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Parent-child interaction in storybook contexts: A study of socially constructed communication with preschool children with disabilities

Rabidoux, Paula Carole, Ph.D.

The Ohio State University, 1994

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PARENT–CHILD INTERACTION IN STORYBOOK CONTEXTS:
A STUDY OF SOCIALLY CONSTRUCTED COMMUNICATION WITH
PRESCHOOL CHILDREN WITH DISABILITIES

DISSERTATION
Presented in Partial Fulfillment of the Requirements for
the Degree of Doctor of Philosophy in the Graduate
School of The Ohio State University
by
Paula C. Rabidoux, B.A., M.A.

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CHAPTER I
INTRODUCTION

Overview

In recent years, the entry of a new population—preconversational children—into the legal mandates for prevention education and clinical services has created the need for paradigm shifts in the ways professions understand and support young children with developmental delays. Traditional approaches to education and clinical services have focused on children who have already developed social infrastructures such as cognitive skills, communication habits, adaptability to relationships and language. Those traditional approaches to development depended on children already having stable skills in spontaneously learning within relationships.

However, as therapists, researchers, educators, and legislators have come to understand more about fundamental developmental processes in cognition (Elkind, 1987; Piaget, 1977), emotional attachment (Greenspan, 1985), social learning (Vygotsky, 1978), language (Bates, 1976; Bruner, 1983), relationship building (Bronfenbrenner, 1979), and early literacy (Teale & Sulzby, 1992) leaders and
practitioners in many fields have seen the need for early intervention services that not only prevent preventable disorders, but that help establish the cognitive and social infrastructures that children need before they can enter educational and communicative worlds.

Two of the essential pervasive competencies that children need before mastering traditional educational and clinical goals are communication and literacy. While these two broad developmental processes have traditionally been studied and treated independently, recent empirical, theoretical and practical findings suggest convincingly that communication and literacy are not only related processes, but that they may have considerable potential for supporting the development of each other in both natural and assisted (i.e., educational, clinical) development (Bruner, 1983; Wells, 1986).

The present study is an investigation of the communicative processes involved in early literacy storybook events with preconversational children. While there is growing research on early communication and literacy with young typically developing children, there has been relatively little research research attention to relating communication and early literacy in children with developmental delays. The study focuses not only on the child’s performance, but on the performance of the child’s partners, as well: in this case, parents and the
researcher. The equal focus on the adult partner's roles and styles with the child is made in light of strong support for the view that children's performance is in great part a function of the social relationships that support it (Bruner, 1983; Bronfenbrenner, 1979; Greenspan, 1985).

The present study involved developing an assessment model for studying early communication and literacy together. The model is adapted from an approach developed for studying early parent-child communication development (Gillette, 1989; MacDonald, 1989; MacDonald & Carroll, 1994). A group of 20 preschool-aged children with developmental delays including language delay were studied during storybook interactions with their mothers and the researcher using a socially constructive communication approach. A series of analytic approaches, both qualitative and quantitative, were applied to the data, resulting in profiles, case examples, and an assessment guide for bridging literacy and communication goals in early intervention.

**Statement of the Problem**

Although there is a growing research base on how typically developing children learn to read, write, and communicate in their natural settings, as of yet little research has been conducted on how atypically developing children learn literacy, how to effectively engage them in
literacy interactions, or the role that adult communication styles play in learning to be literate. Historically, the maturationist and psycholinguistic orientations to language and literacy development have been dominant (Betts, 1946; Gesell, 1949). These perspectives are inclined to render the atypically developing child as "unable to learn literacy" until children attained a certain level of biological maturity, or were systematically taught and learn the necessary subskills to decode written language. The assumptions of this maturationist view concerning child language and literacy development are that reading, writing, and oral language learning are primarily biological, developmental processes, and/or a gradual accumulation of distinct psycholinguistic skills. From both of these perspectives literacy learning may not be accessible to young atypically developing children.

The maturationist view of literacy (reading readiness) relies on framing reading as an individual, passive maturational process (Gesell, 1940). Although historically considered solely as a biological process, the concept was later expanded to include children's experiences and environment. Early programs for teaching reading relied on children's biological or neurological readiness to learn and then proceeded with instruction on isolated skills to prepare a child for actual reading and writing. Learning to read was viewed as acquiring and practicing a series of
skills, one after another (Goodman, 1980). This dominant psycholoinguistic influence postioned the researcher-clinician to assume a primarily linear transmission model of teaching and learning in which teachers gave knowledge to children who were biologically ready and able to receive it.

Contemporary researchers increasingly view literacy (written language) and language (oral language) development as occurring concurrently, long before children receive formal instruction; and as occurring in "real" settings for "real" purposes as children actively engage with their world (Clay, 1967; Sulzby & Teale, 1986). Early literacy may be defined as a continuous developmental process that in some cultures begins at birth (long before children arrive at school) and is a response to the printed language and social environment of the child (Goodman, 1980; Hall, 1987).

One assumption of this socio-cultural paradigm is that meaning is constructed by children using multiple representational systems, all of which are primarily embedded within social contexts (Dyson, 1989). Consequently, methodologically these studies have concentrated on the context of language and literacy as a whole, rather than focusing on the exclusiveness of literacy, (or any one representational system) apart from the fundamental processes of language and spoken culture (Holdaway, 1979). The social context in which the cultural activities of reading, writing, talking and listening occur
shapes the meanings created, the ways we relate to others, and provides the contextually rich frame for early literacy learning (Bloome, 1985). Most of these early literacy studies used Vygotsky’s (1962) framework of cognition as internalized social interaction as their theoretical model.

Drawing from research from naturalistic studies of early language acquisition where the social origins of oral language (which occur long before a child actually talk) are foregrounded, researchers in early literacy currently suggest that the process of becoming literate begins long before formal schooling. In addition, this process takes place in contexts where children experience reading and writing in functional and meaningful real life settings (Pinnell, 1991). This wholistic view suggests that learning to read means using many skills simultaneously, for the primary purpose of constructing meaning from print (Clay, 1975; Harste et al., 1984). Thus, there exists an asynchrony between early literacy teaching approaches and observed "natural" language and literacy learning processes which has not been fully explored in particular with atypically developing children.

The theoretical orientation of language and literacy I bring to this study can best be described as interactionist in nature (Lindfors, 1987; Stickland & Morrow, 1989). An interactionist orientation maintains a primarily social perspective on both literacy and communication learning and
development. From this orientation the interaction between an active, hypothesis-generating child and the social environment is paramount for oral and written language development. This perspective is heavily influenced by Vygotsky (1978) in that the social context in which communication and literacy take place is foregrounded when considering children's literacy and communication development.

One context of social interaction activity is storybook reading. From an interactionist perspective, the activity is considered a mutually negotiated one in which children internalize learning as they develop (Vygotsky, 1962). The interactions between parents and typically developing children during storybook interactions have been described in terms of the interaction routines (Ninio & Bruner, 1978; Snow, 1983) as changing child patterns as children develop (Teale & Sulzby, 1992; Heath, 1982) and as changing patterns of interactions according to type of text (Teale & Sulzby, 1992).

The differential effects of adult storybook reading style on language and literacy development have also been described and analyzed and findings suggest that there are potentially important individual differences in parent behaviors during storybook interactions (Whitehurst et al., 1988; Wells, 1986). This early literacy research represents a new paradigm for conceptualizing early literacy.
development and has provided legitimacy to children's early literacy experiences. This legitimacy has opened the door for the investigation of atypically developing children's early literacy experiences.

To date, few studies have looked at adult interaction styles during storybook interactions with atypically developing children and their parents. Koppenhaver et al. (1991) state, "In a near vacuum of information, any research would be welcome (p. 42). In particular, the issues of lack of information on the roles of the adult's communicative style on the child's participation in storybook interactions and the literacy socialization practices within the family lives of atypically developing children have not yet been explored.

This study consisted of describing the interactive behaviors of parents and atypically developing children during storybook interactions in their homes, interviewing parents concerning their beliefs and knowledge about early literacy and communication learning, and describing the interactive patterns of atypically developing children and the researcher during storybook interactions. Researcher-child storybook interactions were completed to compare and contrast the parent-child interactions and to assess children's "changeability." Research has indicated that certain adult styles of interaction seem to facilitate children's social communicative development (Girolometto,
1988; MacDonald, 1989; Mahoney, 1988). The researcher-child interaction demonstrated the effects of a facilitative adult interactive style on the child's performance in storybook interactions. (A social communicative model of language development, the ECO [MacDonald, 1989] provided the theoretical frame for analyzing these interactions.)
The learning that underlies literacy behaviors of white, middle class, Western, literate societies is not "natural" but develops as part of early social learning (Schieffelin & Cochran-Smith, 1984).

Introduction

Recent research into the developmental processes of early literacy and early communication support the view that these two domains of development may be mutually supportive and develop concurrently. In particular, two broad areas of research have facilitated the merging of early communication and early literacy into a potential for the reciprocal developmental power that actively supports the development of each. First, the notion of oral language as a prerequisite to literacy learning has been challenged (Dyson, 1989; Hall, 1987; Teale & Sulzby, 1986). Rather, early literacy is now defined more broadly as a continuous process that begins at birth, and develops concurrently with early communication and oral language. Second, researchers from both early language and early literacy have identified
social constructive processes within early adult child relationships as fundamental to the development of both language (Bates, 1976; Bruner, 1983; Kaye, 1980; Lindfors, 1987) and literacy (Cochran-Smith, 1984; Harste, Woodward & Burke, 1984; Taylor, 1988). Both areas of research, early literacy and early communication, share certain assumptions; first, that young preverbal children demonstrate interactive and communicative competencies that to a large extent reside in the social context of the activity, and second, that traditionally many of these children have been dismissed as "not ready," either for literacy or oral language intervention.

The two research areas of early communication and early literacy have also addressed certain necessary components of a developmentally appropriate, social constructive model of early communicative literacy learning. When joined together these social constructive processes can enhance both early literacy and early communication. The present study, grounded in the theory of social construction of interactions, explores the extent to which children are ready for early literacy and early language learning, and how the two may be merged to foster learning in both.

The study addresses these concerns by describing the storybook interactions of 20 atypically developing children and their parents. (In this study, the term atypically developing refers to children with a minimum of a six month
language delay. Many of the children presented with delays in other domains in addition to language.) The descriptions include both adult and child behaviors, interpretations of the meanings of the storybook interactions for the parents and children, and an exploration of the parent's fundamental beliefs about communication and literacy. The study also presents data on child changeability during interactions with the researcher (who used a consistent interactive style designed to promote interaction and communication). Children's performance with the researcher was compared and contrasted with their performance with their parent. Finally, the study presented data relating to the development and use of a clinical research tool (the ECO Lit, which was adapted for this study) for the observation of adults and children in storybook interactions, and on an interpretive scale for analyzing parent-child storybook interactions.

Research from a variety of theoretical and conceptual orientations was reviewed and synthesized to provide the foundation for the study. First, research on early communication development with both typically and atypically developing children was reviewed. This research, from American middle-class children, provided strong support for the primacy of parent-child interactions as the context for communication and language development. Additionally, the research suggested that certain adult styles of interaction
differed significantly with typically and atypically developing children and that certain styles were more or less influential in supporting children’s communication development.

The second body of research reviewed was early literacy, in particular storybook interactions between parents and typically developing children. This research documents the relationship of parents’ storybook interactive styles with children’s literacy learning. However, little research was available for review on the storybook interactions of parents and atypically developing children.

The third area of research reviewed included the early communication development of developmentally delayed children and their parents. This research illustrates the similarities and differences in the communication development of young preconversational children, with a focus on both children and their parents. One purpose of the present study is to provide some of the first systematic data on storybook interactions between children with developmental delays and their parents.

A Social Constructive Model of Children’s Early Communication Development

Traditionally, child language has been studied primarily in terms of its cognitive features, such as syntax (Brown, 1973; Chomsky, 1972), semantics (Bloom, 1974), and
phonology (Hubbell, 1981). However, increased theoretical and research interests in early development, from several disciplines (preschool education [Goodman, 1992], parent-child relationships [Bruner, 1983], and emotional development [Greenspan, 1985]), have led toward an interest in the communicative prerequisites of language.

The recent merging of social and cognitive approaches to early language and communication development (Bates, 1976; Bruner, 1983; Wells, 1981) is supported by the research in several areas of child development and infant-caregiver interactions (Bullowa, 1979; Stern, 1977; Trevarthen, 1979). Widespread research demonstrates that the caregiver-child relationship is both the contextual locus of and the functional process for children becoming social and communicative. This research suggests that early interactions set the occasion for the acquisition of the nonverbal behaviors (both communicative and sensorimotor) considered to be the developmental antecedents of language (Bates, 1976). Additionally, the parent-child relationship has been demonstrated as a fruitful and efficient locus for intervention with atypically developing children (Girolometto, 1988; MacDonald, 1989; Mahoney, 1989; Marfo, 1989). Together, these research directions argue that a child's early social development depends to a large extent on the interactions of children with their primary caregivers. Thus, the social basis of language is
highlighted in children’s early interactions where the primary motivation for language development is effective communication with people. Interactions may thus be considered the context for learning to communicate, where children learn about the differential effects of different communicative modes and purposes (Sameroff and Chandler, 1975). While such theory and research strongly implies that adult-child relationships be capitalized upon for enhancing the development of children with delays, there is, as often is the case, a schism between theory and practice. The present study is in part, an investigation of adult-child interactions as a potentially efficacious model for early intervention. This model unites goals for developing communication and literacy into a collaborative process.

The Development of Children’s Communicative Competencies

A social constructive model of early communication is based on the theoretical work from several disciplines. Bruner (1975, 1983) described language as an acquired social skill in which adults and children actively exchange and construct meaning. While he did not disregard the innate features of language, he argued that in addition to the need for a language acquisition device (LAD) (Chomsky, 1972) language development also required features he described in terms of a language acquisition support system (LASS)
(Bruner, 1983) which specified interpersonal relationships as necessary for language development.

