Does Play Make a Difference?
How Play Intervention Affects the Vocabulary Learning of At-Risk Preschoolers

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Merging the literatures of how to enhance young children's vocabulary development and how to improve learning through play, this study tested two vocabulary-teaching protocols on at-risk preschool children: Explicit Instructional Vocabulary Protocol (EIVP) and shortened EIVP and a play session (EIVP + Play). From a group of 118 lowest-performing students, 49 children were divided into two groups and received either EIVP or EIVP + Play twice weekly in thirty-minute tutoring sessions over the course of four months. A total of 64 words were taught. The results revealed that children who received the EVIP + Play showed more growth on both receptive-vocabulary and expressive-vocabulary measures and that more children who received EIVP + Play met the benchmark on the receptive vocabulary, measured by their performance on the Peabody Picture Vocabulary Test (PPVT III). Additionally, children in the EIVP + Play group showed a steeper growth trajectory on the curriculum-based measurement tool. The premise and importance of guided play in literacy learning is discussed, and further research is suggested.

"Vocabulary learning is an essential component of early literacy achievement" (Roskos et al. 2008, 49), one at the heart of oral language mastery and of reading comprehension (Hirsch 2003). Researchers find that children who enter school with poor vocabularies often experience difficulties in learning to read. They also report that the size of a child's early vocabulary predicts the child's later academic achievement (Walker et al. 1994). Similarly, Hart and Risley (1995) write that vocabulary at age three is strongly associated with reading comprehension at the end of third grade. Data suggest early mastery of vocabulary is important. Children may differ by several thousand basic word meanings (Biemiller and Slonim 2001) by the time they enter school.

When children begin school with such large differences in vocabulary, the gap usually never closes and, in fact, it often widens.

Although we have a good idea of the importance of developing a wide vocabulary early, we are less clear about how to best teach vocabulary to young children. Most current vocabulary teaching strategies focus on developing the vocabulary of children in kindergarten through eighth grade. Few vocabulary teaching strategies are aimed at children under five years old, mainly because we think of vocabulary growth in children of this age as only one component in their developing language skills (Yang 2006). We need studies that explore the efficacy of teaching vocabulary to young children to make sure our early-childhood programs are research based. To develop effective strategies, researchers must consider not only the vocabulary literature but also the literature on early-childhood development.

According to the National Association for the Education of Young Children (NAEYC 2009a), any instruction for young children ought to consider the children's ages and their developmental progress. NAEYC recognizes that play is a central component of developmentally appropriate practice (Bredekamp and Copple 1997) and a vehicle for developing language, cognition, and social competence. Thus, the literature on play has the potential to provide guidance for early vocabulary instruction.

Play is critical for developing the oral language skills children need to learn how to read (Bergen and Mauer 2000). Researchers discovered that children at play often use higher forms of language than normal (Bruner 1982; Wells 1983; Johnson, Christies, and Wardle 2005). For example, Bruner (1983) found that "the most complicated grammatical and pragmatic forms of language appear first in play activity" (65). Other researchers have shown that when children learn through play, it stimulates their language development (Bransford, Brown, and Cocking 2000; Bransford et al. 2006; Bredekamp 1997; Shonkoff and Phillips 2000; Sawyer 2006). We discuss these studies more fully later in this article.

Strong evidence suggests that time for play has been dramatically reduced—unfortunately, we think—in present-day early-childhood classrooms (Zigler and Bishop-Joseph 2004, 2006; Bodrova and Leong 2003; Brandon 2002; Johnson 1998). Howes and Wishard (2004) report that pretend play among four- and five-year-olds in preschools has dropped dramatically in recent years. In 1982 pretend play accounted for 41 percent of the youngsters' time in preschool; by 2002 they engaged in pretend play with others only 9 percent of the time. Some

attribute the decrease in play in early-childhood classrooms to an emphasis on early literacy programs recommended by the National Reading Panel (2000), the Bush administration's Good Start, Grow Smart (2002) initiative, and the 2007 reauthorization of the federal Head Start program. These advocated literacy instruction founded on scientifically based reading research strategies. Scientifically based reading research calls for explicit, systematic, and direct instruction for teaching early literacy skills (National Reading Panel 2000; National Early Literacy Panel 2008). Since play, by its very nature, is often not explicit, nor systematic, nor direct, it has not been considered a scientific method for teaching early literacy skills. Moreover, given this national climate, play often gets replaced by lessons targeted at developing literacy skills in preschool and kindergarten (Zigler and Bishop-Josef 2004). However, in early-childhood classrooms, academic learning and play are not mutually exclusive. NAEYC's recent statement (2009b) cautions educators: "Rather than diminishing children's learning by reducing the time devoted to academic activities, play promotes key abilities that enable children to learn successfully" (2).

