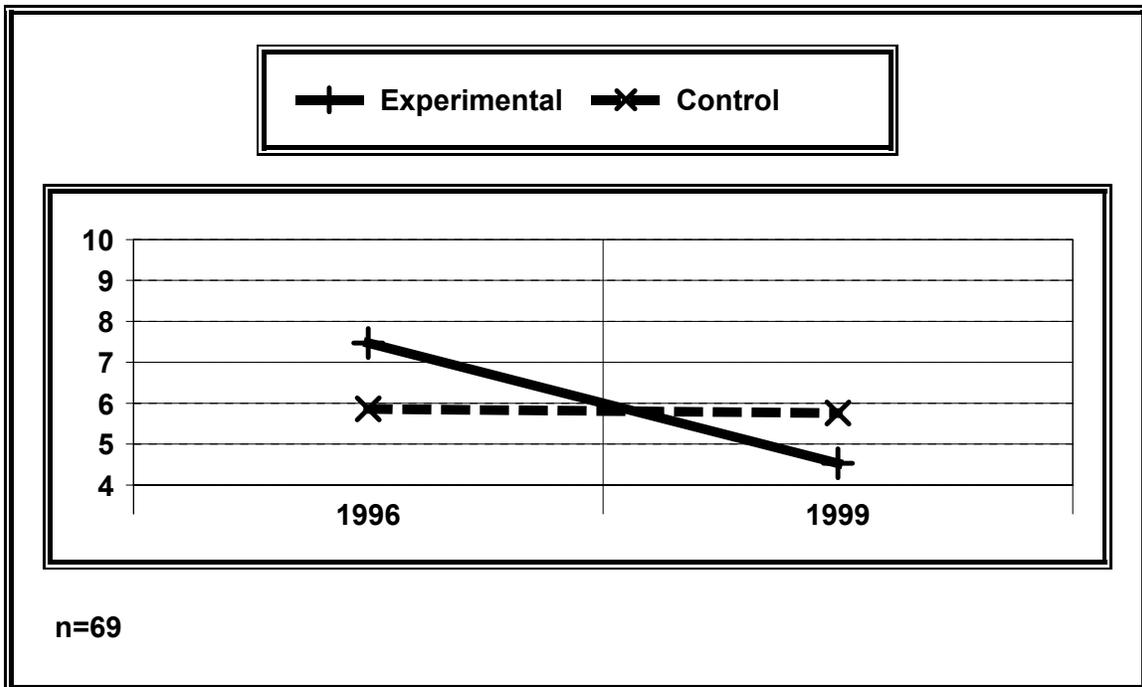


Figure 8. Parent Reported Child Internalizing Behaviors by School



Post hoc comparisons explained this interaction further. Longitudinally, children from the control school showed no significant change on either the externalizing scale ($t(36) = .22, p = .823$) or the internalizing scale ($t(36) = .14, p = .893$). In contrast, the scores for the children from the experimental school showed a significant decrease in both types of problem behaviors (externalizing, $t(31) = 4.45, p < .001$; and internalizing, $t(31) = 3.78, p < .001$).

The fact that children at the experimental school started out with more problem behaviors than those at the control school indicates that these findings should be interpreted with some degree of caution. Some improvement in students' behaviors may be associated with a regression to the mean statistical artifact. On the other hand, there is some evidence to suggest that children showing severe problem behaviors in early primary school years tend to regress further by grade level. This trend is not evidenced among children at the experimental school. It is hypothesized that the presence of the Linkages to Learning program at that school may be a factor serving to mitigate against such an increase in behavior problems over time.

Differences in CBCL Scores by Services

Findings:

The second way that changes in the CBCL were examined was to evaluate differences between children in three groups: children at the control school, children at the experimental school who had received direct services through the Linkages to Learning program, and children at the experimental school who had not received services. Over time, there were significant differences between the three groups on both the externalizing and internalizing subscales. Children who had the highest scores on the CBCL were those who were receiving Linkages services. This suggests that the children who needed services most were the ones who received them.

The reported externalizing problem scores for children receiving services were, on average, more than 2 points higher than those of children not receiving services in the same school, and 4 points higher than scores of children in the control school. While the baseline differences were not as dramatic for the internalizing subscale, the differences were in the same direction.

By the end of the study, parent-reported problems for children receiving services had dropped to the level of children at the control school. The most apparent drop was on the externalizing subscale, where the average 4-point difference had disappeared. It appears that the program had a positive effect, at least in terms of parents' perceptions of their children's emotional and behavioral problems.

In addition, an interesting result was shown for children in the experimental school who were not receiving services. Similar to the children who were receiving

services, this group also showed a dramatic decline in parent-reported problem behaviors on both subscales. In fact, the decline for this group was even greater than for those receiving services, particularly on the internalizing subscale. This finding suggests that the Linkages to Learning program may be having a general effect on the emotional climate of the school. Even parents of those children not directly receiving services were reporting significant improvements in the behaviors of their children. It is possible that these children, whose behavioral problems were likely to be less severe and entrenched than those of children receiving services, were more likely to make behavioral gains with even a minimal level of intervention (e.g., program presence in the school, program impact on teacher or parent attitudes, etc.) Figures 9 and 10 illustrate the changes in CBCL scores for children in the three groups from baseline to 1999.

