



2005

PARENT-CHILD STORYTELLING DURING JOINT PICTURE-BOOK READING AND RELATION TO LANGUAGE SCORES OF CHILDREN WITH ADHD

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ABSTRACT OF THESIS

PARENT-CHILD STORYTELLING DURING JOINT PICTURE-BOOK READING AND RELATION TO LANGUAGE SCORES OF CHILDREN WITH ADHD

Three questions were investigated in the current study. First, do children with ADHD have language deficiencies in comparison to non-referred peers? Second, are there diagnostic group differences in parent and child storytelling when interacting in a joint picture-book setting or in parent reported home literacy habits? Third, are these differences related to child language scores? Parents of 25 children with ADHD and 39 comparison children, average age 7 years 6 months, told their children a story based on a wordless picture-book, and children then retold the story to an examiner without using the book. In addition, children made up two of their own stories and completed a standardized test of receptive and expressive language abilities. Children with ADHD demonstrated an expressive language deficiency compared to the non-referred children, but there was no group difference in receptive language scores. Parents of children in both groups told stories of similar length and complexity, as well as affective and responsive quality. However, for the ADHD group but not the comparison group, more positive and responsive parents told stories on a lower grade level. The length of the child's retell of the parent's story did not differ across groups but children with ADHD told shorter stories when asked to make up their own stories without the external structure or salience of visual cues. Further, there were no significant group differences in the relations between parent storytelling and child language scores. The implications of these findings for understanding parent and child storytelling and language abilities of children with ADHD are discussed.

KEYWORDS: Attention Deficit Hyperactivity Disorder, ADHD,
Parent-Child Joint Picture-Book Reading, Storytelling,
Receptive and Expressive Language Abilities

Melinda A. Leonard

December 14, 2005

PARENT-CHILD STORYTELLING
DURING JOINT PICTURE-BOOK READING
AND RELATION TO LANGUAGE SCORES OF CHILDREN WITH ADHD

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2005

PARENT-CHILD STORYTELLING
DURING JOINT PICTURE-BOOK READING
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THESIS

A thesis submitted in partial fulfillment of the
requirements for the degree of Master of Science in the
College of Arts and Sciences
at the University of Kentucky

By

Melinda A. Leonard

Lexington, Kentucky

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2005

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ACKNOWLEDGMENTS

The following thesis while an individual work, benefited from the insights and direction of several people. First, my Thesis Chair, Dr. Elizabeth Lorch; second, my Thesis Co-Chair, Dr. Richard Milich; and third, my Thesis Committee Member, Dr. Robert Lorch, all exemplify the high quality scholarship to which I aspire. In addition, they provided instructive comments and evaluation at every stage of the thesis process. Each member of my Thesis Committee provided insights that guided and challenged my thinking, substantially improving the finished product.

In addition to the technical and instrumental assistance above, I received equally important assistance from my family. My husband, Darrell Leonard and two sons, Michael and Devin, provided on-going encouragement and support. Their abundant sacrifices and commitment to my success have sustained me throughout the thesis process. I would also like to thank Neomia Hagans for the countless hours spent coding videos and transcripts. Finally, I would like to thank the parents and children that participated in this study. Without their willingness to take part in developmental research, this thesis would not have been possible.

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CHAPTER 1: INTRODUCTION

Attention deficit-hyperactivity disorder (ADHD) is a behavioral disorder characterized by developmentally inappropriate levels of inattention, hyperactivity, and impulsive behavior. It has been estimated that ADHD afflicts as many as 10% of elementary school children, the majority of whom are boys (Barkley, 1990). Inattention and hyperactivity-impulsivity characteristics must appear before age seven, persist for at least six months, be present in more than one environment (e.g., home, school) and cause clinically significant distress or impairment in social or academic functioning to constitute ADHD. Three classification types for diagnosis are possible: predominantly inattentive, predominantly hyperactive, or combined (i.e., showing inattentiveness, hyperactivity, and impulsivity) (*DSM-IV*, American Psychiatric Association, 1994). The domain of academic functioning has been documented to be impaired in children diagnosed with ADHD (Cohen et al., 2000, O'Neill & Douglas, 1991, Semrud-Clikeman et al., 1992). These children are more likely to fail subjects, to be held back, and to drop out of school; therefore, early detection and understanding of cognitive and developmental differences is critical for improvement in the learning and behavioral outcomes of these children.

A possible link to academic difficulties among children with ADHD may be in the area of language deficiencies (Baird, Stevenson, & Williams, 2000; Kim & Kaiser, 2000; McInnes, Humphries, Hogg-Johnson, & Tannock, 2003; Tannock, Purvis, & Schachar, 1993; Zentall, 1988). These deficiencies occur in numerous permutations and combinations and, even when they are mild, can be very debilitating (Green, 1998). Many children who have mild language deficiencies can naturally compensate, but when those children also have ADHD, academic achievement can be negatively influenced (Cohen et al., 2000).

Language deficiencies experienced by children with ADHD have been documented in the area of semantics, although other areas of deficiency exist (e.g., syntax and pragmatics) (Greathead, 2003). Semantic disorders are difficulties with word meanings and organization exhibited in the form of poor receptive and expressive vocabulary, which manifests in poor vocabulary, difficulties with comprehension of

written and spoken language, difficulties using context to help with reading comprehension, word-finding difficulties, and production deficiencies.

Receptive and Expressive Problems

Studies of the semantic aspects of language development include examinations of the development of receptive vocabulary and of expressive language. There have been inconsistent reports of receptive language differences between children with ADHD and comparison children. Receptive language deficiencies have been documented in a study conducted by Baker and Cantwell (1992) using standardized measures (i.e., the Peabody Picture Vocabulary Test – Revised, the Clinical Evaluation of Language Fundamentals-3). Additional studies using the PPVT-R as a secondary measure also document receptive deficiencies (Lorch, Milich et al., 2000 and Lorch, Sanchez et al., 1999). In contrast, no receptive language differences utilizing standardized measures (i.e., the PPVT-R, the Word Test, the Language Processing Test) were found by Barkley, DuPaul, & McMurray (1990); Beitchman, Tuckett, and Bath, (1987); Kim and Kaiser, (2000); or Purvis and Tannock, (1997).

Considerably more consistent findings have been documented regarding expressive language difficulties. Weaknesses such as poor sentence-formulation skills (Oram, Fine, & Tannock, 1999) and difficulties with coherence, organization, and self-monitoring of verbal production during the retelling of narratives (Purvis & Tannock, 1997; Tannock et al., 1993; Zentall, 1988) were found. Additionally, internal verbalization is delayed, producing speech that is often excessive and irrelevant (Baird et al., 2000). These findings document the need for further research in the semantic aspects of language development for those children with ADHD. Nevertheless, there is evidence that children with ADHD exhibit language deficiencies, especially expressive language difficulties.

Parent Influences on Child Language

To date there is mixed empirical evidence of receptive vocabulary deficits among children with ADHD and more consistent evidence of expressive vocabulary deficits. If in fact there are deficiencies in the language abilities of these children, the question arises concerning what factors may account for these language difficulties. One possible contributory factor is the nature of the parent's language when interacting with the child.

The basis for this is that each social contact provides a unique source of language interaction between parent and child. Parents are a natural source for learning and are usually motivated to help their children. Most importantly, they interact with their children in a wide range of communication contexts; a factor that is likely to foster generalization of newly learned skills (Dale & Crain-Thoreson, 1996).

One method used for examining these parental influences on typically developing children is in the context of joint picture-book reading between parent-child dyads. Book sharing offers the methodological advantage of providing a constrained context with a known topic, a level of control that is absent in many other parent-child routines (van Kleeck, Gillam, Hamilton, & McGrath, 1997).

Parent-child interactions, particularly during joint picture-book reading, have been documented to play a role in the influence of language development differences (Scarborough & Dobrich, 1994; Valdez-Menchaca & Whitehurst, 1992; Whitehurst et al., 1988). These joint picture-book reading sessions, especially when children are encouraged to talk about the story and pictures, can increase children's language skills, especially their productive vocabulary (Crain-Thoreson & Dale, 1999) and, consequently, pave the way for successful achievement (Scarborough & Dobrich, 1994). Parents differ greatly in their style of story reading. Reading style must be tailored to children's skill level in order to keep interaction within the child's zone of proximal development (Crain-Thoreson, Dahlin, & Powell, 2001; Vygotsky, 1978). The zone of proximal development is the difference between what a learner can accomplish independently and what he or she can accomplish with the guidance and encouragement of a more skilled partner. It is this zone in which sensitive instruction should be aimed and in which new cognitive growth can be expected to occur (Shaffer, 1999, p. 260).

The literature provides evidence for the influence of parent-child reading experiences on the development of language and literacy skills. According to Scarborough and Dobrich (1994), even though the evidence for this association exists, the magnitudes of the observed effects have been quite variable within and between samples, and, on average, have been unexpectedly modest. Lonigan (1994) argued that there was reason to be more optimistic concerning the effects of parent-child joint reading than suggested by Scarborough and Dobrich (1994). He stated that even initially small effects

of reading to preschoolers are likely to have larger long-term consequences on children's reading abilities. In light of the Scarborough and Dobrich (1994) and Lonigan (1994) debate over the magnitude of these effects, it seems the appropriate question is, what if any, parental affective, responsiveness, or storytelling techniques during joint picture-book reading contribute to the development of language and literacy skills?

One area with clearer evidence of parental influence is the work of Whitehurst and colleagues. A well-developed and field tested intervention program called Dialogic Reading Training Program (DRTP) incorporated principles designed to accelerate young children's language development based on the assumption that practice, feedback, and appropriately scaffolded interactions (non-directive style of supporting children's autonomy and self-regulation) facilitate language development (Whitehurst et al., 1988). Whitehurst and colleagues' studies (1988, 1992, 1994, 2003) examined the utility of the DRTP and demonstrated that large and enduring effects on children's language can be obtained from an intervention that encourages the child to talk about the pictures in joint picture-book reading sessions and provides the child with appropriate models and feedback for progressively more sophisticated language use.

Four principles of the DRTP reflecting parental behavior during story time have been consistently linked with children's language development: (1) *evocative techniques*, which encourage children to take an active role during story time by asking more "wh-", "yes/no", and "open-ended" questions as well as pointing requests and linking something that has already occurred in the story to new information in an effort to keep coherence; (2) *parental feedback*, which provides the child with information about language through repetitions, corrective modeling, criticism or disapproval, and, praise or encouragement; (3) *progressive change* in adult standards that are sensitive to the child's developing abilities/level. This involves moving from simple labeling of objects to asking complex "wh-" questions and providing expansion on what the child says, and (4) *completion prompts* where the parent pauses so the child can fill in the word (Arnold, Lonigan, Whitehurst, & Epstein, 1994; Valdez-Menchaca & Whitehurst, 1992; Whitehurst et al, 1988; Zevenbergen & Whitehurst, 2003).

