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Impact of a Teacher Training Program to Increase Cognitively Stimulating Talk: Pretest and Immediate Post-Test Results

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IMPACT OF A TEACHER TRAINING PROGRAM TO INCREASE COGNITIVELY
STIMULATING TALK: PRETEST AND IMMEDIATE POST-TEST RESULTS

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Laura E. Fisher

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IMPACT OF A TEACHER TRAINING PROGRAM TO INCREASE COGNITIVELY STIMULATING TALK: PRETEST AND IMMEDIATE POST-TEST RESULTS

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Laura E. Fisher   August 2015   37 Pages

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The literacy skills that students develop in preschool are an imperative aspect of school readiness and later academic success. Research has established that some students begin their educational experience at a disadvantage due to the low socioeconomic status (SES) of their family and, as a result, low levels of conversation between parents and children, restricted access to books, and low values placed on literacy. Past research supports that shared book reading is one of the most beneficial activities in which teachers can partake in order to optimize their students' language development. The Head Start program is intended to alleviate the SES gap by providing a high quality education to preschool students. However, as measured by the Classroom Assessment Scoring System (CLASS), Head Start teachers are failing nationally in the area of Instructional Support, or implementing curriculum effectively in order to promote language and cognitive development.

This study was designed to provide a book reading training to Head Start teachers in order to increase their level and frequency of Cognitively Challenging Talk with their students. Results found that Cognitively Challenging Talk increased as a result of the training as well as the amount of words the teacher utilized; Less Cognitively Demanding Talk and Managing Interaction variables, or classroom management aspects, were not significantly changed.

Introduction

Preschool children's literacy skills are an imperative aspect of school readiness and later academic success. A recommended activity for enhancing children's literacy skills is the generic process of shared book reading between preschool teachers and their students. According to Zucker, Cabell, Justice, Pentimonti, and Kaderavek (2013), the term shared reading and the definition utilized for this study is "the interaction and discussion that occurs when an adult and a child (or children) look at a book together" (p. 1425). Preschool is a vital time for enhancing literacy skills and overall school readiness; however, some children begin preschool at a disadvantage due to the educational experiences in their homes prior to formal education.

Young children are building their language skills and vocabulary at a very early age. Research completed by Dickinson and Smith (1994) has documented that children's emergent language skills are developing prior to any kind of formal instruction. Children's language skills emerge as a result of their interactions with others, and typically prior to formal education; this is often by way of their parents or guardians (Zucker, Justice, Piasta, & Kaderavek, 2010). The bioecological theory of human development proposes that ordinary interactions between children and adults serve as primary mechanisms through which children develop (Bronfenbrenner & Morris, 2006). Gest, Freeman, Domitrovich, and Welsh (2004) argued that the emergent literacy skills learned at this young age, which include print and decoding abilities as well as language comprehension skills, are an imperative part of school readiness and later academic success.

The educational experience that each child receives prior to formal education varies greatly. As a result of these varying experiences, Hoff (2003) has documented that the resulting literacy skills, or lack thereof, vary considerably during a child's early academic career. As stated by Alexander, Entwisle, and Horsey (1997), the largest contributor to differences in children's academic performance at the beginning of their first grade year is socioeconomic status. The income of a child's family is a significant predictor of a child's literacy development and later academic success. This can be attributed to several factors, including low levels of conversation between low-income parents and their children, limited vocabulary knowledge and therefore usage in low-income homes, restricted access to books, and low values placed on literacy.

Children of middle-class parents are typically allocated many more opportunities to have conversations with their guardians. This creates a disadvantage for low-income children as emergent literacy skills are developed nearly exclusively by communication with others prior to entering formal education (Dickinson & Smith, 1994). According to Wasik, Bond, and Hindman (2006), students who have educated, middle-class parents are allotted two to three times as many opportunities to discuss with their parents as low-income children. Children from low socioeconomic status homes are exposed to a significantly lower number of words prior to entering formal education. The landmark study conducted by Hart and Risley (1995) found that children from more privileged homes had heard as many as 30 million more words by the age of 3 than children from less privileged homes. Unfortunately, the low levels of maternal vocabulary utilized in these low socioeconomic status homes have been shown to result in their children lacking in the growth of their productive vocabularies (Hoff, 2003).

Book reading in the home has been documented to be very beneficial in assisting young children with their early vocabulary development (Dickinson & Porche, 2011). It can be especially beneficial for students from low-income homes to receive exposure to vocabulary that they likely do not receive from every day conversations with their parents. However, many low-income families do not have the resources to provide their children with books. This limited access to a wide range of vocabulary, which is imperative for language growth, through book reading has been linked to later reading comprehension difficulties for low-income children (Dickinson & Smith, 1994). Furthermore, parents' reports on their children's book-related experiences, including book ownership and the frequency of book reading, accounts for significant variance in end-of-kindergarten literacy status, even when demographics were controlled for (Dickinson & Brady, 2005). The frequency with which parents read to their children prior to formal education has a large impact on school readiness and later reading abilities.

