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The Effects of Early Intervention and Parent Training on Vocabulary Development for the At-Risk Preschool Child

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Abstract

This interdisciplinary team research documents that when specific skills are taught systematically at home and at school, the low-high SES achievement gap shrinks. It provides a "close-up look" at the effects of early intervention and parent training on vocabulary development for the child, which resulted in an intergenerational achievement. The quintessential research goal is to make certain that parents are well equipped to develop their child's vocabulary; using conversation, literature, environmental print, and a focus on selected proven strategies; that is, concept development, daily and repeated readings, and vocabulary games and activities.

There are skills that young children, age birth through five years, can acquire that predict later reading success. These early literacy skills include adequate receptive and expressive vocabulary, oral language, phonemic awareness, alphabet knowledge, sentence structure and print awareness. Researchers have confirmed a pattern of early literacy related deficits among preschool children in the United States. For example, Lonigan & Whitehurst (1998) reported that one in three children in the United States enter kindergarten unprepared to learn, with most lacking the vocabulary and sentence structure that would allow them to participate fully in their educational

environment. Children from high-risk, low-socioeconomic status (SES) families are behind when they enter school at the kindergarten level. Hart and Risley (1995) report that children from lower SES families not only exhibit smaller receptive and expressive vocabularies than children from higher SES families, but that they also add words to their vocabulary more slowly. Contributing further to this problem, Hart and Risley (1995) purport that lower SES children live in communities and homes that lack literacy rich resources, such as books, magazines, and writing materials. When children begin school with early literacy deficits they are at risk for remaining behind in reading as well as other academic areas throughout the K-12 years. The reading achievement gap that exists among children from the low SES environments has prompted concern among early childhood professionals.

Because receptive and expressive vocabulary are especially important for early reading success, three interdisciplinary educators researched, assessed, and documented vocabulary deficits that have been observed in high-risk, low SES preschool children. High-risk children, their parents, and preschool teachers were the focus for this research. The researchers found that many risk factors that predict academic failure for a lower SES child can be overcome by systematic and explicit

interventions, especially in receptive and expressive vocabulary development.

Purpose for Research

Today more children in the United States live in poverty (20.8 percent) than two decades ago (15 percent) Brooks-Gunn & Duncan, (1997). Poverty takes a heavy toll on children; for example, they are at a greater risk for developmental problems than children who are from higher SES families. According to Dickinson, McCabe, Anastasopoulos, Peisner-Feinberg, and Poe (2003), low-income children are at a serious disadvantage in vocabulary acquisition and early phonological awareness; both skills highly correlated with future reading success.

Extrapolating from their observation, Hart and Risley (2003) estimated that by three years of age, the average welfare family child would have been exposed to 13 million words expressed by their parents. In contrast, children from higher SES families would have been exposed to 45 million words—a gap of more than 30 million words. Hart and Risley (1995) reported that there was an ever-widening gap between the higher and lower income children's trajectory for vocabulary growth. They went so far as to assert that the difference in vocabulary experiences is so great with these children that, by age four, even the best of intervention programs could only hope to keep the welfare children from falling still further behind the children from the more advantaged families.

Should we accept the above dire intractable prognosis of our country's high-risk population? Or can informed and systematic interactions and experiences with adults who take the time and effort to teach receptive and expressive vocabulary and other print and emergent literacy concepts improve the plight of these children? Since previous research concludes that there is a significant gap between low SES children and the more advantaged groups, the purpose of this research was to determine if early systematic and explicit instruction significantly narrows the achievement gap in receptive and expressive language among low SES children. Thus, it was hypothesized that if

at-risk preschool children receive systematic and explicit instruction at early childhood education centers, their receptive and expressive vocabularies would increase. Furthermore, it was conjectured that if at-risk preschool children receive systematic and explicit instruction from their parents, the child's receptive and expressive vocabularies would increase.

Review of the Literature

This article section presents a review of the research literature dealing with the problem of early literacy-related deficits among lower SES preschool children. More specifically, the review covers research documenting the causes of low vocabulary development: limited home and community resources and low frequency of children being read to by parents or caregivers.