Extensive research suggests that children benefit from both unstructured play and from teacher-guided play (Johnson et al. 2005; Van Hoorn et al. 2003). Specialists define guided play as play structured to teach academic skills and concepts (Roskos, Tabors, and Lenhart 2004). Guided play has tremendous potential for language and literacy learning. Guided play can include direct participation of adults (Van Hoorn et al. 2003). Though adults have goals or targets they hope to meet through such play, they must also remain sensitive and responsive to children's behaviors (Christie and Enz 1992; Christie and Roskos 2006). However, the efficacy of using guided play in teaching language skills has not been fully tested.

What We Know about Vocabulary Learning and Teaching

Young children learn words rapidly through a process called *fast mapping* as well as through word association, as when, for example, adults explicitly link spoken words with concrete referents (Bloom 2001). At the same time, children use both linguistic and nonlinguistic cues to learn more complex words (adverbs, adjectives, and articles) that occur in speech. The size of children's vocabularies supports the development of decoding skills, provides linguistic information (sounds, rhymes, and meanings) to map onto printed words

(Wagner et al. 1997), and sharpens phonological sensitivity (Fowler 1991; Metsala 1999). Other research attributes the fourth-grade "slump" in reading comprehension to the simple fact that most children do not know the full meanings of many words (Chall, Jacobs, and Baldwin 1990). Such research led Hirsch (2003) to conclude that a wide vocabulary, because it increases reading comprehension, is critical in learning to read and write. In short, children's vocabularies serve as the foundations of their literacy skills. Especially where home settings fail to provide children with cognitive diets dense with words and rich with experiences, educators need to increase the number of words these children use appropriately and to deepen their understanding of the words they do use.

Early research on vocabulary teaching found significant but modest gains in using storybooks for teaching new words (Sénéchal and Cornell 1993; Robbins and Ehri 1994; Sénéchal, Thomas, and Monker 1995). For example, Sénéchal and Cornell (1993) examined the effects of a single reading on the ability of preschool children to increase their vocabularies. Although they found significant effects, these were modest and prompted them to examine the effects of repeated readings on the development of preschool-aged children's vocabularies. In a later study, Sénéchal (1997) found that repeated readings enhanced preschool-aged children's receptive (understanding the words) and expressive (being able to say the words) vocabularies. Sénéchal and her colleagues also studied the effects of different uses of storybooks on the development of children's vocabularies. Sénéchal, Thomas, and Monker (1995) found that preschool-aged children who answered questions about target words during book reading made greater gains than those who simply listened to the readings. Similarly, Sénéchal (1997) found that preschool children who answered questions during repeated storybook readings made significant gains in their expressive vocabularies.

Other researchers have investigated a specific reading strategy, labeled *dialogic reading*, for its efficacy in building children's vocabularies. In dialogic reading, the child learns to become the storyteller, and the adult "assumes the role of an active listener, asking questions, adding information, and prompting the child to increase the sophistication of his or her descriptions of the material in the picture book" (Whitehurst et al. 1994, 680). Interestingly, research by Whitehurst and his colleagues (Arnold et al. 1994; Valdez-Menchaca and Whitehurst 1992; Whitehurst et al. 1994) on dialogic reading showed that, though this talk-intensive storybook-reading strategy increased the phonological awareness and writing skills of preschoolers, the impact on their vocabulary was not significant.

A growing number of researchers (Beck and McKeown 2007; Schwanenflugel et al. 2005; Wasik and Bond 2001) have capitalized on storybook reading to advance vocabulary instruction, extending vocabulary teaching beyond the event itself. Wasik and Bond (2001) and, later, Wasik, Bond, and Hindman (2006) shared target words with children before and after reading. Prior to reading a story, the teacher presented the children with concrete objects representing the words and with word definitions. Throughout the week, the teacher read two books containing the target words several times. The teacher also encouraged the children to use the target words throughout the week by interacting with the objects. The results showed that the children made expressive- and receptive-vocabulary gains on the target words and general gains on a standardized test of receptive vocabulary. Similarly, Beck and McKeown (2007) found significant effects when they included exposure to and discussion of target vocabulary after storybook reading. Instruction followed a protocol that included contextualizing the target words' roles in the story, presenting child friendly definitions and explanations, having children repeat the words, discussing multiple contexts in which the word could be used, constructing examples, and reinforcing the pronunciations and definitions of the words. Even stronger effects were found when the frequency and duration of this instruction were increased.

The research, then, suggests that vocabulary instruction should promote growth in young children's vocabularies by (1) increasing the frequency with which words are encountered through repetition during storybook readings and during additional activities, including activities before and after the readings; (2) providing explicit instructions with direct explanations of the meanings of the words; (3) using interactive reading styles; and (4) increasing the contexts in which children are exposed to new words in meaningful ways.

These early vocabulary teaching strategies were mostly developed in a storybook-reading context. Play, which has been viewed as an essential part of early-childhood curriculum, has hardly been considered as a way to teach vocabulary.