Figure 9. Parent Reported Child Externalizing Behaviors for Three Groups

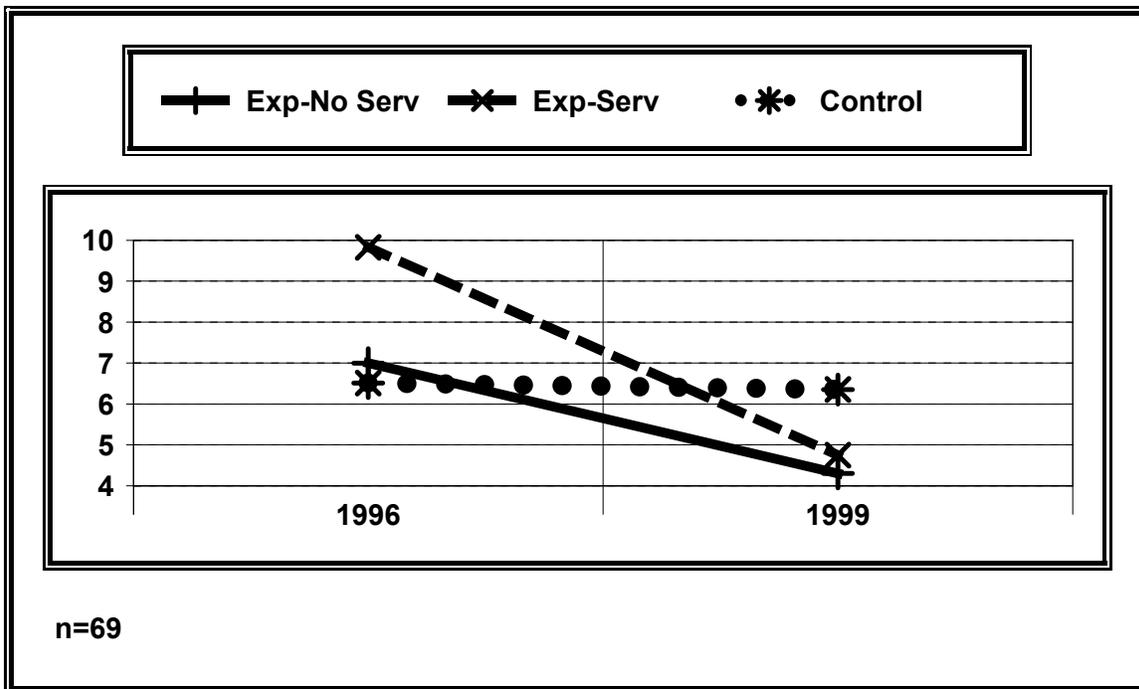
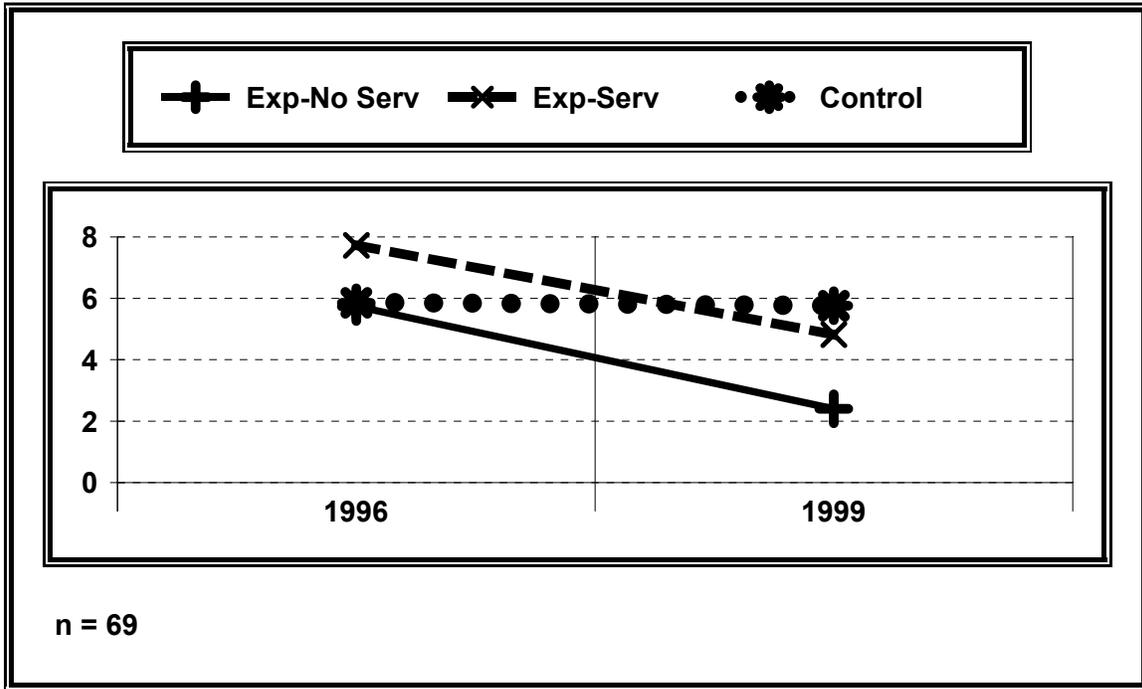


Figure 10. Parent Reported Child Internalizing Behaviors for Three Groups



B. Emotional and Behavioral Outcomes: Teacher Report

Data on children’s behavior in the classroom were collected from teachers using the Teacher-Child Rating Scale (T-CRS) . Teachers completed checklists each year to document the behavioral strengths and weaknesses they observed among their students. The T-CRS groups items into positive and negative behaviors. Negative behaviors include things like being disruptive in class, poor motivation, and defiant behavior. Examples of positive behaviors include coping well with failure, being sensitive to other children's feelings, and tolerating frustration well.