In the 1970's, studies of early language development began to reflect the influence of caregiver interactions on the emergence of linguistic rules (Bloom, 1970; Kaye, 1985; Wells, 1986). Concurrent with these theoretical developments in child language, researchers from early education, child development, speech/language pathology and special education experienced a re-emergence of the sociocultural theoretical views of Vygotsky and his contemporaries (Luria, 1966). This re-emergence of Vygotsky's views on the social basis of learning began to have widespread influence on the new problems emerging from the task of educating pre-verbal children, both with and without delays (Bredekamp, 1987).

Bronfenbrenner (1979) in his ecological theory of human development, concluded that the historical trend of studying children in isolation from their relationships needed to be replaced by disciplines that viewed the behaviors of children's social partners as equally important to the children's behavior in shaping children's development. In fact, Bronfenbrenner has proposed that rather than focusing on the individual alone, the central unit of development is the social dyad, and that developmentally valid assessment of children will include a description of the nature of
children's developmental relationships, as well as the child's behaviors alone.

Vygotsky's theories of learning have either influenced or resonated with the work of Bruner (1983), Bronfenbrenner (1979), Bloom (1985), Kaye (1982), and Greenspan (1990) among others. The social constructive conceptions such as the zone of proximal development (ZPD) (Vygotsky, 1978), provided a conceptual and practical umbrella for assessing the mutual influences in early adult-child relationships.

Since the early 1970's, research on early social learning has arrived at mutually supportive findings regarding the processes necessary for children to first develop social relationships and then to express language (Bruner, 1977; Bell & Harper, 1977; Bullowa, 1979; Field, 1990; Goldberg, 1977; Kaye, 1982; Mahoney et al., 1985). These findings have been integrated into clinical approaches for intervention with developmentally delayed children (Bromwich et al., 1981; Dunst, 1985; Girolometto, 1988; Greenspan, 1990; MacDonald & Gillette, 1989; Mahoney, 1988). This research has indicated that there is a core of child and adult competencies that occur in stable social attachments, and that both children and adults are active participants in the social interactions that support language acquisition.

Five general child competencies are frequently identified as a necessary developmental vehicle in which
children and adults develop together from initial interactions to generalized conversational habits. One recent clinical research model (Gillette, 1989; MacDonald & Carroll, 1992; MacDonald & Gillette, 1989; MacDonald, Gillette & Hutchinson, 1989) has translated these child competencies into a model for developmentally appropriate intervention, with a focus on the social relationships of pre-conversational children. This model (ECO for ecological communication) provides a framework for the current study, through the adaptation of the ECO Scales (MacDonald, Gillette & Hutchinson, 1989) to storybook interactions in the form of the ECO Lit which provides a model for assessment and treatment. The five interactive child competencies evolved from research on over 100 children with developmental delays at four interactive levels: noninteractive, interactive but not communicative, nonverbally communicative but not linguistic, and linguistic but not conversational. An overriding goal of the ECO studies was to determine what children need to do before they demonstrate stable conversational skills, and what children with developmental delays are doing. A second reason for adhering to these interaction competencies is that intervention approaches for children with delays often do not address the social infrastructure responsible for language development. Current theoretical work in early literacy suggests that the communication and interaction
that surrounds the literacy event are essential elements to early literacy learning (Cochran-Smith, 1984; Harste et al., 1984; Teale & Sulzby, 1986). To the extent that communication and interaction are critical to the social construction of early literacy, each of these communicative child competencies might also be used to support early literacy before a child regularly engages in conversations about books. These five developmental competencies are social play, turn taking, nonverbal communication, language, and literacy.

The first set of social constructive competencies focuses on facilitating children’s social play. In the context of social play, children and adults regularly engage in genuinely joint activities where the child is given increasing control and success in the interaction (Bronfenbrenner, 1979; Stern, 1977). Play is considered critical for the collaborative development of both children’s social and cognitive learning (Bruner, 1983; Garvey, 1977). In this playful interaction, relationships develop and children are encouraged to actively stay with others. Additionally, by learning to be more playful, adults make themselves more accessible to children as developmentally appropriate models for learning (MacDonald, 1989). Through interactive play, adults and children build a finely tuned relationship in which both feel successful and motivated to interact more often.
The primary implications of social play for early literacy are to encourage children's playful interactions with both the adult and the books, which will keep children coming back to adults for more interactions with storybooks, and to develop joint storybook interaction routines between adults and children through which children will construct meanings. From a social constructive view, storybook interactions that involve more of children's direct participation are more powerful, under the assumption that children learn to the degree they are actively involved in the sensorimotor and motivational process (Piaget, 1977).

The second set of communicative competencies builds interactive turntaking or exchanging between children and adults across a range of contacts that may include caretaking, play, learning, and leisure (Snow et al., 1984). During exchanges, adults adjust their roles as regulators or initiators to one that helps children's productive development of giving and exchanging. Children who learn to give as well as take in interactions keep adults interacting and elicit more from them (Brazelton and Cramer, 1990; Goldberg, 1977). In turntaking, the child and adult learn the kind of balanced interactions that allows each partner to participate fully in the exchanges. In these early social interactions children learn to decode information and to read adults and adjust their behavior accordingly. Because a habit of give and take with others is
indispensable for social learning, any interaction may provide an opportunity for exchange.

Interactions with storybooks occur frequently in many middle-class American homes (Heath, 1982), and provide an efficient context for oral and written language learning. The storybook provides the focus for the construction of meaning for the interaction, and the communication provides the social context. Storybook interactions also provide stable and repetitive opportunities for exchanges between adults and children. Exchanges can include a variety of nonverbal actions and sounds where the book may be viewed as a tool for maintaining the interaction. Storybooks can provide a captive situation in which turntaking can become the general rule of interaction. Such predictable opportunities for practicing turntaking are not often available in the fast pace of daily interactions. Thus, storybook events may provide the social structure that children with delays need to learn a turntaking habit.

Children with developmental delays often assume a passive role in interactions with primary caregivers (Girolometto, 1988). In this passive role, children often fail to provide their partners with substantial interactive feedback, thus limiting the length and frequency of their interactive exchanges. Storybooks may facilitate interactive exchange and foster turntaking habits by
providing a meaningful focus in which children can share the control.

Another developmental competency critical to a social constructive model of early communication is the many skills involved in nonverbal communication. These competencies recognize that children need to learn to communicate with any physical or vocal means available before they master verbal social language. At first, communicative behaviors are characterized by changes in the child's behavior, and may consist of any behavior, action or sound, not originally intended to communicate (Bates, 1976). Children's behavior becomes communicative when it functions to elicit differential responses from adults (Goldberg, 1977). The contingent responsiveness of adults, on the other hand, depends upon the "readability" of the child's nonverbal behaviors; a communicatively competent child is easily "read" in terms of engagement in and termination of interaction (Fields, 1980). These nonverbal changes in children's actions and vocalizations provide adults with a basis for imputing meaning to the child's behavior (Bates, 1976). These socially contingent interactions frequently occur in the context of repetitive routines (Snow et al., 1984) and gradually develop from highly idiosyncratic, specifiable communicative contexts, to more culturally defined, conventionally communicative, and easily interpreted contexts.
Nonverbal communication prepares children to learn language by first making them communicators. However, adult communication partners often fail to provide feasible models for the actions and sounds of preverbal, developmentally delayed children who may require extended interactions during nonverbal communication development (Bullowa, 1979; Siegel-Causey, Ernst & Guess, 1987; Trevarthen, 1977). A developmentally appropriate, communicative approach to early literacy increases preverbal children’s sensorimotor participation, resulting in children’s increased activity and learning (Piaget, 1977). Children who are not linguistic communicators have a primarily sensorimotor role in the construction of meaning during the storybook interactions. These nonverbal actions, in the context of social play, create a physical icon for the construction of meaning from picture storybooks.

Children’s early communicative actions and sounds are the foundation for their learning communicative language. In a social constructive model of language, children’s social communicative language is paramount to their cognitive language. Children learning language rely on adults to translate their early communication attempts and experiences into words. These translations are immediately useful and highly meaningful because they relate directly to the child’s immediate activities (Brown, 1973; Cross, 1984; Snow, 1984; Wells, 1986). Through daily interactions with
adults, children develop a system of meanings for later integration into language (Halliday, 1975). In the social mediation or construction of meaning, children have been knowing and experiencing "meaning" for an extended time prior to verbal communication. Caregivers interpret children’s intentions and assign meaning to their behaviors through the selective choosing of aspects of children’s activity for emphasis (Wells, 1986).

Often, atypically developing children show in their nonverbal communication that they know much more than they attempt to communicate, or they demonstrate language for school purposes (to name body parts, colors, shapes, size), but fail to use language consistently for social interactive communication, and they demonstrate rather limited language for expressing their own experiences and motivations (MacDonald, 1989).

A primary assumption of a social constructive model of language is that language learning is actively constructed during communicative social interactions. It is a system through which people dynamically construct meanings rather than a static system of semantic meanings that are learned. By developing conversations outside of the storybooks, the storybook interactions can provide a vehicle for showing children how to use language, not just for learning vocabulary. The communicative potential of storybook
interactions provide adults and children with opportunities to interact with a variety of social pragmatics.

Another area of language learning competency is conversation, or the social exchange of meanings and the development of topics. The eventual goal of a social constructive model of language development is that children develop broader conversations for educational, social, and vocational relationships. Halliday (1975) suggested three primary functions of language use: to talk about what we know and establish social connections (social talk), to direct or manipulate others (instrumental talking), and to talk to ourselves for our own stimulation and imagination (self-directed talk). The developmental competencies for building conversations span a range of pragmatic roles. That is, to be linguistically competent, children and adults learn to communicate as much for the social reasons that bind people together as for the instrumental reasons of directing and controlling each other.

Poorly developed social communication is often a great barrier for atypically developing children (Fey, 1986). Children will often talk only when questioned or directed, and have limited language in social conversations. Storybook interactions designed to foster conversations provide an opportunity to use an elaborated range of pragmatic functions. Conversations in the storybook interaction can consist of commenting, responding,
protesting, informing, questioning, labelling, etc. In contrast, the typical pattern of adult reading of the storybook severely restricts the pragmatic potential of the interaction. Children may learn that language and reading are activities to take passively. The "listen, question and answer" characteristics of adult reading styles may confer considerable cognitive and emotional benefit, but miss many opportunities for children to learn the broader social uses of language. The combination of language and literacy goals in storybook interactions can accomplish more than separating them into distinct tasks to learn.

Adult Interactive Styles in Early Communication Development

Not only are traditionally unserviced child competencies a key to the social construction of language, so too are the various styles of adult participation. In this study attention is paid equally to the question: "What do adults do in storybook interactions, and how can their interactive styles support both language and literacy?"

Studies of adult communication styles with children learning language suggest that certain adult styles support a child's communication development, from the early interactive stages through the habitual use of verbal conversations, and that these adults styles have certain similar characteristics. These five adult styles contributed to the design of both
the overall study, and in particular to the adult portion on
the ECO Lit.

Literature across several disciplines provides similar
findings related to the question: "How do adults interact
and communicate with successful language learning children?"
This research mutually supports five general areas for
effective adult interactions. These areas include providing
a balanced reciprocal partnership (Goldberg, 1977);
behaviorally and cognitively matching the child (Mahoney et
al., 1985); responding sensitively to the child’s interests
and communications (Snow, 1984); following the child’s lead
and becoming child-directed (Bruner, 1977, 1983); and
becoming playful and emotionally attached (Greenspan, 1990;
Stern, 1977). There is research that suggests that these
characteristics of effective language learning relationships
pose problems for parents of atypically developing children
(Cross, 1978; Girolommeto, 1988; Goldman, 1992; Lieven,
1984; MacDonald, 1989; Mahoney, 1988).

The relationship of adult interaction styles to
children’s early literacy has been explored (Heath, 1983;
Pelligrini et al., 1985; Sulzby, 1985; Wells, 1986). Both
early communication and early literacy share a certain
theoretically significant commonality: both view learning
as socially mediated. Consequently, how storybook
interactions are socially mediated is a critical issue for
both communication and early literacy. The present study
addresses what pre-conversational children do in storybook interactions under differing socially mediated conditions with their parent and with the researcher. Consequently, the differential effects of styles of mediation are analyzed.

Interactive balance refers to the adult’s allowing a playful give and take style of interaction from children’s early social play behaviors to their habitual conversations (Bronfenbrenner, 1979; Bruner, 1983; Kaye, 1982). Reciprocity in playful relationship necessitates that each partner coordinates activity with the other (MacDonald & Gillette, 1988). Keeping children engaged in back-and-forth exchange is critical for children to develop the social and communicative skills needed for learning and building relationships.

Research with atypically developing children and their parents has reported that adults tend to dominate the turns (Girolometto, 1988; MacDonald, 1989) and that children engage in less reciprocal turntaking than their typically developing peers (Mahoney et al., 1985). Other research has reasoned that a fundamental condition for learning appears to be one in which the balance of power gradually shifts from the adult to the child (Bronfenbrenner, 1979; Rogoff & Lave, 1984; Vygotsky, 1962; Wertsch, 1989). As communicative literacy may be viewed as interactive, increasing children’s active participation (by balancing the
interaction so that children and adults are doing about the same amount) will increase their overall level of activity. Several researchers view activity as the basis of learning (Davidov & Radzikhovskii, 1989; Piaget, 1977; Vygotsky, 1962, 1978), consequently it is predicted that adult interactive styles that facilitate children's activity will also facilitate learning.

Another adult style of interaction consists of interactive match, which refers to adult's acting and communicating in ways children can do so that they stay with adults in interactions and experience success. Through scaffolding or progressive matching (Ninio & Bruner, 1978), adults fine tune themselves to children in ways that show children how next to communicate. Consequently a key factor for this study is how adults' mediate "reading" in response to children (Goodman, 1984; Heath, 1983; Snow & Goldfield, 1982). The adult mediator seems to have definite effects on what and how children take meaning from the reading interaction.