Guided Play and Literacy

Lev S. Vygotsky (1978) presented insights on play that suggested a new role for adults in child's play. Vygotsky believed that children develop an understanding of the world through play and that adults could encourage this development

by appropriate intervention. He viewed play as a means for socially assisted learning and scaffolding. In scaffolding, the adult assists the child to perform at a higher level than would be possible without adult support. When the child is able to perform alone, the adult gradually withdraws and lets the child act independently. This kind of adult intervention helps children expand their knowledge and learning during play. Adult scaffolding during play encourages children to learn self-regulation, cooperation, memory, language use, and literacy (Bodrova and Leong 1996).

The relationship between play and literacy has been much studied (Yaden, Rowe, and MacGillivray 2000). Researchers found that play is an ideal way to support children's emergent literacy (Christie and Enz 1992) and that play enhances children's narrative abilities (Ilgaz and Aksu-KoÁ 2005) by scaffolding to more-developed narrative production (Pellegrini 1987; Eckler and Weininger 1989). Pellegrini and Galda (1990) reported that preschoolers use complex mental-state verbs such as *say, talk, tell, write,* and *explain* when they are engaged in make-believe play. Dickinson and Moreton (1991) echoed this finding, noting that three-year-olds talking more in pretend play was associated positively with the size of their vocabularies when they began kindergarten two years later. The advanced language capabilities that emerge in play offer not only a window into children's growing competencies but also a link to their literacy. Singer and colleagues (2006) wrote that play is crucial for oral language skills, which is the basis for later reading skills, and that children learn best through playful, guided interactions. Specially guided interactions with adults in playful contexts increase children's vocabularies (Roskos, Tabors, and Lenhart 2009). Hence, there is a strong warrant in play to support vocabulary development in young children.

Numerous studies reported the benefits of learning literacy through play (Bellin and Singer 2006; Christie and Enz 1992; Christie and Roskos 2006; Morrow 1990; Neuman and Roskos 1992; Owocki 1999; Roskos and Christie 2001). These studies found that children's literacy knowledge and behavior increase in literacy-enriched play settings and that adults' involvement in play increases the amount of literacy activities (Bellin and Singer 2006; Han 2009; Vukelich 1994). Adults should assume a variety of roles when interacting with children such as onlooker, coplayer, or, sometimes, play leader. When the adults draw children's attention to the literacy in the play, children's abilities to recognize literacy is enhanced. This kind of guided play is a blend of play and academic learning (Roskos et al. 2004). As we already mentioned, within guided play, teachers are goal oriented, but they should remain sensitive and responsive to

the children's behaviors. Neuman and Roskos (1992, 1993) report that playful learning with adults—of which guided play is one type—contributes to the acquisition of literacy skills. Literacy embedded in playful contexts is learned better and faster.

In an earlier study with a colleague, Kathy Roskos (Roskos, Vukelich, Han, and Moore 2007), the authors of this article developed and used the Explicit Instructional Vocabulary Protocol (EIVP) during an interactive book-reading event. In that study, the focus was on preschoolers' learning works during a tutoring intervention. The protocol made use of a concrete referent (object, photograph, or illustration), relying on a learn-by-association approach (see figure 1). Our own results suggested that this instructional protocol had a significant impact on the preschoolers' receptive and expressive word learning; however, the relative growth toward a benchmark (age-appropriate growth) was not, in our view, sufficient. We concluded, therefore, that an intervention with enhanced power was needed to increase the vocabularies of at-risk children more rapidly if we hoped ever to close the achievement gap between them and their more advantaged peers.

We believed that merging the well-established research on play as a foundation for learning with the research on early vocabulary learning suggested a way to enhance the effectiveness of our vocabulary-instruction protocol. Hence, the present study examines the addition of play to at-risk preschool children's vocabulary learning. The study addressed three questions.

- Were there differences in the expressive- and receptive-vocabulary growth for those children receiving EIVP compared to those receiving shortened EIVP + Play intervention?
- Were there differences in the percentage of children performing at the age-appropriate level between those children receiving EIVP and those receiving shortened EIVP + Play intervention?
- Were there differences in the patterns of expressive- and receptive-vocabulary growth for those children receiving EIVP compared to those receiving shortened EIVP + Play as measured monthly by a curriculum-based measurement tool?

Our overarching goal was to field test the impact of adding play to an intervention already shown to improve children's vocabularies and to assess the effectiveness of this addition of play to promote the ability of high-risk preschool children to learn vocabulary words better.

Method

Sample

The study included 49 four- and five-year-old children (26 male; 23 female) selected from a larger pool of 118 kindergarten-bound children attending a Head Start program in a mid-Atlantic state. The sample included only low-income children living in families whose annual income met the federal guidelines for poverty; no special needs children; and children whose *Peabody Picture Vocabulary Test – III* (PPVT) (Dunn and Dunn 1997) standard scores were at least one standard deviation below the mean (85 or lower). These children were at the highest risk among the low-income children in these classrooms. The children attended Head Start programs that were integrating a comprehensive literacy program, *Doors to Discovery* (Wright Group / McGraw-Hill 2002), with a more general instructional framework in place prior to the initiation of the project (*Creative Curriculum*). Table 1 summarizes the demographics for these two groups. As the table describes, more than 60 percent of the children spoke a language other than English at home.