Finally, an issue contributing to low school readiness in children coming from low-income homes is that parents or guardians in these homes typically place low values on literacy. Many of the low income children's language deficits are due to the low value parents place on literacy, as demonstrated by an absence of book ownership and their limited use of literacy skills (Wasik et al., 2006). Valuing literacy is a vital aspect of parental book reading, as studies have found that parental beliefs about the significance and viability of reading books to their children considerably predict their child's later reading achievement, their motivation for reading, and how often parents read to their children (Lipsky, 2013).

A problem with young children falling behind at the preschool age is that they typically have trouble "catching up" academically with their peers. Students who begin kindergarten behind their peers in academic school readiness skills are at high risk for long-term negative school outcomes (Williford, Maier, Downer, Pianta, & Howes, 2013). Furthermore, the language support that young children receive in preschool has lasting effects on their later reading comprehension. The Home-School Study of Language and Literacy Development (HSLLD), a longitudinal study of the development of literacy and language skills of children from low-income homes, reported that the amount of literacy support children receive from their parents and the expanse at which they are read to in preschool accounts for 31% of the variance in their receptive vocabularies four years later (Dickinson & Brady, 2005). These early reading skills that young children develop heavily determine their later success. Other studies found that preschool teachers' use of sophisticated vocabulary was predictive of students' reading comprehension and word recognition abilities even when they had reached fourth grade (Dickinson & Brady, 2005; Dickinson & Porche, 2011).

A term coined by Merton (1968) in the sociology field called the "Matthew Effect" can be helpful in explaining the importance of initial vocabulary skills provided by parents. "The rich get richer and the poor get poorer" displays the major problem with children with limited emergent vocabulary falling farther and farther behind as their formal schooling goes on. Exposure to books and rich language in the home is imperative, as without some level of emergent vocabulary which young children receive from their parents, preschool teachers' efforts to increase vocabulary are less effective (Lipsky, 2013). In one study conducted by Collins (2010), children with larger initial

vocabularies benefitted more from a preschool intervention to raise their vocabulary skills than those with smaller initial vocabularies.

Evidence from many experimental evaluations and analyses of preschool programs has documented that a child's enrollment in a high quality preschool program significantly contributes to that child's readiness for school and increased academic outcomes (Lamb & Ahnert, 2006). Just as parents can facilitate the language development of their children through informal interactions, teachers can increase students' critical thinking skills and language development through instructionally rich interactions that are not necessarily explicit teaching (Hamre, 2014). Finding learning opportunities throughout the day is imperative as only about one-third of a preschooler's day consists of large group setting instruction, whereas one-third consists of daily routines and meal times, and the last one-third consists of free choice or play activities (Cabell, DeCoster, LoCasale-Crouch, Hamre, & Pianta, 2013). The two-thirds that do not consist of obvious instruction allocate many opportunities for teachers to enhance the critical thinking and literacy skills of their students. For example, free-choice, often named "center" time in preschool classroom allows teachers to have one-on-one, rich, conversational interactions with their students in order to extend the child's own ideas or interests (Cabell et al., 2013). Even meal times provide teachers ample opportunity to engage children in discussion and facilitate language development and higher order thinking skills.

It is stressed that both informal and formal teaching methods are vital in order to enhance students' academic success. Although informal methods of enhancing students' vocabulary development are imperative, specific classroom learning activities, such as

instructional time or book reading, clearly allow teachers the opportunity to provide linguistically rich instruction, provide feedback, and include students in discussion (Hamre, 2014). According to a meta-analysis on shared book reading completed by the National Early Literacy Panel (2009), shared book reading in preschool is the "single most important thing adults can do to promote the emergent literacy skills of young children" (p. 153). Shared book reading by teachers has several benefits in fostering vocabulary development.

Due to the fact that preschool children spend a limited amount of time in formal teaching settings, research regarding the amount of time that students actually spend with adults is concerning. A study completed by Early et al. (2005) documents that among prekindergarten programs spanning 10 states, children in these programs typically interacted with adults a limited 27% of the time on an average day. This may be the case due to teachers discerning that students interacting with materials and other children is more beneficial (Hamre et al., 2012). Although these peer interactions and independent learning activities are important, explicit teaching as well as informal interactions with adults are imperative for later language development; therefore, these results are problematic.

The Head Start program is one which supports the development of children ages birth through 5 and was designed in order to increase school readiness in children from lower income homes (Ludwig & Phillips, 2008). The program began in 1965 as a piece of President Johnson's War on Poverty, and since that time the program has grown to serve 1 million low-income children each year (Ludwig & Phillips, 2008). Research has documented that a high quality preschool experience can alleviate the gaps between

children from higher and lower income homes (Piasta et al., 2012). Specifically, it is helpful in enhancing children's social, emotional, and conceptual development and improving their success later in their academic career (Office of Head Start, 2013).