The research on the social and cultural contexts of storybook interactions and children's mediated learning is strongly influenced by Vygotsky (1978). Vygotsky focuses on children's development as a process of internalizing social relationships in which language and literacy is first viewed as an interpsychological process, structured and supported by adults. Later, the process becomes intrapsychological
and children become independent readers, writers, or talkers. Vygotsky suggested that left to their own devices, learners are limited to those competencies they have already acquired. The role of the adult partner is to engage the learner and assist their performance or "to rouse to life those functions which are in a state of maturing" (p. 181, Vygotsky, 1956, from Wells, 1991).

The zone of proximal development (ZPD), is a construct outlined by Vygotsky (1978) to describe the distance between children’s actual developmental level and their potential developmental level under adult guidance (Wertz, 1985). Consequently, the zone of proximal development is jointly determined by the child’s level of development and the adult style of interaction. Adults maximize children’s early communication and literacy learning, and provide developmentally appropriate models when they match the child or interact within children’s zone of proximal development. This suggests that if adults are only reading (i.e., being totally verbal) to preverbal or early verbal children they are not interacting within the child’s ZPD for maximum learning.

Evidence from several researchers (Cross, 1978; Girolometto, 1988; Lieven, 1984; MacDonald & Gillette, 1988; Mahoney, 1988) suggests that adults regularly communicate beyond the atypically developing child’s level, and that they often communicate on topics outside of the child’s
immediate experiences. This mismatch positions adults as less accessible to atypically developing children, and appears to result in limited opportunities for learning. The present study investigated the degree to which adult-child interactions address a ZPD that will facilitate learning.

The next adult interactive style sensitive responsiveness refers to adults responding to the subtle nonverbal and physical behaviors that prepare a child for linguistic communication to the degree they are temporally and meaningfully contingent on children's performances. Adult responses can support and encourage a child's early communicative attempts. Research in parent-child relationships stresses the adult's willingness to interpret the young child's behavior as indicating intentions (Bates, 1976). This process of interpretation frames the child's learning and becomes the groundwork for learning meaning systems (Bates, 1976; Greenspan, 1992; Urwin, 1986). Young children learn about their relationship to the environment by noting the changes created by their behavior. Thus, the consistent responding of adults enables children to learn that their behavior has predictable effects on others (Snow, 1984). Sensitive adult responding also focuses an adult on respecting children as competent and able to generate their own learning from their current knowledge and experiences (Bruner, 1983; Wells, 1986).
A series of research studies (Eheart, 1982; MacDonald & Gillette, 1988; Peterson & Sherrod, 1982) report that parents of atypically developing children appear less responsive to their children's nonverbal communication than parents of typically developing children. Mahoney (1988) found facilitative effects on children's learning when parents acknowledged their children's actions and vocalizations. The implications for early literacy in general and this study in particular, are that broadening adult's sensitive responsiveness to include children's actions, gestures, and vocalizations will increase a child's participative role and allow children to initiate and self-direct their learning. Consequently, adults assuming a less directive and more responsive style in the storybook interactions is predicted to increase adults' sensitive responding to children's intentions and incipient communication.

The next area of adult styles is adult nondirectiveness and refers to giving children some control over their learning and allowing them freedom to express themselves. When child-directed communication becomes self-motivated, (MacDonald [1989] refers to this interactive style as guided freedom), in which children are encouraged to pursue their own motivations while still monitored and appropriately directed. One potential danger of a directive or controlling style is that it appears to suppress children's
own learning and motivations (Mahoney, 1985). Adult
nondirectiveness also refers to the adult assuming a role of
communication partner, rather than only that of teacher or
regulator. Adults may find it easier to allow children to
share the lead in playful interactions when children are
viewed as active co-constructors in their learning and when
active participation is valued as essential to learning.

The final and perhaps the most pervasive interactive
style is emotional attachment and refers to the adult’s
feelings of competence, success, and positive affect in
interactions with their children. Adults become more
emotionally attached with children when they feel competent
in their playful and spontaneous interactions. With
children who display atypical developmental patterns, the
degree of reciprocal, emotionally sensitive interaction may
be disrupted (Greenspan, 1985). Goldberg (1977) suggested
that early learning often depends on the notion of mutual
efficacy in parent-child interactions where both parents and
children experience success in the interaction by having
visible and concrete effects on each other in order to
develop emotional attachment.

In the present study, these five areas of adult
communication styles have been used to analyze the
differential effects of adult behavior styles on the
interactive context, and specifically on children’s
participation in storybook interactions.
A Social Constructive Model of Early Literacy

In the present study, adult-child storybook interactions are viewed in terms of their potential for simultaneously constructing meaning and skills for both literacy and communication. The role of communication in literacy learning and the role of communication in language learning are often studied as if they were independent processes. This study suggests that bringing the two together, and highlighting their common denominator of reciprocal communication, simplifies the process and adds developmental power to each.

Recently, considerable interest, theory, and program development have addressed the issue of early literacy in typically developing children. McLane and McNamee (1991) have proposed that early literacy involves more than encoding and decoding print; rather, they argue that it is part of a social process that occurs within children’s relationships with significant adults. Teale (1983) suggests that literacy can be viewed as evolving from these relationships and is intimately related to early communication development in which children and adults construct meanings together. Snow (1984) and Snow and Goldfield (1982) have noted that the characteristics of parent-child interactions which support oral language acquisition also facilitate literacy. Their suggestions for adults to facilitate children’s development include
utilizing semantically contingent responses, scaffolding of
the child’s verbal abilities, requiring children to interact
at their most sophisticated level (child accountability),
and using highly contextualized routines. Considering early
literacy and communication and language as mutually
developing processes suggests that many of the intervention
principles and strategies of early communication development
may also expedite early literacy learning.

Currently, early literacy learning is viewed as
multidimensional, consisting of cognitive, social, and
sociocultural factors. Scollen (1981) and Scribner and Cole
(1981) suggest that it is useful to view literacy in terms
of its contribution to the ongoing attempts of people to
understand and deal with their world. In this sense,
literacy functions as an aspect of human activity where it
is used to solve practical problems and to maintain social
relationships, rather than as a set of isolated skills used
to decode and encode print. Heath (1982) has defined
literacy as any interaction with written language in which
print is integral to meaning. This broadened view of early
literacy positions it within a functional and social frame,
and aligns it more closely with pragmatic language and
communication development, as opposed to a more isolated
cognitive frame with the issues and answers lying primarily
within the child.
From this social constructive perspective, it becomes necessary to understand the social systems in which literacy is utilized in the home. In order for literacy to be used to mediate a variety of cultural activities in children’s everyday lives, it must become embedded in their social lives and relationships. Consequently, understanding the social systems and relationships in which literacy is used in the home, and the adults’ and children’s independent enactments of literacy provides insight to the social and individual constructions in which children and their families are engaged. Goodman (1967) and Smith (1973) studied children learning literacy (in similar ways to how children learning oral language were studied) by being involved in the process of their literacy learning. Their findings suggested that children were socialized into the literacy practices of their culture through direct and indirect involvement in the literacy practices of their home. Consequently, in the present study parents and children were observed interacting together and parents were interviewed as to their beliefs, practices, and attitudes on literacy and communication.

One literacy activity observed in many middle-class American homes is storybook reading. Several researchers have described the socialization process involved in adult-child storybook interactions (Heath, 1982; Ninio & Bruner, 1978; Pellegrini et al., 1985; Sulzby & Teale, 1987). In
these interactions, the adult’s interactive behavior is viewed as reflecting a culturally defined way of taking and constructing meaning from print. Adult behaviors such as questions or comments that extend or clarify information, and that bring personal knowledge and life experiences to the text, come to constitute a distinct social practice of storybook interacting (Heath, 1983; Wells, 1986).

Research on parents and typically developing children in storybook interactions have studied several aspects of parent or child behavior. Phillips and McNaughton (1990) described the mechanisms of storybook socialization by looking at adult-child interactional patterns. They describe storybook interactions as distinct social practices by virtue of their recurrence and suggest that the nature of the storybook interaction may affect how much information the child learns, as well as the child’s attitudes toward reading. Additionally, they view differing adult goals, purposes, and functions of storybook reading as changing the social interaction practice. They suggest that adult interactive behavior reflects one way of taking meaning from the text. For example, questions or comments may extend or clarify information or narrative structure. Consequently, listening to adult-mediated narrative text may enable a child to acquire specific social interactive skills in comprehending and using written language. In this study, the parent interview was designed to assess and understand
the goals, purposes, and functions of the storybook
interactions from the parent's perspective.

One of the earlier studies of parents and typically
developing children during storybook interactions (Ninio and
Bruner, 1978) focused on how mothers' speech changes as
their children get older. Parents' speech was analyzed in
terms of what aspects of a picture was mentioned and how
they were mentioned. Findings suggest that between 10-18
months mothers seem to structure the book activity to
facilitate children's labelling of pictures. An additional
finding was that adult's change the way they support their
children and "up the ante" as the child gets older.
Consequently, parents required a more linguistically
balanced interaction, where children were required to
demonstrate a greater communicative and linguistic
competency. Certain studies have suggested that certain
adult interactive styles may facilitate verbal language
learning. In a subsequent study, Ninio (1980) found a
positive correlation between dyadic interaction style
(parent's asking questions) and children's later vocabulary
development. A critical distinction for this study, in
terms of facilitative adult interaction styles, appears to
be children's level of verbal communication (particularly
for atypically developing children who may experience a
lengthy period of preverbal learning).
Several researchers have suggested that storybook interactions consist of a hybridization of oral and written language, and together are indicative of a child's overall literacy socialization (Heath, 1983; Snow, 1983; Sulzby, 1986; Sulzby & Teale, 1986; Taylor, 1983). Parents are initially described as focusing children to identify specific objects or characteristics of objects, and then encouraging children to tell the gist of the story or read parts of the story. Sulzby and Teale (1986) described the storybook interaction routines of parents and toddlers where the focus was on the pictures rather than words. The conclusion of these researchers was that early knowledge about reading reflects the family's experience of the interaction. Due to the developmental level of the children in the present study and the theoretical framework used, the definition of language was redefined as primarily communication. Consequently, children's overall literacy socialization was analyzed via their communication during the storybook interaction, rather than via their oral language. However, in the present study, the observed practices of parents suggests that their literacy socialization practices are based on oral language. This created a literacy socialization practice where communication or even active child participation was absent.

Teale (1984) described the adult in early literacy interactions as initially playing all the parts of the
literacy interaction event completely producing and interpreting print for the child. Gradually, the child takes over the various roles in the literacy event and needs less and less adult support. Teale considers the source of literacy in the mutually constructed interactions of children and their adults. Similarly, DeLoache and Demendoza (1987) documented a shift in the mother's verbalizations from teaching the names of pictured objects to introducing additional information once the child knows the names of the pictures.

Sulzby and Teale (1987) and Bus and VanHendoorn (1988) studied how type of text distinguished the type of engagement between mothers and children. For example, when a mother and child were looking at an alphabet book, the mother organized the interaction with the child to instruct and teach the child how to categorize objects. When the mother and child were engaged with books that told a story the purpose of their interaction was more to enjoy the book. Their findings indicated that characteristic patterns of interaction were associated with different types of text. In response to these issues unfamiliar picture storybooks were used in the present study.

Heath's (1982) study described different literacy socialization practices among three communities in the Piedmont area of the Carolinas. One community's adult-child literacy practices were nonexistent in that they did not
read storybooks to their children. The second community's practices consisted of numerous experiences for children to participate in storybook interactions, however, children were expected to be quiet listeners during the story reading. In the third community, children were active participants and problem solvers during the storybook interaction. Heath's research indicated that the ways parents interact with their children during reading (their patterns of literacy socialization) were linked to their child's future school achievement in reading, and represented cultural ways of deriving meaning from the storybook.

Cochran-Smith (1984) viewed storybook reading as a jointly constructed story consisting of a cooperative dialogue between the reader and the listener. She stated that picture storybooks are written in a conversational style that facilitates a conversational pattern of interaction that is supported by a child's early oral language development. In her analysis of classroom storybook readings, Cochran-Smith identified and labeled the sense-making process of the child as "Interactive Negotiation," and outlined three interactive sequences involved in this process. The first sequence consisted on interactive readiness, where the adult establishes appropriate reading behaviors such as visual access to the book, seating arrangement, etc. The second interactive
sequence consisted of life to text interactions. In these interactions children were helped to make sense of the text by using their outside experiences. The third interactive sequence was text to life interactions where information from the book was applied to the child's life, for example, to help a child work through an emotional dilemma such as fear or anger. Through these interactive negotiations the adult monitors and guides the literary-based, communicative sense-making of the child. The text is mediated by adults based on their assumptions about the child and the child's interactive performance. In the development of the analytical tool for observing children and adults in storybook interactions (the ECO Lit) these findings from Cochran-Smith were utilized.

In summary, this research suggests that adult-mediated storybook interactions, in Western middle class culture, seem to progress from early adult-child dialogues that focus on labeling of objects (Ninio & Bruner, 1978; Snow et al., 1984), to the contextualization of the storybook in 4- to 5-year-old children's world of knowledge, when children are expected to know and communicate both the text and their own world knowledge (Cook-Gumperz & Gumperz, 1981). This research consistently implies that the context or use of storybooks in a family's life influences the adult-child storybook interactions that constitute a child's earliest literacy learnings. It also suggests that the relevance and
meaning of storybook reading to the family’s larger community context is influential.

In one of the few studies that included atypically developing children in storybook interactions, Pellegrini et al., (1985) related parent interaction variables of level of cognitive demand and adult degree of directiveness to the child’s level of communicative competency. It was reported that parents adjusted their cognitive demands based on children’s communicative performance. The researchers suggested that parental storybook interaction seemed to be related to the child’s zone of proximal development (ZPD) for expressive language ability. This study supports the inclusion of the adult interaction style interactive match, as an area for adult analysis.

These studies document the interactive context of the storybook interaction as critical to children’s literacy socialization and language learning. Adult’s perceptions of typically developing children’s language abilities seem to relate to adult styles of interaction (Pellegrini et al., 1985). Additionally, the ways adults mediate books for children (the language and interaction that surrounded the text), and the effects of this mediation on children’s interactions and communication, has a strong impact on children’s future literacy and language learning. The link between social interaction and cognition appears to be
manifested as the relationship between the adult’s mediation (interaction) of the story and the child’s learning.