Negative Behaviors

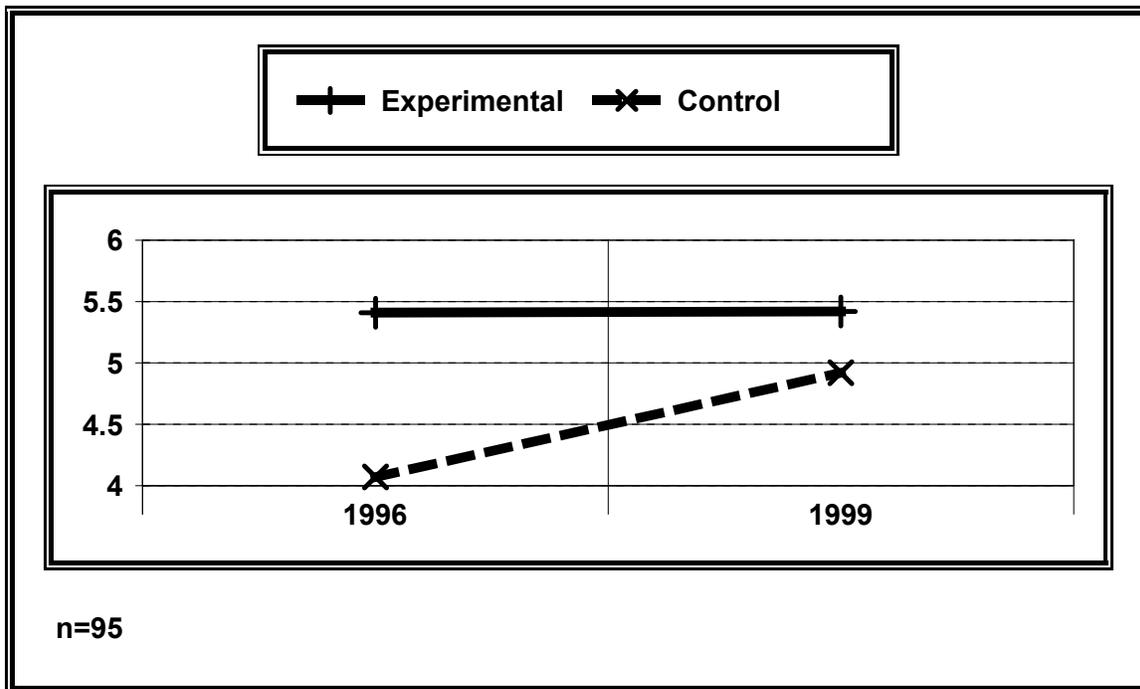
Findings:

The trend in children's negative behaviors over time as reported by classroom teachers indicated a positive effect for the Linkages to Learning program. While children at the control school showed an increase in negative behaviors as they got older, the children at the experimental school did not show a similar trend.

Analysis of teacher ratings on the T-CRS indicated a positive effect for the Linkages to Learning program, although the interaction for school over time was not statistically significant ($F(1,93) = 3.58, p = .062$). Scores for children at the control school increased almost a full point on the negative subscale, while scores for children at the experimental school remained virtually unchanged over three years. At baseline,

teachers at the experimental school reported children as having significantly more negative behaviors ($t(98) = 3.85, p. < .001$) and significantly fewer positive behaviors ($t(98) = -2.10, p. = .038$) than teachers at the control school. At the end of the third year, however, the schools were no longer statistically significantly different from each other on the negative subscale ($t(111) = 1.62, p. = .108$). That is, children at the control school demonstrated an increase in negative behaviors as they got older, while children at the experimental school did not show a similar trend, even though they had more risk factors. Figure 11 provides a graphical depiction of this finding.

Figure 11. Teacher Reported Child Negative Behaviors by School



As Figure 11 illustrates, children in the control school went up almost a full point on the negative subscale over the course of the study. One possible explanation is that as children get into the higher elementary grades, the classroom becomes a more structured environment. Negative, acting-out behaviors become more apparent, particularly among children at-risk for academic and behavioral problems. It is also possible that as children get older, teachers' expectations for conforming behaviors get higher. When children fall behind in the academic domain, they may be more likely to respond by acting-out. Such behaviors can be attempts to distract from their academic difficulties, or may be expressions of frustration, anger or poor self-image.

Since children in the experimental school represent an equally, if not more, high-risk population than children in the control school, it was reasonable to expect a similar increase in teacher-reported negative behaviors as these children got older. In fact, at baseline, teachers at the experimental school reported children as having significantly more negative behaviors and significantly fewer positive behaviors children at the control school. However, at the end of the third year, the schools were no longer statistically

different from each other on the negative subscale. While children at the control school showed an increase in negative behaviors as they got older, the children at the experimental school did not show a similar pattern. This was true both for children in the experimental school receiving Linkages to Learning services, and those not receiving services. It is possible to speculate that the Linkages to Learning program was one important factor in preventing this increase in negative behaviors over time.

Positive Behaviors

Findings:

No significant differences were found among the three groups in terms of change in positive behaviors.