In addition to the above parental behaviors, the level of parental responsiveness and parental affective tone (i.e., negative, neutral, or positive) all have been shown to

have a contributory role in the influence of parent-child dyadic interactions (Johnston, Murray, Hinshaw, Pelham, & Hoza, 2002). General parental responsiveness refers to the parent's overall ability to be sensitive to their child's needs or state, and to coordinate her behavior to the child's. A responsive parent is child-centered rather than mother-centered, able to set aside her own agenda in order to focus on the child, and attends and listens to the child's signals. A parent low in responsiveness is oftentimes intrusive, operates more on her own agenda, seems unaware of her child's cues, needs, or requests, and ignores her child's suggestions (Johnston et al., 2002).

Parental affective tone describes the parent's emotional tone during the parent-child interaction and is based upon verbal statements, nonverbal gestures, body posture, facial expressions, and tone of voice. A negative affective tone is displayed when parental facial expressions and/or body posture is rigid or unfriendly, indicating anger, sadness, or irritability when addressing the child. A neutral affective tone represents a calm and polite manner of speaking to the child and nonverbal communication is neither warm nor irritated. Parents displaying a positive affective tone use a pleasant voice when speaking to the child, convey warmth or happiness with gestures, and overall body posture seems relaxed and happy (Johnston et al., 2002).

Parental speech during book reading exposes children to more complex language than in many other contexts. Parents provide a more supportive linguistic environment through a greater use of scaffolding in order to keep children engaged in the interaction (Crain-Thoreson et al., 2001). According to Winsler (1998), scaffolding refers to a non-directive style of assisting children on collaborative problem-solving tasks that provides a high degree of support for children's autonomy and self-regulation (a child's ability to actively plan, guide, monitor, delay, and organize behavior during complex, goal-directed activity). Maternal speech characterized by a supportive style of mother-child interaction (i.e., mother focuses on the same object or activity as the child, the mother engages the child in conversation by asking questions that elicit verbal replies, and the mother responds to the child's speech in a contingent manner) has been found to be positively correlated with measures of children's language development (Hoff-Ginsberg, 1991).

The previous studies have addressed issues regarding the parental influence of language in typically developing children; however, virtually no attention has been given

to the study of parental language influences on children with ADHD. The question arises, do parents of these children use joint picture-book story narration techniques differently from parents of typically developing children? Further, to what extent do differences in parents' language correlate with ADHD and comparison group differences in language scores?

One study that addressed related questions was conducted by Winsler (1998). In a joint-problem-solving task, rather than a joint reading task, Winsler examined parent-child dyadic interactions and private speech in boys with ADHD. The question of primary concern was: What is the relation between parent-child interaction and ADHD children's use and internalization of private speech for verbal self-regulation? The overall quality of parental scaffolding was analyzed. Components of scaffolding that went into the ratings included: (1) the degree to which parents regulated the task demands and modified their assistance such that the child was led to struggle independently with appropriately challenging task subgoals; (2) the extent to which parents encouraged verbal problem-solving strategies and asked leading conceptual questions; (3) the frequency and appropriate use of praise, competence attributions, and other motivational enhancers; (4) the extent to which mutual collaboration and inter-subjectivity (the pursuit of shared goals) took place; and (5) the extent to which the parent dynamically and appropriately modulated his or her assistance over the course of the session.

Results from the Winsler (1998) study indicated that the speech of parents of the boys with ADHD was more characterized by negative control than was that of comparison parents and maternal utterances concerning person regulation were more frequently used for parents of the boys with ADHD. Furthermore, parents of the boys with ADHD engaged in poorer quality of scaffolding than parents of comparison boys (i.e., the degree to which parents regulated the task demands, modified their assistance to the child, encouraged verbal problem-solving strategies, asked leading questions, used praise, and other motivational enhancers over the course of the session).

Parents of children with ADHD have been described in previous research as using more verbal directives, issuing and repeating more commands, and giving more suggestions and corrections (Campbell, 1995; Gardner, 1994). Furthermore, parents of

these children physically direct both their child and the activity more often, initiate and respond with more verbal and physical conflict, engage their children in joint play activities considerably less often, and are less responsive to their child's behavior than parents of comparison children (Cunningham & Barkley, 1979, Tallmadge & Barkley, 1983). These findings demonstrate that parents of children with ADHD may contribute to the suboptimal patterns of parent-child dyadic interactions, which further substantiates the need for empirical research of parents of children with ADHD and their influences on their child's language.

The continued study of parental influence on language is important and should be made in multiple contexts (i.e., joint picture-book reading and home literacy environment). The role that the home literacy environment plays in children's language learning is a critical issue in language acquisition (Valdez-Menchaca & Whitehurst, 1992). Joint picture-book reading, as well as book ownership, home literacy-related activities, and, library excursions have been hypothesized to explain not just individual differences in literacy development but also group differences (Scarborough & Dobrich, 1994).

In analyses of a sample of 28 lower- to upper-middle class 2 ½-year-olds, DeBaryshe et al., (1991) found that the amount of exposure to reading in the home (reflecting the frequency of joint picture-book reading, the number of stories read per week, and the age at which this activity began) was correlated with scores on standardized measures of expressive language, picture-labeling skill, and verbal expression. However, results from two different samples of children in a Head Start program from the same study, utilizing the same testing criterion, showed no relation to children's language abilities. On the other hand, DeBaryshe (1993) found significant associations between the number of stories read per week and children's language abilities, but not between the reported frequency of reading and language abilities.

An important question to ask then is, if the literacy environment does play a role in a child's language development, do the parents of ADHD children report different home literacy habits compared to parents of non-referred children? If so, do any differences in these habits correlate with any of the children's language differences?

The Current Study

Although important findings have resulted from the above-mentioned studies, virtually no empirical study has specifically addressed the question of parental language influence on language development among children with ADHD. Three questions are investigated in the current study. First, do children with ADHD have language deficiencies in comparison to non-referred peers? In particular, current research suggests there may be receptive and expressive (i.e., production) deficiencies in the language of those children with ADHD. The current study examines these deficiencies through the administration of a standardized measure of receptive and expressive language.

Second, if children with ADHD are shown to have language deficiencies, are there diagnostic group differences in parent and child storytelling when interacting in a joint picture-book setting or in parent reported home literacy habits and third, if there are diagnostic group differences, are these differences related to child language scores? Parent and child story content will be analyzed for story length, passive sentence usage, reading ease, and grade level. Parental language during the joint activity will be analyzed based on the usage of evocative, feedback, progressive change, and completion prompt techniques developed by Whitehurst and colleagues (1988, 1992, 1994, 2003) and parent and child responsiveness and affective tone criterion developed by Johnston et al. (2002), as described earlier. The current study addresses whether there are group differences in how parents use joint picture-book story narration techniques. Specifically, do parents adjust their language usage, techniques, and interactions on the basis of the child's ability to comprehend or to produce language? If so, are parents of ADHD children behaving differently from comparison parents?

We hypothesize: (1) children with ADHD will demonstrate expressive language deficiencies in comparison to non-referred peers, and may also demonstrate deficiencies in receptive language abilities. Regarding differences in parent storytelling, (2) because parents of children with ADHD may be required to consistently maintain the attention of their children and manage their disruptive behavior, these parents will tell shorter and less complex stories and use more story narration techniques to keep their child engaged in the joint interaction compared to parents of non-referred peers. Further, (3) because children with ADHD often exhibit behavioral problems, their parents will display a more

negative affective tone and lower levels of responsiveness. Regarding differences in child storytelling, (4) because children with ADHD experience difficulties maintaining attention, they will tell shorter and less complex stories compared to their non-referred peers. Further, (5) because children with ADHD often exhibit behavioral problems, they will display a more negative affective tone and lower levels of responsiveness compared to their non-referred peers. Regarding the relation to child language scores, additional questions will explore whether within each diagnostic group (6) parent story content, story narration technique usage, affective tone, and responsiveness are related to child language scores, and (7) child story content, affective tone, and responsiveness are related to child language scores.

Finally, the role that a child's literacy related environment plays in language learning also is investigated. The current study examines whether the parents of children with ADHD report different home literacy habits compared to parents of non-referred children (i.e., reading, resources in the home), and whether these habits relate to group differences in children's language scores. The current study attempts to answer this question by including the results of a parent-completed self-report home literacy and media habits questionnaire, which allows examination of group differences in home environmental effects.

CHAPTER 2: METHOD

The current study is part of a longitudinal project designed to examine story comprehension and its relation to attention among children with ADHD. The project was divided into two Phases with two sessions each, with 18 to 24 months time between Phase 1 and Phase 2. At intake during Phase 1 participants were divided into a younger and older cohort ranging in ages from 4 years 0 months to 6 years 11 months and 7 years 0 months to 9 years 11 months, respectively. The diagnostic status of each participant was established at Phase 1 and reconfirmed at Phase 2. Within phases, each session was approximately two weeks apart, lasted approximately 1-½ hours, and included measures additional to those reported here.

Participants

The sample was drawn from the younger cohort identified during Phase I, although the data to be reported were collected primarily during Phase II (*M* age = 7 years 6 months). This sample included 25 children with ADHD (76% boys) and 39 comparison children (59% boys). 89.1 percent of this sample were Caucasian, 4.7% were African American, and 6.3% were from another ethnic group (e.g., Biracial, Hispanic). The mean vocabulary subtest score from the Wechsler Preschool and Primary Scale of Intelligence-Revised (WPPSI) for the children with ADHD was 10.72 and 12.08 for the comparison children. Average educational level for both groups of mothers was 15.31 years. Table 1 summarizes the demographic information for both groups of children.

In order to ensure an accurate diagnosis of ADHD, a three-step process was used in the recruitment of children with ADHD. First, the children with ADHD were recruited from a hyperactive children's clinic at a local university medical center. Following thorough assessment at the clinic, all children had to have been diagnosed with ADHD-combined type, based on *DSM-IV* criteria (American Psychiatric Association, 1994). The clinic diagnosis was made after interviews with the parent(s) and child and observation of the child. Additional information was sometimes gathered from teachers, referring physicians, or psychological test results. A clinic team comprised of a child psychiatrist and another mental health professional (e.g., a clinical social worker) made the final diagnosis. This clinic diagnosis was made independent of the research study and merely generated the pool of eligible participants.