These research findings suggest that storybook reading may be considered a social interaction activity that exists along a continuum from identification of items and dialogue exchanges, to full story reading of extended pieces of text by an adult. Early story book reading dialogues have been described as highly interactive, with adults mainly initiating until children become more verbal, when they respond mainly by labelling pictures. Around the age of three, the interaction dialogue of middle-class children and adults shifts and children are expected to sit and listen, and re-tell the gist of the story in a back and forth dialogue with the adult (Heath, 1982). These interactive changes relate to the child’s verbal development, and to the adult’s perception of the child’s communicative competency (Whitehurst, 1988).

The current study addresses how parents and atypically developing children (including mainly preverbal and early verbal children) negotiate storybook interactions. In particular the relationship of adult interactive style on children’s participation is addressed. As early literacy research has redefined the relationship between communication and literacy, the study has implications for how to read with children so that they learn to communicate.
and how to communicate with children so that they learn to read.

Central issues addressed by the study include:

1. How can an assessment model for early communication development be adapted for assessment of storybook interactions?

2. What interactive and communicative styles characterized parents and their atypically developing preschool children during storybook interactions?

3. What are the effects of a socially constructive adult interaction model as compared to the effects of interactions with parents?

4. How do children interact and communicate in storybook interactions with an unfamiliar adult using developmentally appropriate socially constructed interaction styles?

5. How do adult interactive styles differ with children who are more or less verbal?

6. How do adult interactive styles differ with children who participate at a relatively high and a relatively low level of interaction?

7. What do parents understand, expect, and value in terms of their child’s literacy and communication development?
CHAPTER III

METHODOLOGY

Introduction and Overview

The purpose of this study was to describe the storybook interactions of atypically developing children with their parent and the researcher as they relate to children's social communication and early literacy development. In addition, the study explored parents' beliefs and knowledge about early communication and early literacy. A variety of methods including observational fieldnotes, measurements with the ECO Lit (an observational tool adapted for the study), parent interviews, and videotapes were employed to provide a diverse picture of parents and children, and yield a variety of data for comparison.

Methodologically, the trend in early literacy research with typically developing children has been to look at what families do with children that promotes literacy (Cochran-Smith, 1984; Heath, 1983; Wells, 1986). The ECO taxonomy for observing adult-child communication (MacDonald & Gillette, 1988) was adapted for this study, to provide a unique look at storybook interactions as a context for the collaborative development of both social communication and
social literacy. The ECO Lit provided data about the performance of the children and parents and of the same children and the researcher. Interactive profiles of a sample of adults and children were then prepared on selected issues relating early communication and early literacy.

The individual interaction profiles obtained from the study also provided information concerning the application of an interactive model of communication to the social interactive context of storybook readings. The parent interviews provided detail and insight to the social interaction data obtained. As human behavior is significantly influenced by the context in which it occurs, studying the beliefs and knowledge of the parents allowed the researcher to explore and probe the processes and meanings of events (Wilson, 1977).

The methodology used in the study provided insight and information concerning the relationships between adult interaction styles and the child's early literacy and communication performance, and generated further questions for research.

Major questions of the study included:

1. How can an assessment model for early communication development be adapted for assessment of storybook interactions?
2. What interactive and communicative styles characterized parents and their atypically developing preschool children during storybook interactions?

3. What are the effects on children’s performance of a socially constructive adult interaction model as compared to the effects of interactions with parents?

4. How do children interact and communicate in storybook interactions with an unfamiliar adult using developmentally appropriate socially constructed interaction styles?

5. How do adult interactive styles differ with children who are verbal or nonverbal?

6. How do adult interactive styles differ with children who participate at a relatively high and a relatively low level of interaction?

7. What do parents understand, expect, and value in terms of their child’s literacy and communication development?

Development Phase of the Research

Goals of Prior Fieldwork and Pilot Project

Given that communication and literacy are parallel and reciprocal developmental processes, adequate understanding and education of both processes calls for instruments to assess early communication and literacy as one dynamic process. The question arose as to how the literature on
early developmentally appropriate communication and
storybook interactions can be integrated into one efficient
approach for the parallel assessment of each process. An
assessment approach designed for early interaction and
communication development (ECO Scales, MacDonald & Gillette,
1989) was systematically adapted to the context of storybook
interactions with a focus on developmentally appropriate
child goals and adult interactive strategies.

In the development phase of the research the ECO
taxonomy was adapted into a scale designed specifically for
storybook interaction contexts. Following the adaptation,
the scale was revised via consumer feedback and reliability
testing. In addition to the ECO Lit, a focused parent
interview and coding matrix for the fieldnotes was designed.
All tools and the research design were then pilot-tested
with preverbal and verbal children and their parents.

Participant Criteria

Four parent-child pairs were involved in the pilot
study over a two-month period from August through October
1992. For inclusion in the pilot study, children's language
age (as estimated using the REEL-2) was from 12-36 months
and their chronological age was 18-48 months. In addition,
parents reported no evidence of visual or auditory
impairment, or of severe behavioral difficulty and they
reported that both mother and child enjoyed storybook
interactions. Also, parents and children were not enrolled in the Nisonger Center Parent-Child Communication program, the ECO Program, (the interactive model to be studied is practiced clinically).

Pilot Procedures

Parent-child dyads were seen for one laboratory visit which consisted of video taping the parent and child during a storybook interaction with a familiar and an unfamiliar storybook. All visits were conducted in the Parent Child Communication Clinic at the Nisonger Center at The Ohio State University, and lasted approximately 60 minutes. The room is a simulated living room/kitchen area which is typically used for parent training of young children.

Procedures from initial contact to data analysis consisted of the following six steps:

1. Families were contacted by telephone to obtain a verbal commitment and consent to participate in the study, and were then scheduled for a videotaping session at the Nisonger Center.

2. A packet of materials consisting of a written summary of the study, an ECO Lit Child and Adult Assessment, the Family Demographic Survey, and a consent form (Appendices B, G, and A) was sent to each family. Parents were requested to complete the ECO Lit, the Family
Demographic Survey, and the consent form and bring them to the scheduled clinic visit.

3. The visit at the Nisonger Center began by securing written consent from the parent for participation in the dissertation pilot study (see Appendix A), and verification with the parent of the unfamiliar storybook selections. The focus of this videotaping was to observe how the parent and child interact with each other in the storybook context.

4. Videotaping began with the parent and child interacting with the familiar storybook. (The familiar storybook was defined as a book that mother and child had looked at together on more than three occasions.) Parents were given the instructions, "We are interested in how you and (child’s name) spend time together with storybooks. I’d like you to use two books, choose one of yours and spend about 15 minutes with it. Then we’ll take a short break and spend about 15 minutes with one of my books." Taping with familiar and unfamiliar books lasted approximately 45 minutes.

5. Following the videotaping, the REEL-2 (an assessment of early language development) was reviewed with the parents according to the standards developed by Bzoch and League (1991) to determine an approximation of the child’s current level of language functioning.

6. Following the clinic visit and videotaping, the researcher reviewed the videotape interactions and rated
both the adult and child performance using the ECO Lit.

Adult interactive style was rated on the ECO Adult Lit and child interactive competency was rated on the ECO Child Lit. Descriptive fieldnotes were completed for each parent-child dyad. These notes contained operational descriptions of the interactions between adult and child, a summary of verbal dialogue, verbalizations and vocalizations by the child, and the ways the parent and child responded to each other. The fieldnotes also contained the researcher's insights, interpretations, and working hypotheses about what was happening in the interactions. Fieldnotes were used to identify recurrent themes and interactive trends within the dyad that could serve as a framework for data analyses in the dissertation study.

Analysis of Pilot Procedures

Following completion of the fieldwork, the data were reviewed by the researcher and principle advisor, and revisions were made to the assessment tools, and the study design. Changes in the design included focusing on interactions with unfamiliar storybooks only, and including a researcher-child interaction with the storybooks. Changes on the ECO Lit were based on rater comments and agreement ratings to make the instruments more specific to the storybook context.
Instrumentation

Adaptation of ECO Scales

One of the primary purposes of the preliminary study was to pilot the ECO Lit as an assessment tool and to create an interactive taxonomy that enfranchises the synergy between early literacy and early communication. During the revisions of the instruments, the researcher and primary advisor considered the wording and clarity of items. Changes were made to the instruments to improve the clarity and overall organization of the instruments.

The ECO-LITERACY Assessment for Children and Adults was designed to describe the child’s interactions and the interactive and communicative styles of adults during storybook interactions. The instruments were also designed to integrate literacy and communication clinical and developmental goals, to activate literacy events as critical communication learning activities, and to guide parents’ and professionals’ interactions with children to facilitate communication and early literacy development. (See Appendix B for examples of both the child and adult forms.)

Items for the ECO-LITERACY Child and Adult Assessment evolved from the ECO Scales (MacDonald, Gillette & Hutchinson, 1989), which is a taxonomy of adult-child communication behaviors from early nonsocial behaviors to full conversation skills. The ECO Scales were developed from a series of studies on parent-child interactions with
both delayed and non-delayed children (MacDonald et al., 1989) and developmental literature (Bronfenbrenner, 1979; Bruner, 1983; Greenspan & Greenspan, 1985; Stern, 1977), and were designed to focus observations on both potentially productive and problematic adult and child behaviors for natural communication development. The reliability in the present study was held constant with the procedures for development of the ECO Scales. See Appendix E for the model, procedures, and data for the ECO Scales manual.

The ECO LITERACY Child-Adult Assessment was designed for the purpose of evaluating children's interaction and communication behavior during storybook interactions. It was based on the ECO Scales designed by MacDonald (1989), with additions designed to include items relevant to early literacy development. The assessment was designed as an observational tool, to assess the interactive competencies of children during storybook interactions. The tool is comprised of 32 items divided into the developmental categories of social play & exchange, nonverbal communication, language, conversation, and early literacy. The instrument was designed to assess children who may be described as follows: noninteractive, interactive but not communicative, communicative but not linguistic, linguistic but not conversational, or conversational in only limited contexts (MacDonald, 1989). The rating scale has been used to allow both parents and professionals to describe the
interactive and communicative behaviors of children in early literacy contexts.

Each item on the ECO Literacy Child Assessment is rated on a five-point scale designed to reflect a continuum of social-communicative behaviors. A rating of "1" indicated that a behavior is never observed in a particular context, "2" indicates a behavior is seldom observed, "3" a behavior is occasionally observed, "4" a behavior is often observed, and "5" a behavior is consistently observed.

The rater judged how frequently each item on the scale was observed during the interaction. Scores from all of the domains: social play, exchange, nonverbal communication, language conversation, early literacy, form a developmental profile of child behaviors in storybook interactions with adults.

The second form of the ECO Lit, the adult assessment is an observational measure of a range of interactive styles developed from the adult-child interaction literature (Bronfenbrenner, 1979; Bruner, 1975), and research with children with disabilities to map the performance variables that function in influencing a child's interaction and communication development (MacDonald, 1989; Mahoney, 1988; Girolometto, 1989). The ECO-LIT (Adult) was adapted from the ECO Adult Communication Evaluation (ECO-ACE), (MacDonald & Carroll, 1994) to describe certain adult behaviors in storybook contexts. It is an adult-focused tool that
details descriptive information of adult interactional behavior in storybook interactions with children. Six areas of interactional style are described: balance, match, adult responsiveness, child-based nondirectiveness, emotional attachment, and early literacy. Each item on the ECO LIT (Adult) is rated on a five-point scale where a rating of "1" indicates a behavior is never observed, and a rating of "5" indicates consistent use of a behavior as in the child form.

Establishment of Inter-rater Reliability on ECO Lit

Phase I

Inter-rater reliability was established in two phases. During the first phase three judges viewed six videotaped vignettes using an early draft of the ECO Lit. A random arrangement of the vignettes was compiled and shown to three judges who were familiar with the ECO model, but unfamiliar with the ECO Lit assessments. The video vignettes of adults and children engaged in storybook interactions were developed from the pilot videotapes and the ECO video bank in the language department of Nisonger Center. The tapes represented atypically developing children representing a variety of diagnostic groups. Inter-rater agreement ratings were calculated for each of the six vignettes using a method developed by Rosenberg and Robinson (1985) specifically for research in early parent-child interaction with developmentally delayed children. In this method, each
point of rater discrepancy on the 5-point Likert scale used to rate the ECO Lit, is converted to a discrepancy of 20%. Comparison of ratings for all raters across items on the ECO Lit Child and Adult Assessment revealed an average agreement rating of 87.4%. Agreement on ratings for the adult assessment ratings ranged from 83.5% to 94.3% with an average agreement rating of 86.3%. On the child assessment ratings ranged from 82.7% to 94.6% with an average agreement rating of 88.2%. The interrater reliability coefficients (Pearson product moment) for the two raters with the researcher were $r = .82$ and $r = .84$.

Phase II

Inter-rater reliability was also obtained on the revised ECO Lit for use in the study. In this second phase of development six two-minute video vignettes (different from those used during Phase I) of adults and children engaged in storybook interactions were developed from the pilot videotapes and ECO video bank. Five raters, two who participated to establish reliability in Phase I and the researcher and two raters not involved in the pilot study, viewed the videotape and completed the ECO Lit Child and Adult Assessments. All judges had received at least two quarters of training in the ECO assessment and treatment model both in an academic course and supervised clinical training.
Agreement ratings were again calculated using Rosenberg and Robinson's (1985) method. Comparison of the ratings for the raters across all items on the adult assessment revealed an average agreement rating of 85.7%, with agreement values ranging from 82.7% to 89.1%. On the child assessment an average agreement rating of 87.4% was obtained, with a range from 84.3% to 92.2%.

Interrater reliability coefficients (Pearson product moment) for the four raters each with the researcher were $r = .81$, $r = .80$, $r = .84$, and $r = .81$.

