

# School Performance in Elementary, Middle, and High School: A Comparison of Children Based on HIPPY Participation During the Preschool Years

*Amber Brown and Joohi Lee*

## Abstract

The purpose of this study was to determine the impact of the Home Improvement for Preschool Youngsters (HIPPY) program on school performance during the 3rd, 5th, 7th, and 9th grades. The study employed a quasi-experimental, post-hoc design using existing data on children who participated in the HIPPY program as 3-, 4-, or 5-year-olds, including: Texas Assessment of Knowledge and Skills (TAKS) scores, attendance records, school retention, and discipline referrals. Independent samples *t*-tests and chi-square analysis revealed that in all four grades HIPPY children had significantly higher rates of school attendance, were retained less often, had fewer repeat discipline referrals, scored higher, and had higher pass rates on the Reading and Math TAKS than matching children without HIPPY experience. Results indicate that children who participated in the HIPPY program as a 3-, 4-, or 5-year-old appear to have benefited long-term from the experience. The results also suggest that the HIPPY program intervention can increase school achievement and build a strong base for school success.

Key Words: early childhood intervention, parent involvement programs, Home Improvement for Preschool Youngsters, HIPPY, home visits, attendance, academic achievement, discipline referrals, parents, students

## Introduction

Based on the prevailing body of research, children living in poverty are often at risk for developmental problems due to factors within the home environment such as a lack of learning opportunities, parenting skills, quality parent–child interactions, and educational resources (Magnuson, Meyers, Ruhm, & Waldfogel, 2004; Magnuson & Waldfogel, 2005; NICHD ECCRN & Duncan, 2003). Low-income parents may lack the necessary skills or resources to adequately stimulate the cognitive development of their children and prepare them for school (Wagner, Spiker, & Linn, 2002). As a result, children from families of lower socioeconomic status (SES) tend to begin school without the necessary skills for academic achievement and are particularly at risk for reading difficulties (Espinosa, 2007; Maxwell & Clifford, 2004; Rhode Island KIDS COUNT, 2005; Wesley & Buysse, 2003). However, much of this research does not take into account the often “hidden” home and community resources of children and their families (Moll, 1992). These “funds of knowledge” are a key to the learning of all children, but particularly those from low-income, culturally diverse families. This understanding of the role of family in children’s learning, growth, and development highlights the importance of empowering and supporting parents as primary teachers of their children during early childhood in order to avoid the possible negative outcomes described above.

When families are involved in their children’s early childhood education, children experience greater success once they enter elementary school (Miedel & Reynolds, 1999). Studies report that children whose parents are involved in their schooling are more likely to earn high grades and enjoy school than children whose parents are not involved in their children’s schooling (Vaden-Kiernan & McManus, 2005). Children of involved parents are also more likely to have higher educational aspirations and motivation to achieve (McNeal, 1999). In addition, parent involvement allows parents to monitor school and classroom activities and to coordinate their efforts with teachers.

There have been numerous attempts (e.g., Head Start home visit program, Even Start for parents of infants and toddlers, Parents as Teachers, etc.) to empower parents to actively engage children’s learning and to provide appropriate opportunities to assist their children to be successful at school (Administration for Children, Youth, & Families, 2001; Head Start Performance Measures Center, 2006; Parents as Teachers, n.d.). One well-known parent empowerment program is the Home Instruction for Parents of Preschool Youngsters (HIPPY) program, which is a systematic, home-based early intervention program for parents of 3-, 4-, and 5-year-old children (HIPPYUSA,

n.d.). HIPPY helps parents empower themselves as their children's first teacher by giving them the tools, skills, and confidence they need to work with their children in the home. The program was designed to bring families, organizations, and communities together and to remove any barriers to participation that may include limited financial resources or lack of education. HIPPY views parents as the best teachers who are able to successfully raise and educate their children with appropriate resources and aims to empower parents. It is based on three assumptions: (a) parents have the capability to provide educational activities to their children, (b) parents can act as primary teachers of their children, and (c) children's successful school performance is the outcome of parents' active involvement (HIPPYUSA, n.d.).

There have been many studies of the effects of HIPPY associated with the academic achievement of children in elementary school (e.g., Garcia, 2006; Kagitcibasi, Sunar, & Bekman, 2001; Karoly, Kilburn, & Cannon, 2005). However, there is a lack of empirical studies on the long-term impacts of children's experience with HIPPY beyond elementary school. To address this gap, this study investigates the long-term impact of the HIPPY program on children's school success at various levels, including elementary, middle, and high school. In this study, children's school success was measured by school attendance, retention rates, discipline problems, state mandatory standardized test scores, and passing rates on standardized tests.

### **What is HIPPY?**

HIPPY is a free, three-year, home-based early intervention program for 3-, 4-, and 5-year-old children from poor and immigrant families (HIPPYUSA, n.d.). The fundamental philosophy of HIPPY is to "empower parents as primary educators of their children in the home and foster parent involvement in school and community life to maximize the chances of successful early school experiences" (HIPPYUSA, n.d., para. 5). HIPPY utilizes home visits to train parents to promote their children's whole development at home. The primary goals of the HIPPY curriculum are to better prepare children from low-income families to be developmentally (especially cognitively) ready for school and to be successful at school by empowering parents as the first and best teachers of their children to facilitate their children's learning.