B. Emotional Outcomes: Child Report

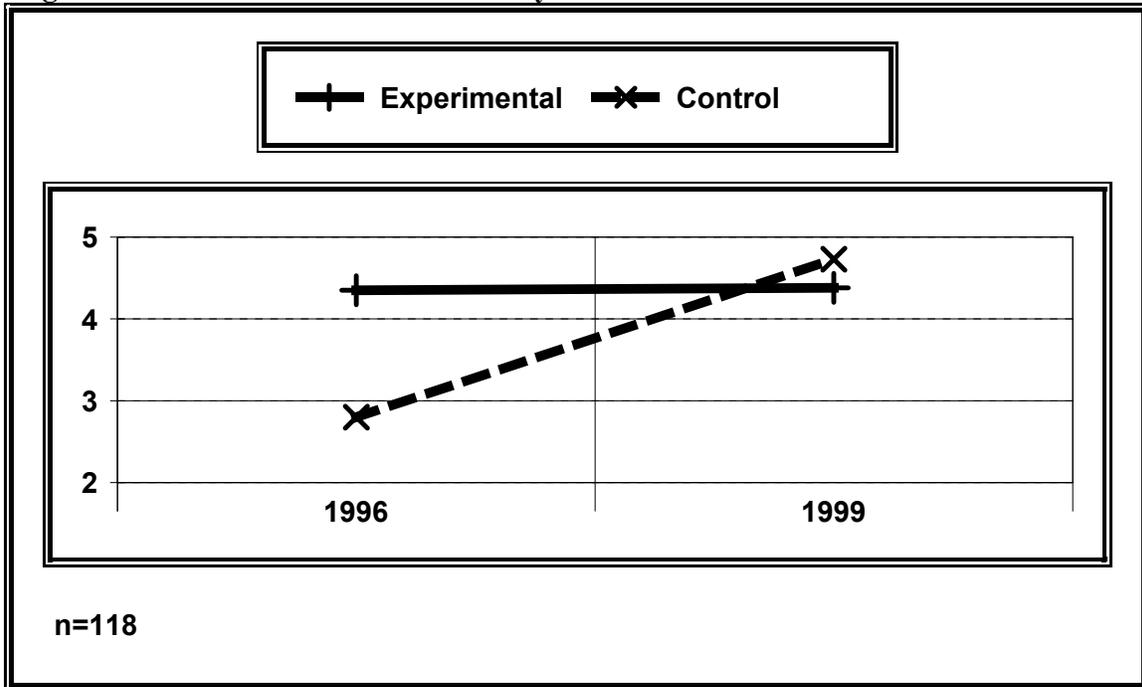
Findings:

As expected, children in the experimental school reported significantly higher emotional distress levels at baseline than children in the control school. Three years later, however, distress scores for children in the experimental school were lower than those of children in the control school.

Just as parents and teachers reported on children's behavioral functioning at home and in the classroom, children reported on their own perceptions and experiences of emotional well-being. The Levonn Scale was used to assess a child's perception of his/her own level of emotional distress. For this measure, children reported on the extent to which they experienced symptoms of anxiety, depression, distractibility, and poor self-esteem.

Analyses by ANOVA indicated a significant School x Time interaction ($F(2,116) = 6.80, p = .010$). At baseline, the two schools were significantly different ($t(116) = 2.56, p = .012$) from each other, with children at the control school reporting significantly lower distress levels. The levels of distress among children at the experimental school remained stable over the three year period. However, the scores for the children the control school increased significantly ($t(43) = 3.41, p = .001$) and surpassed scores for children at the experimental school. Figure 12 illustrates this finding.

Figure 12. Child Emotional Distress by School



At this point, we can only speculate about the reasons for an increase in distress symptoms among children at the control school. It is possible, for instance, that as children get older and have greater self-awareness, they are more able and more likely to report on their internal experiences of sadness, anxiety or low self-concept. It is also possible that as children get older and parents, teachers, and even peers place greater expectations upon them, they are more likely to experience stress. Common stresses experienced by school aged-children include those related to academic success, social acceptability, and family factors such as divorce. Again however, what is most notable here is that while we would speculate that children at both schools would be similarly vulnerable to the effects of such stresses, only those at the control school show increases in distress levels over time. This finding suggests that the presence of the Linkages to Learning program at the experimental school may be serving as a protective factor against such increases in emotional distress.

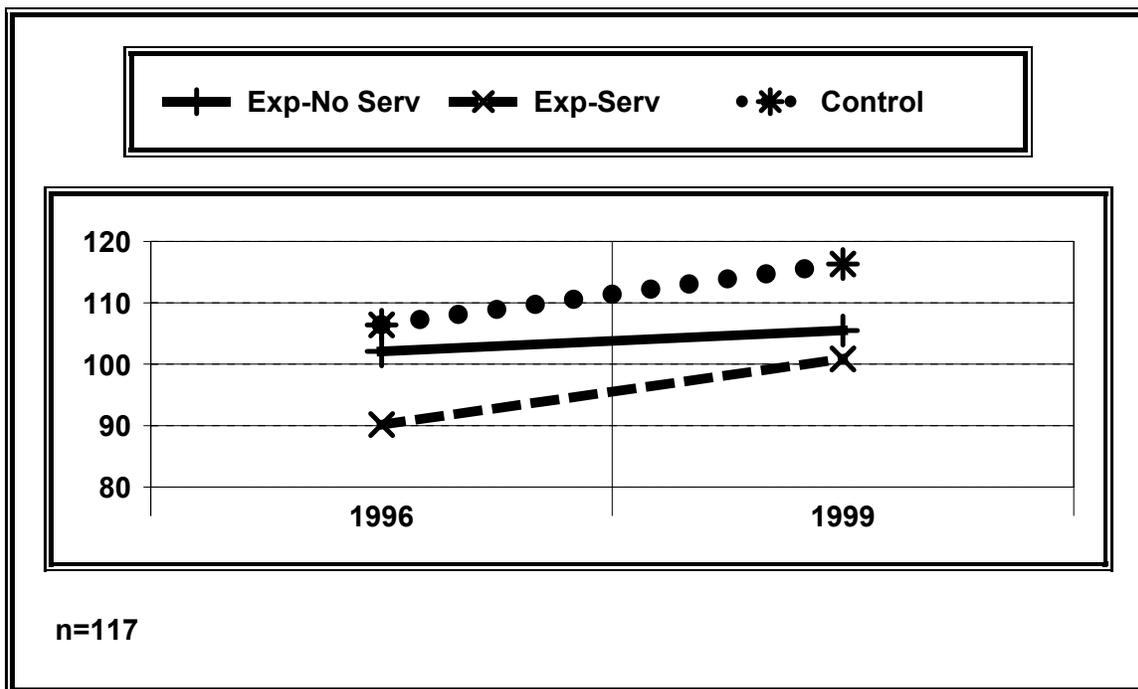
C. Academic Outcomes

Findings:

Results from the math subscale of the academic achievement screener indicated some positive effects of educational services provided to children through the Linkages to Learning program. Children at both schools had significantly higher math achievement scores at the end of the three-year study than at baseline. However, children receiving educational services through the Linkages to Learning program improved significantly more than those at the experimental school who did not receive services.