Lower SES children experience deficiencies in home and community environments that compromise their potential for acquiring early literacy skills. Lee & Burkam (2002) reported a great disparity in the family resources of low and high SES children. Their study found that a typical low-income child owned 38 books compared to the 108 books owned by the typical high-income child. Not surprisingly, they also found a difference in the frequency with which parents read to their children in the two SES groups. While 94 percent of the high-income children were read to three or more times a week, only 63 percent of the low-income children enjoyed a similar experience. Moving beyond the home and into the community, Neuman & Celano (2001) were the first to evaluate the amount and type of print available in four Philadelphia neighborhoods that range from low to high SES. In low SES neighborhoods a scarcity of environmental print was evident; that is they found fewer libraries and fewer books in the libraries that did exist, fewer billboards and less billboard variety, fewer free community newspapers and fliers. In addition, the low SES children experienced fewer neighborhood literacy opportunities such as book fairs and storytelling events. Baker, Serpell, and Sonnenschein (1995) found that compared to children from middle-

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income homes, low-income children had fewer opportunities for interactions involving literacy (e.g. food preparation, shopping, storybook reading, pretend play, and educational toys). Middle-income parents reported significantly more writing activities and more independent reading by children. Ninety percent of the middle-class families in this study reported that their child visited the library at least once a month, whereas only 43 percent of the low-income families reported library visitation.

Rush (1999) examined the possibility that problems with vocabulary size and related early literacy skills might be associated with a particular pattern of literacy related activities in the home. In a group of low SES children, he measured receptive and expressive vocabulary skills. The study provided correlational support for the premise that literacy activities in the home (e.g. shared book reading, dialogical reading, reading aloud to the child) and the overall level of caregiver involvement significantly contributed to the development of receptive and expressive vocabulary skills. Rush also found that some children from low-income environments—those whose caregivers engaged in early literacy activities—demonstrated well-developed vocabulary and early literacy skills and were not at risk for early academic delays. His findings are consistent with the results of developmental and intervention studies in which adult behavior has been found to have an immediate effect on child language (Girolametto & Tannock, 1994).

All three educator researchers promoted the view that the potential causes of low vocabulary development were limited home and community resources, and the low frequency with which parents read to their children. The following text will focus on the actual research on how the potential causes of early literacy deficiencies can be addressed in efforts to increase the vocabulary development among at-risk children.

Even Start Overview

The Even Start Literacy Program is an education program for the Nation's low-income

families that is designed to improve the academic achievement of young children and their parents, especially in the area of reading. Even Start offers promise for helping to break the intergenerational cycle of poverty and low literacy in the Nation by combining four core components that make up family literacy: early childhood education, adult literacy (adult basic and secondary level education and/or instruction for English language learners), parenting education, and interactive literacy activities between parents and their children (United States Department of Education, n.d.).

Study Sample

The participants in this research project were enrolled in the Muscogee County Even Start Program. This program is located in southwest Georgia in an urban setting and enrolls approximately 300 families per year. Twenty-two children, ages two through four years of age, were included in the study. These children were from two Even Start sites: Tillinghurst Adult Education Center and the Teen Age Parenting (TAP) Center. Twelve mothers from the TAP Center (ages 18 and younger) agreed to be in the study and attended a two-hour workshop on how to develop their child's receptive and expressive vocabulary. A typical family demographic includes:

- Parents do not have a high school diploma or a GED
- Families participating in a social service program such as Temporary Aid to Needy Families
- Participants receiving free and reduced lunches
- Family incomes that are generated mostly from government assistance and averaging \$6,000-\$8,000

Pre-Testing

The tests administered were the *Receptive One-Word Vocabulary Test* (ROWPVT) and the *Expressive One-Word Vocabulary Test* (EOWPVT, Academic Therapy Publication, 2000). These norm-referenced tests are individually administered and provide an assessment of an individual's English

speaking vocabulary. They are standardized for use with individuals ages 2 years 0 months through 18 years 11 months and can be used to assess the early literacy skill of vocabulary, which is a predictor of future reading success. On the receptive and expressive vocabulary tests, the child and/or parent points to or names pictures of objects, actions, and categories. The pretests were conducted in January 2004, and the posttests in April 2004. These assessments were administered by Even Start staff and trained Columbus State University teacher candidates.