Table 1. Demographics for the Subjects Tutored by the Two Versions of the Protocol

	EIVP	EIVP + Play
Gender		
Male	14	12
Female	11	12
Race/Ethnicity		
African American	8	4
Hispanic	16	16
Caucasian	0	1
Biracial	0	2
Other	1	1
Home Language		
English	7	6
Spanish	13	16
Other	0	0
English + Other	5	2

To test the efficacy of both forms of the vocabulary protocol, these 49 children were randomly assigned to one of two groups, one receiving EIVP during storybook reading and one receiving EIVP + Play. Children in both groups

received the intervention through tutoring (one adult with two children) for thirty minutes twice weekly. The tutoring protocol for both groups and play scripts (added in the case of EIVP + Play) directed the tutor to teach two target words per session. To control the amount of time spent in each group, the following procedures were developed. For the EIVP group, tutors were directed to spend the full thirty minutes reading the storybook and completing steps 1–6 of the protocol. For the EIVP + Play group, tutors were directed to complete the storybook reading and steps 1–6 of the protocol in twenty minutes to allow time for play. These instructions guaranteed that both groups received only thirty minutes of instruction.

Procedures

Selecting words for vocabulary instruction. In light of the research about the importance of vocabulary on future academic achievement (Hart and Risley 1995; Walker et al. 1994), word selection and organization for instruction in the preschool years increasingly seems a crucial matter. Literacy pedagogy, however, has not determined what words to teach and when in preschool (Roskos et al. 2008). Beck, McKeown, and Kucan (2002), for example, recommend selecting words "of high frequency for mature language users and are found across a variety of domains," words they labeled Tier Two words (8). Biemiller (2005) argues for the development of a stock of root words taken mainly from Dale and Chall's *Readability Index* (1948). Steady growth in root word vocabulary, he contends, contributes to acquiring the age-normal vocabulary children attending primary grades need to comprehend what they read. On the other hand, Beals and Tabors (1995) suggest teaching rare words "that appear infrequently in the vocabularies of three- and four-year-old children" (63). Rare words or specialized vocabulary are linked to the domain or disciplinary knowledge grade schoolers need to discern among multiple meanings of words.

For the purposes of this study, we selected words from a list in the *First Thousand Words for Children's Beginning Reading* (Spache 1974). According to Roskos and her colleagues (2008), this is a "well-substantiated list of words that are time-honored in many beginning reading materials and typically used in children's everyday life" (56). From this list, we chose words semantically related to the monthly themes under investigation in the intervention classrooms. The words we selected were primarily Tier One words. Beck, McKeown, and Kucan (2002) define Tier One words as the "most basic words . . . rarely requiring instruction in school" (8). However, they identify two occasions when Tier One words

are more appropriate for instruction. The first occurs when teachers are unable to explain a new vocabulary word in terms already known to the children. For example, it would be inappropriate to teach children the Tier Two word (i.e., feast) if they do not understand Tier One words (i.e., food, lunch, dinner, or meal). The second occasion occurs when words are appropriate only if they are useful and interesting to children learning the words. We took the first tier words we had selected and cross-referenced them with the alphabetical list prepared by Dolch (1948) of words that children at the beginning of first grade knew in the middle of the last century, words that Dolch judged to be essential for children to know in order to begin reading successfully.

For each classroom theme, we selected sixteen words, four words to be explicitly taught each week, for a total of sixty-four words over the course of the study. These words differed from the words teachers taught in the classroom. Even though the tutors and teachers used the same storybook, the target words for explicit teaching were different during the classroom instruction and tutoring sessions. We proceeded by (1) reading through each storybook, searching for one of the exact vocabulary words on the list or for evidence that the concept of one of the words was clearly represented (i.e., *speak* could be represented by two characters *speaking* to each other); (2) recording the storybook page where the word appeared; (3) securing an adult definition of the word, typically using www.dictionary.com; (4) writing a child friendly definition of the word, using words already known to the children; (5) developing an action related to the word; and (6) developing a play episode appropriate to the word.

Describing the two explicit vocabulary-teaching protocols. EIVP, the first protocol, is consistent with the long-established pedagogic rules for teaching vocabulary: frequent, explicit, interactive, and meaningful instruction used to reinforce the words learned in a classroom. The protocol includes an interactive book reading using a book from the classroom to increase the frequency of the word encounters. The explicit vocabulary instruction employed a meaningful concrete referent (object, photograph, or illustration). Child friendly definitions were developed for all target words prior to the tutoring session. EIVP follows the steps 1 through 7 during or after the book reading as described in figure 1.

Figure 2 describes an example of explicit teaching of the word *bake* using EIVP during a reading of *Warthogs in the Kitchen* by Pamela Edwards (1998).