During the second step of the screening, if parents had indicated interest in the study, files were reviewed in detail by the investigators to identify those who appeared appropriate for the study. In addition, available information was gathered on children's Conners Teacher Rating Scale scores (Goyette, Conners, & Ulrich, 1978), IQ, medications, additional diagnoses, reason for clinical referral, and other salient facts (e.g., other symptoms, age at onset). Children in the clinic sample were excluded from participation in the study if their symptom picture and history were not consistent with a diagnosis of ADHD-combined type, if their IQ was less than 70, or if they were taking antidepressant medication or medications that could not be discontinued for the study. Children who exhibited only attentional problems were not included in the study because of mounting evidence of differences between the predominantly inattentive and combined groups along important classification dimensions (e.g., demographics, family history, symptom presentation, associated features, comorbid disorders), indicating the inattentive group may be a distinct disorder and not a subtype of ADHD (Milich, Balentine, & Lynam, 2001).

As a final step, in order to confirm each child's ADHD-combined type diagnosis, a semi-structured interview was conducted with his or her parent or caregiver (typically the mother) on the first day of the study. A trained graduate student conducted each of the interviews, which was designed to assess the presence of ADHD and oppositional defiant disorder according to *DSM-IV* (1994) diagnostic criteria. This same interview has been used successfully for classification of children with ADHD in previous studies by this group (Lorch, Diener et al., 1999; Lorch, Milich et al., 2000; Lorch, Sanchez et al., 1999; Whirley, Lorch, Lemberger, & Milich, 2003). Any child who did not meet the *DSM-IV* (1994) ADHD-combined type diagnostic criteria during this interview was excluded from further participation in the study.

Comparison children were recruited through the schools and an advertisement in a local newspaper. The absence of behavioral problems associated with ADHD or learning disorders was confirmed through a parent interview and the Child Behavior Checklist (CBCL; Achenbach, 1991). Any comparison child who met criteria for three or more symptoms of inattention or hyperactivity/impulsivity on the parent interview was excluded from the study.

Parents of children with ADHD were asked to withhold their child's stimulant medication on the days of the testing. This is considered an acceptable washout period for stimulant medication and is the standard procedure in studies involving children with ADHD. To ensure compliance with this request, parents received a reminder telephone call the night before the study, and the medication-free status was confirmed at the session. If parents indicated that the child took medication the day of testing, the child did not participate in the study that day but instead was rescheduled. The study was reviewed and approved by the university Institutional Review Board, and informed consent was obtained from the parents of all participants.

Table 1. *Demographic Information for Children With ADHD and Non-referred Children*

Factor	ADHD (n = 25)		Non-referred (n = 39)		value
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Gender					
Male	19	76%	23	59%	$\chi^2 = 1.96$
Female	6	24%	16	41%	
Ethnicity					
White	23	92%	34	87%	$\chi^2 = 2.16$
Black	0	0%	3	8%	
Other	2	8%	2	5%	
Age (months)	91.00	9.58	89.31	9.78	$t = .68$
Mother Education. (yr)	15.00	2.34	15.63	2.25	$t = 1.06$
WPPSI	10.72	3.62	12.08	3.23	$t = 1.56$

Note: ADHD = Attention Deficit Hyperactivity Disorder.

WPPSI = Wechsler Preschool and Primary Scale of Intelligence-Revised: Vocabulary Scaled Score.

Procedures

Some data were collected during previous sessions, and even during the previous phase. However, the primary tasks used for this study took place during the second session of Phase 2. On arrival at the home-like university laboratory, the child spent about five minutes getting acquainted with the undergraduate experimenter who was blind to the clinical status of the child, while a graduate-level research assistant (RA) obtained consent and asked the parent to complete the Conners Parent Rating Scale – Revised (Conners, 1997). The child was taken to a room and seated at a small table diagonally from the experimenter. Once seated, the experimenter provided instructions to the child regarding each task and audio taped the session. A camera was mounted on the wall across from the small table. The RA videotaped the session from a control room.

Tasks

Parent-Child Joint Picture-Book Reading. The wordless picture-book, *Picnic*, by Emily Arnold McCully (1984), was used for the parent-child joint picture-book reading task. This book contains a total of 32 pictures and includes a hierarchical goal structure. The story begins with a family of mice going on a picnic. After riding along a bumpy road in a truck, the baby mouse (along with his/her stuffed animal) falls out. This action establishes the overall goal of reuniting the family for the picnic. The story progresses with a number of unsuccessful attempts to meet the goal, creating subgoals. Ultimately, the baby mouse (along with his/her stuffed animal) is reunited with the family. The family is then allowed to have the picnic, thus resolving the overall goal.

While the child and experimenter were completing other tasks, the RA gave the wordless picture-book to the parent in the waiting area. The parent was instructed that she/he would be telling a story to their child based on the wordless picture-book in a manner consistent with their home reading style. The parent was allowed additional time to look over the story while the child completed a secondary task.

Once the child completed the other tasks and was allowed a short break with the parent in the waiting area, the experimenter returned the child to the testing room and provided the following instructions, “The next thing we are going to do today is have your mom/day tell you a story from a picture-book. After your mom/dad has finished telling you the story, I will ask you some questions about it.”

The parent was advised that it was time to tell the story, “It is now time for you to tell a story to your child using the wordless picture-book we gave you earlier. Use the pictures in the book to tell a story to your child. Please tell the story the way you might normally do at home. When you are finished, we will come get you.” The parent was escorted to the testing room by the RA and seated in the assigned position. The experimenter said, “As soon as I shut the door, you may begin.” Both experimenter and RA left the testing room. The parent told the story starting with the first page and proceeding one page at a time until the completion of the book.

At that time, the RA escorted the parent back to the waiting area. The experimenter returned to the testing room and gave instructions for the story recollection task, “There is one more thing I want you to do today. Your mom/dad just told you a story. I didn’t get to hear it. Please tell me everything you can remember.” Once the child completed the story retell, the experimenter provided two additional prompts for encouragement of complete recall. Although the child was provided with two prompts, for the purpose of this study language scoring only included the story up to the first prompt.

The parent and child protocols were transcribed verbatim from audiotapes by an undergraduate honors student. When necessary, videotapes were reviewed if transcription could not be accomplished from the audiotapes. Parent and child story transcriptions first were analyzed using Microsoft Word readability program. Content analysis included: story length (total number of words), total percentage of passive sentence usage, Flesch Reading Ease score, and Flesch-Kincaid Grade Level score. Flesch Reading Ease is calculated based on the following formula: $206.835 - (1.015 \times \text{ASL}) - (84.6 \times \text{ASW})$ where ASL = average sentence length (the number of words divided by the number of sentences) and ASW = average number of syllables per word (the number of syllables divided by the number of words). Thus, the higher the score, the easier it is to understand the document. For most standard documents, aim for a score of approximately 60 to 70. Flesch-Kincaid Grade Level score rates text on a U.S. grade-school level. For example, a score of 4.0 means that a fourth grader can understand the document. Flesch-Kincaid Grade Level is calculated based on the following formula: $(.39 \times \text{ASL}) - (11.8 \times \text{ASW}) - 15.59$. Because two children (1 ADHD and 1 non-referred) were unable to retell their parent’s story, their data were excluded from these analyses.

Second, videotapes of the parent-child storytelling session were reviewed independently by a graduate student and an undergraduate honors student. The parent storytelling technique coding scheme was based on Whitehurst et al. (1988) and included the following parental techniques: evocative (encourages child to talk about pictured materials), feedback (i.e., praise, criticism), progressive change (sensitivity to child's abilities/level), and completion prompts (where the adult pauses so the child can fill in the word). Global parent and child scoring was based on Johnston et al. (2002) and included affective tone (tone of voice) and responsiveness (parent-child relationship). Global parent and child affective tone and responsiveness ratings ranging in scores from 1 to 7 (low to high/negative to positive) were individually assigned by the graduate student and an undergraduate honors student and then averaged for the final score. The graduate student was not blind to the group status of each participant but the undergraduate student was. The two coders were trained by coding practice protocols from participants and by reviewing and clarifying the coding categories with the investigators. Interrater reliability was established on a subset of the protocols resulting in the following Pearson correlation coefficients: $r = .80$ evocative; $r = .86$ feedback; $r = .92$ progressive change, $r = .93$ completion prompts; $r = .96$ parent affective tone; $r = .97$ child affective tone; $r = .96$ parent responsiveness; $r = .98$ child responsiveness. Parent and child rating manuals are included in Appendix A and B.

Child Free Storytell (Zentall, 1988). During the beginning of the second session of Phase 2, children were asked to make up a story that they had never heard before. The examiner said, "I want you to make up a story, one that you have never heard before. You may have as long as you need to think it up. Tell me when you are ready. Please remember to say 'the end' when you are done with your story." If 30 seconds elapsed without response, the examiner said, "Tell me when you are ready." If another 30 seconds had elapsed and the child had still not started, the examiner said, "Tell me whatever you have thought up now." If after that time, the child was unable to produce a story (or was finished), he or she was directed to the next task.

Child Free Storytell transcriptions were analyzed using Microsoft Word readability program. Content analysis included: story length (total number of words), total percentage of passive sentence usage, Flesch Reading Ease score, and Flesch-

Kincaid Grade Level score. Because nine children (3 ADHD and 6 non-referred) were unable to make up their own stories, their data were excluded from these analyses.

Child Four Picture Storytell (Zentall, 1988). Immediately following the Child Free Storytell task, children were asked to make up a story that they had never heard before from four, color cards containing the word and picture of gold, a dragon, a cave, and a storm. The cards were placed in random order in front of the child and the examiner said, “The story should be about a (1), a (2), a (3), and a (4). You may keep the cards with the words on them so you don’t forget. You may have as long as you need to think up a story. Tell me when you are ready. Just like last time, please remember to say ‘the end’ when you are done with the story.” If 30 seconds had elapsed and the child had not started, the examiner said, “Tell me when you are ready.” If another 30 seconds had elapsed and child had still not started, the examiner said, “Tell me whatever you have thought of now.” If after that time, the child was unable to produce a story (or was finished), he or she was directed to the next task.

Child Four Picture Storytell transcriptions were analyzed using Microsoft Word readability program. Content analysis included: story length (total number of words), total percentage of passive sentence usage, Flesch Reading Ease score, and Flesch-Kincaid Grade Level score. Because three children (2 ADHD and 1 non-referred) were unable to produce a story from the four pictures, their data were excluded from these analyses.

Standardized Language Measures

WPPSI. The Wechsler Preschool and Primary Scale of Intelligence-Revised (Wechsler, 1989) is an individually administered clinical instrument for assessing the intelligence of children aged 3 years through 7 years, 3 months. For this study, the WPPSI Vocabulary subtest was administered during the second session of Phase 1 as an approximate measure of participants’ verbal IQ. This subtest is a two-part test in which the child is asked to name a pictured object (Items 1-3). For the remaining items, the child is asked to provide verbal definitions for orally presented words (Items 4-25). Test administration is discontinued after five consecutive failures, starting with Item 4. Scoring for Part 1 is 1 point for each correct response with a maximum score of 3 points. Each item in Part 2 is scored 2, 1, or 0 points according to the quality of the definition

with a maximum score of 44 points. The average test-retest reliability ($M = 4$ weeks) of the Vocabulary subtest is $r = .71$. The validity evidence suggests that the WPPSI-R is a valid instrument for assessing the intellectual functioning of young children. The factor analytic results and the high correlations of the WPPSI-R with the WPPSI, the WISC-R, the Stanford-Binet, and the McCarthy scales provide support for the construct validity of the WPPSI-R (Wechsler, 1989).