Receptive-Expressive Emergent Language Test-2 (REEL-2)

The independent language measure in the study was the REEL-2. The REEL-2 was initially developed in 1971 and revised in 1991 by Bzoch and League as a behavioral description in the clinical study of children. It has been used to screen infants and toddlers for emergent language learning problems, to assist with clinical diagnosis, and to focus the goals of intervention. The scale is a 132-item checklist that uses observational data reported by parents to identify major receptive and expressive language problems.

The format of both the receptive and expressive scales is a checklist based on an interview with a knowledgeable informant about behaviors he or she has observed. Scoring consists of: "+", which signifies that the behavior is
typical for the child; "+-" which signifies that the behavior is emerging; and "-", signifying that the behavior is never observed. Behaviors are grouped by age intervals of one, two, or three months, from 0-36 months. Credit is given for an age interval if two of the three items are coded as typically occurring. The receptive language scale is completed first, followed by the expressive language scale. The results of the two scales are combined to yield the combined language age.

The completed REEL-2 provides three scores:

1. The Receptive Language Age (RLA)
2. The Expressive Language Age (ELA)
3. The Combined Language Age (CLA)

The items of the REEL-2 scale were derived from a population of healthy, normally developing, environmentally language advantaged, Caucasian, infants and children, and are criterion referenced by determining the most facilitative behaviors for a particular age.

The research applications of the REEL-2 have included intervention studies, and studies related to language variables in infancy and longitudinal development. As this study involves the development of an interactive-based assessment tool of adult-child performance during storybook interactions, the REEL-2 is used as an independent measure of the child’s language (Bzoch & League, 1991). (See Appendix C for an example of a REEL-2 scoring form.)
The Parent Interview

The purpose of the parent interview was to obtain information on parents' beliefs, perceptions, and practices concerning early literacy and communication. An interview guide was developed to systematize the interviews and to facilitate data analysis (Patton, 1990). The focused interview guide was reviewed and modified for clarity based on parents' responses during the pilot phase (see Appendix E).

Dissertation Study

Introduction

While interactive and communicative patterns of typically developing children and their parents in storybook interactions have been studied, there is relatively little research into the storybook-related interactions of either preverbal children or young children with developmental delays with their parents (Koppenhaver et al., 1991). Further, the findings identifying facilitative interactive strategies with language learning children have yet to be systematically applied to young preconversational children in storybook interactions. Additionally, the nature of adult roles in storybook interactions with children with developmental delays and the differential effects of altering these roles has received little research attention.
Participation Criteria and Selection Procedure

This study focused on 20 children with a language age from 12-36 months and a chronological age from 18-48 months. The range of months of delay was 6 to 24. Children's language age was estimated using the REEL-2 (Bzoch & League, 1991), a language screening instrument. On the REEL-2 child performance behaviors are grouped by age intervals of one, two, or three months. For example, to score in the 16-18 month range on the REEL-2 the parent must have typically observed two out of three of the following events: (a) the child uses words rather than gestures to express wants and needs, (b) the child is beginning to repeat words overheard in conversation, and (c) the child demonstrates a gradual but continued increase in speaking vocabulary (3-4 new words each month).

Children were at risk due to a variety of developmental delays and diagnoses as reported by their parents and validated by researcher observations and performance on the REEL-2. Children represented a range similar to those present in special education programs where communication and early literacy are common goals (Goodman, 1991). In addition, children met the following criteria determined from parent reports. Children demonstrated no evidence of visual or auditory impairments or of severe behavioral difficulty. Both the mother and the child enjoyed storybook interactions and they were not enrolled in the Nisonger
Center Parent-Child Communication Program (ECO Program). (Thus, parents had no formal training in the parent interaction system investigated in the study.)

As determined by their parents, seven children (35%) were diagnosed with Down Syndrome, five (25%) as language-delayed, three (15%) as Developmentally Delayed (delays in speech/language and other domains), and three (15%) with genetic syndromes (other than Down Syndrome). One child (5%) was diagnosed with a seizure disorder, and one child (5%) with cerebral palsy.

The children’s Combined Language Age (CLA) from the REEL-2 ranged from 12-36 months with a mean of 22.1 months. Seven children scored between 12-18 months and seven between 19-24 months. Two children scored between 25-30 months, and four children scored between 31-36 months.

Table 1 illustrates the children’s chronological age, results on REEL-2(Receptive Language Age [RLA], Expressive Language Age [ELA], and Combined Language Age [CLA]), the months of language delay, type of programming the child was enrolled in at the time of the study, and the child’s diagnosis. The number of months of language delay was determined as the difference between the child’s chronological age and the Combined Language Age (CLA) which is an average of their Receptive and Expressive Language Age performance on the REEL-2.
### Table 1

**Children's Demographic Data**

<table>
<thead>
<tr>
<th>Name</th>
<th>Type of Programming</th>
<th>Chronological Age</th>
<th>Receptive Language Age</th>
<th>Expressive Language Age</th>
<th>Combined Language Age</th>
<th>Number of Months Language Delay</th>
<th>Child's Diagnosis</th>
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</thead>
<tbody>
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<td>Child A</td>
<td>EI</td>
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<td>14</td>
<td>22</td>
<td>-9</td>
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</tr>
<tr>
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<td>20</td>
<td>-12</td>
<td>Genetic Syndrome</td>
</tr>
<tr>
<td>Child D</td>
<td>EI</td>
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<td>22</td>
<td>14</td>
<td>18</td>
<td>-8</td>
<td>Down Syndrome</td>
</tr>
<tr>
<td>Child E</td>
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<td>-24</td>
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<td>33</td>
<td>34</td>
<td>-8</td>
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</tr>
<tr>
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<td>13</td>
<td>-6</td>
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</tr>
<tr>
<td>Name</td>
<td>Type of Programming</td>
<td>Chronological Age</td>
<td>Receptive Language Age</td>
<td>Expressive Language Age</td>
<td>Combined Language Age</td>
<td>Number of Months Language Delay</td>
<td>Child’s Diagnosis</td>
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</tr>
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<td>33</td>
<td>30</td>
<td>31</td>
<td>-9</td>
<td>Genetic Syndrome</td>
</tr>
</tbody>
</table>

Determined by the REEL-2

Note. Demographic data for children: Chronological Age, three REEL-2 scores (Receptive Language Age, Expressive Language Age, Combined Language Age), Number of Months Language Delay, and Child’s Diagnosis.

* EI = early intervention; PT = physical therapy; OT = occupational therapy; ST = speech therapy.
Table 2 demonstrates family demographics including each parent's educational level, ethnic background, number of siblings living in the home, type of programming the child was receiving at the time of the study, and the family's total income. These data indicated that 16 of the 20 children were enrolled in early intervention programming, and 15 of the 20 had brothers or sisters living at home. (The number of siblings ranged from 0 to 3, with a mean of 1.2.) In terms of parents' educational backgrounds, mothers' education ranged from 12-21 years (mean of 15 years), and fathers' education ranged from 14-21 years (mean of 16 years). Eighteen of the twenty children came from families in which both parents resided at home. All but one family indicated a European-American ethnic background; the remaining family was African-American. The range of families' total income was from $10,000-60,000+.

The family demographics suggest that this group consisted mainly of two-parent, middle income, European-Americans, with two to four children living in the home. Seventeen of the atypically developing children received programming through early intervention outside of the home, two children were enrolled in typical preschool, and one child was enrolled only in speech therapy. Twelve of the children who were enrolled in preschool or early intervention were also receiving speech therapy, and five of
<table>
<thead>
<tr>
<th>Name</th>
<th>Mother Education</th>
<th>Father Education</th>
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<th>Total Income</th>
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<tr>
<td>Child O</td>
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Table 2 (continued)

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<th>Name</th>
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<th>Father Education</th>
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<tbody>
<tr>
<td>Child Q</td>
<td>13</td>
<td>--</td>
<td>European A</td>
<td>--</td>
<td>50-60</td>
</tr>
<tr>
<td>Child R</td>
<td>13</td>
<td>16</td>
<td>European A</td>
<td>3</td>
<td>50-60</td>
</tr>
<tr>
<td>Child S</td>
<td>15</td>
<td>17</td>
<td>European A</td>
<td>1</td>
<td>40-50</td>
</tr>
<tr>
<td>Child T</td>
<td>16</td>
<td>18</td>
<td>European A</td>
<td>2</td>
<td>60+</td>
</tr>
</tbody>
</table>

Note. Family demographic data: Mother's education; Father's education; Ethnic background; Number of Siblings in the Home and Total Family Income.
the children were receiving physical therapy and/or occupational therapy in addition to speech.

Only mothers who reported they were their child’s frequent storybook reading partner were included in the study. A population of children meeting the criteria for inclusion in the study was drawn from the Nisonger Center Early Special Education Center, the Columbus Speech and Hearing Center, and other preschools and family referrals in central Ohio.

Parents of children meeting the eligibility requirements were sent an announcement describing the study and the role of parents and children. (See Table 3).

Parents were contacted by telephone shortly after receiving the announcement to answer questions and further explain the study. Verbal consent to participate in the study and scheduling of the home visit was also completed. Parents were also informed as to the information packet they were to receive (Appendices A, F, and G), and they were asked to complete the Consent Form (for participation in the study and for future research and training purposes, Appendix A), and the Family Demographic Survey (Appendix G). Twenty-two families were solicited and twenty agreed to participate in the study.
Content of the Study

The study was conducted in the homes of the parents and children. All video samples were collected in the living room with the television turned off. Child care was available for other children to maintain an optimal environment. In three instances siblings briefly (less than one minute) interrupted the parent-child storybook interaction and were returned to the child care provider.

Home interviews were collected from parents after the parent-child videotaping.

Procedures

Introduction

A combination of techniques was used to obtain a variety of data including: structured assessments (REEL-2 and ECO Lit), video observations, fieldnotes and parents interviews. The home data collection procedure consisted of seven events (see Table 5).

The researcher had a brief discussion with the parent about the general goals and expectations of the study. The discussion included the purpose of the study and what the parent and child were expected to do. In addition, the storybook selections were verified with the parent to establish that the child was not familiar with any of the researcher's storybooks. Familiar books were removed from the choice of books for each family.
Table 3

Introduction of Study to Parents of Children Selected for Study

COMMUNICATING DURING STORYBOOK INTERACTIONS: A Study of the Nisonger Center Parent/Child Communication Clinic and a Dissertation Research Project

Project Summary

WHY ARE WE DOING THIS STUDY?

For a number of years professionals working in the communication department at Nisonger Center have been studying how children learn to talk. We are now in the process of developing clinical and educational tools that will help professionals understand how young children and their parents learn early literacy interactions. The information from this study will allow us to better meet the learning needs of a wide variety of young children and their families. We are currently looking at how children and parents interact and learn together during storybook interactions and how these early interactions may eventually lead to children becoming social learners.

WHAT INFORMATION WE WILL NEED FROM YOU

For us to understand how you and your child interact and learn together during storybook reading, we would ask that you complete the following information:

- complete a Family Demographic Survey
- sign a Permission to Videotape Form

WHERE WILL THE STUDY TAKE PLACE?

The study will be scheduled to take place in your home and will last 1 to 3 hours.

WHAT WILL YOU AND YOUR CHILD DO IN THE STUDY?

During the visit you will be videotaped during storybook interactions with your child. The two of you will be videotaped while reading a storybook that is new to you. Also, I will videotape your child while reading a storybook with me. Each activity will last 5 to 15 minutes.

I will also interview parents to explore your ideas about your child's early literacy development.

HOW MUCH TIME WILL YOU NEED TO SPEND?

The home visit will last 1 to 3 hours depending on individual parents and children.

HOW MUCH WILL PARTICIPATION COST YOU?

Participation in the study will cost a few hours of time. All other costs including child care for your other children will be provided.

WHAT WILL YOU GET FOR YOUR PARTICIPATION?

- A manual of educational materials that will help you guide your child through the early stages of communication development during early literacy years.
- A free consultation with a certified Speech/Language Pathologist on how you can best assist your child's learning during early literacy interactions.
- $50 to partially compensate you for your time.
Table 3 (continued)

W H A T  E L S E  D O  Y O U  N E E D  T O  R E M E M B E R ?

Participation in the study is strictly voluntary; you may withdraw from the study at any time.

All information is confidential. Your name and your child's name will not be disclosed.

Ensure an optimal environment child care will be available during the visits for your other children.

If you are unable to attend a scheduled appoint, please contact Paula Rabidoux at 292-9920 (days) or 263-4478 (evenings) to reschedule the appointment.


Thank you for your participation and support. Please feel free to contact me at 292-9920 (days) or 263-4478 (evenings) if you have any questions.

Table 4

Time Line of Research

<table>
<thead>
<tr>
<th>TIME LINE</th>
</tr>
</thead>
<tbody>
<tr>
<td>7/92</td>
</tr>
<tr>
<td>8/92</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>8/92 - 10/92</td>
</tr>
<tr>
<td>11/92 - 12/92</td>
</tr>
<tr>
<td>12/92 - 6/93</td>
</tr>
<tr>
<td>7/93</td>
</tr>
<tr>
<td>7/93 - 10/93</td>
</tr>
<tr>
<td>11/93 - 3/94</td>
</tr>
</tbody>
</table>
Independent Language Assessment

The REEL-2 was completed in 15 to 20 minutes with the parent as an interview according to standard procedures as described under instrumentation.

Adaptation Phase

Five minutes of unstructured play with or without books was videotaped to allow the parents and children to become accustomed to the videotaping venue.

Videotaped Mother-Child Interaction

A 15-30 minute videotaped storybook interaction then began with unfamiliar books. Two collections of 10-12 books were available for mothers depending on the age of their children. (See Appendix H for specific titles.) The following instructions were provided to the mother: "As we discussed, I will be videotaping you and your child in storybook interactions today. First, we'll spend five minutes letting you and your child get accustomed to the video recorder, then I'd like to tape at least 15 minutes with both of you in the book activity. Then if you want to go longer, we can go for 10 or 15 more minutes."