The alternative protocol incorporated all of the steps of EIVP, but the time spent on the EIVP steps was shortened and a play component was added (EIVP

Step 1: Show the child illustration of the target word in the storybook
Step 2. Say the word
Step 3. Ask the child to say the word
Step 4. Tell what the word means, using a child friendly definition
Step 5. Ask the child to tell by giving or repeating the definition
Step 6. Do a word-related action or use concrete prop to show action
Step 7. Ask the child to repeat the demonstration
(In EIVP + Play, an additional step was added.)
Step 8. Engage the child in a play episode

Figure 1. Explicit Instructional Vocabulary Protocol (EIVP) and Additional Play Steps

Target word is *bake*

Reading a book, *Warthogs in the Kitchen* by Pamela Edwards with a child. Pointing at a picture of warthogs baking in the kitchen (step1).

I say "bake" (step 2), and you say "bake" (step 3).

I say "bake is to cook in the oven" (step 4). You say "bake is to cook in the oven (step 5).

I say "I am going to point to the warthogs baking cupcakes in the book. They are baking like this" (mimic the actions of warthogs baking) (step 6). "Can you find a place in the book where the warthogs are baking? Show me how they are baking cupcakes" (step 7).

Figure 2. An Example of EIVP Procedure (Steps 1–7)

+ Play). The play step provided a heightened level of context including adult- and child-guided play and props to give each target word substance and meaning. Because our tutors were not play experts, we developed play scripts for the target words to guide the tutors in how to play with the children for each word. Our play session incorporated dramatic play or constructive play. The play script incorporated the pretend component, which the tutor and children enacted together. The scripts described only the tutor's actions because the child's actions were unpredictable and spontaneous. Figure 3 describes the example of a play script for tutors to teach the word *bake*.

Target word is *bake*

Materials: mixing bowl and spoon, small cake pan, timer, and oven mitt

Let's play: Let's bake a cake. (Pretend to mix together ingredients in a bowl and pour the batter in a cake pan, take turns modeling and having the child mix. Let the child be the leader during the play.) Now it's time to put the cake in the oven (Have the child put the cake in the oven.) Now we have to wait until its finished baking. (Set timer.) The cake is finished! Let's take it out and eat it. (Use the oven mitt.)

Figure 3. An Example of a Play Script (step 8 added to steps 1–7 of protocol)

Tutors and fidelity to the protocol. One of the researchers trained three graduate students as tutors in the instructional protocol in an hour-long training session. During the training, the graduate students took turns assuming the roles of children and tutor, in which the tutor used the word meanings, selected word-related actions, and enacted the play episode prepared by the researchers. The trained tutors then held thirty-minute tutorial sessions twice a week. They used the instructional protocol with a target vocabulary word, introducing two words in each tutoring session. During each session, the tutor read and discussed the words and employed the interactive reading strategy. At what she judged the appropriate time, the tutor began the guided play for the specific target word. One of the researchers met weekly with the tutors to solve problems, discuss the children's progress, reflect on the use of the protocol, and train the tutors in the use of the protocol with words for the next session.

To ensure fidelity to the protocol, a research assistant videotaped the tutors each month at random. One of the researchers cross-referenced each tutor's language and actions with each child to assess adherence to the appropriate protocol. In addition, the tutors completed record-keeping sheets in which they described each child's tutoring session. The same researcher cross-referenced this data for each child. Finally, the time spent in each tutoring session was recorded to ensure that children in both groups received the same amount of instructional time. These fidelity checks helped us ensure that the tutors implemented our protocols accurately and appropriately and that each child received the appropriate instruction in the protocol to which he or she was assigned.

Measuring children's vocabulary growth. We tested the children three times to compare the two protocols—twice before the sessions began (in October and

November) and once after all the sessions were completed (the following May). We used the Peabody Picture Vocabulary Test-III (PPVT) (Dunn and Dunn 1997) to measure the children's receptive-language attainment. The PPVT-III includes a series of multiple choice vocabulary questions. The examiner offers the children a plate containing four black and white illustrations, one target word and three foils. Next, the examiner asks them to point to the illustration that represents the target vocabulary word (i.e., show me the *ball*). The difficulty of the items increases as the examinee progresses, and the test continues until they reach a ceiling—eight or more wrong in a set of twelve items.

Second, we used the Individual Growth and Development Indicators: Picture Naming (Early Childhood Research Institute on Measuring Growth and Development 2000) to measure the children's ability to name pictures rapidly. For this test, an examiner presents a series of individual cards containing one colored picture (photograph or illustration), one at a time, to a child. The pictures on the cards consist of objects found in the natural environment such as in the community, at home, or in school. The order of the cards is completely random and different for each child. The child must name as many pictures as he or she can in one minute; the child's score is the total number of pictures named correctly.