Intervention

The following text provides an in-depth summary of the parent training and early intervention strategies for vocabulary development. Five phases of strategic and systematic implementation included Assessment Training, Professional Development, On-going Staff Training, Environmental Setup, and Program Improvement Plans.

Phase I: Assessment Training

The Even Start program manager trained Even Start staff and Columbus State University teacher candidates on the testing and scoring procedures for the EOWVPT and ROWVPT. Assessment training was designed to ensure reliability among examiners in order to validate the research findings.

Phase II: Professional Development

The purpose of this phase was to familiarize Even Start staff, teachers, and parents with strategies and activities to increase vocabulary development for at-risk preschool children. Columbus State University's (CSU) coordinator of reading in early childhood education was the facilitator. A one-day training event of concurrent sessions grounded in scientifically based reading research was conducted. The concurrent sessions were lead by CSU teacher candidates.

The concurrent sessions were:

1. Research overview—**Workshop discussion:** The four components identified by the National

Early Literacy Panel's Report were talked about using a group dialogue format. The components are oral language (receptive and expressive vocabulary), phonemic awareness, print awareness, and alphabet knowledge.

Workshop sample activity: Demonstrations on how to read to a child were provided to the parents and Even Start staff using dialogical reading techniques; such as, reading books to and with the child, highlighting linguistic concepts, such as a word ("Look at what the word says") or sentence ("Listen to what the moose says in this sentence"), or asking questions about the meaning of the text or relating the text to the child's background (McCormick, 2003).

2. Ages and stages in vocabulary development—**Workshop discussion:** Workshop participants engaged in a group dialogue about their child's vocabulary development and pondered the following question as it related to their child: What can be expected for age appropriate vocabulary? **Workshop sample activity:** In an effort to meaningfully apply the ages and stages research into an every day situation, the parents and Even Start staff made language placemats with words and pictures that were appropriate for the child's age level and language development stage.
3. Vocabulary and how it leads to reading and academic success. **Workshop discussion:** The group dialogue focused on the following question: Why do children from low SES homes run a higher risk for not learning new vocabulary and are more likely to fall behind in school than children from the more advantaged home? **Workshop sample activities:** Parents completed a home literacy environment checklist, analyzed what literacy materials were missing in their own home, and discussed strategies for getting the materials. During the workshop the participants were given a magnetized poster to be placed in the home or classroom. The poster included the Dolch list of sight words and a bulleted list of the following

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major activities for improving early vocabulary development:

- Pointing out the letter-sound relationships on labels, boxes, newspapers, magazines
 - Listening to a child read words and books from school, even if the child is “pretend reading”; for example, repeating the words of the story in a “reading like” manner
 - Sharing conversations (chit-chats) over meal times and other times
 - Reading to and with the child every day
 - Visiting the library often
4. Free and fun vocabulary activities around the home. **Workshop discussion:** The group dialogue focused on how various vocabulary games and activities could be developed for the participants’ children at little or no cost. **Workshop sample activities:** The activities included
- making labels for objects in the child’s room;
 - making books of environmental pictures and word (McDonalds, Kmart, M & Ms);
 - playing word and letter games (using masking tape to make the letters and then the child walks around the letters while saying the letter name); and
 - making letter and word banks.

Phase III: Ongoing Staff Training

The Even Start staff attended weekly training sessions directed by the program manager. These sessions expanded the one-day training topics and were customized to meet the staff’s needs relating to vocabulary development instruction. The training sessions occurred over an eight-week period. Topics for training were:

- Essential Language Systems (What is phonology? What is vocabulary? What is Grammar? What is Pragmatics)
- Language-literacy connection
- Second language learners

- Features of a language-rich classroom
- Activity setting for oral language development-circle time, read-aloud sessions, small group instruction, independent centers
- Concepts of scaffolding, modeling and expanding a child’s language.