The HIPPY program is delivered by home visitors who are members of the community in which they serve and often times were former parents in the program. HIPPY home visitors work with participating parents in the parents' homes weekly to instruct them in using the HIPPY educational materials. Each week, the coordinator practices the lesson for the week with the home visitors. The home visitors then role play the lessons with the parents, and

the parents in turn repeat the activities with their children during the week. Prior to presenting a new lesson, the home visitors follow up with each parent by reviewing the child's workbook and discussing the child's progress. Home visitors are crucial to the HIPPPY model. Their knowledge of the community allows them to develop trusting relationships with the participating families, and since most home visitors are former HIPPPY parents themselves, they identify with the kinds of challenges the parents face.

The home visitors teach the parents primarily through role playing. Role play provides opportunities to discuss the goals of the activities, reflect on the learners' specific needs (both adults and children), and teach new skills. Role playing also promotes a comfortable, nonthreatening learning environment that promotes parental empathy for the developmental capabilities of young children. Finally, the role playing method of instruction allows parents with limited reading ability an opportunity to become effective first teachers for their children. HIPPPY also provides books, activity packets, and all necessary stationery (e.g., pencils, markers, note papers, scissors, glue, etc.) as part of the program curriculum. One of the main goals of the HIPPPY Program is to strengthen the parent-child bond and extend education into the home. Parents practice in-home learning activities with their children at home on a daily basis. Parents are also challenged to give back a minimum of 20 hours of time to their child's school (HIPPPYUSA, n.d.). While HIPPPY is for any parent who wants educational enrichment for his/her child, the HIPPPY model was designed to remove barriers to participation due to lack of education, poverty, social isolation, and other issues (HIPPPYUSA, n.d.).

In addition to serving as an early education program, HIPPPY incorporates features of family support programs. HIPPPY parents meet on a monthly basis to discuss various issues (e.g., parenting, local resources, etc.). HIPPPY is based on the ecological approach which recognizes children's development as powerfully influenced by the families, communities, and societies in which they live (Westheimer, 2003). HIPPPY focuses on creating greater continuity between home and school by enhancing children's home learning environments.

HIPPPY programs provide support for families in a way that is designed to recognize and respect family needs and values—another common feature of family support programs. HIPPPY, like many other family support programs, respects the cultural diversity of the families it serves (Baker, Piotrkowski, & Brooks-Gunn, 1999). The most unique characteristic of HIPPPY compared to other parent support models is its highly structured model which supports parents with curriculum including a set of lesson plans designed to enhance children's whole development. The major emphasis of the HIPPPY curriculum is on children's cognitive skills (Westheimer, 2003).

### HIPPY Program Effectiveness

There is a great deal of evidence documenting the positive effects of HIPPY on children's school readiness at kindergarten entry. The very first major study conducted in the U.S. was funded primarily by the U.S. Department of Education (Baker et al., 1999). Baker and her colleagues investigated the outcomes of children's HIPPY experiences in New York and Arkansas and found that HIPPY children in the first cohort outperformed those in the comparison groups at kindergarten entry on objective measures of school performance and teacher ratings of their motivation and adaptation to the classroom. HIPPY children also had higher attendance rates, scored higher on standardized achievement tests, and were perceived by their teachers as well-performing children.

HIPPY is also associated with positive effects on children's experiences on school readiness at kindergarten entry. Jacobson (2003) investigated the effectiveness of HIPPY in the Dallas–Fort Worth metroplex area in Texas by studying children's school readiness as measured by school adaptability and functioning. Kindergarten teachers were asked to rate HIPPY children in their classroom on school adaptation and school readiness as compared with other children in their classroom. For each of the three years reported in Jacobson's study, teachers rated three-quarters of the HIPPY children as average or above average in classroom adaptation and school readiness when compared to the other children in the same class who did not participate in HIPPY. Since kindergarten teachers were only asked to rate the children in their classrooms who participated in HIPPY, the school adaptability and school readiness of the comparison children in their classrooms is unknown. In addition, the children enrolled in HIPPY showed positive tendencies in terms of personal and social development, language learning, literacy development, and math achievement during their kindergarten year.

In one of very few longitudinal studies, Klein, Weiss, and Gomby (2001) tracked the progress of 375 HIPPY children in New Orleans from kindergarten through 7th grade. Based on their public school records, HIPPY children were found to have good attendance, good social skills, low suspension rates, and average-to-good academic performance compared to local expectations for children from similar socioeconomic backgrounds. In addition to tracking the performance of children, Klein et al. conducted informal interviews with teachers and surveyed parents each year. Teachers reported that HIPPY participants were more verbal than control group participants, and parents commented regularly on how well their children were doing in school. A vast majority of HIPPY parents surveyed indicated that they would recommend HIPPY to other parents and that HIPPY had improved their communications

with their child, helped them to feel more confident in their role as their child's first teacher, and improved their child's social skills.

Research has also examined the long-term effects of HIPPIY. Bradley and Gilkey (2002) conducted a quasi-experimental study to determine the effects of the HIPPIY program on children who had completed two full years of the program and who were enrolled in 3rd and 6th grades using a post-hoc matching design to compare children who participated in the HIPPIY program with demographically similar children matched on the basis of sex, race, age, and economic status but having other preschool experiences. Child outcomes were examined in five categories: (a) school attendance; (b) official actions (suspension, retention, special education) taken by the school district that affected children's experience in school; (c) classroom grades; (d) standardized achievement test scores; and (e) student behavior. When compared to children with other preschool experiences, HIPPIY children showed a modest positive effect on school suspensions, classroom behavior, and achievement test scores at both grade levels studied.