Measuring children's learning of the target words. In the last method of testing, we used a curriculum-based measurement (CBM) (Fuchs and Fuchs 2002) tool to monitor the effectiveness of the instructional method in helping children learn vocabulary words. Burstein, Bryan, Christie, and Ergul (2004) had tailored the CBM procedure to the preschool population. Word learning was tested in the expressive- and receptive-vocabulary modes respectively using plates of four-colored pictures, one of the target word and three foils, all semantically linked and all of the same approximate size. Each plate used pictures from Google's images. For example, to test the children's knowledge of the word *fork*, the four-picture plate included a picture of a spoon, fork, whisk, and spatula. To measure expressive vocabulary, the children responded to the prompt "What's this?" as the assessor pointed to one of four pictures on the plate. To measure receptive vocabulary, the children responded to the prompt "Point to _____" on the same four-picture plate. Testing of the expressive mode always preceded testing of the receptive mode. Children were tested before the initiation of each theme and tested again at the theme's conclusion. The children received one point for each correct score, with synonyms coded as correct in the expressive mode, for a maximum of sixteen points in each mode each month.

Results

In this study, we hoped to determine the relative strength of two versions of an explicit instructional vocabulary protocol in helping at-risk children learn new words in preschool.

Comparing picture-naming gain scores (expressive vocabulary)

As figure 4 indicates, both groups made progress in expressive vocabulary. A paired samples t-test comparing pre-test and post-test scores showed that both groups made significant gains [for EIVP: $t(24)=3.92$, $p<.001$; for EIVP + Play: $t(23)=7.19$, $p<.001$] in expressive vocabulary.

An individual samples t-test comparing the mean-gain scores of the EIVP and EIVP + Play groups on the picture-naming measure found a significant difference between the mean gains of the two groups [$t(47)=2.45$, $p<.05$]. The mean gain of the EIVP + Play group was significantly higher ($m=7.37$, $sd=5.03$) than the mean gain of the EIVP only group ($m=3.88$, $sd=4.95$) on the picture-naming measure. Gain scores were computed by subtracting the pre-test score from the post-test scores.

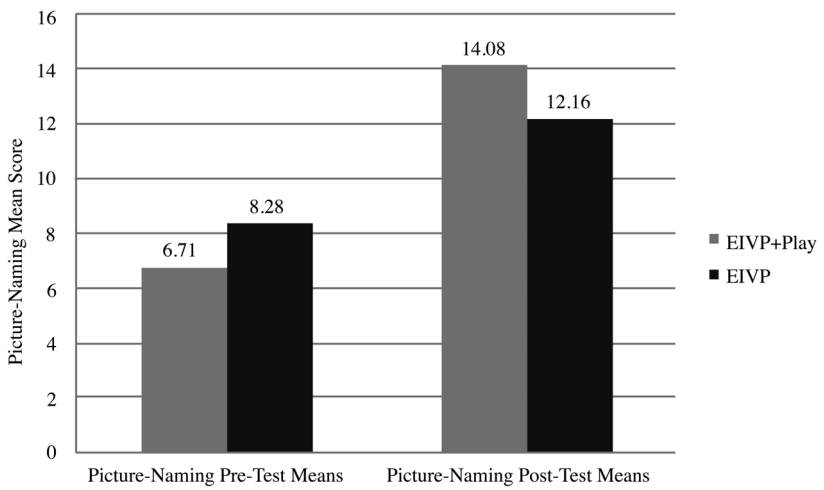

Figure 4. Mean Scores for Pre-Testing and Post-Testing Picture-Naming Test for Children Who Received EIVP and EIVP+Play Instruction

Comparing the two groups' PPVT gains and age-appropriate scores (receptive vocabulary)

As seen in figure 5, both groups made gains in receptive vocabulary. A paired samples t-test comparing the pre-test and post-test scores on the PPVT for each group showed that both groups made significant gains [for EIVP: $t(24)=8.23$, $p<.001$; for EIVP + Play: $t(23)=6.8$, $p<.001$].

Next, we tested to determine if the mean gains made by two groups were similar. Gain scores were computed by subtracting the pre-test scores from the post-test scores. An individual sample t-test comparing the mean-gain scores of the EIVP and EIVP+Play groups on the PPVT-III was calculated. No significant difference was found [$t(47)=.797$, $p>.05$]. The mean gain of the EIVP + play group ($m=18.38$, $sd=13.21$) was not significantly different from the mean gain of the EIVP group ($m=21.36$, $sd=12.98$) on this receptive vocabulary measure.