To determine if the Linkages to Learning program had an impact on academic achievement, children were assessed with the Woodcock-McGrew-Werder Mini-Battery of Achievement (1994). Data were collected by trained research assistants, normed to standardized scores by age, and analyzed by repeated measures analyses of variance. Results from the math subscale indicated some positive effects of direct educational services to children. Children at both the experimental and control schools had significantly higher math achievement scores at the end of the three-year study. However, when children at the experimental school were divided into two groups, those receiving direct educational services and those not receiving services, the group receiving services improved significantly more. The two groups at the experimental school were different at baseline ($t(71) = .32, p = .001$), but by the end of the study those receiving services had made considerably greater gains, and the difference between the groups was no longer significant ($t(73) = 1.05, p = .297$). These changes are depicted graphically in Figure 13.

Figure 13. Math Achievement by 3 Groups



As Figure 13 illustrates, the performances of children within the two groups at the experimental school were different. While the children not receiving direct educational services started out with higher math achievement scores, by the end of the study the children receiving services had made such gains that they were now approaching the achievement scores of their peers in the no-service group. Again, as in earlier examples, children in the service group had the lowest achievement levels of all children. This indicates that the children who received help were in fact those with the greatest need. By the end of the study, children who received services scored closer to their same-school peers than they did at baseline. Thus, when children at the experimental school

not receiving services were viewed as a control group, the Linkages intervention seemed to have a positive effect on this aspect of academic functioning. That is, the children receiving services showed significantly greater improvements than their no-service peers. In fact, their gains more closely mirrored those of the children in the control school.

This positive impact of the Linkages to Learning program on math achievement was not found for either the reading subscale or the writing subscale of the achievement measure. One important consideration is the fact that a significant number of the children at the experimental school had limited English proficiency, which could have confounded reading and writing scores. Math scores, because they are less language-dependent, may be less influenced by this factor.

Parent Outcomes

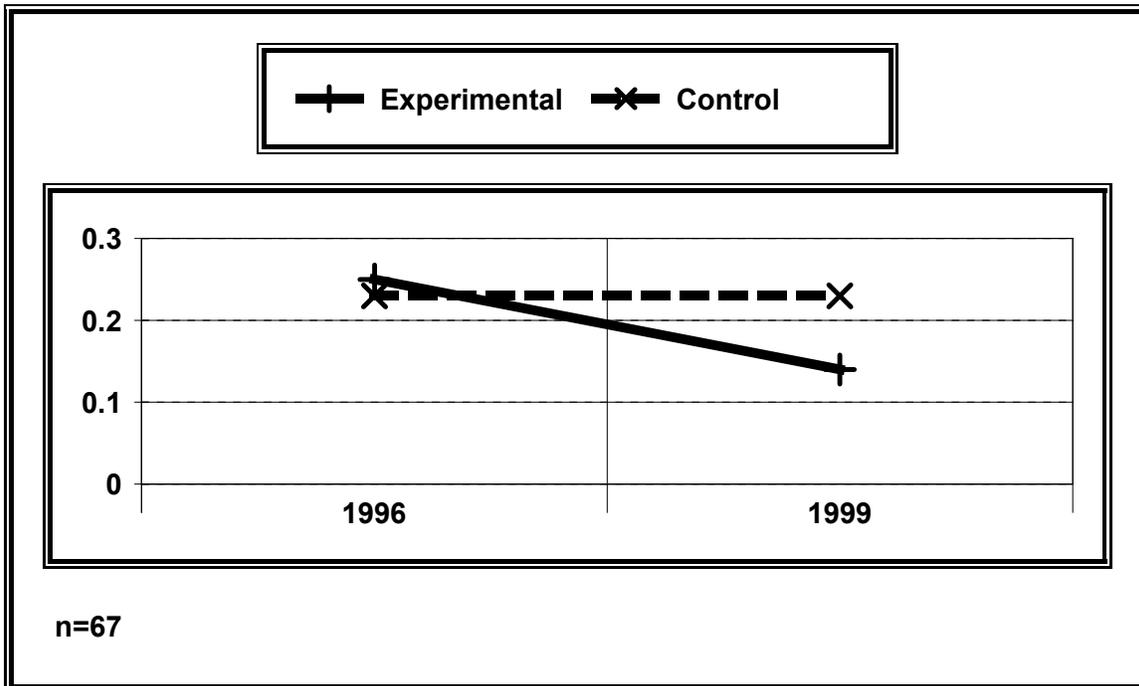
A. Depression

Findings:

Since Linkages to Learning services were available to parents at the experimental school, it was anticipated that parents would show improvement in some areas of emotional functioning and parenting skills. While levels of depression did not differ significantly between the two schools, the trends were interesting. Parents at the school with the Linkages to Learning program reported being less depressed over time, while those at the control school remained unchanged.

Data were collected from children's primary caregivers to assess their level of emotional functioning (Brief Symptom Inventory, BSI, Derogatis & Melisaratos, 1983). On this inventory, parents indicated on a 5-point Likert scale whether they had experienced a number of physical and emotional "symptoms" during the past 7 days. Of particular interest to this study was the subscale which assessed depression, since a high correlation between maternal depression and child behavior problems has been demonstrated in previous research. At baseline, parents at the experimental school reported slightly higher depression ratings than parents at the control school. By the end of the study, while depression scores of the control school parents had not changed, there was a decrease in comparable scores for parents of children in the experimental school. Figure 14 presents these findings graphically.