HIPPIY has also been found to be significantly effective for children with limited English proficiency. Garcia (2006) assessed HIPPIY's impact on the academic achievement of Hispanic English language learners in Texas. Using a quasi-experimental design, the academic success of Hispanic third grade children who participated in the HIPPIY program as 4- and 5-year-olds was compared to that of a matched group of Hispanic third grade children who attended comparison preschool programs offered by the public school district. Comparison of state-mandated standardized test scores in reading and math revealed that HIPPIY children consistently outperformed their comparison group peers. In addition, more children from the HIPPIY group completed the tests in English rather than Spanish.

Though HIPPIY currently serves more than 16,000 economically disadvantaged children and their families nationwide (HIPPIYUSA, n.d.), most empirical studies have been conducted to evaluate its impact in the elementary grades, and there is a lack of studies examining the effects of HIPPIY in middle and high school. Therefore, this study aims to measure the long-term relationship between children's HIPPIY experiences as preschoolers and children's school performance in the 3rd, 5th, 7th, and 9th grades. Using a cross-sectional design, groups of 3rd, 5th, 7th, and 9th grade children who participated in HIPPIY as preschoolers were examined based on factors that have been shown to be correlated with parent involvement, including: attendance rates, grade retentions, number of school discipline referrals, and state-mandated standardized test scores. School performance has been measured using various indicators in previous studies, with the most common method being an evaluation of student

scores on standardized tests and retention rate (Wisconsin Department of Public Education, 2010). Attendance rate is also used as an indicator to measure student school performance and has been identified and recently emphasized as a key aspect of children's school performance (Grysho, 2008; Colorín Colorado, 2008; San Diego Unified School District, n.d.). This study used these indicators to measure student school performance. This study also included school discipline referrals related to behavioral problems to measure student school performance. According to Rusby, Taylor, and Foster (2007), it is important to consider school discipline referrals when measuring student school performance, and the association between student discipline records and their school achievements and teacher rating has been well documented (Luiselli, Putnam, Handler, & Feinberg, 2005; McCurdy, Mannella, & Eldridge, 2003; Rusby et al., 2007).

In order to evaluate the long-term relationship between children's experience with HIPPY and later school performance, the following research questions were addressed:

1. Do children who participated in the HIPPY program have higher school attendance than children who did not?
2. Do children who participated in the HIPPY program have fewer grade retentions than children who did not?
3. Do children who participated in the HIPPY program have fewer behavior problems, as evidenced by discipline referrals, than children who did not?
4. Do children who participated in the HIPPY program have higher achievement test scores than children who did not?
5. Do children who participated in the HIPPY program have better passing rates on state-mandated standardized tests than children who did not?

## Methods

### Research Design

The study employed a quasi-experimental, retrospective, cross-sectional design involving within-school matching of HIPPY children with children who are demographically similar but who did not participate in the HIPPY program. In a cross-sectional design, researchers record the information that is present in a population at distinct points in time, but they do not manipulate variables. The cross-sectional design also allowed the researcher to look at the impact of HIPPY participation on each of the variables (attendance, grade retention, behavior, test scores) at four different time periods (3rd, 5th, 7th, 9th grades). A quasi-experimental design is one that is similar to an experimental design but lacks random assignment (Freeman, Pisani, & Purves, 2007). A retrospective

design involves looking into the past by looking at historical records—in this case, the historical records were the children’s HIPPY participation status. This research design was chosen because the children who participated in the HIPPY program as preschoolers were a preexisting group, and therefore it was not possible to randomly assign children to the HIPPY program after the fact. Children who were identified as former HIPPY participants by school district personnel were matched on the basis of gender, ethnicity, and socioeconomic status (SES) to children to form a comparison group. SES was determined by the public school as those children who qualified according the federal government for free or reduced lunch. Children in the comparison group were chosen at random from a pool of children who matched each HIPPY child on each of the demographic and SES factors mentioned above. Since the HIPPY program in the targeted school district is available to all children who meet eligibility requirements, matching students were identified in this study based on their basic demographic and SES characteristics to estimate the impact of the HIPPY program. It has been well documented that these two factors (demographic and SES) tend to be strongly related to children’s school performance (Hall, Davis, Bolen, & Chia, 1999; Shonkoff & Phillips, 2000; Steele, 2003). Of course, it is always possible that HIPPY children and HIPPY families may differ from comparison children or families in other ways that might affect the children’s performance in school (e.g., factors associated with family level, neighbor level, school level, community level). Factors related to parent motivation was of particular concern, so only children who had other preschool experience were included in the control group.

The study was approved by both the university and school district Institutional Review Boards. HIPPY children were identified using their school records. The HIPPY program is housed and partially financed by the school district. As a result, children who participate in HIPPY are given school district identification numbers upon enrollment in HIPPY. This allowed school district personnel to identify those children who had participated in HIPPY as preschoolers. School district personnel also provided a pool of children for the comparison group. The data for each child in the HIPPY and the comparison groups was encoded so that the researchers had no identifying information. Data from the school district included: current grade level; ethnicity; gender; SES; days absent; number of discipline referrals; number of times children were retained; and reading and math scores on the state-mandated achievement test (TAKS: Texas Assessment of Knowledge and Skills).

School attendance, grade retention, discipline referrals, and TAKS scores were compared using both independent samples *t*-tests and chi-square analysis. The percentage of discipline referrals for each group was also examined for



trends since behavior is strongly related to both parent involvement and academic success (Henderson & Mapp, 2002; Shonkoff & Phillips, 2000).