A minimum of 15 minutes of video of parent-child engagement was obtained from each parent and child; however, if the dyad maintained joint activity, up to 30 minutes of interaction was videotaped.
The videotaping session was conducted in the homes of the children using a Sharp Zoom 8 VHS recorder and tripod. All videotaping occurred in the living room with the television off. All other distractions were minimized:

Table 5
Home Data Collection

<table>
<thead>
<tr>
<th>Home Data Collection</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Introduction</td>
</tr>
<tr>
<td>2. Independent Language Assessment</td>
</tr>
<tr>
<td>3. Adaptation Phase</td>
</tr>
<tr>
<td>4. Videotaped Mother-Child Interaction</td>
</tr>
<tr>
<td>5. Audiotaped Parent Interview</td>
</tr>
<tr>
<td>6. Researcher-Child Interaction</td>
</tr>
<tr>
<td>7. Member Check (parent validation)</td>
</tr>
</tbody>
</table>

Note. Table 5 presents the sequence of the seven events that comprised the home data collection procedures.

child care was provided for other children and no animals or other adults were present in the room. Observation of the children and parents in their homes provided detail to the
study, which was valuable for exploring new ground and generating future hypotheses for examination.

**Audiotaped Parent Interview**

The researcher interviewed the parent as she audiotaped the process. (See Appendix E for the interview guide.) Focused interview techniques were utilized to gain further insight into the informants’ perspectives of early literacy and communication development (Bogdan & Taylor, 1975; Denzin, 1978; Lincoln & Guba, 1985). The interview consisted of a series of open-ended questions on parents’ beliefs, perceptions, and practices concerning early communication and literacy, and their roles as communicative partners. Although this type of interview may restrict topics, it assisted in limiting the focus of the interview (Patton, 1987).

**Researcher-Child Interaction**

A 15-minute videotape of storybook interaction with unfamiliar books was then obtained with the investigator. The researcher positioned the video recorder on the tripod and focused on the area in which the storybook interaction would occur. The researcher started the camera recording and joined the child on the floor or couch. The purpose of this interaction was to foreground the effects of a developmentally appropriate, socially constructed adult
interactive model (Bruner, 1983; MacDonald, 1989; MacDonald & Carroll, 1994) on children’s interactive and communicative performance. The researcher used the five adult interaction parameters included on the ECO Lit (Balance, Match, Responsiveness, Nondirectiveness, and Emotional Attachment) as a deliberate guide to interacting with each child.

**Member Check (parent validation)**

A comprehensive member check for establishing the credibility and representativeness of the storybook interaction was completed with the parent. The member check is one method in qualitative research to verify factual and interpretive accuracy and is utilized for corroboration of data (Lincoln & Guba, 1985). Completion of the member check consists of providing the parent the opportunity to assess the overall representativeness of the interaction. Member check questions included:

1. Do you think your time just now with the books was like you usually spend time? How was it the same? How was it different?

2. Do you think that you interacted like you usually do? What was different?

3. Do you think your child interacted like she/he usually does? How was she/he different?
Consultation

Following the member check, the researcher addressed any questions the parents had about their child’s early communication and literacy development. The researcher then provided the parents with developmental strategies needed for early communication and literacy development, and was supported by the packet of practical guidelines for communicating with children during reading and writing activities. (See Appendix I.) Parents also received $50 for partial compensation of their time.

Data Preparation and Analyses

Introduction

To address the questions of interest, data were analyzed from the ECO Lit Scales, descriptive fieldnotes, video observations, and parent interviews. As both communication and early literacy develop in interactive relationships, adult and child behaviors were examined in an interactive context. Analyses of data were an ongoing process throughout the study. Profiles of mothers and children were analyzed to describe trends and patterns for adults and children, including high and low participation, verbal and nonverbal, and parent/researcher differences.

Within 24 to 48 hours following the videotape session the researcher reviewed the videotape and completed the observational fieldnotes and the ECO-Lit Child & Adult
Assessment. The parent interviews were transcribed in 4-7 days after the interview and then coded on the interview coding matrix in an additional 4-7 days.

Fieldnote Preparation

Fieldnotes were completed first, in the manner described below. The researcher first watched each interaction completely. Using the word processing program WordPerfect 5.1, the researcher then wrote notes into the computer while watching each parent-child interaction. Notes were first written on the gestalt of the interaction. The videotape was then rewound and notes were written with a focus on the adult. The tape was then viewed a third time for reporting on the child's behavior.

The fieldnote coding matrix (Table 6) was designed to facilitate writing and coding of the observations in three distinct sections:

1. Behavioral descriptions of adults and children: Fieldnotes were first written to elaborate on the six adult interactive principles identified on the ECO Lit, and then to identify additional categories of interest. Specific behavioral observations of children and adults were included. (Table 6 includes the notation "other". This refers to any additional categories of interest observed during data preparation and analysis.)
### Table 6

**Fieldnote Coding Matrix**

<table>
<thead>
<tr>
<th><strong>PARENT</strong></th>
<th><strong>BEHAVIOR</strong></th>
<th><strong>INTERPRETATION</strong></th>
<th><strong>HYPOTHESES</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Balance</td>
<td>P. initiates frequency</td>
<td>M. responds to E.'s</td>
<td>M. as teacher &amp;</td>
</tr>
<tr>
<td>Match</td>
<td>P. primarily verbal</td>
<td>little movements to</td>
<td>controller.</td>
</tr>
<tr>
<td>Responsiveness</td>
<td>Responded to child's</td>
<td>keep her on task &amp;</td>
<td></td>
</tr>
<tr>
<td>Emotional Attachment</td>
<td>actions to keep her on</td>
<td>focused. (Different</td>
<td></td>
</tr>
<tr>
<td>Woundirectiveness</td>
<td>task</td>
<td>from sensitive</td>
<td></td>
</tr>
<tr>
<td>Early Literacy</td>
<td>P. chose book, read</td>
<td>responsiveness.)</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>words. Asked questions</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>CHILD</strong></th>
<th><strong>BEHAVIOR</strong></th>
<th><strong>INTERPRETATION</strong></th>
<th><strong>HYPOTHESES</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Play</td>
<td>C. mainly responsive</td>
<td>E. is engaged but Little</td>
<td>Type of Dyad</td>
</tr>
<tr>
<td>Exchange</td>
<td>Attended to M. &amp; book</td>
<td>joint negotiation.</td>
<td>Joint</td>
</tr>
<tr>
<td>Nonverbal</td>
<td>Pointed to pictures</td>
<td>(Bronfenbrenner)</td>
<td>Observational</td>
</tr>
<tr>
<td>Communication</td>
<td>1-2 words, labels</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Language</td>
<td>Little back &amp; forth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conversation</td>
<td>Tried to turn pages</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Early Literacy</td>
<td>C. attended, passive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>LITERACY</strong></th>
<th><strong>INTERACTION</strong></th>
<th><strong>BEHAVIOR</strong></th>
<th><strong>INTERPRETATION</strong></th>
<th><strong>HYPOTHESES</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Rate</td>
<td>M. occasionally waited</td>
<td>M. &amp; E. have a &quot;way&quot; of</td>
<td>Restricted range of</td>
<td></td>
</tr>
<tr>
<td>Length of Interaction</td>
<td>15 minutes +</td>
<td>doing books. Both know</td>
<td>ways to do books.</td>
<td></td>
</tr>
<tr>
<td>Interaction Readiness</td>
<td>Quick transition, stayed with the</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Life to Text</td>
<td>interaction, M.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Text to Life</td>
<td>referred to child's</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td># of different topics</td>
<td>dog.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>Topics controlled by</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>book</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Changed books one time</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note.** Example of fieldnote coding matrix with behavioral descriptions, research and interpretations, and working hypotheses.
2. Researcher interpretations were made from fieldnotes that elaborated on observed behaviors. Specifically, the researcher's understandings of the intentions, pragmatics, and effects of each adult-child interaction were proposed.

3. Working theoretical hypotheses were prepared from fieldnotes to explain early communication and literacy development for the group of adults and children.

Fieldnotes were compiled by the researcher for each mother-child and researcher-child pair to continuously evaluate and interpret events. This allowed the investigator to look for natural variations and recurrent themes in the data (Patton, 1990).

Fieldnote Analyses

In addition to the quantitative analyses of adults and children, additional interactive categories of interest were generated from the fieldnote data. These categories were related to both developmental issues in the research literature and/or clinically resonant practices, during early literacy and early communication development. (See Appendix I.) Table 7 provides a summary of fieldnote analysis procedures.

Data reduction.

The first phase of the fieldnote analyses consisted of data reduction, including the process of selecting,
focusing, and abstracting the data (Miles & Huberman, 1984). In this phase, fieldnote data from the word processing program WordPerfect were downloaded into the qualitative software program The Ethnograph (Seidel, 1989). The Ethnograph was used to create forty files, one for each parent-child and researcher-child dyad. Each line of Table 7

Data Analyses for Fieldnote Procedures

1. Data reduction
2. Initial coding of data
3. Initial interpretation of data (conceptual categories)
4. Additional coding and analyses of data
5. Refining of conceptual categories

fieldnotes from each dyad was numbered to allow for coding of data into topics.

Initial coding of data.

The initial coding and conceptual labeling of data into topics (Patton, 1990) followed. Data were coded and analyzed to make connections among the adult-child interactions, giving shape to themes and patterns (Glesne &
Peshkin, 1992). The coding process consisted of making comparisons and asking questions, for example, "How did the parent start the storybook interaction? How are parents who choose books similar, and how do they differ?"

The Ethnograph (Seidel, 1989) was used extensively to assign codes to specific lines of text. It was also used to facilitate in the categorization of concepts (Strauss & Corbin, 1990). The categories used to code the text included theoretically driven codes such as the adult interactive styles (balance, match, responsiveness, emotional attachment, nondirectiveness, and early literacy) and the child developmental stages (social play and exchange, nonverbal communication, language, conversation, and early literacy). Additional emergent codes were generated from the thick (elaborated narrative) descriptions provided by the fieldnotes on the basis of clinical and theoretical relevance for both early literacy and communication development.

See Appendix J for an example of initial coding.

Initial interpretation of data (conceptual categories).

The third phase of analysis consisted of generating conceptual categories concerning the phenomenological or experiential aspects of the storybook interactions (Lincoln & Guba, 1985). In this phase, initial speculation and
Table 8

Examples of Early Coding Categories

<table>
<thead>
<tr>
<th>Book Exploration</th>
<th>Pace</th>
<th>Handling of Book</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beginning with Parent</td>
<td>Control: Child</td>
<td>Level of Engagement</td>
</tr>
<tr>
<td>Book to Life</td>
<td>Control: Mother</td>
<td>Interactive Rate</td>
</tr>
<tr>
<td>Physical Context</td>
<td>Beginning with Researcher</td>
<td>Changing Books</td>
</tr>
<tr>
<td>Ending with Parent</td>
<td>Verbal Mismatch</td>
<td>Match</td>
</tr>
<tr>
<td>Ending with Researcher</td>
<td>Orientation to task</td>
<td>Responsiveness</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Questions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Prediction</td>
</tr>
</tbody>
</table>

insights concerning the significance of data and the relationships among data were generated (Patton, 1990).

This process of grouping categories pulled together other groups of categories or subcategories. For example, the initial codes of Level of Engagement and Orientation to Task were developed analytically with Bronfenbrenner’s (1979) sequential forms of dyads to develop an understanding of the nature of the relationship during the storybook interaction. Additional examples of early conceptual categories generated included the five adult interactive styles from the ECO Lit (balance, match, nondirectiveness, emotional attachment, and responsiveness) and the five child developmental competencies (social play, turntaking, nonverbal communication, language, and conversation). Other early categories included the child’s book exploration, parent roles, child roles, beginning and ending the interaction,
interactive rate, and the flexibility demonstrated by the child.

Additional coding of data.

The fourth phase of analysis consisted of the researcher returning to the videotapes, fieldnotes, and interviews to test the initial conceptual categories from the ECO Lit (balance, match, nondirectiveness, emotional attachment, and responsiveness; social play, turntaking, nonverbal communication, language, and conversation), and other categories (the child's book exploration, parent roles, child roles, beginning and ending the interaction, interactive rate, and the flexibility demonstrated by the child). A constant comparative method (Glasser & Strauss, 1967) was employed to compare categories with other incidents in the same category. In this way, incidents were compared to each other and category properties were identified (Lincoln & Guba, 1985). For example, in the process of categorizing children's roles as primarily proactive in their interactions, four characteristics were identified. First, children interacted with their parents as co-constructors, or equal partners in the interaction. Second, children regularly initiated as well as responded during their interactions. Third, children actively kept the interactions going and shared in the direction of the
activity. Fourth, children acted from their own motivations using independent and creative communication and actions.

**Refining of conceptual categories.**

The Ethnograph (Seidel, 1989) was again utilized to re-sort data by categories and subcategories. This process of making categories explicit facilitated category discrimination and integration and the refining of the conceptual hypotheses and identification of disconfirming evidence (Lincoln & Guba, 1985). Following this "return to the data", data were re-coded and re-categorized.

The re-coded data were organized into an interpretive taxonomy (qualitative scale) that will be developed as a research and clinical tool for a communication-based interactive guide for parents and atypically developing children in storybook interactions (Appendix K).

**ECO Lit Preparation and Analysis**

Following completion of the fieldnotes, videotaped interactions were scored using the ECO Literacy Child & Adult Assessment according to established guidelines described in the instrumentation section. Each videotape was viewed twice and then the ECO Lit was scored, first for the adult performance, then for the child performance. Then the researcher viewed the tape again, while checking her
observations against the child and adult ratings she had just completed.

Descriptive ECO Lit data was collected to describe individual and group status of parents and children, and the researcher and children. Data graphs representing parent-child and researcher-child performance on the ECO Lit were also completed. Descriptive statistics including frequency counts, percentages of ratings, and ranges and mean scores were reported to describe the group data by the factors of interest generated by the research questions.

A coding matrix (Table 9) to condense, analyze, and organize the data from the ECO Lit was designed. Twenty-two ECO Lit scores were entered on each dyad. Descriptive statistics were completed using the data management program Reflex 2 (Bronderbrund, 1991).