Figure 14. Primary Caregiver Level of Depression by School



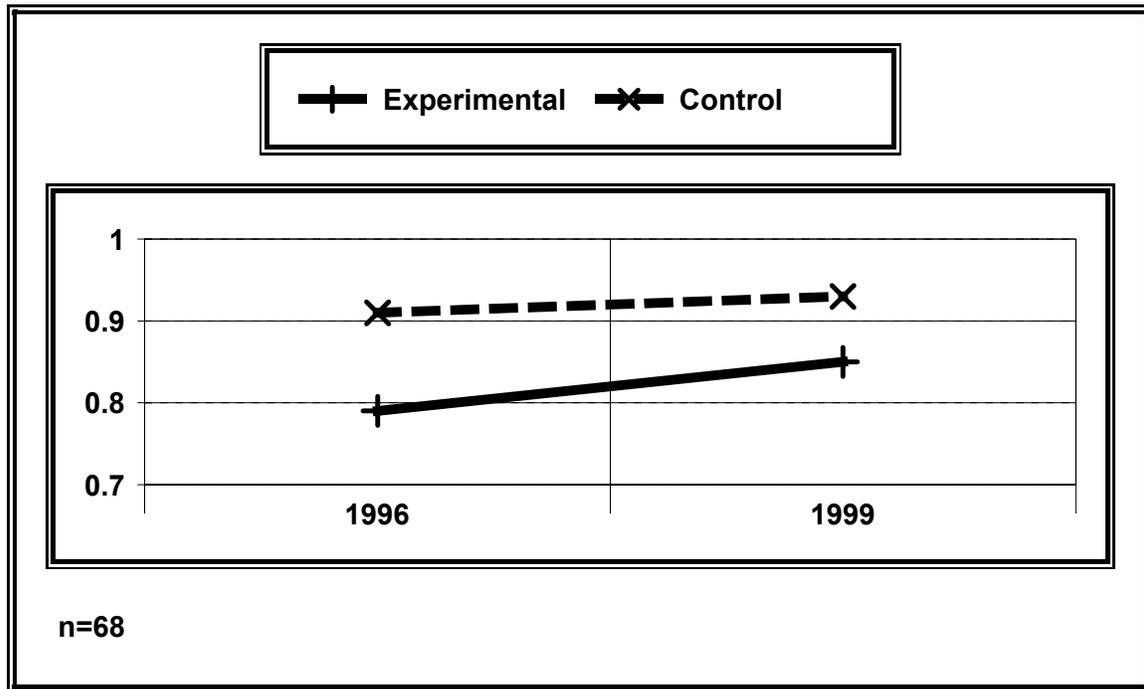
B. Family Cohesion

Findings:

A significant positive change for parents in the experimental school was evident in the amount of family cohesion reported by the primary caregiver. Parents at the experimental school reported a significant increase in family cohesion over time that was not evident among parents at the control school.

The cohesion subscale of the Family Environment Scale (FES, Moos & Moos, 1981) was used to assess this area of family functioning. This subscale was of particular interest because it correlated significantly with children's CBCL scores. Analyses indicated that there were significant differences between the two schools and over time. That is, the two schools were significantly different at baseline, with parents at the experimental school reporting less family cohesion. By the end of the study, cohesion scores were no longer significantly different for parents at the two schools. Here again, it is possible that activities offered through the Linkages to Learning program (such as activities aimed at reducing social stressors, and improving emotional health, parenting and family functioning) may have resulted in some positive impact on families at the experimental school. Figure 15 illustrates these findings.

Figure 15. Family Cohesion by School



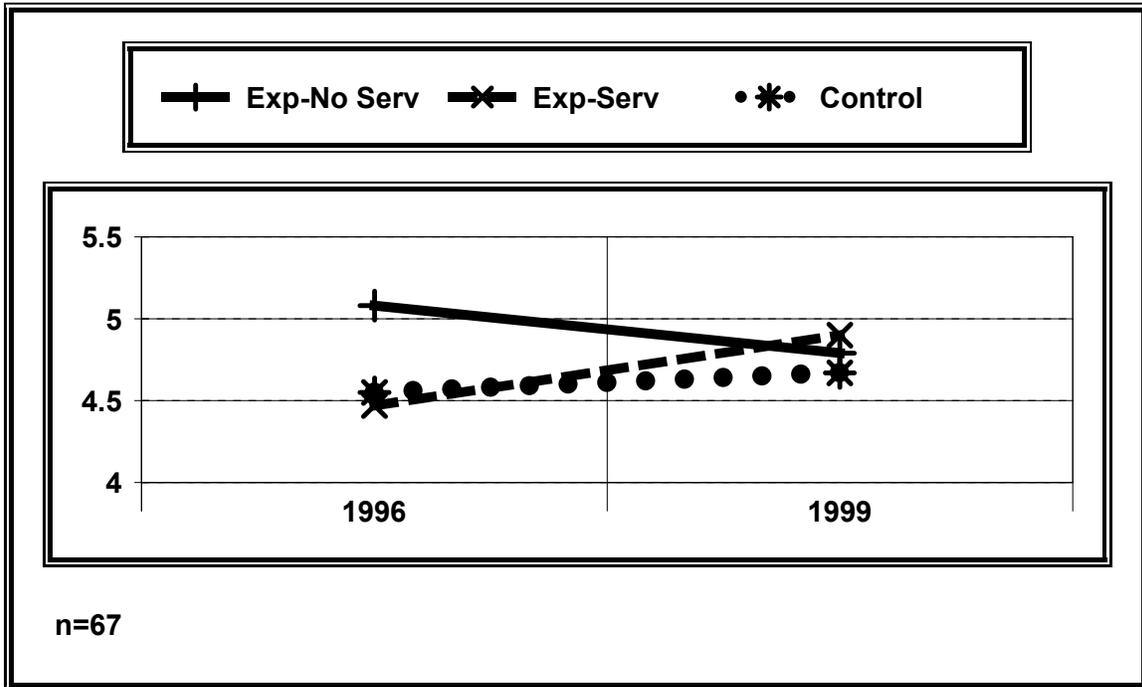
C. Consistency in Parenting Practices

Findings:

Several aspects of parenting style were assessed. Findings related to consistency in parenting were particularly encouraging. Parents receiving services through the Linkages to Learning program demonstrated greater gains in consistency than parents at the experimental school who did not receive services, and parents at the control school.