OWLS. The Oral and Written Language Scales: Listening Comprehension (LC) Scale (receptive language) and the Oral Expression (OE) Scale (expressive language) (Carrow-Woolfolk, 1995) were administered during the second session of Phase 2. The items in the LC Scale are lexical, syntactic, and supralinguistic receptive language tasks. The items in the OE Scale are lexical, syntactic, supralinguistic, and pragmatic expressive language tasks. The lexical domain includes tasks requiring comprehension of nouns, verbs, modifiers, personal and demonstrative pronouns, prepositions, idioms, words with double meanings, and words that represent direction, quality and spatial relations. The syntactic domain includes tasks requiring comprehension of noun and verb modulators (i.e., number, tense, gender, voice, person, and case) and syntactic constructions (i.e., embedded sentences, coordination, subordination, negation, direct/indirect object, etc.). The supralinguistic domain includes tasks requiring language analysis on a level higher than lexical or syntactic decoding (i.e., comprehension of figurative language and humor; deprivation of meaning from context, logic, and inference; and other higher-order thinking skills). The pragmatic domain includes tasks requiring appropriate responses in specific situations (i.e., questions, courtesy responses, reasonable explanations, etc.).

OWLS' scoring is based upon correct response (e.g., Preferred, Acceptable, or No Differentiation) and incorrect response (e.g., Grammatical Error, Semantic/Pragmatic Error, or No Response). By categorizing correct and incorrect responses, the examiner can gain a better understanding of the child's expressive skills. For example, Item 11 contains one picture representing two girls, one presenting a gift to the other and one holding her hands out in a gesture of acceptance. The examiner asks the child, "Sarah gave Mary a present. What should Mary say to Sarah?" A correct response might be "Thank you"; a grammatical error might be "Thank", whereas, a pragmatic error might be "Happy Birthday".

The LC and OE subtests of the OWLS are administered individually to children and young adults, aged 3 to 21. LC is measured by asking the examinee to select one of four pictures that best depicts a statement (e.g., “In which picture is she not walking to school”) made by the examiner. Oral expression is assessed by asking the examinee to look at one or more line drawings and responding verbally to a statement made by the examiner (e.g., “Tell me what is happening here and how the mother feels”). The OWLS provides reliable and valid scores for determining the language competence of individual children. The only exception involves the LC measure, which appears to be best suited as a screening device for children 6 to 9 years of age (The Twelfth Mental Measurements Yearbook, 1995).

Home Environment Measure

Home Habits Questionnaire. The parent completed a 60-item questionnaire, developed by investigative team members, during the first session of Phase 2. The questions pertaining to home literacy were used in this study: (1) Print materials and reading (i.e., “How much does your child enjoy being read to or told stories). The home literacy habit questions used in this study are included in Appendix C.

CHAPTER 3: RESULTS

Analyses proceeded in several steps corresponding to the three purposes of the current study, which were to determine whether: (1) children with ADHD have language deficiencies in comparison to non-referred peers, (2) parent and child groups differ in storytelling or in parent reported home literacy habits, and (3) these differences are related to child language scores.

Group Differences in Child Receptive and Expressive Language

An analyses of group means indicated there was no receptive language difference between the ADHD ($M = 101.04$) and non-referred ($M = 101.15$) groups based on scores obtained from the OWLS Listening Comprehension Scale, $t(62) < 1$. However, children with ADHD ($M = 95.78$) demonstrated an expressive language deficiency, scoring significantly lower on the OWLS Oral Expression Scale, $t(60) = 2.04$, $p < .05$, $r = .25$, than the non-referred children ($M = 102.82$). Further error analyses revealed specific oral expressive deficiencies within the pragmatic domain with children with ADHD ($M = 11.52$) scoring significantly more pragmatic errors than the non-referred children ($M = 9.37$), $t(54) = 2.15$, $p < .05$, $r = .28$.

Group Differences in Parent and Child Storytell Content

The second purpose of the study was to determine whether there were parent and child group differences in storytelling and how these differences relate to child language scores. Means and standard deviations for parent story content variables are shown in Table 2, and those for the child storytellings are shown in Table 3. There were no significant group differences in parental story content variables. However, the non-referred children used significantly more passive sentences, $t(60) = 1.97$, $p = .05$, $r = .25$, than children with ADHD in retelling the parents' stories. Further, although there was no significant group difference in story length when the child worked from the structure of the parent's story (i.e., Child Retell), $t(60) = 1.02$, $p > .10$, children with ADHD told significantly shorter stories than non-referred children when asked to make up their own stories without a prompt (i.e., Child Free Storytell), $t(53) = 2.66$, $p = .01$, $r = .34$, or with a minimal prompt (i.e., Child Four Picture Storytell), $t(59) = 2.17$, $p < .05$, $r = .27$.

Group Differences in Parent Story Narration Techniques

Overall, as shown in Table 4, there were no group differences in the mean number of story narration techniques (e.g., evocative, feedback, progressive change, and completion prompts) provided by the parents during the joint picture-book reading session, although parents of the non-referred children ($M = 12.76$) tended to provide more story-relevant labeling, $t(62) = 1.76, p = .08, r = .22$, than the parents of children with ADHD ($M = 7.92$).

Group Differences in Global Parent and Child Affective Tone and Responsiveness

Means and standard deviations for parent and child affect and responsiveness ratings are shown in Table 5. Analyses revealed no group differences in either parental global affective tone or responsiveness ratings. However, children with ADHD tended to show a more positive affective tone during the joint picture-book reading session than the non-referred children, $t(62) = 1.77, p = .08, r = .22$.

Relations between Parent Affective Tone and Responsiveness and Story Content

Variables

As shown in Table 6, in both groups, parents who scored more positive on the affective measure, (ADHD: $r = .562, p < .01$; non-referred: $r = .487, p < .01$), and higher in responsiveness (ADHD: $r = .421, p < .05$; non-referred: $r = .384, p < .05$), told longer stories. For the ADHD group but not the non-referred group, parents who were more positive (ADHD: $r = -.438, p < .05$; non-referred: $r = -.029, p > .05$), and responsive (ADHD: $r = -.535, p < .01$; non-referred: $r = -.114, p > .10$), told stories at a lower grade level, suggesting that these parents were adapting their communication to their child's needs, potentially keeping their child more engaged in the joint activity. The group difference in correlations was marginally significant for parent responsiveness ($z = 1.78, p < .10$ two-tailed) but not for parent affective tone ($z = 1.63, p > .10$ two-tailed).

Relations between Parent Affective Tone and Responsiveness and Story Narration Techniques

For the non-referred children, but not the children with ADHD, more positive parents provided less non-story relevant criticism or disapproval (ADHD: $r = .129, p > .10$; non-referred: $r = -.408, p = .01$) during the joint picture-book reading session, with the group difference in correlations being significant ($z = 2.10, p < .05$ two-tailed).

Further, more positive parents of children with ADHD provided significantly more story-relevant progressive change techniques (e.g., labeling) (ADHD: $r = .661, p < .01$; non-referred: $r = .139, p > .10$), with the group difference in correlations being significant ($z = 2.41, p < .05$ two-tailed).

Relations between Child Language Scores and Story Content Variables

Intercorrelations between child receptive and expressive scores and other child and parent variables are shown in Table 7. For both groups of parents, longer stories were significantly related to higher receptive language scores (ADHD: $r = .441, p < .05$; non-referred: $r = .380, p < .05$) and the group difference in correlation coefficients was not significant, ($z = .27, p > .10$ two tailed). For the children with ADHD, but not the non-referred group, retelling more of the parent's story was significantly correlated with both higher OWLS Listening Comprehension scores (ADHD: $r = .450, p < .05$; non-referred: $r = .106, p > .10$) and Oral Expression scores (ADHD: $r = .611, p < .01$; non-referred: $r = -.021, p > .10$). The group difference in correlation coefficients was only significant for the Oral Expression scores ($z = 2.56, p < .05$ two-tailed), but not the Listening Comprehension scores, ($z = 1.38, p > .10$ two-tailed). The relation between longer stories with a minimal prompt (i.e., Child Four Picture Storytell) and higher receptive language scores was significant for the children with ADHD but not the non-referred children (ADHD: $r = .460, p < .05$; non-referred: $r = -.043, p > .10$), with the group difference in correlations being marginally significant ($z = 1.93, p < .10$ two-tailed).

Relations between Child Language Scores and Parent Story Narration Techniques

For the non-referred children, but not children with ADHD, receptive language scores were significantly related to more progressive change techniques provided by the parents during the joint picture-book reading session (ADHD: $r = .117, p > .10$; non-referred: $r = .364, p < .05$) but the group difference in correlations was not significant, ($z = .99, p > .10$ two-tailed).

Relations between Child Language Scores and Affective Tone and Responsiveness

There were no significant correlations or group differences in correlations between parents' affective tone or responsiveness and children's language scores or children's affective tone or responsiveness and children's language scores.

Group Differences in Parent Reported Child Home Literacy Habits

A further purpose of the current study was to examine the role that the home literacy environment plays in children's language learning by determining whether parents of children with ADHD reported different home literacy habits than parents of non-referred children and whether these habits were related to group differences in children's language scores.

Home Literacy Differences

Parents reported on their child's independent reading, their participation in being read to or told stories, their enjoyment of these activities, and their involvement in other reading-related activities. Means and standard deviations for these variables are shown in Table 8. Children with ADHD were reported to spend less time reading or looking at books independently at home, $t(59) = 2.48, p < .05, r = .31$, and demonstrated less enjoyment in independent reading, $t(60) = 3.22, p < .01, r = .38$, than non-referred children. In contrast, there were no group differences in the amount of time children are read to or told stories, $t(60) = .34, p > .10$. However, parent reports indicated that both children with ADHD, $t(60) = 1.82, p = .08, r = .23$, and their parents, $t(60) = 1.74, p = .08, r = .22$, tended to enjoy this joint activity less than non-referred children and their parents, which may be related to the greater difficulty parents of children with ADHD reported in getting their children to pay attention during reading, $t(60) = 4.27, p < .01, r = .48$. Furthermore, parents reported that children with ADHD were significantly less involved in reading-related activities (e.g., asking to go to the library, engaging in book-related play), $t(60) = 2.79, p = .01, r = .34$, than their non-referred peers.