Efforts to increase access to early childhood programs in the United States are beneficial, however, some of those exertions should be targeted at increasing the quality of the programs to which children have access. Instruction that is highly beneficial is something that must be taught to teachers. In terms of book reading, the higher the frequency of shared reading and the higher the quality of the reading both result in increased vocabulary development for young children (Dickinson & Porche, 2011). However, the features, or quality, do play a more significant role than the frequency of shared reading (Zucker et al., 2013). There is a significant link between teachers' language complexity utilized during shared book reading and the outcomes in student vocabulary (Lipsky, 2013). Furthermore, observational studies demonstrate that literacy interventions which are low in quality of implementation have no effect on child outcomes in the slightest (Dickinson & Brady, 2005).

A major way that teachers can increase the quality of their instruction is through extratextual talk, or discussing topics in the book which are either print or phonological, literal or inferential (Zucker et al., 2013). Inferential discussions go beyond the literal texts or pictures. Several studies have examined the use of teacher extratextual talk and have found that preschool students may be asked to infer things about a character's point of view, similarities and differences between the text and their conceptual knowledge of the world, the meanings of words, the cause of an event that has happened or a prediction regarding what may happen next, and connections between information given in the text

or between texts (Dickinson, De Temple, Hirschler, & Smith, 1992; Van Kleeck, Gillam, Hamilton, & McGrath, 1997). Research has documented that children learn more when teachers draw attention to the features of the print in the book as well as outside connections and inferences (Piasta et al., 2012). Inferential discussions can even occur outside the realm of book reading to including free play or classroom routines (Cabell et al., 2013).

A major, yet indirect, effect that shared reading has on children's vocabulary development is increased phonemic awareness (Dickinson & Porche, 2011). This phenomenon can be described as a growth in vocabulary which results in a change in the mental representation of language. This is particularly helpful to children emerging from low-income homes, as book reading allows them to receive exposure to words unfamiliar to them, which they may have not received exposure to in their everyday experiences (Wasik et al., 2006).

Providing interactions for children which are cognitively stimulating is vital, however, it also requires a relatively deep knowledge of instructional strategies which are effective and a familiarity with children's development (Scott-Little et al., 2011). Due to the importance of preschool teachers appropriately implementing teaching strategies, in which book reading is included, an evaluation system has been put into place in order to evaluate Head Start teachers. Teachers are evaluated using the Classroom Assessment Scoring System (CLASS), an observation instrument that measures the quality of teacher-child interactions (Pianta, La Paro, & Hamre, 2008). Three domains are included in the scoring system, including classroom organization, emotional support and instructional support. A report published by the Office of Head Start (2013) documented that the area

in which Head Start teachers are failing is instructional support, which involves implementing curriculum effectively in order to promote language and cognitive development. In 2013, the average grantee-level scores received by Head Start programs during CLASS reviews were 5.63 in Classroom Organization, 5.99 in Emotional Support, and 2.72 in Instructional Support. CLASS observers rate each dimension on a 7 point scale, ranging from low to high. Scores between 1 and 2 fall in the low classification range, scores between 3 and 5 fall in the mid-range, and scores between 6 and 7 fall in the high range. At the specific Head Start office where this research project took place, the average scores for their Spring 2014 CLASS reviews were as follows: Classroom Organization-5.26, Emotional Support-4.70, and Instructional Support-3.73. The Office of Head Start (2013) reported that instructional support has been the domain with the lowest score for multiple years. Research by Hamre (2014) further documented that although teachers spend a moderate amount of time providing organization and emotional support, a very limited amount of time is spent on instructional support.

The domain of instructional support involves three separate dimensions which are vital in order to promote the conceptual development of young children and increase their later academic success (Hamre, 2014). These domains include concept development, quality of feedback, and language modeling. Concept development involves teachers' interactions with children that encourage abstract and critical thinking skills while making relevant connections to the children's lives. Quality of feedback comprises teachers providing children with information regarding their performance or shared thoughts so that their understanding of an idea can be broadened and their active participation is encouraged. Finally, language modeling consists of teachers and their

students actively participating in discussions together in ways that help the students to extend their communication and linguistic skills (Hamre, 2014). The majority of Head Start teachers spend a limited amount of time administering instructional support opportunities, and instead focus on free-play, memorization or recall activities without adult interactions as an effort to enhance children's learning and thinking skills (Fugilini, Howes, Huang, Hong, & Lara-Cinisomo, 2012).