Phase IV: Environmental Setup

The classrooms were evaluated for literacy quality using the Early Learning Language Classroom Observation (ELLCO) (Smith & Dickinson, 2002). Based on the evaluation results, the classroom teachers made following adjustments:

- Placed books at child level
- Provided child access to puppets, stuffed animals, building blocks, props, and writing material
- Refreshed centers with new material to expose children to new vocabulary
- Placed books and vocabulary cards in all centers, even the block center
- Placed computers in the “library” center that had vocabulary words with real life pictures for the children to interact with
- Developed small partitioned spaces to increase high quality verbal interaction, cooperative dramatic play, and use of language-related activities

Phase V: Program Improvement Plan

Each center developed a program improvement plan for increasing vocabulary skills. It was based on the results of the ROWPVT and EOWPVT. The purpose of the site-specific plans was to assure that vocabulary activities were systematic, explicit, and delivered on a routine basis. A checklist of daily, weekly, and monthly intervention activities was developed, and the checklist activities were incorporated into the Even Start components.

Parenting education.

Parents checked out trade books daily for their children from the Even Start lending library. Through weekly parenting education classes, parents learned the importance of developing their child's vocabulary. Parents kept vocabulary journals, made a vocabulary word wall, learned semantic feature analysis, and charted word webs based on the preschool curriculum themes. Parenting education units of one month intervals were taught. Topics included *Dialogical Reading*, *The Importance of Reading to Your Child*, and *Read-a-loud Strategies*.

Interactive literacy activities between parents and their children.

Parents engaged their children in specific vocabulary enriched activities. Daily activities in which parents were involved included reviewing picture flash cards, keeping a vocabulary journal for their children, and reading to their children when they arrived at the center in the morning and prior to naptime in the afternoon. Every week, parents made books with their children emphasizing the vocabulary themes. For example, a barnyard book was made to support the theme of farm animals. Similarly, teacher's weekly lesson plans had a vocabulary list that correlated with the curriculum themes. Monthly field trips were planned that correlated with the curriculum theme. A trip to a farm was arranged to reinforce the vocabulary used with the farm animal theme.

Early childhood education.

Classroom teachers used a series of teaching strategies to encourage vocabulary development. These strategies included:

- A Language Master where teachers helped children identify pictures of objects or actions
- A Language Master where data cards were played for children to hear the word as well as see the word
- Photograph picture flash cards used during circle time

- Commercial vocabulary software on the personal computers used with one or two children at a time
- Experiential learning activities used to demonstrate vocabulary words that were brought in through curriculum—for example, to teach the word *flutter*, the classroom teacher brought a kite to school and flew it during outdoor activities to help the children visualize the word *flutter*
- A bulletin board posted in each classroom to highlight with designated vocabulary words
- Words, pictures, and children's artwork were placed on the board to reinforce the *words of the week*

Parents As Teachers (PAT).

Individual visits were designed to meet each family's needs in developing their child's vocabulary. These visits were held twice per month during the intervention period. Staff certified in the *Born to Learn Curriculum* by PAT conducted these visits. The PAT program model is based on the assumption that all families can benefit by receiving expert knowledge on parenting skills. These individual visits were used to teach the parent about early literacy skills necessary for their child to master prior to entering kindergarten. Parents were informed of their child's test results—vocabulary age equivalent score. Then specific intervention activities were taught to the parents so they could implement them in their home. For example, placing real objects in a pillowcase and asking the child to describe the objects they touched.

Methodology and Data Measures

The tests administered included the *Receptive One-Word Vocabulary Test* (ROWPVT) and the *Expressive One-Word Vocabulary Test* (EOWPVT, Academic Therapy Publication, 2000). These norm-referenced tests are individually administered and provide an assessment of an individual's English speaking vocabulary. They are standardized for use with individuals ages 2 years 0 months through 18 years 11 months and can be used to assess the early literacy skill of vocabulary,

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which is a predictor of future reading abilities. On the expressive and receptive vocabulary tests, the child and/or parent points to or names pictures of objects, actions, and categories. The pretests were conducted in January 2004, and the posttests were conducted in April 2004. These assessments were administered by Even Start staff and trained Columbus State University teacher candidates.