Relations between home literacy habits and story narration techniques. Among parents of the non-referred children, but not children with ADHD, greater difficulty getting their child to pay attention during reading was significantly related to greater use of feedback techniques (ADHD: $r = -.208, p > .10$; non-referred: $r = .359, p < .05$) provided by the parent during the joint picture-book reading session. The group difference in correlations was significant ($z = 2.14, p < .05$ two-tailed). For the children with ADHD, but not the non-referred children, less enjoyment experienced in reading or looking at books independently (ADHD: $r = -.460, p < .05$; non-referred: $r = .093, p > .10$) was significantly related to more evocative techniques provided by the parent during

the joint picture-book reading session with the group difference in correlations being significant ($z = 2.14, p < .05$ two-tailed).

Relations between child language scores and home literacy habits. There were no significant group differences in the relation of home literacy experiences and children's language scores. However, more difficulty reported by parents in getting their child to pay attention during reading was significantly related to lower receptive language scores for children with ADHD but not for non-referred children (ADHD: $r = -.481, p < .05$; non-referred: $r = -.149, p > .10$), although the group difference in correlations was not significant ($z = 1.35, p > .10$ two-tailed).

Table 2. *Parent Storytelling Content Information*

Factor	ADHD		Non-referred		<i>t</i> (62)
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Number of words	90.88	205.69	739.46	271.20	.77
Passive sentences (%)	1.60	1.50	1.08	1.31	1.48
Reading ease	86.66	4.63	86.67	5.72	.01
Grade level	3.94	1.14	3.86	1.70	.20

Note: ADHD = Attention Deficit Hyperactivity Disorder

Table 3. Child Story Content Information

Factor	ADHD		Non-referred		<i>t</i> value
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Child Retell:					<i>t</i> (60)
Number of words	152.67	109.38	181.03	104.99	1.02
Passive sentences (%)	.96	2.46	3.34	6.78	1.97*
Reading ease	88.70	9.20	89.93	9.63	.50
Grade level	4.46	2.37	4.35	2.45	.18
Child Free Storytell:					<i>t</i> (52)
Number of words	69.00	61.90	148.73	131.10	2.66**
Passive sentences (%)	4.82	10.16	3.36	9.61	.54
Reading ease	90.00	10.04	90.28	6.64	.12
Grade level	3.52	2.72	4.08	1.60	.88
Child Four Picture Storytell:					<i>t</i> (59)
Number of words	74.91	55.42	124.74	122.68	2.17*
Passive sentences (%)	3.83	10.80	3.24	7.77	.25
Reading ease	93.86	6.84	94.96	5.57	.68
Grade level	3.01	2.50	3.09	1.82	.13

Note: ADHD = Attention Deficit Hyperactivity Disorder
 $p < .05$ two-tailed. ** $p < .01$ two-tailed.

Table 4. *Parent Story Narration Techniques
(Total Story Relevant and Non-Story Relevant)*

Techniques	ADHD		Non-referred		<i>t</i> (62)
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Evocative	24.36	14.85	28.62	15.99	1.07
Feedback	8.06	7.74	7.17	8.67	.42
Progressive Changes	12.30	9.21	17.92	17.99	1.64
Labeling	7.92	6.73	12.76	14.95	1.76+
Completion Prompts	.68	2.23	.23	.58	.99

Note: ADHD = Attention Deficit Hyperactivity Disorder
+ $p < .10$ two-tailed.

Table 5. *Global Parent and Child Affective Tone and Responsiveness Ratings*

Factor	ADHD		Non-referred		<i>t value</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Parent:					
Affective Tone	5.44	1.00	5.21	1.37	.74
Responsiveness	5.12	1.65	4.99	1.38	.35
Child:					
Affective Tone	5.74	1.44	5.12	1.34	1.77+
Responsiveness	5.86	1.23	5.55	1.21	.99

Note: ADHD = Attention Deficit Hyperactivity Disorder

+ $p < .10$ two-tailed.

Table 6. Intercorrelations Between Global Parent and Child Affective Tone and Responsiveness Ratings and Parent and Child Story Variables

	Parent Affective Tone			Parent Responsiveness		
	ADHD	Non-referred	Z-score	ADHD	Non-referred	Z-score
Parent:						
Number Words	.562**	.487**	.38	.421*	.384*	.16
Grade Level	-.438*	-.029	- 1.62	-.535**	-.114	-1.78+
Total Evocative	.625**	.426**	1.03	.615**	.515**	.54
Total Feedback	.494*	.306	.84	.640**	.455**	.99
Criticism/Disapproval (NR)	.129	-.408**	2.10*	.150	-.251	1.50
Total Progressive Change	.618**	.233	1.80+	.721**	.267	2.33*
Labeling (SR)	.661**	.139	2.41*	.787**	.233	3.03*
Total Completion Prompts	.103	.220	-.44	.265	.347*	-.33
Child:						
Number Words	.392*	.189	.80	.257	.151	.40
Affective Tone	.018	.195	-.65	.307	.556**	-1.13
Responsiveness	.314	.161	.60	.403*	.641**	-1.19

Note: ADHD = Attention Deficit Hyperactivity Disorder. (SR) = Story Relevant, (NR) = Non-Story Relevant
 + $p < .10$ two-tailed. * $p < .05$ two-tailed. ** $p < .01$ two-tailed.

Table 7. Intercorrelations Between Child OWLS Scores and Other Child and Parent Variables

	Listening Comprehension			Oral Expression		
	ADHD	Non-referred	Z-score	ADHD	Non-referred	Z-score
Child Number Words:						
Retell	.450*	.106	1.40	.611**	-.021	2.69*
Free Storytell	.407	-.101	1.22	.413	-.200	2.38*
Four Picture Storytell	.460*	-.043	2.00*	.327	-.152	.86
Parent:						
Number of Words	.441*	.380*	.27	.260	.097	.63
Total Progressive Change	.117	.364*	-.99	.071	.226	-.59
Affective Tone	-.017	.296	-1.18	.012	.182	-.64
Responsiveness	-.038	.205	-.89	.205	.216	-.04
Mother Education	-.002	.321*	-1.23	.088	.289	-.77

Note: ADHD = Attention Deficit Hyperactivity Disorder. OWLS = Oral and Written Language

Scales: Listening Comprehension Score, and Oral Expression Score.

* $p < .05$ two-tailed. ** $p < .01$ two-tailed.

Table 8. *Parent Reported Home Literacy Habits for Children with ADHD and Non-referred Children*

Question Variable	ADHD		Non-referred		<i>t value</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Weekly independently reading minutes	51.17	51.50	91.22	67.49	2.48**
Weekly minutes being read to	70.02	86.05	76.91	70.67	.34
Parent Rating (1-5)					
Enjoyment of independent reading	3.33	1.24	4.25	.80	3.22**
Enjoyment of being read to	4.21	1.02	4.63	.63	1.82
Involvement in book-related activities	2.82	.78	3.32	.63	2.79**
Parental enjoyment of reading to child	4.21	.78	4.53	.65	1.74
Difficulty in getting child to attend to reading	2.04	.86	1.24	.43	4.27**

Note: ADHD = Attention Deficit Hyperactivity Disorder

** $p < .01$ two-tailed.

CHAPTER 4: DISCUSSION

Three questions were investigated in the current study. First, do children with ADHD have language deficiencies in comparison to non-referred peers? Second, are there diagnostic group differences in parent and child storytelling when interacting in a joint picture-book setting or in parent reported home literacy habits; and third, are these differences related to child language scores?

Group Differences in Child Receptive and Expressive Language

With respect to the first issue, results revealed similarities between the two diagnostic groups in receptive language abilities. Although limited evidence exists that receptive language abilities are impaired in children with ADHD (Baker & Cantwell, 1992), our findings are consistent with several studies (Barkley et al., 1990; O'Neill & Douglas, 1991; Kim & Kaiser, 2000; Zentall, 1988) that obtained no difference in receptive language abilities between children with ADHD and typically developing children.

Although receptive differences were not present, children with ADHD were found to have oral expressive deficiencies. Our findings are consistent with the findings of Kim & Kaiser (2000) who also used a standardized language test as the primary measure of language abilities, and are consistent with others using storytelling tasks as a measure of oral expression abilities (Purvis & Tannock, 1997; Tannock et al., 1993; Zentall, 1988).

Why is it that the children of ADHD exhibited an expressive language deficit but not a receptive language deficit? An examination of the language scales may offer an answer. The receptive language scale includes items from three semantic categories: lexical, syntactic, and supralinguistic. The oral expression scale includes these three categories as well as a fourth category, pragmatics. Although scoring does not allow specific breakdown of all four semantic categories, the oral expression scale does allow measurement of syntactic and pragmatic difficulties through number of grammatical and pragmatic errors.

Within the constraints of the OWLS, the clearest evidence of oral expressive dysfunction within the semantic domain of children with ADHD was in the pragmatic category. These language deficiencies include inappropriate conversation or questioning,

because the pragmatic language deficiencies identified within the OWLS parallel many of the behavioral symptoms cited as criteria for the diagnosis of ADHD (*DSM-IV*; American Psychological Association, 1994).

It has been well documented that children with ADHD experience difficulty in inhibiting behaviors (Barkley, 1997; Jennings, Van der Molen, Pelham, Debski, & Hoza, 1997; Konrad, Gauggel, Manx, & Scholl, 2000). Therefore, it is possible that part of the reason children with ADHD show pragmatic language deficiencies is because they are generally affected by behavioral inhibitory control problems. For example when engaged in a conversation, children with ADHD may exhibit behavioral and conversational difficulties in the form of difficulty waiting turns, talking excessively, interrupting others, not listening to what is being said, and blurting out answers to questions before they are completed.

Children with ADHD experience significant distress and impairment in social settings (*DSM-IV*, American Psychiatric Association, 1994). These behavioral symptoms can be manifested in inappropriate language as they scrutinize social cues and listener needs and abilities. Thus, a bi-directional interaction may be occurring in that the social problems experienced by children with ADHD result in an inability to learn appropriate pragmatic skills, and their pragmatic language deficiencies may limit their ability to become good conversational and social partners.

Our findings add to a limited number of studies (Geurts et al., 2004; Kim & Kaiser, 2000) specifically addressing children with ADHD and pragmatic dysfunction using standardized measures (e.g., Test of Pragmatic Language; Children's Communication Checklist). Additional studies suggesting pragmatic problems using other expressive tasks have been documented (Humphries, Koltun, Malone & Roberts, 1994; Purvis & Tannock, 1997; Zentall, Gohs, & Culatta, 1983). These pragmatic difficulties with language use include the use of ambiguous references creating difficulty for the listener to follow the speaker's train of thought, difficulty in maintaining conversation, or difficulty in turn taking during conversations.