One way to increase instructional support is through responsive teaching (Hamre, Hatfield, Pianta & Jamil, 2014). Teachers who are responsive in nature engage their students, are aware of their needs and cues, and respond to their social, behavioral and academic needs in individualized ways. One longitudinal study which tracked children from birth through their adolescent years documented that children who receive more responsive teaching as preschoolers demonstrated fewer externalizing problems and a higher cognitive-academic achievement even when they had reached 15 years of age (Vandell, Belsky, Burchinal, Steinberg, & Vandergrift, 2010).

Studies have demonstrated that when teachers receive coaching and training in regard to teacher-child interactions and ways to facilitate language development, they improve their practices resulting in a benefit for children in their social, academic, and self-regulatory skills (Raver et al., 2011). One study found that students who were randomly assigned to a teacher who received consultation training with regard to language and literacy instruction had greater improvements of their receptive vocabulary development than their peers whose teachers did not receive training (Mashburn, Downer, Hamre, Justice, & Pianta, 2010). Explicit training is more effective at increasing

the use of teacher strategies with regard to instructional support than is simply providing teachers with resources (Raver et al., 2011).

The teaching practices that preschool teachers utilize affect young children's development while they are in preschool and far beyond that. When abstract, inferential language and responsive teaching are utilized during frequent shared book reading, research has documented these practices to predict children's future story comprehension skills (Dickinson & Smith, 1994; Reese, 1995), abstract language skills (Van Kleeck et al., 1997), vocabulary development (Dickinson & Porche, 2011), and intelligence (Sigel, 1993), with effects lasting as long as fourth grade (Dickinson & Porche, 2011). Given that the effects of shared reading on children's oral language skills and vocabulary knowledge are so numerous and children's quality interactions with their teachers are so imperative, the National Early Literacy Panel (2008) posed the question why "more studies have not investigated the impact of these practices" (p. 162). The present study aims to evaluate the outcomes of a training program on the level of vocabulary usage and extratextual talk utilized by teachers during instruction.

Research Question

It is hypothesized that after the Head Start teachers receive the training, their use of cognitively complex talk during book reading will be higher after the training than before. In addition, it is expected that they will say more total words to their students as well as more unique words. Unique words is defined as the total number of words minus word repetitions, or each individual word is counted only one time even if it is repeated.

Method

Participants

Seven female teachers, employed by a child care program which was a blended Head Start and university child care center, participated. Four of the teachers were lead teachers and three were assistant teachers. Four of the teachers were Caucasian; three were African American. Their average years of teaching experience were 15; their average age was 39. In terms of highest degree of education, one teacher had earned her Associate's, five had Bachelor's degrees, and one had a Master's degree. Six of the teachers were observed both pre-training and post-training. Compensation was provided to the teacher via books that were selected by the researchers and given to them in order to participate in the book reading sessions.

Materials and Procedures

After obtaining Western Kentucky University Institutional Review Board approval (see Appendix A), as a pretest each teacher was videoed while reading a book to her students. Book reading trainings were administered to the teachers by a developmental psychologist from Western Kentucky University. After the training, teachers were videoed again reading a different book, provided by the researcher, to their students. Each of these observation times were varied in accordance with the amount of time it took each teacher to read the book to her students. The book reading sessions varied in length from six minutes to twenty minutes, with the average length being ten minutes. The books chosen for the book reading sessions were "Animals should definitely not wear clothing" (Barrett, 1970) and "Never take a shark to the dentist (and other things not to do)" (Barrett, 2008). These books were selected as they provided the

teachers with many opportunities to expand on the content included in the book as well as facilitate open-ended questions and vocabulary enrichment.

Book Reading Training

The teachers participating in the study received three training sessions, one individual and two group sessions, led by a developmental psychologist from Western Kentucky University. These sessions consisted of one group session involving all of the teachers. After the first group session, each teacher received an individual session, and finally a second group session finished the trainings. The group sessions lasted approximately one hour each whereas the individual session lasted for approximately thirty minutes.

During the first group session, the teachers were presented with an overview of book reading and how they could implement it correctly in their classrooms. They were first shown a PowerPoint presentation that aggregated the major findings from the study conducted by Hart and Risley (1995), which indicated that children emerging from lower class homes have significantly less interactions with their parents and are exposed to fewer words in order to demonstrate the importance of reading and other language rich activities in the classroom.

Also as an aspect of the initial group session, the teachers were provided a handout in addition to the PowerPoint presentation, which included four major tips for book reading in their classrooms: book selection, preparing to read, reading the book, and after the book. (See Appendices B and C for the PowerPoint and handout utilized.) During the book selection process, teachers were encouraged to first identify their goals for teaching the students. Then, when selecting a book, they were to choose one which

introduced new vocabulary and ideas that could be related to the child's own experiences, other lessons they have taught, or other concepts the child is familiar with, in order to facilitate higher order thinking.