### Participants and Context

This study population included two groups of children in a large, urban school district in the Southwest. The HIPPY group consisted of 516 children (3rd = 197; 5th = 130; 7th = 75; 9th = 114) who were flagged by the school records as having participated in the HIPPY program at 3, 4, or 5 years of age and were classified as either 3rd, 5th, 7th, or 9th graders. To be eligible for the HIPPY program, a child must be economically disadvantaged, academically at-risk, or homeless (C. Weir, personal communication, July 19, 2007). Families are recruited for participation in the HIPPY program during the public schools' preschool enrollment, as well as through waiting lists at government subsidized preschool programs and Head Start Centers/childcare centers, partnerships with social service organizations and agencies such as Women Infants and Children (WIC), presentations in the community, and onsite in neighborhoods/canvassing.

The comparison group consisted of 516 children (3rd = 197; 5th = 130; 7th = 75; 9th = 114) who were randomly chosen to match each student in the HIPPY group based on grade, gender, ethnicity, and SES. School district personnel provided a pool of children for each grade (3rd, 5th, 7th, 9th). The pool of possible participants was chosen from the children at each grade level who had attended the same elementary schools as the HIPPY children. All of these schools are Title I schools in the targeted school district. Using a statistical software package, children in the comparison group pool were first divided by SES (low or not low). Each of these groups was then divided by gender (male or female), then by ethnicity (Asian, Black, Hispanic, White). The result was 16 separate groups. For example, one group contained low-SES, female, Hispanic children. Next, for each child in the HIPPY group, a child was chosen at random from the comparison group pool that matched their SES, gender, and ethnicity. The total *N* for this study was 1,032.

All the children in the study attended the same school district since kindergarten. The target district had a diverse student population with 66.5% Hispanic children, 4.6% White children, 27.7% African American children, 1% Asian children, and .2% American Indian children. The district also reported almost 70 different languages spoken in children's homes.

### Data Sources

Existing data on the 3rd, 5th, 7th, and 9th grade children who participated in the HIPPY program as 4- or 5-year-olds included: TAKS scores, attendance

records, school retention, discipline referrals, and special education placements. School district officials provided these data using existing district databases. Basic demographic data including SES, gender, and ethnicity was also obtained from the existing school database and is displayed in Table 1.

Table 1. Demographic Data for Study Participants

Gr.	Gender		Low SES*		Ethnicity			
	Male	Female	No	Yes	Hispanic	Black	Asian	Am. Indian
3rd	50.5%	49.7%	2.5%	97.5%	84.3%	12.7%	3.0%	0
5th	52.3%	47.7%	5.0%	95.0%	87.3%	9.6%	.8%	0
7th	55.8%	44.2%	13.2%	86.8%	80.0%	15.3%	2.6%	0
9th	52.3%	47.7%	21.9%	78.1%	75.9%	16.5%	5.1%	.8%

\*as determined by students who qualified for free or reduced lunch

## Measures

### *School Attendance*

School attendance rate was determined by the percentage of days the student was present at school during the school year. The data was provided by school district personnel from the district database records.

### *Grade Retention*

Grade retention was determined by the number of times since kindergarten that each student was retained. Because all of the children in the study had attended the same school district since kindergarten, the school district was able to provide the number of times each student had been retained.

### *Discipline Referrals*

Discipline referrals were obtained for each student based on their school records for the school year. Discipline referrals came in three forms: in-school suspensions; out-of-school suspensions; and alternate education placements. In-school suspensions refer to an all-day, in-school placement away from the rest of the student body. Out-of-school suspensions occur when children are forbidden to return to school for a predetermined amount of time. Alternate school placements refer to placement in an alternate campus, away from the main student body. As with the other variables, the data was obtained through school records and was provided to the researchers by district personnel.

*Academic Achievement*

Results from the Texas-mandated, criterion-referenced TAKS test and the Spanish version (Lectura) of the TAKS were used in this study. Scores for both the English and Spanish versions of the TAKS were considered together in one TAKS variable since they are both scored using the same metric.

The TAKS and Lectura were administered during the Spring semester of the children's 3rd, 5th, 7th, and 9th grade years. TAKS and Lectura reading and math assessments reflect the standards and curriculum specified in the Texas Essential Knowledge and Skills (TEKS) at each grade level. This curriculum is specifically designed to help children make progress in reading and math by emphasizing the knowledge and skills most critical to student learning. Results for the reading and math TAKS tests are reported as raw scores (number of items correct). Using linear transformations, the raw scores are converted to scale scores.

Standards-referenced assessments, such as the TAKS, are based on an extensive definition of the content they assess. Test validity is, therefore, content based and tied directly to the statewide curriculum, which in this case are the TEKS. To ensure the highest level of content validity, the process of aligning TAKS and the Lectura to the curriculum was carefully implemented and included review by numerous committees of Texas educators (Texas Education Agency, 2009a). Test reliability is an indication of the consistency of the assessment. TAKS and the Lectura test reliability data are based on internal consistency measures. The Cronbach's alpha for the overall reading and math instrument for each grade is available from the authors upon request. All of the internal consistency reliabilities are in the high .80s to low .90s range, with 1.0 being perfectly reliable (Texas Education Agency, 2009b).

However, even with a highly valid and reliable standardized test such as the TAKS, there are limitations on what can be learned from these measures. Standards-based tests such as the TAKS fail to measure other qualities related to the academic achievement of children such as higher-level thinking skills and academic motivation. In addition, since these tests rely mainly on multiple choice questions, there is a limit to the depth at which the test can probe for children's understanding. Despite these limitations, for studies where the outcome of interest is general achievement (such as this study), a nationwide study of state standardized tests conducted by the Institute of Educational Statistics suggests that the broad content of state tests makes them suitable for evaluating the effect of the intervention on a policy-relevant measure of general achievement (Somers, Zhu, & Wong, 2011).