Parent Interviews: Preparation and Analysis

Audiotapes of the parent interviews were transcribed using a microcassette transcriber and the word processing program WordPerfect 5.1. Each interview was transcribed by a trained word processor. The script was then read by the researcher who reviewed any areas of unintelligibility on the audiotape and clarified on the written data file for that interview.

To analyze the data relating to parents' views of their child's early literacy and communication development,
information obtained through the parent interview was organized in a conceptually clustered matrix (Miles & Huberman, 1984) that foregrounded five areas of interest: Reasons (for engaging in storybook interactions with the child), Reading Status (how the parent and child typically looked at books together), Predictions (of child's future ability to read), Mother's Reading Style (mother's reading preferences), and Role (mother's perceived role during the reading). See Table 10 for an example of how the interview coding matrix was used.

The software program, The Ethnograph (Seidel, 1989), was used to number lines of text from the transcribed interviews and data was coded using the predetermined categories. Interview data from these categories were used to expand and elaborate on hypotheses generated from the ECO Lit and fieldnote analysis. For example, parent interaction styles from the fieldnote data served as the point of comparison for the interview data. Interview data was organized and analyzed according to parents' identification as regulators, supporters, teachers, and players. Areas of support and contrast were analyzed and incorporated into the theoretical structure of the study.
Table 9

Coding Matrix for ECO Lit Data

<table>
<thead>
<tr>
<th></th>
<th>Parent Score</th>
<th>Researcher Score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Adult Scores</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Balance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Match</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Responsiveness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nondirectiveness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotional</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attachment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Early Literacy</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Child Scores</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Play &amp;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exchange</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nonverbal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communication</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Language</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conversation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Early Literacy</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note.** Sample of data form used to organize ECO Lit scores for each dyad.

**Triangulation of Data**

A triangulation of data sources was conducted to ensure the dependability and structural corroboration of the study's findings (Eisner, 1991; Miles & Huberman, 1984; Patton, 1980; Glesne & Peshkin, 1990). This process
involved comparing and cross-checking of data sources, the ECO Lit, fieldnotes, and parent interviews to explore potential relationships of behavioral categories yielded from different procedural sources and to validate and identify limitations to the data. In this process, the ECO Lit data matrix was used to identify high and low scoring dyads by adult interactive strategy, and child competency level. Fieldnote and interview data were then compared to these high and low scoring dyads to search for incongruous and complimentary patterns. Areas of data incompatibility were further explored to establish possible patterns of distortion and accompanying explanations. For example,

Table 10
Interview Coding Matrix

<table>
<thead>
<tr>
<th>Categories</th>
<th>Reasons</th>
<th>Reading Status</th>
<th>Predictions</th>
<th>Mother's Reading Style</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parent #1</td>
<td>To teach her words</td>
<td>M. reads 15 minutes</td>
<td>E. will read by age 10 or so</td>
<td>Reads magazines; no time for novels</td>
<td>Teacher and friend</td>
</tr>
<tr>
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Note. Sample of parent interview data using coding matrix.
parents rated high on the ECO Lit adult area of Sensitive Responsiveness were frequently identified by the fieldnote data as regulators in their interactions. On initial examination this appears theoretically incompatible, however, further analysis revealed that parents identified as Regulators from the fieldnotes were highly sensitive to their child’s actions (high on Sensitive Responsiveness from the ECO Lit) but also controlled and directed the interactions. Table 11 illustrates how data sources were compared and contrasted.

Interview data was also organized to look for patterns of compatibility or incongruity in comparison to the ECO Lit and fieldnote data. Parent interview data (from parents who scored high on sensitive responsiveness on the ECO Lit) was used to compare and contrast with fieldnote (parents who were Regulators) and ECO Lit data. Parents whose interview data was inconsistent with other data sources were further analyzed for additional patterns as disconfirming evidence or used to de-construct or clarify the emerging hypotheses (Bogdan & Biklin, 1982; Guba, 1990; Marshall & Rossman, 1989; Patton, 1990).

The consistency of information derived from different data sources assisted in the validation of information collected. Data obtained through parental interview and written fieldnotes was contrasted with information gathered through observational checklists (ECO Lit) and member
checks. Ongoing analysis provided an evolving focus as salient features of the interactions were observed and categorized. Consistent, but distinct, categories for describing the interactions of both adults and children were created and sorted together. Confirming and disconfirming evidence was pursued once categories were established. Videotapes were used to reconstruct and analyze the interactions throughout data collection and analysis. The videotapes were utilized to provide for accuracy and precision of analysis.

Table 11
*Triangulation Table*

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<th>ECO Lit</th>
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<td><strong>Interview Data</strong></td>
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*Note.* Comparison of the three data sources.

**Limitations of the Study**

Findings from this research were not used to attempt to predict performance or to generalize findings. Rather,
findings were used to provide information that is pertinent to the ECO model for social communicative development and to provide initial data on the storybook interactions of atypically developing children and their parents. Additionally, interactional variations between parents and children and the researcher and children provided insight into children's communicative competency.
CHAPTER IV
RESULTS

Introduction

The chapter presenting results of the present study is organized into four major sections:

1. Interactive trends from the videotapes using fieldnotes and based on the analysis of patterns and emergent themes observed.

2. Specific performance data based on an interactive assessment of storybook interactions (ECO Lit), from videotaped interactions of twenty parents and their children, as well as of the researcher and the same children during storybook interactions. Data were also collected on the ECO Lit as a preliminary analysis of the analytical tool for assessing early communication and early literacy development.

3. Parent interview analyses, based on focused interviews with parents concerning literacy and communication.

4. Integrated analyses on issues relating to early literacy and communication development based on the ECO Lit and fieldnote data.
The major purpose of the study was to describe the interaction, communication, and early literacy behaviors of each of twenty atypically developing children during storybook interactions with their parent and with the researcher using a developmentally appropriate interactive style. The study provides initial data on a developmental taxonomy of parent and child interactive and communicative styles, including both verbal and nonverbal behaviors, during interactions with storybooks. Additionally, the effects on each child of a consistent researcher interactive style designed to facilitate children's interaction and communication was examined. Finally, parents' knowledge and perceptions of communication and literacy development were explored in interviews and related to parent performance styles.

Descriptions of Children and Parents

Twenty preschool children with language delays were studied. The children's language ages on the REEL-2 ranged from 12 to 36 months and chronological ages from 18 to 42 months participated in the study with their own mothers. The range of months of language delay was 6 to 24. Participating children represented a variety of developmental delays and diagnoses as reported by their parents, including Down syndrome (seven), language delay
(five), developmental delay (three), genetic syndrome (three), seizure disorder (one), and cerebral palsy (one).

Sixteen of the twenty children were enrolled in an early intervention program and fifteen had brothers or sisters living in the home. The number of siblings ranged from 0 to three, with a mean of 1.2. Eighteen of the children came from families in which both parents resided at home. All but one family indicated a European-American ethnic background; the remaining family was African-American. The range of families' total income was from $10,000-60,000+.

Thus, the study involved families that consisted mainly of two-parent, middle-income European-Americans, with two to four children living in the home. Sixteen of the atypically developing children received programming through early intervention outside of the home, three children were enrolled in typical preschools, and one child was enrolled in speech therapy only. Twelve children were enrolled in preschool or early intervention and were also receiving speech therapy. Five children were receiving physical therapy and/or occupational therapy in addition to speech.

All videotape samples were collected in the families' own homes during storybook interactions with books that parents reported were unfamiliar to the children. Each parent-child interaction was videotaped prior to the taping of the researcher-child interaction.
Classification of Interactive Categories of Adults and Children in Storybook Interactions

Introduction

The qualitative analyses of the storybook interactions were designed to seek answers to questions that address how social experiences are created and given meaning. Through detailed interviews and observations, the parents' perspectives of the storybook interactions were made explicit. The qualitative data (fieldnotes and interviews) will then be supplemented by specific analyses of the behavioral dimensions from the ECO Lit. The ECO Lit analyses of adult and child behaviors provided information on how adults and children performed and the interpretive analyses tried to interpret and contextualize these behaviors and make explicit the belief structures of the parents.

The field note data were used to develop an interpretive taxonomy of underlying meanings of the observed behaviors. This taxonomy included six primary themes: the nature of the adult-child relationship, temporal parameters of the storybook interactions (how they began, changed and ended), child roles in the storybook interactions, parent roles in the interactions, the degree of adult fine tuning, and the differential effects of adult support on children's performance. (See Appendix K.)
Several of the themes that emerged from the qualitative data related to aspects of the child and adult categories from the quantitative data. For example, the behavioral data from the ECO Lit suggested that parents were seldom balanced, matched or nondirective in their storybook interactive styles. To compare these findings, one portion of the taxonomy from the fieldnote data identified parent roles, including parents as "teachers". These parents read 3 to 4 pages of text at a time and then stopped and asked their children questions from the text. Their focus was on the child's providing correct answers to their questions. In their interviews these parents stated their purposes for engaging in storybook interactions were for the child to learn words and gain knowledge. By looking at these three sources of data (ECO Lit, fieldnotes, interviews), one interpretation for some parents (those identified as teachers) scoring low on match, balance, and nondirectiveness is that they saw the interactions as an opportunity to teach their child about language by asking questions. This informs us about parents' assumptions concerning how their child learns communication and literacy in the storybook interaction and provides valuable insight into parents' behaviors.

In these interpretive analyses, additional ways of organizing and categorizing the storybook interactions are proposed. Themes that were included provided a richer
interpretation of the data beyond the quantitative analyses. These themes were generated to further explore the dynamic processes occurring during the interactions as they related to the theoretical bases and purposes of the study.

The Nature of the Relationship

Bronfenbrenner's (1979) partnership or dyadic model of child development provided a conceptual framework for these analyses. In developing an ecological theory of human development, Bronfenbrenner proposed that the dyad, in which two people pay joint attention, and participate in each other's activities, is the fundamental context for development of young children. He argued that valid descriptions and understanding of children's development cannot occur without descriptions of the contingent and simultaneous behaviors of children's partners in the event. Bronfenbrenner and contemporaries (Brazelton & Tronick, 1980; Bruner, 1983; Greenspan, 1990) propose that a more fruitful way to view development is to follow the development of interpersonal dyads rather than the development of an individual child. Bronfenbrenner (1979) identified three sequential forms that an adult-child dyad may take: observational, joint activity, and primary. This taxonomy of dyads guided the observations and analyses of the current data. One major requirement of an ecological theory of human development is that children experience
persistent reciprocal relationships in which each member of
the dyad influences the progressive behavior of the other.
The implication of this requirement for the present study is
that children's performance is, to an important extent, a
function of their partner's styles of interaction, and vice-
versa. Additionally, these adult styles are viewed as just
as critical to an adequate assessment of a child's
development as the child's performance itself. The present
study investigated children's performance in two distinct
interpersonal contexts, one with their mothers and one with
an unfamiliar person.

According to Bronfenbrenner (1979), an observational
dyad occurs when "... one member is paying close and
sustained attention to the activity of the other, who, in
turn, at least acknowledges the interest being shown" (p.
56). In a joint activity dyad, the two participants
perceive themselves as doing something together as part of
an integrated pattern that includes reciprocity, a gradual
shifting of the balance of power to the developing person,
and the development of affective relations. The third type,
the primary dyad, is defined as one that continues to exist
phenomenologically for both participants even when they are
not physically together, so that each person's influence
endures beyond their physical presence. The present study
provides evidence for both observational and joint activity
dyads; the study did not address the issue of primary dyads which requires longitudinal study.

During the storybook interactions, both observational and joint activity dyads were observed. The proportion of observational to joint activity dyads varied with the child’s degree of proactive involvement and the parent’s facilitation of the child’s active participation. In other words, the storybook interactions may be conceptualized on a continuum from observation to joint activity. Sixty-five percent (13) of the dyads were considered mainly observational, and 35% (7) were considered mainly joint activity. The defining characteristics of observational dyads included: the adult attending to the activity of the child, the adult responding to the child’s attention, the child attending to the adult, and the child attending to the storybook.

Examples of interactions that characterized observational and joint activity dyads follow.

Example of an Observational Dyad

Harris and Ms L. sat on the sofa. Ms L. chose a storybook from the bag and began reading the title page. Harris sat close to his mother looking at the book and occasionally at his mother. His hands were in his lap, and he leaned toward his mother and the book. Ms L. held the book, turned the pages, and read each page until the book was finished. At the end of the book she turned to Harris and said, "That was a good book, wasn’t it? Do you want to read another one?"
This interaction was characterized as observational because the child maintained sustained attention to the activity of the parent (looking at the book and his mother), and the parent responded to the child's attention (she continued reading, even beyond the first book). However, there was minimal mutual coordination of activity. It should be noted that in dyads characterized as observational the child always was observing the parent.

A joint activity dyad was defined in terms of three major events: the adult and the child influenced what each other did and said, the child initiated as well as responded, and each partner's actions or communication extended the interaction.

Example of a Joint Activity Dyad


In this joint activity dyad, both Ms. M. and Keith coordinated their activities together, so that what one did and said influences what the other did and said (reciprocity). They need not be doing the same activity,
but their actions (and communications) are complementary, and extend from one another. Keith's active involvement in the interaction, and Ms. M.'s willingness to follow Keith's direction, facilitates a transfer of control from the parent, to the child during the interaction. The mutuality of their actions and communication, and the transfer of control from the more developed person in the dyad to the less developed person exemplifies Bronfenbrenner's first and second criteria for a joint activity dyad.

**Temporal Storybook Interaction Parameters**

In their research on the organization of the educational process, Mehan (1982), Bremme and Erickson (1977), and Florio (1978) have suggested that certain events possess unique organizations or phases that are signalled by distinct verbal and nonverbal patterns. Likewise, distinct phases of the storybook interaction event were demonstrated by both adults and children. Specific phases identified included the initiation of the interaction, changing books during the reading, and ending the activity.