In the next section of the handout, teachers were taught how to prepare to read to their students, a vital aspect in order to facilitate meaningful discussion and prospective vocabulary growth. Teachers were instructed to read the book very carefully first and study the pictures. In order to scaffold instruction and introduce the book to the children in a way they will understand, the teachers were to create a brief statement to introduce the book. To increase the amount of vocabulary utilized by the students when answering questions, they were instructed to formulate open-ended questions to provoke discussion, as well as identify vocabulary in the book which may need an explanation and prepare to define it. Finally, they were to find places in the story to stop and summarize, and create thought provoking questions to ask after the story had ended.

When reading the book, teachers were instructed to be engaging by utilizing eye contact, facial expressions, and vocal tone. After asking a question, they were taught to give the child time to answer it and repeat and expand on the child's answer if it was an opportunity for further discussion. Finally, they were to manage behavior by complimenting those who are behaving appropriately and participating.

After reading the book, the teachers were taught to evaluate the child's understanding of what they read and their interest towards it by asking the students about their favorite aspects of the book or what they thought of it. They were also encouraged to share their own favorite things about the book to facilitate discussion.

Before the first group session, teachers were videoed for the first of two times reading the provided book to their students. The second training session involved individual sessions with the developmental psychologist where this pretest video was presented. The teachers watched themselves reading the book on video and were provided with specific feedback on what they did well and areas they could improve on in order to utilize the book to its maximum extent and provide the students with opportunities for open-ended discussion and new vocabulary.

The final session provided to the teachers prior to their post-test book reading video was another group session with the developmental psychologist. Each teacher was asked to bring books with them that they enjoyed reading to their students so that they could practice reading to each other. The purpose was so that teachers could give their own feedback on the procedures they utilized to facilitate higher order thinking while reading the books or strategies they may use as a result of their prior trainings.

Coding System

Research assistants first made transcripts of the book reading sessions; each transcript was verified by having all the coders watch the video together to assure the accuracy of the transcription. Once verified, the coders independently coded sessions, with approximately 25 percent of the sessions coded by two coders; coders were blind as to which sessions were double coded. A coding system adapted from Dickinson and Smith (1994) was used to categorize the quality of the utterances the teacher made. There were four major categories: Cognitively Challenging Talk (CCT), Lower Cognitively Demanding Talk (LCD), Managing Interaction (MI), and Other. Cognitively Challenging Talk is the category that teachers were taught to use during the training. These are

statements which involve higher order thinking such as analysis of story events or characters, predictions, open-ended questions, summaries, or discussions which facilitate students' critical thinking skills. Lower Cognitively Demanding expressions are those which are still instructional in nature, however, not as cognitively stimulating. These include labeling, direct recall, simple instructions, or closed questions. Managing Interaction statements are those which teachers utilize in order to maintain control of their classroom, including task organization, request for attention, and general feedback. Finally, the Other classification included statements that were either unintelligible or did not fall into any other category. Table 1 lists each of the codes used and gives a brief description.

Interrater reliability for the coding system which Dickinson and Smith used was computed to be a Cohen's kappa statistic of .79. This is considered to be a "very substantial" agreement (Landis & Koch, 1977, p. 165). Degree of agreement between pre-test and post-test for the current study was a Cohen's kappa statistic of 0.88.

In addition to the above coding, standard measures of language were computed. The total number of words used by each teacher was counted as well as the number of unique words. The number of unique words is defined as the total number of words minus word repetitions, or each individual word is counted only one time even if it is repeated. The mean length utterance for each teacher was also calculated.

Table 1

Coding system for teacher book reading discourse

Category Code	Subcategory Code	Description
CCT	CCTANAL	Analysis of characters or events in the book that goes beyond mere labeling
	CCTPRED	Predictions of future events in the book that may occur
	CCTCONO	Open-ended questions or statements that make connections between the text and real life events; thought provoking or promote discussion
	CCTVOC	Vocabulary (definitions or comments about the functions or sounds of words)
	CCTSUM	Summarizing the book
	CCTCLAR	Clarifying comments about the story by going beyond what has already been said
	CCTEVAL	Responses to the story that evaluate what has occurred
	CCTTPR	Open-ended questions or comments which are thought provoking and have multiple possible answers
	CCTML	Modeling by expanding on a child's utterances
	CCTEXTD	Discussion that is extended and explores a topic (5 or more turns)
LCD	LCDBK	Book-focused utterances in which the book is treated as an object
	LCDLAB	Labeling of objects or actions
	LCDSK	Skill routines which occur during reading, such as reciting ABCs or counting
	LCDDR	Direct recall of recently read text, instructions or labels
	LCDCHM	Chiming of a child's utterance or familiar passage
	LCDSIN	Simple instructions
	LCDCLQ	Closed questions which have only one answer
	LCDAOQ	Answers own questions which was asked to children, typically before the children have a chance to answer
	LCDCONC	Closed question or statement that connects a concept to children's lives but does not encourage thought or discussion
MI	MITSK	Task organization, such as how to behave or where to sit
	MIREQ	Request for attention
	MIGENF	General feedback to speakers (wow, good job)
OTHER	OTHERUN	Unintelligible
	OTHER	Not one of 3 major codes

Adapted from Dickinson and Smith (1994).