Analysis

Participants in this study included twenty-two children ($n = 22$), ages two through four years of age. These children were from two Even Start sites: Tillinghurst Adult Education Center ($n = 13$) and The Teen Age Parenting (TAP) Center ($n = 9$). Twelve mothers ($n = 12$) from the TAP Center (age 18 and younger) were self selected to be in the study by attending a two-hour workshop on how to improve their child's vocabulary development. There was no study control group for the children or the mothers because of the small sample sizes available within the program.

A *t* test for Correlated Samples was used to compare the pre- and post-test test scores of the mothers and children in both the expressive and receptive domains of the test. The *t* test for Correlated Samples procedure compares the means of two variables for a single group. It computes the differences between values of the two variables for each case and tests whether the average differs from 0. A confidence level of 95% was selected for this analysis. We calculated a raw score, a standard score, an age equivalent score, and percentile rank for both the pre- and post-test scores in both the expressive and receptive domains of the test for the entire sample of mothers, the entire sample of children, and for sub-groups of children for each Even Start site.

Intervention Impacts: Children

Results of the study impacts using the receptive and expressive percentile rank scores of the children are presented in Table 1. The table shows the pre-and post-expressive test scores and the pre-and post-receptive test scores by site location.

There are significant results for both the entire sample of children and the children by site location. Overall, the intervention showed significant impact on the percentile scores from the pre-test to the post-test in both the expressive ($t_{(21)} = 4.384, p < .05$) and receptive ($t_{(21)} = 3.629, p < .05$) domains of the test for the entire sample at both sites. When sub-grouped by site location, the intervention showed significant impact on both the pre-post expressive domain ($t_{(8)} = 2.951, p < .05$) and the pre-post receptive domain ($t_{(8)} = 2.951, p < .05$) for children tested at the TAP Center (see Figure 1).

At the Tillinghurst Center, the intervention showed significant impact on the percentile scores from the pre-test to the post-test in both the expressive ($t_{(12)} = 3.163, p < .05$) and receptive ($t_{(12)} = 3.000, p < .05$) domains of the test (see Figure 2). We can accept the research hypothesis that the post-test scores would be higher than the pre-test scores for the entire sample and for the sub-grouping by site. The bar graphs below indicate the mean pre-post tests scores for the children at both the TAP and Tillinghurst Centers.

Data Findings for the Mothers

Twelve mothers ($n = 12$) from the TAP Center (age 18 and younger) were self-selected to be in the study by attending a two-hour workshop on how to improve their child's vocabulary development. These mothers were administered the pre- and post-test in both the expressive and receptive domains. The purpose of administering the tests to the mothers was to give the staff another tool to gage the English speaking vocabulary abilities of the mother. However, no specific intervention was provided to the mother's vocabulary development other than their attendance at the initial workshops. Table 2 shows the results of the pre- and post-test on the mothers. Analysis indicated that there was no significant change in the percentile scores in the receptive domain from the pre-test to the post-test. Unexpectedly, there was a significant gain from the pre-test to the post-test in the expressive domain ($t_{(11)} = 4.120, p > .05$).

Table 1
Percentile Rank Scores of the Child by Sub-Group
Means and Standard Deviation

	Child Pre-Expressive Test		Child Post-Expressive Test		Child Pre-Receptive Test		Child Post-Receptive Test	
	%tile	S.D*	%tile	S.D*	%tile	S.D*	%tile	S.D*
TAP Center (n=9)	12.7778	14.280	25.0011	22.3081	12.6678	14.772	26.4444	22.787
Tillinghurst Center(n=13)	9.1538	9.70263	22.000	15.2096	20.9231	19.388	41.8462	19.878
Both Sites(n=22)	10.6364	11.610	23.2277	18.001	17.5459	17.75	35.5455	21.99