## Results

The purpose of this study was to examine the long-term effect of HIPPY on the school performance of children in the 3rd, 5th, 7th, and 9th grades. School performance was measured using school attendance, grade retention, discipline referrals, and standardized test scores. While previous research has documented the positive outcomes of HIPPY at kindergarten entry and in elementary school, there is a lack of empirical research documenting its effects beyond elementary school. The following results address the five research questions that guided this study.

### School Attendance

To determine if children in the HIPPY group had significantly different attendance rates than those in the comparison group, an independent samples *t*-test was used to compare the mean attendance rates of both groups. An independent samples *t*-test allows for comparison of the mean scores of two groups to determine if they are statistically different from one another. In this study, the Bonferroni's adjustment to alpha was calculated and used to reduce the chances of obtaining false-positive results (Type I errors). Table 2 displays the results. At all four grade levels, children in the HIPPY group had significantly higher school attendance rates during the academic year than children in the comparison group. Though students in both groups show lower attendance rates as they progress through school, the gap between the groups [HIPPY vs. comparison group (Non-HIPPY)] becomes larger in the 9th grade. In fact, the largest gap in school attendance rates appears in the 9th grade (94% attendance rate for HIPPY children, 88% for comparison group).

Table 2. Difference Between Attendance Rates for HIPPY and Non-HIPPY (Control) Groups by Grade

Grade	<i>N</i>		Mean		<i>SD</i>		<i>t</i>	<i>p</i>
	<u>HIPPY</u>	<u>Cont.</u>	<u>HIPPY</u>	<u>Cont.</u>	<u>HIPPY</u>	<u>Cont.</u>		
3rd	197	197	98.31	97.50	2.09	2.88	3.200	** .001
5th	130	130	97.72	96.50	2.83	3.96	2.841	* .005
7th	75	75	96.81	94.21	3.78	6.01	3.098	* .002
9th	114	114	94.01	88.88	12.41	14.11	2.880	* .004

\*  $p < .05$ ; \*\*  $p < .001$

### Grade Retention

To determine if children in the HIPPY group had different retention rates than those in the comparison group, chi-square analysis was used to compare the mean retention rates of both groups to determine if there was a statistically significant difference between the HIPPY and comparison children. Table 3 presents grade retention rates based on the number of retentions (e.g., one year, two years, three years) for children in the HIPPY and comparison groups since their kindergarten year.

Statistical significances on grade retentions between the two groups were found in the 5th, 7th, and 9th grades. In the 5th grade, children in the HIPPY group had lower retention rates in both one-year retention (HIPPY 14.6% vs. Comparison 59.2%) and two-year retention (HIPPY 0% vs. Comparison 8.5%) than children in the comparison group. No one in either group had a three-year retention.

In the 7th grade, a significant difference was found between children in the HIPPY (18.6%) and comparison (49.2%) groups in terms of one-year retention rates, but no statistically significant difference was found in two-year retention rates in children in the HIPPY (2.6 %) and comparison (4.8%) groups. No one in either group had a three-year retention at the 7th-grade level.

In the 9th grade, statistically significant differences were found in all categories (i.e., one-year, two-year, and three-year retention rates). Fewer children in the HIPPY group (23.5%) had one-year retentions than in the comparison (46.6%). About 0.8% of children in the HIPPY group had two-year retentions compared to 27.1% of children in the comparison group. No children in the HIPPY group had three-year retentions, but 3.4 % of children in the comparison group did.

Table 3. Difference Between Grade Retention for HIPPY and Non-HIPPY (Control) Groups by Grade

Gr.	Percent Retained One Year		X <sup>2</sup>	Percent Retained Two Years		X <sup>2</sup>	Percent Retained Three Years		X <sup>2</sup>
	HIPPY	Cont.		HIPPY	Cont.		H	Cont.	
3rd	8.1	11.7	.238	0	1.5	.082	0	0	N/A
5th	14.6	59.2	** .000	0	8.5	** .001	0	0	N/A
7th	18.6	49.2	* .000	2.6	4.8	.512	0	0	N/A
9th	23.5	46.6	** .000	0.8	27.1	** .000	0	3.4	* .043

\*  $p < .05$ ; \*\*  $p < .001$

### Discipline Referrals

Discipline referrals were categorized by three different types: in-school suspensions, out-of-school suspensions, and alternate education placements.

#### *In-School Suspensions*

Independent samples *t*-tests revealed no statistically significant difference between the HIPPY and comparison groups for in-school suspensions. There were no 3rd grade children in the HIPPY group placed into “in-school suspension” (5th grade,  $t = 0.50, p = .602$ ; 7th grade,  $t = 0.65, p = .519$ ; 9th grade,  $t = 1.74, p = .081$ ). However, as displayed in Table 4, there were differences in the percentage of referrals at each grade.

Table 4. Percentages of In-School Suspensions for HIPPY and Non-HIPPY (Control) Groups by Grade

Gr.	None		1–2		3–4		5 or more	
	HIPPY	Cont.	HIPPY	Cont.	HIPPY	Cont.	HIPPY	Cont.
3rd	100%	99.0%	0%	0.5%	0%	0.5%	0%	0%
5th	99.2%	96.9%	0.8%	3.1%	0%	0%	0%	0%
7th	88.0%	81.3%	10.7%	12.0%	1.3%	2.7%	0%	4.0%
9th	88.6%	92.9%	7.0%	3.5%	0.9%	2.6%	0%	0.9%

#### *Out-of-School Suspensions*

Independent samples *t*-tests did not indicate a statistically significant difference between the HIPPY and comparison groups for out-of-school suspensions (3rd grade,  $t = -.07, p = .942$ ; 5th grade,  $t = 1.02., p = .310$ ; 7th grade,  $t = 0.04, p = .965$ ; 9th grade,  $t = 3.62, p = .717$ ). In addition, Table 5 displays the differences in the percentage of referrals at each grade.