Results

In order to evaluate the effectiveness of the book reading training, a series of repeated measures multivariate analyses of variance were computed on the cognitively challenging language codes, the lower cognitive demand codes, the managing interaction codes, and the general language measures (total number of words, number of unique words, and mean length utterance). In the first analysis, the multivariate analysis of variance examined the frequency of each code (CCT, LCD, MI, and other) by wave (pretest and post-test). The MANOVA yielded multivariate effects of wave, $F(1, 15) = 12.97$, $p = .016$, partial eta$^2 = 0.72$ and code $F(3, 15) = 17.69$, $p < .001$, partial eta$^2 = .78$. Follow up ANOVAs were performed on each code by wave. A significant effect of wave was found for cognitively challenging talk, $F(1, 5) = 7.78$, $p = .039$, partial eta$^2 = .61$ which significantly increased from pretest to post-test. There were no significant wave differences for the other three codes (lower cognitively demanding, managing interaction, and other). Results can be found in Table 2.

The second analysis involved a multivariate analysis of variance for each cognitively complex code by wave (pretest, post-test). Significant multivariate effects of wave $F(1, 45) = 31.86$, $p = .002$, partial eta$^2 = .864$ and code $F(9, 45) = 4.94$, $p < .001$, partial eta$^2 = .497$ were modified by a significant interaction of wave and code, $F(9, 45) = 4.38$, $p < .001$, partial eta$^2 = .467$. Follow up ANOVAs examined each code by wave. Results can be found in Table 3. Significant effects were found for summarizing $F(1, 5) = 7.50$, $p = .041$, partial eta$^2 = .60$; model and expand language, $F(1, 5) = 8.29$, $p = .035$, partial eta$^2 = .624$; and total codes, $F(1, 5) = 7.78$, $p = .039$, partial eta$^2 = .609$. All other cognitively challenging talk codes were not significantly different from pre- to post-test.

In the final analysis, a repeated measure multivariate analysis of variance was computed for the general teacher language variables (total number of words, number of unique words, and mean length utterance) by wave (pretest and post-test). Significant multivariate effects of wave $F(1, 5) = 15.44$, $p = .011$, partial eta^2 = .755 and language variable $F(2, 10) = 32.91$, $p < .0001$, partial eta^2 = .868 were modified by a significant interaction of wave and teacher language variable $F(2, 10) = 14.17$, $p = .001$, partial eta^2 = .739. Follow up ANOVAs examined each teacher language variable by wave. Results can be found in Table 4. These analyses yielded a significant result for total number of words, $F(1, 5) = 14.69$, $p = .012$, partial eta^2 = .746; and number of unique words, $F(1, 3)$ = 15.91, $p = .01$, partial eta^2 = .761. Mean length utterance was non-significant from pretest to posttest. The training resulted in teachers utilizing a larger number of words and more unique words while participating in book reading with their students.

Table 2

Mean Teacher Utterances by Coding Category

| | Pretest | | Post-Test | |
	Mean	SD	Mean	SD
Cognitively Challenging Talk	47.50	20.90	72.00	37.67
Lower Cognitively Demanding	66.16	19.92	98.83	54.56
Managing Interaction	30.50	21.56	30.50	34.34
Other	3.33	5.04	4.33	6.02

Table 3

Cognitively Challenging Talk at Pretest and Post-Test

	Pretest		Post-Test	
Cognitively Challenging Talk Code	Mean	SD	Mean	SD
Analysis of Characters or Events	0.71	1.89	2.83	3.82
Prediction	0.00	0.00	1.67	1.86
Connections to Real Life	1.14	3.02	2.17	2.48
Vocabulary	0.57	0.98	2.17	3.71
Summarizing	0.00	0.00	1.00	0.89
Clarifying	14.00	12.73	18.67	11.57
Evaluative Comments	3.57	4.04	6.83	6.43
Thought Provoking Questions	13.14	7.43	19.33	9.77
Model and Expand Language	7.00	7.77	12.17	7.41
Extended Discussion	3.00	4.66	5.17	5.00
Total Codes	43.14	22.30	72.00	37.67

n = 6

Table 4

Teacher Language Codes at Pretest and Post-Test

	Pretest		Post-Test	
Teacher Language Code	Mean	SD	Mean	SD
Total Number Words	733.57	353.39	1322.17	584.82
Number Unique Words	245.71	90.98	369.17	135.57
Mean Length Utterance	6.31	0.97	6.80	1.07

n = 6

Discussion

It was hypothesized that the book reading training that the Head Start teachers received would result in higher levels of cognitively complex talk after the training as compared to before. As evidenced by the results of this study, the book reading training had significant effects on multiple variables measured, including higher mean levels of cognitively complex talk.