A third explanation for the difference between groups in expressive but not receptive language results may reflect differences in the cognitive processing

requirements of the two scales. As illustrated in the OWLS, receptive language is measured by asking the child to select one of four pictures that best depicts a statement made by the examiner (e.g., “In which picture is she not walking to school”). In responding, the receptive language task requires that the child either point or state the number corresponding to the correct picture. In comparison, expressive language is assessed by asking the child to look at one or more drawings and to respond verbally by answering a question, completing a sentence, or generating one or more sentences to a statement made by the examiner (e.g., “Tell me what is happening here and how the mother feels”).

Both expressive and receptive language tasks require inferential processing that allows for the interpretation of presented information and monitoring of comprehension of the visual materials. However, the expressive language task includes greater task demands in that the child must first focus on multiple pieces of the presented information and then “hang on” to that information while composing a lengthier verbal response to the examiner. When faced with oral expressive tasks requiring more effortful processing, children with ADHD may be less likely to exert effort to the same degree as comparison children as has been implied in previous research allocation (Barkley, 1997).

When processing presented information and monitoring comprehension of visual materials is added to the demands of word retrieval, children with ADHD may experience expressive deficiencies. Although word retrieval is sometimes required in the listening comprehension task, it is used extensively in the oral expression task. Even with a knowledge of words that serves both comprehension and expression, the speaker must access the system in which that knowledge is stored to find the exact word or words appropriate to express a specific thought. The words must be retrieved and expressed with fluidity so communication does not break down (Carrow-Woolfolk, 1995). Word retrieval difficulty has been documented in studies focusing on neuropsychological test performance of children with ADHD (Korkman & Pesonen, 1994; Muir-Broadus, Rosenstein, Medina, & Soderberg, 2002). These studies reported that children with ADHD performed poorly on most memory tests requiring word retrieval.

Group Differences in Parent and Child Storytell Variables

Parent and Child Storytell

The second question raised in this study was, are there diagnostic group differences in parent and child storytelling when interacting in a joint picture-book setting or in parent reported home literacy habits? The results indicate that parental groups did not differ in story content, the use of story narration techniques, or in their affective tone or responsiveness shown during the joint interaction. We had originally hypothesized that, because parents of children with ADHD may be required to consistently maintain the attention of their children and manage their disruptive behavior, these parents would tell shorter and less complex stories and use more story narration techniques compared to parents of non-referred peers. Further, because children with ADHD often exhibit behavioral problems, it was hypothesized that their parents would display a more negative affective tone and lower levels of responsiveness (Cunningham & Barkley, 1979).

Several reasons exist that may explain the lack of group differences in our findings. First, both groups of parents reported similarities in the amount of time spent at home reading to their child, amount of enjoyment experienced while reading to their child, and amount of enjoyment the child experienced being read to, even though parents of children with ADHD reported significantly more difficulty in getting their child to attend to reading at home. These results suggest that picture-book reading is a common activity shared by these parents and young children (DeLoache & DeMendoza, 1987). Joint picture-book reading may be an activity that both parents and their children with ADHD enjoy, allowing it to become a source of positive interaction for both parent and child (Sonnenschein, Baker, Serpell, & Schmidt, 2000).

Second, the nature of a joint picture-book reading task may be less demanding for parents and children in comparison to a problem-solving task, such as the one used in the study conducted by Winsler (1998). Although his study was conducted in a parent-child context, the nature of the task demanded that the parent and child collaborate to solve a specific problem. In this collaborative effort, parents of boys with ADHD exhibited a more controlling and intrusive management strategy and the boys with ADHD were less compliant and more off-task during the completion of the problem-solving tasks. Parental

use of controlling and negative strategies may inadvertently strengthen the child's inappropriate behavior and result in the child demonstrating a more negative affective tone and lower levels of responsiveness during the dyadic interaction.

In the current study, children with ADHD tended to be more positive than non-referred children during the joint interaction. This finding is opposite to our original hypothesis that children with ADHD would display more negative affective tone than non-referred children and is inconsistent with the findings of Winsler (1988). We believe joint picture-book reading facilitates a more positive and enjoyable dyadic interaction in which parents can assist children with ADHD.

Regardless of the reasons these parents may not have differed in storytelling, both groups of parents demonstrated effective parent scaffolding during the joint picture-book reading session. Parents encouraged their children to take an active role in the joint activity by asking similar numbers of "wh-", "yes/no", and "open-ended" questions. Further, parents used similar numbers of pointing requests and linking techniques in an effort to keep coherence. Our findings are inconsistent with the findings of Winsler (1998), in that parents of the children with ADHD compared to parents of controls were reported as having poorer quality of scaffolding, including a failure to modify task demands and assistance to be appropriate to the child's skill.

Although we believe both parental groups effectively used scaffolding techniques during the dyadic interaction, subtle differences exist between groups in relations between different features of storytelling. Results indicate that for the ADHD group, but not the non-referred group, parents who were more positive and responsive during the joint reading activity tended to tell stories at a lower grade level while providing more progressive change techniques in the form of significantly more labeling. We suggest that the more positive and responsive parents of children with ADHD were adapting their expressive communication to their child's linguistic needs by producing a story at a lower grade level and utilizing a less complex method of instruction (e.g., labeling) while potentially keeping their child more engaged in the joint activity. Our findings do suggest that for the children with ADHD, the more positive and responsive parents of children with ADHD recognize that they must adjust their storytelling, which may contribute to their ability to maintain a positive and responsive interaction with their child. Similar

adjustments may not be necessary for the comparison parents, whose children are likely to remain engaged in this activity.

Additionally, for the non-referred children, but not the children with ADHD, more positive parents provided less non-story relevant criticism/disapproval during the joint picture-book reading session. Because parents of children with ADHD may have a history of needing to express more criticism/disapproval as they regulate their child's behavior, it is possible that over time this expression becomes more matter-of-fact without bringing down the affective tone of the dyadic interaction. According to Danforth, Barkley, and Stokes (1991), parents and their children with ADHD both emit behaviors that strongly influence each other. Johnston et al. (2002) reported that monitoring and interpreting on-going child behavior as a basis for adapting one's own behavior is more difficult when interacting with a child who, by definition, displays impulsive, disorganized, and poorly-regulated behavior.

Child Free and Four Picture Storytells

For the children, three elicited-language conditions (e.g., Retell; Free Storytell; Four Picture Storytell) were used to demonstrate the children's language use. Children from both groups produced stories of similar length when working from the structure of the parents' story. This suggests that the children with ADHD did not exhibit deficiencies in memory. During this task, children were presented with a complete structured stimulus by way of the picture-book and the parent telling the story. However, children with ADHD were found to have significant production deficiencies in the stories requiring organization and planning with minimal (Four Picture Storytell), and no (Free Storytell) external structure or visual cues. Thus, when there is minimal environmental input, children with ADHD may not always respond with an optimal level of verbal output (Zentall, 1988).

Our findings are inconsistent with the findings of Zentall (1988), in that for children with ADHD relative to the non-referred children when working from the structure of their parent's story (Child Retell) they did not manifest verbal production deficits. The difference in findings between our study and Zentall's may be attributed to the fact that the children in the Zentall study (aged 7 to 10 years) listened to a tape-recorded story rather than a story from a dyadic interaction in which the parent provided

ready-made structure for their child to follow, along with pictorial support from a wordless picture-book. This explanation is consistent with the findings of Renz et al. (2003) who found no significant difference between the comparison boys and the boys with ADHD in the number of idea units based on the presence of pictorial support in the form of a wordless picture-book such as the one used in the current study. These findings suggest the need to further investigate the comparison of stories across structural categories.

The differences in storytells between the two diagnostic groups may be attributed to deficits in the executive functioning processes requiring organization and monitoring of verbal production (Purvis & Tannock, 1997; Tannock et al., 1993; Zentall, 1988). For the children with ADHD, but not the non-referred children, organizing and monitoring verbal production requires more effortful processing. When making up a story with minimal or no oral or visual prompting, children with ADHD experience expressive language deficiencies. These deficiencies may result in shorter, less cohesive stories.

Relations between Parent-Child Storytells and Home Literacy Habits and Child Language Scores

The third question raised in this study was, if there are diagnostic group differences in parent and child storytelling when interacting in a joint picture-book setting or in parent reported home literacy habits, are these differences related to child language scores? There were no significant group differences in the relation of parent storytelling and child language scores. However, regarding home literacy experience and child language scores, results indicate that for the children with ADHD but not for non-referred children, more difficulty reported by parents in getting their child to pay attention during reading was significantly related to lower receptive language scores. It is possible that the attention deficits experienced by the children with ADHD lead to behavioral difficulties during dyadic interactions resulting in lower listening comprehension. Therefore, because parent-child interactions tend to include negative cycles of interaction among families of children diagnosed with ADHD, it is important to consider how positive family interactions can be promoted, as these are likely to help prevent or reduce behavior problems and facilitate the best possible outcomes for children (Warren, 2004).

Further, there were significant group differences in the relation between language scores and the length of the children's retell of their parents' stories and stories with minimal prompts. For the children with ADHD, but not the non-referred group, engagement in the dyadic interaction may have influenced the length of their stories resulting in higher language scores. As previously stated, we believe joint picture-book reading facilitates a more positive and enjoyable dyadic interaction in which parents can assist children with ADHD. Because current procedures did not allow us to distinguish levels of engagement, future studies focused in this area may prove beneficial in explaining these group differences.

CHAPTER 5: LIMITATIONS AND FUTURE DIRECTIONS

A number of limitations in conducting this study need to be acknowledged. First, children with ADHD were required to be medication free the day of testing, whereas, in reality, it is likely these children would have been taking their medication. It is unknown how such treatment might impact the children's ability to plan, organize, and convey stories with limited or no structure. It is possible that an intervention such as stimulant medication would decrease if not eliminate the planning, organizing, and production deficiencies shown by these children. According to a study conducted by Francis, Fine, and Tannock (2001) on the stimulant effects of methylphenidate on story retelling of children with ADHD with and without comorbid language impairment (M age = 8.97 years), there was no evidence to suggest that medication impacted the length of the retold stories or on story comprehension.

Second, a deeper understanding of specific expressive language difficulties of children with ADHD could be made with the inclusion of more extensive measures of linguistic skills in future research. Focus should be placed on standardized measures used to assess expressive syntax and semantic abilities, the use of language in social situations, pragmatic language abilities, and semantic aspects of language that tap the ability to analyze, organize, and associate linguistic units. It is important when choosing the measures used in future research that the selections provide reliable measures that are also sensitive to later language and literacy competencies (Dunning, Mason, & Stewart, 1994).

Third, our sample was an ethnic and SES mix fairly consistent with the Lexington, Kentucky area comprising primarily white, upper- and middle-class mothers and their young children based on the parents' educational classification. According to Scarborough and Dobrich (1994), higher SES is generally associated with higher levels of parents' own education attainment and more frequent shared reading and, therefore, presumably a greater emphasis on educational achievement. Thus, caution must be taken in extending these results to other cultural or socioeconomic groups.