Table 5. Percentages of Out-of-School Suspensions for HIPPY and Non-HIPPY (Control) Groups by Grade

Gr.	None		1–2		3–4		5 or more	
	HIPPY	Cont.	HIPPY	Cont.	HIPPY	Cont.	HIPPY	Cont.
3rd	97.5%	97.5%	2.1%	1.5%	0.5%	2.0%	0%	0%
5th	89.2%	80.8%	7.7%	16.6%	0.8%	1.4%	0%	1.4%
7th	78.7%	82.7%	10.0%	14.6%	2.7%	2.7%	2.7%	2.7%
9th	88.6%	92.1%	8.8%	5.3%	2.6%	2.6%	0%	1.8%

#### *Alternate Education Placements*

Alternate education placements occur when a student is removed from the home campus due to disciplinary reasons. This placement allows children the

opportunity to continue their educational program while developing appropriate social and behavioral skills for a successful return to the home school. Since there were no 3rd grade children for either group with an alternate education placement, a *t*-test was not computed. There were no 7th or 9th grade children in the HIPPY group with an alternate education placement, so a *t*-test was not computed for those grades. An independent samples *t*-test was computed for the 5th grade ( $t = 0.41$ ,  $p = .686$ ). The results indicate that there was no statistical difference in alternate education placements between the HIPPY and comparison groups. However, as displayed in Table 6, the percentage of children who received alternate education placements was noticeably higher for the comparison group than the HIPPY group in the 5th, 7th, and 9th grades.

Table 6. Percentages of Alternate Education Placements for HIPPY and Non-HIPPY (Control) Groups by Grade

Gr.	None		1–2		3–4		5 or more	
	HIPPY	Cont.	HIPPY	Cont.	HIPPY	Cont.	HIPPY	Cont.
3rd	100%	100%	0%	0%	0%	0%	0%	0%
5th	99.2%	96.9%	0.8%	3.1%	0%	0%	0%	0%
7th	100%	96.0%	0%	4.0%	0%	0%	0%	0%
9th	100%	98.2%	0%	1.8%	0%	0%	0%	0%

### Student Achievement

Children’s scale scores on the Reading and Math components of the TAKS (i.e., state-required standardized test) were compared using independent samples *t*-tests. Table 7 and Table 8 display the results for both the Reading and Math TAKS for all four grades (3rd, 5th, 7th, 9th).

#### *Reading TAKS Scale Scores*

Using independent samples *t*-tests, differences in Reading TAKS scale scores between children in the HIPPY group and children in the comparison group were found to be statistically significant from 3rd grade through 9th grade (in grades examined). HIPPY children outperformed comparison children in all four grades (see Table 3): 3rd grade,  $t = 3.27$ ,  $p = .001$ ; 5th grade,  $t = 7.26$ ,  $p = .000$ ; 7th grade,  $t = 2.69$ ,  $p = .003$ ; and 9th grade,  $t = 3.99$ ,  $p = .000$ .

Table 7. Mean Difference Between Reading TAKS Scale Scores for HIPPY and Non-HIPPY (Control) Groups by Grade

Gr.	N		Mean		SD		t	p
	HIPPY	Cont.	HIPPY	Cont.	HIPPY	Cont.		
3rd	197	197	2284	2228	154.4	183.4	3.274	** .001
5th	130	130	2220	1745	178.1	725.4	7.259	** .000
7th	75	75	2197	2113	145.9	174.5	2.691	* .003
9th	114	114	2209	2073	181.9	154.7	3.992	** .000

\*  $p < .05$ ; \*\*  $p < .001$

*Math TAKS Scale Scores*

According to independent samples *t*-tests, HIPPY children outperformed comparison children in math. As Table 4 shows, statistically significant differences were found between children in the HIPPY group and children in the comparison group in math in the 3rd, 5th, 7th, and 9th grades. Children from HIPPY outperformed children from the comparison group in 5th, 7th, and 9th grades: 5th grade,  $t = 7.90$ ,  $p = .000$ ; 7th grade,  $t = 3.08$ ,  $p = .008$ ; and 9th grade,  $t = 3.86$ ,  $p = .000$ .

Table 8. Mean Difference Between Math TAKS Scale Scores for HIPPY and Non-HIPPY (Control) Groups by Grade

Gr.	N		Mean		SD		t	p
	HIPPY	Cont.	HIPPY	Cont.	HIPPY	Cont.		
3rd	197	197	2275	2229	212.4	220.5	2.124	* .034
5th	130	130	2322	2094	227.5	230.4	7.900	** .000
7th	75	75	2178	2106	158.6	154.0	3.075	* .008
9th	114	114	2169	2013	234.6	180.4	3.860	** .000