*SD= Standard Deviation

Pre-Post Receptive and Expressive Percentile Rank

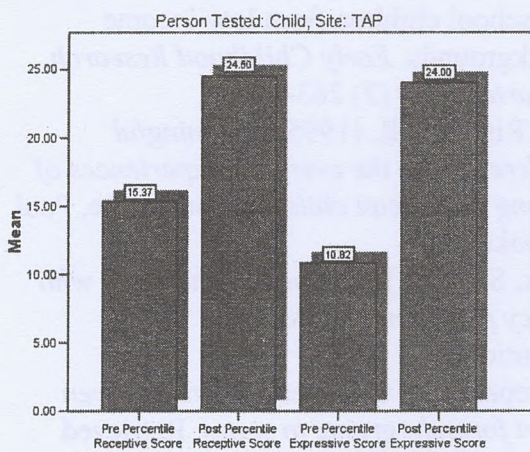


Figure 1. Impact on pre-post expressive and receptive domains at the TAP center.

Pre-Post Receptive and Expressive Percentile Rank

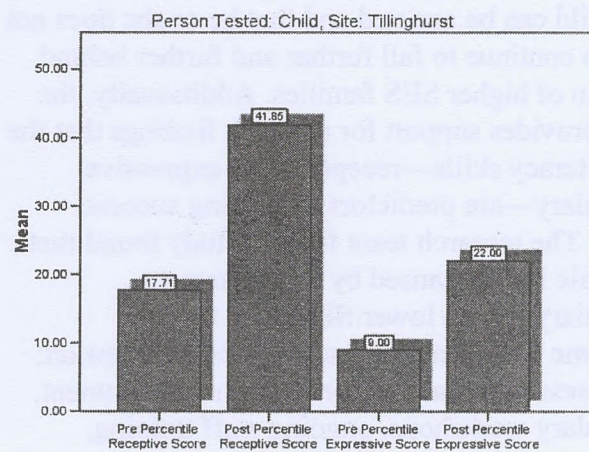


Figure 2. Impact on pre-post expressive and receptive domains at Tillinghurst

Table 2 Percentile Rank Scores of the Mother
Means and Standard Deviations

	Mother Pre-Expressive Test		Mother Post-Expressive Test		Mother Pre – Receptive Test		Mother Post-Receptive Test	
	%	S.D*	%	S.D*	%	S.D*	%	S.D*
TAP Center(n=12)	14.25	17.27	20.25	16.97	21.1667	8.33	25.4167	11.25

* SD = Standard Deviation

Limitations of the Findings

Limitations to the intervention and the methodology should be mentioned. The study sample is small with no control group. It is assumed that the intervention with the children was consistently delivered at both Even Start sites. Also, no tracking of the mothers was conducted; therefore, it is unknown what specifically caused the increase in the mothers' expressive percentile score. We speculate that the mothers increased the amount of time they read aloud to their children as was suggested in the initial orientation workshop. Therefore, the mothers improved their expressive language abilities from the pre-test to the post-test.

Concluding Remarks

This study offers more research and documentation supporting the premise that the at-risk child can be assisted and that he or she does not have to continue to fall further and further behind children of higher SES families. Additionally, the study provides support for research findings that the early literacy skills—receptive and expressive vocabulary—are predictors of reading success.

The research team for this study found that academic failure caused by an inadequate vocabulary for the lower SES child can be overcome by systematic and explicit intervention; e.g., assessment training, profession development, vocabulary workshops, ongoing staff training, environmental setup, and the program improvement plan. Overall, the intervention (pre- and post-assessment results) showed a significant, positive impact on the lower SES children's expressive and receptive vocabulary development.

Surprisingly, the mothers' expressive vocabulary scores also significantly improved even though there was no intervention provided to them. It is hypothesized that the mothers' active engagement in reading with their children positively affected their scores. Implication and questions for another study might include the following questions. Is the mother's role in their child's vocabulary development the starting place for breaking the intergenerational cycle of poverty and low literacy in the Nation? What funds are available

for specific intervention training with the child's mother?

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Catherine Kostolnick serves LaGrange College as the Executive Director for the Center for Community Services. Ms. Kostolnick provided the statistical analyses for this project.