As discussed previously, the educational experience that a preschooler receives at home varies greatly in terms of the level and amount of vocabulary to which they are exposed. Students from low socioeconomic status homes are at risk of hearing as many as 30 million less words by the age of three than their more privileged peers (Hart & Risley, 1995). It is imperative that preschool teachers utilize language instruction to facilitate vocabulary growth and language development to increase the probability that their students will be successful, as teachers' use of sophisticated vocabulary has been documented to have lasting effects on their students years later (Dickinson & Porche, 2011).

The training implemented in this study was directed at the Head Start program due to its goal of increasing school readiness in children from lower income homes (Ludwig & Phillips, 2008). In addition, these programs across the nation are failing in the CLASS dimension of instructional support, which involves implementing curriculum effectively in order to promote language and cognitive development (Office of Head Start, 2013). During this training, the quality rather than quantity of book reading was emphasized due to teachers' level of language complexity significantly contributing to outcomes in student vocabulary at a higher level than the frequency that shared reading

takes place (Zucker et al., 2013). Both individual and group sessions were utilized and individual feedback given in order to maximize the teachers' success.

Results of this study indicated that the overall level of Cognitively Challenging Talk utilized by the teachers was significantly increased after the training as compared to before. An examination of the specific Cognitively Challenging Talk variables revealed that all Cognitively Challenging Talk codes increased from pretest to post-test, but statistically significant changes were observed for both summarizing and modeling and expanding language. The level of Managing Interaction, or classroom control variables, and the Lower Cognitively Demanding Talk were not significantly changed from pre- to post-test. This pattern of findings indicates that the primary goal of the training was reached as cognitively demanding talk is directly relevant to the level of instructional support provided by teachers. Classroom management was not a direct goal of the training.

In addition to the quality of teacher discourse improving after the training, the quantity of vocabulary utilized by the teachers also increased. As measured by the general teacher language measures, the overall number of words and the number of unique words used by teachers increased as well. This is beneficial as growth in productive vocabularies has been linked to amounts of vocabulary utilized during conversation (Hoff, 2003).

The area in which Head Start teachers are failing nationally is instructional support, which involves concept development, quality of feedback, and language modeling. The results of this study indicate that a training similar to the one used here

could be utilized in order to increase the CLASS scores for Head Start teachers, and result in greater academic outcomes for the students they teach.

Strengths and Limitations

During reflection, this study had areas of both strength and limitation. One area of strength was that teachers were provided with both individual and group sessions during the training process. They were provided time to watch themselves read a book to the students and critique their own performance. Consistent with previous research, this explicit coaching was beneficial in increasing the use of teacher strategies with regard to instructional support (Raver et al., 2011). In addition, degree of interrater agreement for the teacher discourse coding system was calculated to be a Cohen's kappa statistic of 0.88, a very substantial agreement. Finally, despite the small sample size, effect sizes for all results were substantial (Cohen, 1988).

There were also some limitations to this study. First, it cannot be certain which type of session was more effective – the group or individual, as both were utilized and differences not accounted for. Another limitation of this study was observer reactivity. It is possible that the teachers were only utilizing the book reading strategies while on camera. We cannot be certain that they used these strategies at other times. In addition, because group data were analyzed, individual teacher improvement was not examined, and we do not know if all teachers improved equally. Furthermore, no longitudinal data were collected as the post training data were gathered shortly after training ended, consequently, it cannot be estimated whether the effects of this training are long lasting. Generalizability of this study is low as the sample size was small and this research was completed at one child care center.

Future Research

   There are directions that future research can take related to this study. Although it has been established that higher levels of cognitively stimulating vocabulary during book reading is beneficial for students long term, it is unknown whether teachers continue to utilize the strategies taught to them over time. It would be beneficial for the both group and individual trainings to be examined to determine the effects of each type of training. It would also be advantageous for a larger sample size to be utilized in order to gauge whether these results are generalizable.

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APPENDIX A: Institutional Review Board Approval Document

WKU® INSTITUTIONAL REVIEW BOARD
OFFICE OF RESEARCH INTEGRITY

DATE: June 18, 2013

TO: Elizabeth Lemerise, Ph.D.
FROM: Western Kentucky University (WKU) IRB

PROJECT TITLE: [480761-1] Program Evaluation of Concept Development and Quality of
                     Feedback Training for Preschool Teachers: Teacher Outcomes
REFERENCE #:   IRB 13-400
SUBMISSION TYPE: New Project

ACTION: APPROVED
APPROVAL DATE: June 18, 2013
EXPIRATION DATE: June 18, 2014
REVIEW TYPE: Expedited Review

Thank you for your submission of New Project materials for this project. The Western Kentucky University (WKU) IRB has APPROVED your submission. This approval is based on an appropriate risk/benefit ratio and a project design wherein the risks have been minimized. All research must be conducted in accordance with this approved submission.