\*  $p < .05$ ; \*\*  $p < .001$

*Mastery on the Reading and Math TAKS (TAKS Passing Rate)*

Multiple *t*-tests were performed to evaluate statistically significant differences between the percentages of children from the HIPPY group and the comparison group who passed each test. Each group was compared on the basis of whether the children scored well enough on the Reading and Math components of the TAKS to have met the minimum standards for passing each test. The *t*-test results revealed statistically significant differences at Bonneferoni's  $p = .01$  level between the HIPPY and comparison groups for both the Reading and Math TAKS passing rates for all four grades studied. Table 9 displays the percentages as well as the results of the chi-square analysis. More than 90% of



students in the HIPPY group (vs. 79% of students in the comparison group) passed the reading test in the third grade, 80% of students in the HIPPY group (vs. 40% of students in the comparison group) passed in the 5th grade, 76% of students in the HIPPY group (vs. 53% of students in the comparison group) passed in the 7th grade, and 87% of students in the HIPPY group (vs. 50% of students in the comparison group) passed in the 9th grade. Lower passing rates in math are found in both groups from the 3rd grade through 9th grade. About 81% of the HIPPY group passed the math test in the 3rd grade (vs. 72% of the comparison group), 87% of the HIPPY group in the 5th grade (vs. 51 % of the comparison group), 70% of the HIPPY group (vs. 44% of the comparison group) in the 7th grade, and 60% of the HIPPY group (vs. 33% of the comparison group) in the 9th grade.

Table 9. Difference Between Mastery on the Reading and Math TAKS for HIPPY and Non-HIPPY (Control) Groups by Grade

Grade			Reading			Math		
	N		Percent Passed		X <sup>2</sup>	Percent Passed		X <sup>2</sup>
	HIPPY	Cont.	HIPPY	Cont.		HIPPY	Cont.	
3rd	197	197	92.9	79.7	** .000	81.2	72.6	*.042
5th	130	130	80.8	40.8	** .000	87.9	51.6	** .000
7th	75	75	76.0	53.9	*.007	70.6	44.4	*.002
9th	114	114	87.1	50.0	** .000	60.8	33.3	** .003

\*  $p < .05$ ; \*\*  $p < .001$

## Discussion and Conclusions

Early childhood intervention and care programs have been shown to significantly promote children’s school success by reducing the number of behavior referrals (Rusby et al., 2007) and grade retentions as well as improving school attendance rate (Grysho, 2008; Colorín Colorado, 2008; San Diego Unified School District, n.d.) and school achievement (Bowman, Donovan, & Burns, 2001; Magnuson et al., 2004; Magnuson & Waldfogel, 2005; NICHD EC-CRN & Duncan, 2003). These programs have been demonstrated to function more effectively for children at risk than for others (Connor & Morrison, 2004). Our findings also suggest that children’s participation in HIPPY during the preschool years had a positive relationship with school performance in 3rd, 5th, 7th, and 9th grades, specifically in the following areas: (a) higher rates of school attendance, (b) lower rates of grade retention, (c) lower rates of multiple discipline referrals, (d) higher achievement scores on state-mandated tests in reading and math, and (e) higher passing rates on state-mandated tests in reading and math.

The results of this study concur with a meta-analysis of early childhood parenting intervention programs that showed positive effects of a parental involvement model on at-risk children's development and school performance (Bakermans-Kranenburg, van IJzendoorn, & Bradley, 2005). They reflect and expand findings from Bradley and Gilkey (2002), who compared children who attended HIPPY during their preschool years and those who had other preschool experiences and found that HIPPY participation was correlated with significant differences in classroom behavior, achievement tests, classroom grades, and school suspensions. The results of this study also showed a modest, but not significant, positive effect on classroom attendance and special education placements.

The findings of this study also coincide with the current body of HIPPY research and support the HIPPY program's fundamental belief that a young child's education begins in the home. Researchers agree that it is crucial for young children to have meaningful time and attention from their parents, extended family, or other significant adults in their life (BarHava-Monteith, Harre, & Field, 1999; Bradley & Gilkey, 2002; Garcia, 2006; Jacobson, 2003). As this study shows, children who participated in the HIPPY program as 3-, 4-, and 5-year-olds appear to have benefited long-term from their HIPPY experience. This suggests that systematic parental involvement can benefit children's school success and help at-risk children to overcome the barriers they encounter.

Our findings also support the importance of systematic parental assistance/involvement in children's school performance longitudinally, especially for children from low-income families. Family SES has long been known to be a strong predictor of school achievement and is further associated with children's economic status as adults. Children from lower SES are likely to be behind their counterparts, which ultimately leads to lower SES as adults (Davis-Keenan, 2005; Sirin, 2005). There have been various nationwide attempts to break this negative cycle by improving school achievement of children from low-SES backgrounds (e.g., Head Start, Reading First Program, etc.). HIPPY attempts to do so by providing a systematic parent involvement program to parents of preschoolers with low SES. The results of this study are important in that both groups (children with HIPPY experiences vs. children without) investigated in this study are disadvantaged in terms of their lower family SES. Children in the HIPPY group outperformed those in the comparison group in a statistically significant manner on the majority of the factors affecting school performance included in this study. This is an important finding for educators, researchers, and policymakers to consider as they make continuous efforts to help disadvantaged children succeed in school by actively and systematically promoting parent involvement.

There are some additional noteworthy findings in this study. For example, the grade retention rates between these two groups were not found to be significant in 3rd grade, but they appear to be significantly different starting in the 5th grade in both one- and two-year retentions, and this also continues in the 7th grade in one-year retentions. The gap is more significant in the 9th grade. This implies that there are long-term impacts of participating in HIPPY in terms of grade retention, which is closely associated with school performance in the state of Texas.