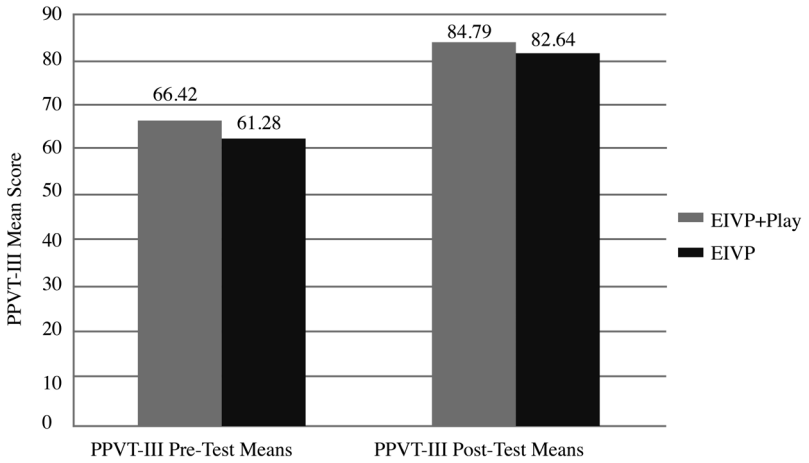

Figure 5. Mean Scores of The Pre-Test and Post-Test PPVT-III for Children Who Received EIVP and EIVP+Play Instructions

Comparing the two groups' vocabulary benchmark achievement

Children earning a standard score of 85 to 115 on the PPVT are judged to be within the age-appropriate, average range. We calculated, therefore, how many children in both groups met this benchmark. Recall that no child in either group met this benchmark on the pre-test; all of the children scored below 85, and all were identified as high-risk children at the time of pre-test. Figure 6 provides

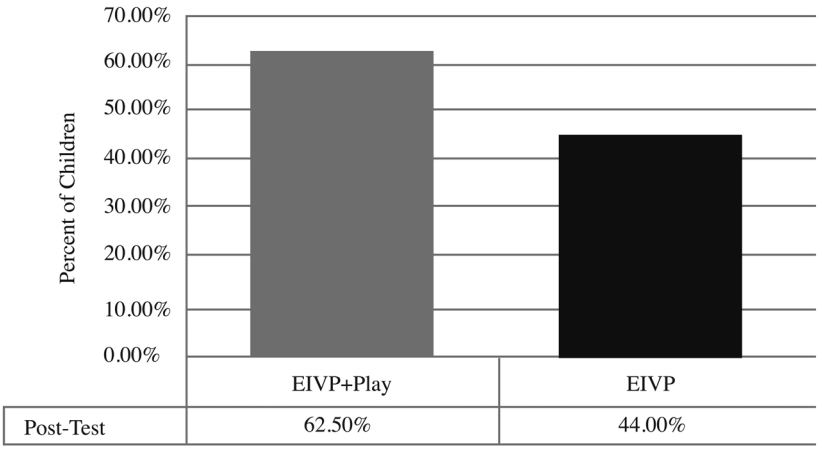

Figure 6. Percentage of Children Who Met the PPVT Benchmark for Their Age

data on the percentage of children in the two groups who met this benchmark in post-testing. A greater percentage of children in the EIVP + Play group (62.5 percent) reached a standard score of at least 85 on the PPVT post-test compared to EIVP only group (44 percent).

Comparing the two groups' monthly growth on curriculum-based measurement (expressive and receptive vocabulary)

While standard scores are important for research and evaluation, ongoing assessment is critical if we wish to predict the further growth of children's vocabularies and adjust instruction to promote such growth. Figures 7 and 8 depict the monthly performance on the curriculum-based measurement of children's mastery of the vocabulary words that were explicitly taught using the two versions of the vocabulary instruction protocol. Children in both groups started at similar points and a showed similar pattern of fluctuation for each theme or time period. However, children in EIVP + Play group showed consistently higher expressive vocabulary gains as time progressed (figure 8). We might naturally expect some fluctuation because each child's knowledge of each theme is different. Children receiving EIVP + Play, though, exhibited higher receptive and expressive vocabulary scores on more thematic units as time progressed.

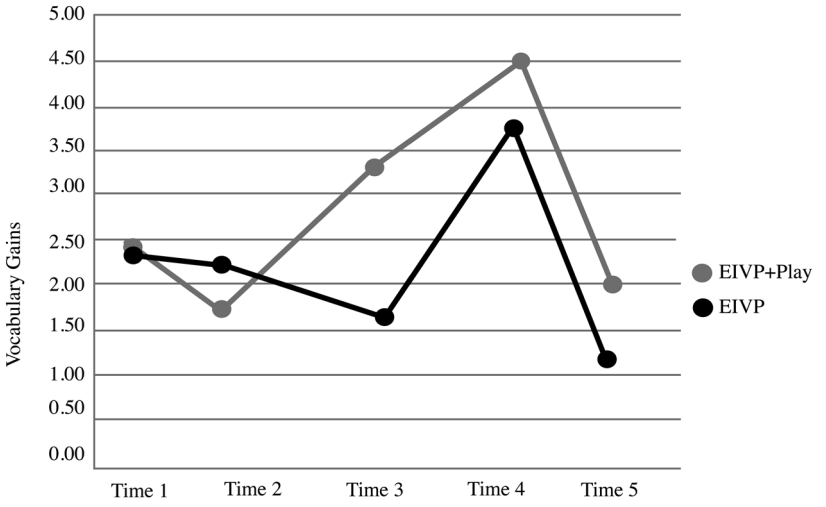

Figure 7. Gains of Receptive Vocabulary Measured by Monthly Curriculum-Based Measurement