Subscales of the Parenting Dimensions Inventory (PDI, Slater & Power, 1987), a multidimensional assessment of parenting, were used to measure differences between the schools and over time on various aspects of parenting. When measuring consistency in following through on discipline, differences were found among all groups, although these were not statistically significant. The trends, however, were very encouraging. While parents at the control school showed slight increases in consistency over time, parents at the experimental school who did not receive Linkages services reported decreases in consistency. Parents at the experimental school who received Linkages services made the greatest gains. This finding, which is shown in Figure 16, suggests a positive effect of program services on this aspect of parenting practices.

Figure 16. Consistency in Childrearing Practices by Three Groups



D. Use of Physical Punishment

Findings:

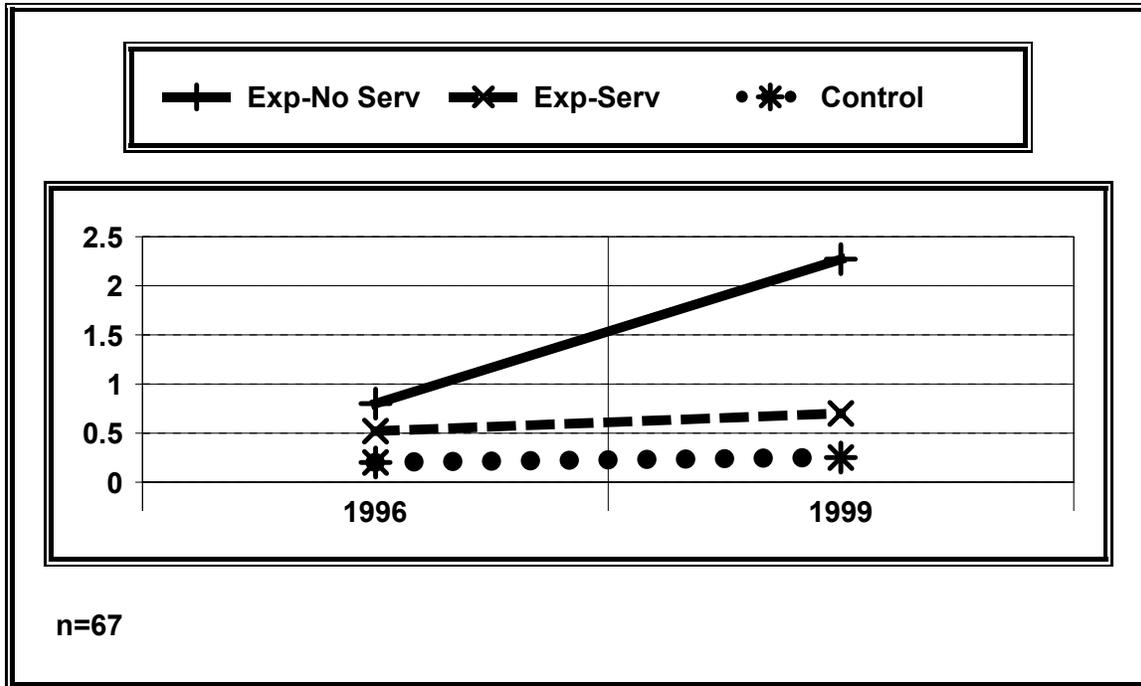
Use of physical punishment was another area of parenting that was assessed. While parents in all three groups increased reliance on physical punishment as their children got older, parents at the control school and parents who were receiving Linkages to Learning services increased only slightly. However, parents at the experimental school who were not receiving services increased significantly in their use of physical punishment.

There was a significant difference between the two schools at baseline ($t(64) = 3.2, p = .002$) and also at the end of the study ($t(67) = 3.32, p = .001$). At both points in time, parents at the experimental school reported greater use of physical punishment. When comparing parents at the experimental school who did not receive services, parents receiving Linkages services, and parents at the control school, there was a significant Group x Time interaction ($F(2,63) = 6.10, p = .004$). There were also significant differences found between the three groups ($F(2,63) = 12.00, p < .001$) and over time ($F(2, 63) = 11.94, p = .001$). That is, the three groups were significantly different from each other at baseline and were still significantly different at the end of the study.

While all three groups increased in their use of physical punishment, parents at the control school and parents who were receiving Linkages to Learning services increased only slightly. However, parents at the experimental school who were not

receiving services increased significantly in their use of physical punishment. Findings suggest that providing parenting support and education to families with high risk factors may lead to the development and use of discipline strategies other than physical punishment. When these services were not used by parents within this high-risk population, use of physical punishment increased significantly more. Differences in use of physical punishment among the groups, and changes over time, are depicted in Figure 17.