In Texas, more aid programs have been implemented in the elementary grades compared to middle and secondary grades in order to promote children to the next grade. These include before- and after-school programs, Saturday tutoring, or summer schools (TEA, 2009a). This extra assistance may partially explain why there are no statistically significant differences found in 3rd grade between groups. However, the grade retention rate of the comparison group was nearly double that of the HIPPY group (HIPPY 23.5% vs. comparison 46.6%) in the 9th grade. As indicated above, most grade retention in Texas is associated with state-mandated test results (TAKS). Both groups are at risk since students in both groups are from low SES. This finding implies critical long-term impacts of HIPPY participation and reflects general tendencies within the state by showing higher retention rates as students progress through school. According to a report from the Texas Education Agency (TEA, 2009a), children in middle and secondary grades have lower passing rates than in elementary grades, that is, they tend to be retained more frequently in the middle or secondary grades.

This finding is critically important to regard when considering the average retention rate in Texas. TEA has reported recent average retention rates of public schools by grade level, with the grade retention rate in the 9th grade at 12%. Both the HIPPY and comparison groups are at critical risk, but children in the comparison group are more at risk. In a recent study, the number of retentions was closely linked with dropout rates in high school (Grysho, 2008). "Higher dropout rates among students retained later in their school careers [middle or secondary grades] may be due to a number of factors, including problems in progressing from one grade level to the next, unhappiness and dissatisfaction with their school experience, the decision to avoid the stigma associated with being held back in school, the decision to start a family, or the decision to seek employment" (U.S. Department of Education, 1995, para. 12). Therefore, it is essential for educators, researchers, and policymakers to find ways to reduce student retention rates as early as possible.

Regarding discipline referrals (in-school suspensions; out-of-school suspensions; alternate education placements), no statistical difference was found

between the HIPPY and comparison groups, but both groups showed a high percentage of in-school and out-of-school suspensions. Both groups are particularly at risk in the 7th and 9th grades, with about 10–20% of students likely to be placed in discipline referrals. It is recommended for future researchers to investigate this phenomenon further to determine the factors influencing discipline referrals in order to provide necessary supports to children in need. It is important to diagnose major causes of discipline referrals, including several critical child-level, classroom-level, and school-level factors that will help children avoid discipline referrals. Very often, discipline referrals are only considered based on child-level factors (Hawken, Vincent, & Schumann, 2008). For instance, children receive discipline referrals as a result of challenging behaviors (e.g., disruptive and/or aggressive behaviors) or characteristics (e.g., anti-social, violent) and low academic performance (McIntosh et al., 2008). However, it is necessary to examine contextual factors such as classroom-level and school-level factors. Classroom-level factors are linked with quality of teachers, such as class management skills and characteristics/moods of teachers (Morrison & Skiba, 2001). For example, poor management skills are found to increase the risk of discipline referrals (Pas, Bradshaw, & Mitchell, 2011). In addition, school-level factors need to be taken into consideration by examining the school variables which impact student discipline referrals, such as high faculty turnover, large school size, or high concentration of children with low socioeconomic status (Pas et al., 2011).

Finally, the differences in passing rates on state-required math and reading assessments found in this study are also crucial to consider. In the ninth grade, only 50% of comparison group children passed reading compared to 87.1% of HIPPY children. More critically, in math, only 33.3% of comparison group children passed math compared to 60.8% of HIPPY children. These results show that the need for systematic parental involvement in children's early lives is urgent.

### **Limitations**

One of the limitations of this study is that we are unable to report whether children in the HIPPY group showed competitive school performance compared to the general population of children from middle- or upper-income families. Therefore, it is recommended for future researchers to compare school performance of children in the HIPPY group versus the general population (targeting children from the middle/upper class).

Another limitation of this study is that we are unable to investigate how parents function in this trajectory, even though parental involvement has been considered an important factor of children's school success (Kurdek & Sinclair,

2000). Because we utilized existing public data from HIPPY and school districts, no data on parent functions were available. Therefore, it is strongly recommended that future researchers investigate aspects of parent functions such as their parenting skills, attitudes toward parenting, expectations for their child, ways of interacting with their child, and so forth in order to determine whether and how these aspects affect their child's HIPPY experience along with the child's later school performance. The study is also limited in the fact that it is impossible to determine if the intervention during early childhood must come from the parents or whether it can come from some other microsystems such as daycare, preschool experiences, other parent education programs, or extracurricular activities.

Although formal and informal evaluations have indicated that low-income children who participated in HIPPY performed better than their peers who did not, little is known about how well parents administer HIPPY activities with their children and the levels of attendance in the HIPPY program. We could not determine the exact "dosage" of HIPPY the children received. More rigorous evaluation studies (e.g., a true experimental research design) are necessary to determine the effectiveness of early intervention programs, especially HIPPY, to establish the value of such programs to children's later developmental adjustment and academic success.

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Amber Brown is a former preschool and elementary teacher and preschool director; she also conducted parent involvement training for teachers and parent educators. Dr. Brown served as the evaluator for the Home Instruction for Parents of Preschool Youngsters (HIPPY) program for three years prior to her current post. Dr. Brown is currently an assistant professor in the Department of Curriculum and Instruction at the University of Texas at Arlington. Correspondence concerning this article may be addressed to Dr. Amber L. Brown, Curriculum & Instruction, University of Texas at Arlington, Box 19777, Science Hall, 322E, Arlington, TX 76019.

Joohi Lee is an associate professor of early and elementary education at the University of Texas at Arlington. She has researched early and elementary math education and conducted extensive research on the math performance of minority children in an effort to improve the quality of teachers who serve diverse populations.