The final limitation is the relatively small sample size of the study. Data from small studies provide only limited information with limited clinical generalizability. The

failure to obtain some of the predicted group differences may be due to this problem. Nevertheless, a number of findings consistent with the hypotheses, and consistent with what we know about children with ADHD, were obtained. Replication studies clarifying the nature and strength of the relations are necessary.

Because parents and children interact in a variety of social contexts and task complexity, examination of the differences in interaction patterns between parent and child may provide a deeper understanding of the expressive language difficulties experienced by children with ADHD. Future research utilizing a variety of parent-child laboratory-based observations (i.e., free-play, problem-solving, child reading to parent) and an examination of the day-to-day interactions between parent and child at home may support and extend the current findings. It is important to determine whether parent-child interactions observed in a structured setting such as the one used in this study is representative of that occurring in unstructured settings which may characterize many of the child's interactions with his parent at home (Cunningham & Barkley, 1979). We would expect to find differences in interaction patterns and language use between parent and child across multiple social contexts and task complexity.

Parents of children with ADHD should continue to be encouraged to involve their children in reading and reading-related activities (Dunning et al., 1994). Our findings suggest that implementation of a parent-child educational program designed to remediate the production deficits of children with ADHD in future research from this group may augment parental knowledge of the importance of increasing the active participation of children during multiple dyadic contexts, thereby facilitating the language development of children at risk for delays (Senechal & LeFevre, 2001).

The results of this study address for the first time parental language and story narration influences on children with ADHD and are relevant to understanding the differences in parent-child joint picture-book reading interactions and their relation to language development for both children with and without ADHD. We were able to demonstrate that the more positive and responsive parents of the children with ADHD differed in the manner in which they told a story to their child during the joint picture-book reading session, suggesting that these parents were adapting their communication to their child's needs, potentially keeping their child more engaged in the joint activity.

APPENDIX A

GLOBAL PARENTAL AFFECTIVE TONE AND RESPONSIVENESS AND PARENT STORY NARRATION TECHNIQUE RATING MANUAL

The rating dimensions and their descriptions presented in this manual are based on the standards developed by Johnston et al., (2002) regarding parental affective tone (tone of voice/expressiveness) and responsiveness (overall ability to be sensitive to her child's needs or state, and to coordinate her behavior to the child's), and the Dialogic Reading Training Program (DRTP) developed by Whitehurst et al., (1988) respectively. The DRTP encompasses the parental usage of the following story narration techniques: evocative (encourages child to talk about pictured materials), feedback, progressive change (sensitivity to child's developing abilities/level), and completion prompts (where the parent pauses so the child can fill in the word).

The ratings described in this manual reflect the observer's general impressions of the parents' behavior during the joint picture-book reading session when reviewing the videotape.

GLOBAL PARENT AFFECTIVE TONE AND RESPONSIVENESS RATING MANUAL

(Based on Johnston et al., 2002)

Observer impressions for affective tone and responsiveness should be based on both the verbal content of the interaction (i.e., what the parent says), nonverbal actions and emotional cues (i.e., tone of voice and posture), and on the pattern of coordination between parent and child behavior (i.e., does the parent usually wait for the child to finish speaking or does she often interrupt the child).

For the entire joint picture-book reading session, observers use a 7 point scale to rate parental affective tone and responsiveness: 1 = extremely low; 2 = moderately low; 3 = slightly low; 4 = neutral; 5 = slightly high; 6 = moderately high; and 7 = extremely high. Ratings indicate the level of the characteristic that best describes the parent's behavior during the session or the level that was most predominant during the session.

Observers will start with a neutral rating of 4. If anything in the interaction strikes them as being more extreme, they will rate the interaction accordingly using the 1 to 7 scale. The entire range of each rating scale should be used as appropriate. A rating of 7 is used when both the quantity and the quality of the construct are high. To reduce observer bias, the participant's identification information should remain blind. Once the interaction has been rated, the participant's identification information should be recorded at the top of each coding sheet.

Parental Affective Tone (Positive, Neutral, or Negative)

This dimension describes the parent's emotional tone during the joint picture-book reading session and is coded on the basis of verbal statements, nonverbal gestures, body posture, facial expressions, and tone of voice.

A parent showing *negative affect* may display clear and pronounced anger or displeasure. Alternately, the parent may appear irritated or display sadness.

A parent displaying *neutral affect* shows approximately equal amounts of positive and negative affect or neutral affect throughout the session. Neutral affect involves a neutral tone of voice and an absence of either effusive or hostile nonverbal gestures. Neutral affect is calm, mild, quiet, cordial, and polite.

A parent showing *positive affect* may exhibit expressions of happiness, warmth, or pleasure. Her expressions of positive affect are unmistakably pleasant and may be expressed by loudness, length of nonverbal gesture, or intensity of voice intonation or gesture.

Levels 1, 2, 3 – Negative Affective Tone*

- Sounding irritated when addressing child
- Facial expressions and/or body posture indicate anger or sadness
- Rigid or unfriendly body posture or hostile nonverbal gestures when interacting with the child.

* To distinguish between a rating of 1, 2, or 3, ratings should be assigned as follows:

If one of the above occurs, rating = 3.

If two of the above occurs, rating = 2.

If three of the above occurs, rating = 1.

Level 4 – Neutral Affective Tone

- Calm and polite when speaking to child.
- Nonverbal communication is neither warm nor irritated

Levels 5, 6, 7 – Positive Affective Tone**

- Pleasant voice when speaking to child
- Gestures convey happiness or warmth
- Body posture seems relaxed and happy – enthusiasm in voice and gesture

** To distinguish between a rating of 5, 6, or 7, ratings should be assigned as follows:

If one of the above occurs, rating = 5.

If two of the above occurs, rating = 6.

If three of the above occurs, rating = 7.

Parental General Responsiveness (Low, Neutral, or High)

This dimension refers to the parent's overall ability to be sensitive to her child's needs or state, and to coordinate her behavior to the child's

A parent low in responsiveness is *intrusive* and operates more on her own agenda as opposed to the agenda of the child. The mother's behavior is not congruent with the child's behavior. She seems unaware of her child's cues, needs, requests, or interests and generally does not coordinate her behavior with that of her child. The mother may verbally demand that the child respond to her. Indifference to or ignoring of the child's comments or requests may also reflect low responsiveness. Mothers who are not responsive may act in a way that inappropriately distracts the child or may fail to set limits when the child needs them. The mother does not comply with or ignores the child's suggestions or directions. She shows a lack of sensitivity to the child's emotional state or interests.

A parent who is responsive to the child appears to be in synchrony with the child. She understands what her child is like, what his ongoing needs are, how to appropriately adapt her behavior to that of the child, and how to best facilitate the child's activities. In general, responsive mothers are child-centered rather than parent-centered, able to set aside her own agenda in order to focus on the child. *Note: even though the joint picture-book reading session must be more parent-driven, a responsive parent meets the experimental protocol in the way that is most sensitive to the child.*

A responsive parent is aware of the constraints and requirements of the situation, and of how the child's needs are affected by the situation. A responsive parent attends and listens to the child's signals and acknowledges child requests (i.e., if the child becomes antsy and distractible, the parent will change her own tactics to make the session more engaging for the child). The parent is very sensitive in picking up on the child's cues, even if these are subtle. Her responses to the child are appropriately timed, neither too fast and abrupt nor too delayed or weak.

Levels 1, 2, 3 – Low Responsiveness*

- Ignoring the child's comments or questions
- Never acknowledging the child's frustration
- Limiting or interrupting the child's active participation

* To distinguish between a rating of 1, 2, or 3, ratings should be assigned as follows:

If one of the above occurs, rating = 3.

If two of the above occurs, rating = 2.

If three of the above occurs, rating = 1.

Level 4 – Neutral

- Neither low nor high levels of responsiveness

Levels 5, 6, 7 – High Responsiveness**

- Placing the child's needs ahead of a strict interpretation of the instructions she has been given.
- Letting the child contribute to the story.
- Parent seeks and maintains physical proximity to child and allows child to turn pages or point to pages.

** To distinguish between a rating of 5, 6, or 7, ratings should be assigned as follows:
If one of the above occurs, rating = 5.
If two of the above occurs, rating = 6.
If three of the above occurs, rating = 7.

PARENT STORY NARRATION TECHNIQUE RATING MANUAL

(Based on Whitehurst et al., 1988)

The parent uses the following story narration techniques in an effort to prompt the child to increase the sophistication of his or her descriptions of the material in the picture-book. The parent is encouraged to ask more questions and add more information based upon the ability/level of the child. Observer impressions for parental use of the DRTP techniques should be based on the verbal content of the interaction as well as pointing requests.

All categories are either coded story relevant or non-story relevant. Story relevant information are parental techniques that inform the child of the story content and tie information within the picture-book story (i.e., “The little mouse ate so many berries his tummy hurts”), techniques that tie the child’s life experiences to the story (i.e., “That’s like the banjo Grandpa plays.”), and/or techniques that encourage the child to pay attention (i.e., “Look”, “Sit closer”, “Pay attention”). Non-story relevant information is information that in no way ties to the picture-book story or the child’s attention prompting (i.e., “Oh, that reminds me that we need to stop at the store to get milk on our way home”).

Evocative Techniques (encourages child to talk about pictured materials)

- *Simple* wh-prompts (questions – who, what, where, when, which) – Child answers with either a name or label.

Who is that?	What is that?
Where is the mouse?	What did he eat?
- Open-ended prompts (questions) – Nonspecific request for description or additional information from child.

Are they flowers or berries?
Tell me more.
Can you tell me ...?
- Yes/No prompts (questions) – Expected answer is yes/no or nod of head.

Do you think he is going to eat all of those?	
Is that the mouse?	Did they...?
Right?	Okay?
- Other Evocative Techniques – Parent attempts to keep child engaged in the story.

Oh ...	Crash!
Look...	Here we go.
Ahhh...	Oops!
Gasp.	Wow!

Imitative sounds (i.e., truck noises or character voice from parent)

- Praise or encouragement
 You're right! You are so smart. Yes!!
 I think that is a frog too. Uh huh. Okay.
- Repetitions – Copy or reduced copy of child's utterance
 Yeah, he's got his hat on. (This example should be coded as
 praise/encouragement and repetition.)
 Grandma?
 And then they run in circles?
 That *is* a frog.
- Other Feedback
 Parent pauses to answer question child poses.
 I don't know.
 Let's see.
 Maybe.

Progressive Change (sensitivity to child's developing abilities/level) – Parent provides additional information that allows the child to obtain more specific details about the event occurring within the story or allows the child to broaden the conversation beyond simple labeling.