This submission has received Expedited Review based on the applicable federal regulation.

Please remember that informed consent is a process beginning with a description of the project and insurance of participant understanding followed by a *signed* consent form. Informed consent must continue throughout the project via a dialogue between the researcher and research participant. Federal regulations require each participant receive a copy of the consent document.

Please note that any revision to previously approved materials must be approved by this office prior to initiation. Please use the appropriate revision forms for this procedure.

All UNANTICIPATED PROBLEMS involving risks to subjects or others and SERIOUS and UNEXPECTED adverse events must be reported promptly to this office. Please use the appropriate reporting forms for this procedure. All FDA and sponsor reporting requirements should also be followed.

All NON-COMPLIANCE issues or COMPLAINTS regarding this project must be reported promptly to this office.

This project has been determined to be a Minimal Risk project. Based on the risks, this project requires continuing review by this committee on an annual basis. Please use the appropriate forms for this procedure. Your documentation for continuing review must be received with sufficient time for review and continued approval before the expiration date of June 18, 2014.

Please note that all research records must be retained for a minimum of three years after the completion of the project.

If you have any questions, please contact Paul Mooney at (270) 745-2129 or irb@wku.edu. Please include your project title and reference number in all correspondence with this committee.

- 1 -   Generated on IRBNet

Poverty and Language Development

- **Heard home language has profound implications for future cognitive success**
- **Hart and Todd Risley (1995) landmark study**
  - Affluence of the parents = more speech to children.
  - Parents professionals spent almost twice as much time interacting
  - Children in families that received welfare assistance exposed to fewer words
  - Language used home differed among various types of families.
  - See Figure 7.12 for complete comparison

Figure 7.12
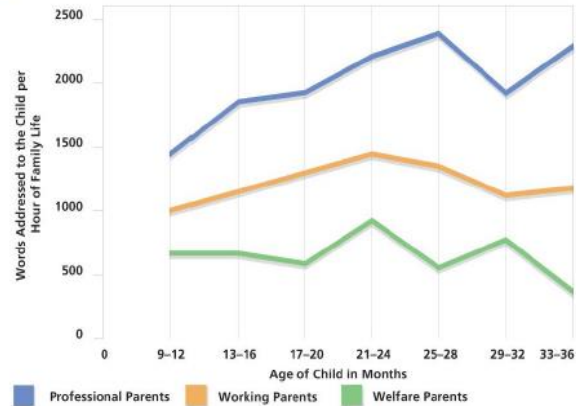
What do these findings suggest?

- Importance of early exposure to language
- Usefulness of intervention programs
- Consequences for children's general cognitive development and behavior related to poverty and family income

APPENDIX C: Training Handout

Some Tips on Book Reading

1. Book Selection
   a. There are lots of kinds of books!
   b. Consider your goals for teaching children – different kinds of books will help you meet different kinds of goals.
   c. Important things to consider in selecting a book
      i. Introducing new vocabulary and ideas
      ii. Vocabulary and ideas can be related to
         1. Child's experience
         2. Other lessons you have taught
         3. Other concepts that the child is familiar with
      iii. Book type
         1. Does the book have a story?
         2. Or does the book have a format where each page provokes discussion?
         3. Book topic
2. Preparing to read to children
   a. First you must read the book and carefully study the pictures!
   b. Formulate a brief statement that introduces the book in a way that helps children to understand what the book is about and what to expect (scaffolding introduction).
   c. Think about some open-ended questions that can be posed to the children to provoke discussion. Open-ended questions have more than one possible answer.
      i. What do you think will happen next?
      ii. What does the picture tell you about….?
      iii. How does "the character" feel about….?
      iv. Why do you think that….?
      v. How do you know that?
      vi. What would you do if you were the…?
   d. Identify vocabulary that will need definition and work on good explanations
   e. If the book is a bit long, think about some key places to summarize the story so far
   f. Formulate some thought provoking questions for discussion after the book
3. Reading the book
   a. Be engaging! Use eye contact, animated facial expressions and vocal tone to engage children's attention.

  b. Give children time to answer your questions

  c. Repeat the child's answer, expanding on it: e.g., Assume you asked the children what their favorite thing in the book was:

    i. Child: Shark!!!

    ii. Teacher: You liked the shark the best. What did you like about that shark?

  d. Manage children's behavior by praising the ones who are paying attention and/or behaving appropriately and complimenting children on their good questions and thinking

4. After the book

  a. Ask children what they thought of the book and why

  b. What are their favorite things about the book

  c. You could share your favorite things too – it could provoke more discussion