Figure 17. Use of Physical Punishment by Primary Caregiver by Three Groups



E. Consensus

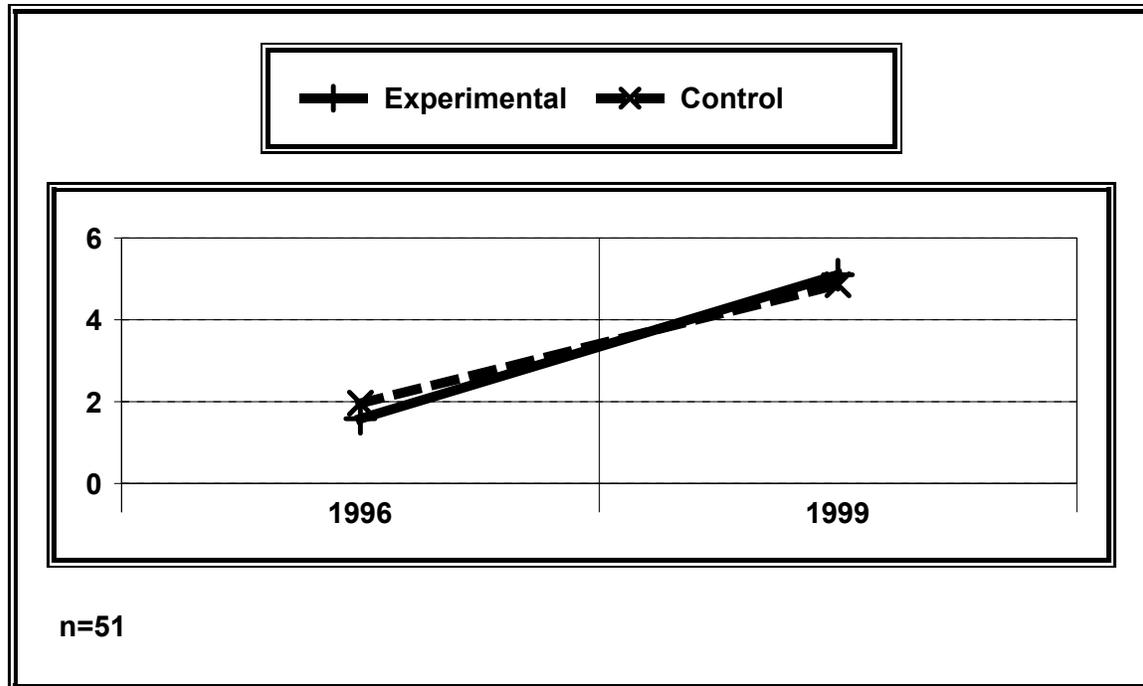
Findings:

While not all children in the study were from two-parent families, additional data assessing the quality of the relationship between parents in couples were collected from primary caregivers with partners. Findings indicate that ratings of consensus among partners at the experimental school increased more than, and even surpassed, scores among couples at the control school.

At baseline, partners at the experimental school had significantly lower consensus scores than partners at the control school ($t(19) = 12.63, p. < .001$) on the consensus subscale of the Dyadic Adjustment Scale (Spanier, 1976). Parents at both schools showed a significant increase in their consensus scores. However, at the end of the study consensus among partners at the experimental school had increased more and even surpassed the consensus scores for parents at the control school. There was no longer a

significant difference in parental agreement scores between the schools after three years. Figure 18 depicts this outcome.

Figure 18. Consensus Between Partners by School



Teacher Outcomes

Findings:

There were no significant differences between teachers at the two schools in terms of job satisfaction.

To determine whether there were significant differences in teachers' perceptions of their job satisfaction between the two schools, data were collected on the Maslach Burnout Inventory (Maslach & Jackson, 1981). It was hypothesized that teachers at the experimental school would report higher levels of emotional exhaustion, more student depersonalization, and lower feelings of personal accomplishment due to the significant population of students with multiple and severe psychosocial stressors (e.g., poverty, abuse) at that school. However, a series of independent t-tests and analyses of variance did not support these hypotheses. No significant differences were found between teachers at the two schools at baseline or at the end of the study on any of the three Maslach subscales. There were also no differences over time or significant interactions.

Findings from the study of the Linkages to Learning program at Broad Acres Elementary School are quite encouraging. Data from multiple sources, assessing functioning across several domains (e.g. behavioral, emotional and academic), indicate

positive outcomes for children and families. In some areas, functioning of children and parents at Broad Acres improved over time, while functioning of children and families at the control school did not. For example, parents reported significantly decreased behavioral problems among their children at Broad Acres, while parent-reported problems at the control school remained stable over time. Similarly, parents at Broad Acres reported slightly lower ratings of depressive symptoms, and higher rates of family cohesion over the course of three years, while control school parents reported virtually no change.

Furthermore, while teacher-reported negative behaviors and children's self-reported emotional distress symptoms increased at the control school, functioning of children at Broad Acres remained stable in these areas. While it is not entirely clear why these problems increased among the control sample, it is reasonable to expect to see similar trends among children in both populations. This suggests that the presence of the Linkages to Learning program at Broad Acres may have been serving to prevent such behavioral and emotional problems from increasing.

Even more compelling are the findings that demonstrate particularly positive gains among children and families at Broad Acres who received direct services through the Linkages to Learning program. Children who received educational support from the Linkages program made the greatest improvements in math achievement of all groups of children, for example. Parents participating in the program also made the greatest gains in terms of consistency in parenting practices.

Future research on children and families like those at Broad Acres is needed to assess the sustainability of these outcomes. In particular, we need to understand whether or not children maintain positive gains as they move into middle and high school, and whether such changes make a difference in these children becoming self-sufficient, well-adjusted and productive members of society.

Conclusion

As this four year, University of Maryland project draws to an end, we are pleased that many aspects of the project will continue. The Linkages to Learning School-Based Health Center at Broad Acres currently functions at the same level of funding as it had during the U.S. Department of Education grant. Montgomery County, as part of its commitment to integrated, school-based services for under-served children and families, has assumed fiscal responsibility for the program. County leaders, including the many public and private partners in the Linkages to Learning initiative, are currently working on a five-year plan for the continued improvement and expansion of Linkages to Learning in elementary and middle schools.

A partnership between the University of Maryland and one of the Broad Acres Linkages to Learning partners will also likely result in continued analysis of the project data. Although the present report responds to the research questions that were posed at the outset of this endeavor, several additional areas of interest remain. One area of focus for this next stage of analysis will be the relationship between children's exposure to violence and rates of aggressive behavior. Findings from additional analyses will be reported next year.

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