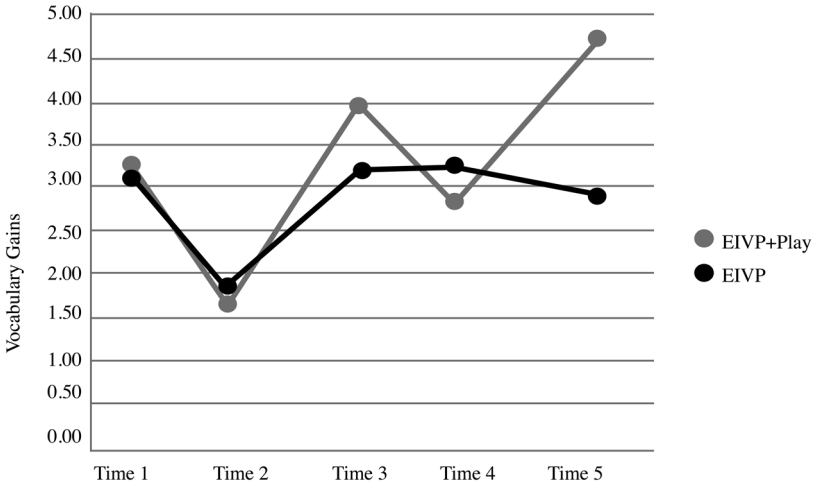

Figure 8. Gains of Expressive Vocabulary Measured by Monthly Curriculum-Based Measurement

Discussion

Our study indicates that the children who received either EIVP or EIVP + Play tutoring increased their vocabularies over the course of the study compared to students who received no tutoring. We also found that adding a play component to the protocol slightly improved both the performance and performance trajectory of the children's vocabulary learning. While these results are encouraging, ultimately gains, even statistically significant gains, are not meaningful if they cannot improve classroom-relevant performance. It is from this applied perspective that the clinical significance of this intervention becomes apparent. Indeed, more than 60 percent of the children in the EIVP + Play intervention moved from being assessed as at-risk to scoring within age-level averages after just four months of intervention.

The EIVP + Play also proved a more powerful intervention for growing an expressive vocabulary, a more challenging gain than receptive vocabulary. It is also noteworthy that while the children in both groups displayed similar patterns of word learning based on the curriculum-targeted words, those children in the play group evidenced a more pronounced learning trajectory.

Why did the addition of play with explicit vocabulary teaching result in better outcomes? It is quite possible that the blending of science-based reading strategies delivered in a play-based format was responsible for the gains. This has substantive implications for program planning. Recently, many education specialists have advocated replacing playtime with explicit literacy-skill instruction. In our study, rather than replacing playtime, we used playtime to teach a literacy skill. Researchers have studied ways to connect literacy with children's play, such as creating literacy-enriched dramatic-play settings (Neuman and Roskos 1993; Christie and Enz 1992), and how to use play to facilitate children's story production and recall (Silvern et al. 1986). These researchers found that dramatic play and acting out stories prompted children to read more and write more, helped them recognize the components of stories (e.g., setting, character, and plot), and improved their ability to remember stories. The focus of literacy skills in the past studies (e.g., reading, writing, and comprehension) were broader than those we measured in this study. Future studies might examine the sort of intensive intervention described in this article in terms of those broader literacy skills the earlier studies measured.

Our study documents one example of how play provides a learning context for literacy. Play can also be a means to learn other literacy skills such as

alphabet, phonological awareness, print concepts, and comprehension. There are numerous possibilities to integrate literacy with play. In an era of accountability and evidence-based research, examining the impact of play on academic learning is critical to helping early-childhood educators understand the real value of play in school success. We believe that play-based learning and guided play actively engages children in pleasurable and seemingly spontaneous exploration and learning.

Limitations and Future Directions

One of the limitations of our study is the small sample size. Testing the protocols with larger numbers of children might yield samples of individual differences in the efficacy of the interventions that are tested. For instance, future studies might test the results of boys or girls, or the students' ages in months at onset of the intervention. Second, we did not have a control group against which to compare the efficacy of instructional protocols. The high percentage of children meeting the benchmark on the PPVT-III suggests that EIVP + Play is an effective way to improve children's vocabularies. However, including a control group in future research will further help us understand the protocol's effectiveness compared to regular classroom vocabulary instruction. Similarly, we do not know if it would have been more efficacious for the children to have played with the tutors in a guided-play format than to have had them review the storybook. Indeed, we need to test for guided play alone in boosting expressive vocabulary. For future research, it will be important to follow children over a longer period of time to better understand how their vocabulary developed as measured by both a progress-monitoring instrument (such as our curriculum-based measurement) and a yearly performance assessment to see how the gains made by the EIVP and EIVP + Play groups were maintained. We need ongoing monitoring of children's vocabulary progress to measure the success of early intervention programs.

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