- *Complex* wh-prompts (questions – who, what, where, when, and how)
 What kind of berries do you think they are?
 What do you think this one might be going to take?
 What kind of milk do you think mice drink?
 What did the truck do?
 What kind of games do you think they will play?
 How are they going to find him?
 Guess what happened?
- Expansion of what child says (elaboration)
 He's getting the rest of the kids.
 A bug's coming over, crawling.
- Labeling
 It's his baby mouse.
 Picnic blanket
 A lake.
- Other Progressive Changes – Story Relevant (*Be sure these are NOT linking or distancing techniques when coding.*)
 ...because ... (They like this spot because they come here every year.)
 ...in order to ...
 ...so that ...
 ... in hopes that...

Completion Prompts – where the parent pauses for the child to fill in the word

APPENDIX B

GLOBAL CHILD AFFECTIVE TONE AND RESPONSIVENESS RATING MANUAL

The rating dimensions and their descriptions presented in this manual are based on the standards developed by Johnston et al., (2002), Zevenbergen et al., (2003), and, DeBruin-Parecki (1999) regarding child affective tone (tone of voice/expressiveness) and responsiveness.

The ratings described in this manual reflect the observer's general impressions of the child's behavior during the joint picture-book reading session when reviewing the videotape.

GLOBAL CHILD AFFECTIVE TONE AND RESPONSIVENESS RATING MANUAL

(Based on Johnston et al., 2002; Zevenbergen, Whiterhurst, & Zevenbergen, 2003; and DeBruin-Parecki, 1999)

Observer impressions for affective tone and responsiveness should be based on both the verbal content of the interaction (i.e., what the child says), nonverbal actions and emotional cues (i.e., tone of voice and posture), and on the pattern of coordination between parent and child behavior (i.e., does the child usually wait for the parent to finish speaking or does she often interrupt the parent).

For the entire joint picture-book reading session, observers use a 7 point scale to rate child affective tone and responsiveness: 1 = extremely low; 2 = moderately low; 3 = slightly low; 4 = neutral; 5 = slightly high; 6 = moderately high; and 7 = extremely high. Ratings indicate the level of the characteristic that best describes the child's behavior during the session or the level that was most predominant during the session.

Observers will start with a neutral rating of 4. If anything in the interaction strikes them as being more extreme, they will rate the interaction accordingly using the 1 to 7 scale. The entire range of each rating scale should be used as appropriate. A rating of 7 is used when both the quantity and the quality of the construct are high. To reduce observer bias, the participant's identification information should remain blind. Once the interaction has been rated, the participant's identification information should be recorded at the top of each coding sheet.

Child Affective Tone (Positive, Neutral, or Negative)

This dimension describes the child's emotional tone during the joint picture-book reading session and is coded on the basis of verbal statements, nonverbal gestures, body posture, facial expressions, and tone of voice.

A child showing *negative affect* may display clear and pronounced anger or displeasure. Alternately, the child may appear irritated or display sadness.

A child displaying *neutral affect* shows approximately equal amounts of positive and negative affect or neutral affect throughout the session. Neutral affect involves a neutral tone of voice and an absence of either effusive or hostile nonverbal gestures. Neutral affect is calm, mild, quiet, cordial, and polite.

A child showing *positive affect* may exhibit expressions of happiness, warmth, or pleasure. Her expressions of positive affect are unmistakably pleasant and may be expressed by loudness, length of nonverbal gesture, or intensity of voice intonation or gesture.

Levels 1, 2, 3 – Negative Affective Tone*

- Sounding irritated when addressing parent
- Facial expressions and/or body posture indicate anger or sadness
- Rigid or unfriendly body posture or hostile nonverbal gestures when interacting with the parent.

* To distinguish between a rating of 1, 2, or 3, ratings should be assigned based on the following:

If one of the above occurs, rating = 3.

If two of the above occurs, rating = 2.

If three of the above occurs, rating = 1.

Level 4 – Neutral Affective Tone

- Calm and polite when speaking to the parent.
- Nonverbal communication is neither warm nor irritated

Levels 5, 6, 7 – Positive Affective Tone**

- Gestures convey happiness or warmth
- Body posture seems relaxed and happy
- Indicates excitement and pleasure – enthusiasm in voice and gesture

** To distinguish between a rating of 5, 6, or 7, ratings should be assigned based on the following:

If one of the above occurs, rating = 5.

If two of the above occurs, rating = 6.

If three of the above occurs, rating = 7.

Child General Responsiveness (Low, Neutral, or High)

This dimension refers to the child's overall ability to heighten attention to the parent and the text by performing the following behaviors:

Child seeks and maintains physical proximity

Child pays attention and sustains interest

Child holds book and turns pages on own when asked

Child initiates or responds to book sharing which takes her presence into account.

Child responds to questions about the book

Child responds to parent cues or identifies pictures on her own

Child attempts to relate book content to personal experiences

Child poses questions about the story and related topics

A child low in responsiveness is *intrusive* and operates more on her own agenda as opposed to the agenda of the parent. The child's behavior is not congruent with the parent's behavior. She seems unaware of her parent's cues or requests and generally does not coordinate her behavior with that of her parent. The child may verbally demand that

the parent respond to her. Indifference to or ignoring of the parent's comments or requests may also reflect low responsiveness. Children who are not responsive may act in a way that inappropriately distracts the parent. The child may fail to comply with limits set by the parent or does not comply with or ignores the parent's suggestions or directions.

A child who is responsive to the parent and text appears to be in synchrony with the parent. She understands what is expected of her during the joint-reading session. In general, a responsive child actively participates in the session by performing the above behaviors.

Levels 1, 2, 3 – Low Responsiveness*

- Ignoring the parent's comments or questions
- Attention is not focused for any length of time on the story
- Limiting or interrupting the parent's active participation

* To distinguish between a rating of 1, 2, or 3, ratings should be assigned based on the following:

If one of the above occurs, rating = 3.

If two of the above occurs, rating = 2.

If three of the above occurs, rating = 1

Level 4 – Neutral

- Neither low nor high levels of responsiveness

Levels 5, 6, 7 – High Responsiveness**

- Responds to parent's questions and comments
- Actively contributing to the story by paying attention, sustaining interest, or initiating questions or comments about the story
- Child seeks and maintains physical proximity to parent AND book (i.e., turns pages or points to pages)

* To distinguish between a rating of 5, 6, or 7, ratings should be assigned based on the following:

If one of the above occurs, rating = 5.

If two of the above occurs, rating = 6.

If all three of the above occurs, rating = 7

APPENDIX C

HOME LITERACY HABITS QUESTIONNAIRE

(Questions relevant to child literacy habits only)

I. Print Materials and Reading

A. Independent Leisure Reading

2. About how many minutes does your child read or look at books independently at home in the average week? _____ minutes

3. How much does your child enjoy reading or looking at books independently? (check one)

- _____ not at all
- _____ a little
- _____ somewhat
- _____ pretty much
- _____ very much

B. Being Read to or Told Stories

5. About how many minutes is your child read to or told stories at home in the average week?

_____ minutes

6. How much does your child enjoy being read to or told stories? (check one)

- _____ not at all
- _____ a little
- _____ somewhat
- _____ pretty much
- _____ very much

7. How much do you enjoy reading or telling stories to your child? (check one)

- _____ not at all
- _____ a little
- _____ somewhat
- _____ pretty much
- _____ very much

9. If you read with your child, how difficult is it to get your child to pay attention during reading?

- _____ not at all difficult
- _____ a little difficult
- _____ somewhat difficult
- _____ difficult
- _____ very difficult

C. Book-Related Activities

11. How often does your child do the following activities?
(check one for each item)

- a. Asks to be read a story
 never
 seldom
 sometimes
 often
 very often

- b. Chooses to read or look at books by himself/herself
 never
 seldom
 sometimes
 often
 very often

- c. Asks to go to the library or bookstore
 never
 seldom
 sometimes
 often
 very often

- d. Asks questions about storybook content
 never
 seldom
 sometimes
 often
 very often

- e. Memorizes the exact wording of a storybook
 never
 seldom
 sometimes
 often
 very often

- f. Talks about the characters and events in the book
 never
 seldom
 sometimes
 often
 very often

g. Plays book-related themes or pretends to be characters in books

- never
- seldom
- sometimes
- often
- very often

h. Asks for books as gifts

- never
- seldom
- sometimes
- often
- very often

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Academic/Teaching Experience

**Lab Instructor/
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PSY450: Learning, Fall 2005

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Mentor: University of Kentucky, Lexington
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**Literacy Lab
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Ulster Project (Northern Ireland) International
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PI: E. P. Lorch, PhD
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PI: S. Sandefur, PhD
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Scholarly Activity

Leonard, M. A. (2004). Predicting completion vs. defection in a community-based reintegration program. *Journal of Offender Rehabilitation*, 40 (1/2), 133-146.

Leonard, M.A. (2005). Ulster Project International Impact Evaluation. Invited Presenter – Ulster Project International Conference, Derry, Northern Ireland.

Leonard, M. A., Lorch, E. P., Milich, R., & Hagens, N. A. (2005). Parent and child language influences during joint picture-book reading. American Psychological Association 113th Annual Convention, Washington, DC.

Leonard, M. A., Hagens, N. A., Milich, R., Lorch, E. P. (2004). ADHD and parent-child storytelling. 16th Annual International Conference on Attention-Deficit/Hyperactivity Disorder, Nashville, TN.

Leonard, M. A., & Pittenger, D. J. (2003). The self-report assessment of college students with ADHD. Annual Meeting of the Southeastern Psychological Association, New Orleans, LA.

Leonard, M. A., Smith, Z. D., Hendren, R. L. (2003). A content analysis of publications from four undergraduate research journals in psychology. Annual Meeting of the Southeastern Psychological Association Conference, New Orleans, LA.

Leonard, M. A., & Van Ness, S. (2003). A Reintegration Program Evaluation: Comparison of Completers and Non-Completers. Emory University Sociology Symposium, Atlanta, GA.

Leonard, M. A., & Van Ness, S. (2002). Outcomes of a reintegration program: Comparison of completers and dropouts. American Society of Criminology, Chicago, IL.

Academic Awards

Graduate School: \$800 International Research & Travel Award to present at the Ulster Project International Conference, Londonderry, Northern Ireland - October 2005

Research Challenge Trust Fund: \$800 International Research & Travel Award to present at the Ulster Project International Conference, Londonderry, Northern Ireland - October 2005

Graduate School: \$400 Research & Travel Award to present at the 113th Annual American Psychological Association Convention, Washington, DC - August 2005

Graduate School: \$400 Research & Travel Award to attend 16th Annual International Conference on Attention-Deficit/Hyperactivity Disorder, Nashville, TN – October 2004

Academic Honors

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University of Kentucky, Lexington
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Golden Key International Honor Society: 2003	University of Tennessee, Chattanooga
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Academic Service

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Editorial Review Board: *Modern Psychological Studies*
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