The interaction was typically initiated when the parent sat on the floor, couch, or chair and invited the child to sit with her by patting the floor or cushion and calling to the child. Parents would usually help their child decide on a book either by picking one they thought would interest the child or by dumping the bag of books and letting the child
browse through the books until one was chosen. Two styles of parent initiation of the storybook interactions were identified: Chooser and Follower. These two distinctions set the stage for much of the interaction to follow, particularly in terms of adult and child roles. Choosers constituted 70% (14) of the parents observed, whereas Followers constituted 30% (6).

After choosing the storybook, the next phase of the interaction observed was how parents and children changed books during the interaction. Parents who picked their child’s books (Choosers) changed books less frequently during the interaction, stayed on one book longer, and tended to end the interaction abruptly after their child began "fussing". That is, when the child began to squirm on the parent’s lap, to comment on topics not related to the book, or to try to escape from the parent and the book. These parents would quickly comment that perhaps the child had enough and the interaction should end. Parents who were Choosers also tended not to try to bring their children back for longer interactions or to keep them interacting after they wanted to leave. As soon as the child signalled that they wanted to do something different, parents often let them leave the storybook interaction.

In summary, 70% of parents were categorized as Choosers. This group of parents demonstrated many of these characteristics: they picked the storybooks to read, they
changed books less frequently, they stayed on one book longer, and the interaction ended abruptly.

**Example of Chooser**

Jaime's mother picked her up and sat her on the couch, next to her. Ms. B. picked two books from the bag and showed them to Jaime saying, "Oh, you'll like this one. It's about a dog." Ms. B. read the title of the book *My Dog* and began reading the words of the book. Jaime sat next to Ms. B. and watched both the book and her mother closely. Her hands were tucked under her legs and she looked at the book until her mother paused in her reading; then Jaime would look up at her mother. At the end of the book, Ms. B. turned to Jaime and said, "Did you like that one?" Jaime quietly sat on the couch by her mother and smiled. She continued to watch the book and look up smiling at her mother. She did not vocalize or participate with actions. After two more books Jaime began to make comments about other objects in the room, point to them, and began to squirm from side to side on the couch. Ms. B. stopped reading, looked at Jaime without speaking, and then returned to reading. After several of Jaime's comments ("Toy box, fan, clock"), Ms. B. finished the book she was reading and ended the interaction.

Parents who allowed their child to pick the book (Followers) generally had children who "browsed" books. That is, the children would look at or handle a book and decide to either sit and look at it with the parent or would reject it and throw it on the floor, or move it away. These parents and children actively stayed interacting on a single book for a shorter length of time, but would often stay in the storybook interaction longer. They would change storybooks frequently (more than 5-6 storybooks), as illustrated by the child rejecting a book, browsing again, choosing a new book, and all the time the parent following the child's choices. Also, children demonstrated a wider
range of "storybook behaviors" that parents accepted and to which they responded, such as pointing to other props in the room that related to the story and making sounds and noises that related to the story. This group of parents and children had a less distinct ending to the interaction. Frequently children would return again and again for another book after leaving the interaction for brief intervals, become interested in another object or activity, and then return to the storybook interaction. The interaction would end when the parent started putting books away, stood up and moved away from the storybook interaction site, or otherwise physically cued the child that this was the end of the interaction.

The interactions of the 30% of the parents categorized as Followers could be characterized by the following events: parents did not choose the book, they allowed the child to choose the book, parents permitted children to "browse" a book before the child accepted or rejected it, parents and children actively interacted on one book for a shorter time, and the interaction ended gradually rather than precipitously.

Example of Follower

Ms. J and Tommy sat on the couch and Ms. J. picked up the bag of books and put it on the coffee table. Tommy grabbed for the bag and dumped some of the books onto the table. He grabbed one book and handed it to his mother. Ms. J. looked at the cover and read the title to Tommy, when she opened the book to begin reading, Tommy grabbed the book
and threw it to the floor. Tommy leaned over grunting and pointing toward another book. Ms. J. picked up another book and Tommy grabbed it, pointing and vocalizing at the pictures on the cover. When Ms. J. tried to open the book Tommy pushed it on the floor and slid down onto the floor. Tommy crawled over to the window, and looked outside, pointing and vocalizing for several seconds before returning to the coffee table and picking another book. Tommy climbed up beside his mother and pointed to the book and then looked at his mother, vocalizing excitedly.

Child Roles with Parent and Researcher

Analyses suggested four primary activity roles of children during the storybook interactions: proactive, reactive, inactive, and resistive.

Proactive Children

Children who were primarily proactive interacted with their parents as co-constructors or equal partners in the interaction. These children regularly initiated interactions and responded to parents’ and the researcher’s actions and communications. They actively contributed to keeping the interaction going: pointing to pictures, verbalizing about the story or pictures, or reaching for additional books to continue the interaction. Often these children actively shared the lead in the interaction, determining with the adult how the interaction was to unfold. Also they acted from their own motivations, adding activities and communication that were independent and creative from themselves. Children identified from the proactive role usually had parents who were players or
supporters. Three children (15%) were categorized as primarily proactive in their storybook interactions with their parents and 14 children (70%) were characterized as primarily proactive with the researcher. An example of a proactive child follows:

Example of proactive child role.

Lisa and Ms. K. were sitting on the sofa looking at My Dog. While Ms. K. was reading, Lisa vocalized, "daw, daw" and she signed dog. Ms. K. responded, "Yeah, a dog." Lisa then scooted across the floor to look out of the window saying and signing, "daw, daw." Ms. K. said, "Your dog is outside on the porch, come on back and look at the book now." Lisa scooted back to the couch, climbed up onto her mother's lap and turned the page.

In summary, children who were categorized as primarily proactive in their storybook interactions demonstrated the following characteristics: they interacted with their parents as co-constructors or equal partners in the interaction, they regularly initiated as well as responded during their interactions, they actively kept the interaction going and shared in the direction of the activity, and they acted from their own motivations using independent and creative communications and actions.

Reactive Children

Children who were characterized in a primarily reactive role regularly responded to their parents and the researcher, but seldom initiated or actively contributed in novel, generative ways to the interaction. These children were co-operative and responsive, however, they followed the
adult's interactive lead, and had shorter task-oriented interactions. There was little back and forth interaction and a lack of sustained contact on the storybook activity from the child. Also the child tended to show a limited repertoire of storybook interaction behaviors. Children who were primarily in a reactive role tended to have parents whose roles were as regulators or teachers. Twelve children (60%) were categorized as primarily reactive in their storybook interactions with their parents, and 1 child (5%) was reactive in her/his interactions with the researcher.

An example of a reactive child role follows:

Example of reactive child role.

Tammy and Ms. L. sat on the couch looking at a storybook. Ms. L. read four or five pages of text and then directed Tammy, "See the boa constrictor? Point to the boa constrictor, Tammy." Tammy looked at her mother and smiled. Ms. L. repeated, "Point to the boa constrictor." Tammy then pointed to the picture. Ms. L. continued reading the book until it was completed and the she chose another book to read. She opened the book to one of the first pages and said, "They're going shopping, Tammy. See the shopping cart? Can you point to the shopping cart?" Tammy pointed to the child and Ms. L. responded, "That's the girl, Tammy. Show me the cart. The shopping cart."

In summary, children categorized as reactive demonstrated these characteristics in their storybook interactions: co-operative and responsive to their parent's lead, responded regularly, but seldom initiated interaction or activity, lack of sustained back and forth interaction, and showed a highly routinized repertoire of storybook interaction behaviors.
Inactive Children

The third child role, the inactive child, demonstrated an extremely slow rate of interactive or communicative participation. This child seldom initiated or responded and didn’t appear to attend to or become an integral part of the interaction. There appeared to be few reasons for the child to communicate during the storybook interaction. Parents of inactive children tended to be in the role of regulators, where the child’s activity was rather limited and the adult wanted the child to stay attending. Four children, or 20% of the group, were categorized as primarily inactive in their storybook interactions with parents, and four children (20%) were inactive with the researcher. An example of a child in an inactive role follows:

Example of inactive child role.

Carl and Ms. T. sat on the couch. Ms. T. picked a storybook from the bag and showed it to Carl. Carl looked at the book and then looked around the room. Ms. T. started reading the book and stopped after two pages and said, "Look at the Mom, Carl. She’s painting." Carl looked at Ms. T. and then wiggled and looked at his feet. "Stop wiggling," said Ms. T. She picked Carl up and put him on her lap, then continued reading for a few more pages. Ms. T. stopped reading and said, "Lookie here, Carl. Your Mommy fixes things when they break, doesn’t she?" Carl leaned over to the couch and Ms. T. re-arranged him next to her.

In summary, children categorized as inactive demonstrated these characteristics in the storybook interactions: they gave limited attention to their parents, they seldom initiated or responded, they had a slow rate of
both interaction and communication, and there were few reasons or opportunities for the child to interact.

Resistive Children

The final child role, resistive, was demonstrated by only one child. This child demonstrated fleeting attention to both the adult (parent and researcher) or the storybook and actively tried to escape the interaction. To keep the child attending even briefly, the adult held him in her lap. When she loosened her hold on him, he would leave the interaction. The parent role demonstrated was regulator. An example of this interaction follows.

Example of resistive child role.

Ms. K. called to Timmy several times to come look at a book with her. After a short time, she went to find him and returned carrying him into the room. She sat Timmy next to her on the sofa and reached for a storybook, all the time keeping a grasp on Timmy. Ms. K. said, "Look, Timmy. A book about kitties." Timmy squealed and squirmed to get off of the sofa. Ms. K. positioned Timmy on her lap and opened the book and began reading rapidly. After two pages, when Ms. K. turned the page, Timmy squeezed off of her lap and ran into another room of the house. Ms. K. called Timmy and then went to retrieve him.

Characteristics of this child categorized as resistive include: fragmentary attention to his parent, seldom initiated or responded during the interaction, absence of back and forth interaction, and actively tried to escape the interaction.

In summary, four primary child roles were identified: proactive, reactive, inactive, and resistive. The majority
of these child roles were resilient throughout the duration of the interactions with parents and the researcher. However, infrequent episodes of role flexibility did occur. These changes mainly occurred early in the interactions where a child would start the interaction in a proactive role and quickly assume a more reactive or inactive one. These role changes were observed in six of the parent-child interactions. In researcher-child interactions there was more flexibility with ten children beginning the interaction in a passive, reactive role and then becoming more actively engaged and proactive.

Parent and Researcher Roles

According to Bronfenbrenner (1979), the definition of a role in a personal relationship should include the role of both partners, accounting for not only the behavior expected of a person of a given status, but also for reciprocity, including how others are expected to act toward that person. Consequently, for the purposes of this study a definition of role is: "a set of activities and relations expected of a person, and of others in relation to that person" (Bronfenbrenner, 1979, p. 85). As evidenced in parent interview data and from researcher observations, parents and children, and researcher and children engaged in four distinctive roles during their storybook interactions: regulator (5 parents, 0 researcher), supporter (5 parents, 5
researcher), teacher (7 parents), and player (3 parents, 15 researcher).

The role of follower was infrequently observed in the interactions which counters research and clinical observations that parents of atypically developing children frequently play the role of follower (MacDonald 1989; Mahoney, 1988). It is possible that this role was not observed in the storybook interactions due to the fact that parents volunteered to participate in the study and described themselves as enjoying storybook interactions. This may have created a situation where parents roles were more active than usual.

Regulator

The role of Regulator can be characterized by adults whose goal for the interaction appeared to be to keep the child attending to the storybook. They acted as controllers and directors and demonstrated high sensitivity to their child’s actions and words. These adults interpreted children’s small actions and responded to them quickly mainly to direct children’s behavior and keep them on the storybook task. These adults also created rigid boundaries around both adult and child behaviors that constituted acceptable literacy interactions. They orchestrated the interactions, read more and larger portions of text, and tended to position children in a more reactive or responsive
role. Five parents (25%) were categorized as demonstrating a regulator role in their storybook interactions with their children. No researcher interactions were categorized as regulators.

**Example of adult as Regulator.**

Ms. J. sat Fran beside her on the sofa and pulled *Polar Bear, Polar Bear, Where Are You?* from the bag of books. Ms. J. read the title and author and opened the book to the first page. Fran sat looking at the book with her fingers in her mouth. After reading the first two pages Ms. J. paused and Fran slapped at the book. Ms. J. said, "Turn the page. Are you going to turn the page, Fran?" Then Ms. J. turned the page and read two or three more pages while Fran sat looking with her fingers in her mouth. Fran vocalized, "Ahhh," and Ms. J. looked at her and said, "Yeah. A lion, Fran." When Fran patted at the book, Ms. J. again said, "Turn the page, Fran." After another page, Fran's active patting pushed the book onto the floor. Ms. J. picked the book up and found the place where they had left off, and resumed reading.

**Supporter**

Adults who interacted primarily as Supporters demonstrated a wider range of adult storybook interaction behaviors than others and accepted a wider range of child behaviors. These adults demonstrated looser boundaries around what constituted acceptable literacy interactions, both on the part of the child and themselves. Supporter adults often spontaneously included more from the children's immediate environment into the interactions (without redirecting the child to the storybook). Also, these adults generally did not try to keep the child attending and interacting until a book was "finished". The goal for supporters appeared to be to interact with the child more
for the enjoyment of social contact than for instrumental purposes such as completing a task. Five parent interactions (25%), and five researcher interactions were categorized as supporters in their storybook interactions.

Example of adult as Supporter.

Thomas and Ms. R. started looking at storybooks on the sofa, but soon scooted onto the floor. Ms. R. chose a book from the bag with horses because she said Thomas loved horses. When she showed the book to Thomas, he immediately came over and sat on her lap. Ms. R. began reading the first page of the book, but Thomas interrupted her excitedly, "Look. Look Mommy at this one." Thomas put his hand gently on his mother's cheek to direct her to what he was looking at. Ms. R. responded, "That looks like one we saw at Grandpa's doesn't it?" Thomas replied, "Yeah," and jumped off of his mother's lap running to a box of toys on the other side of the room. Ms. R. asked what he was looking for and Thomas said he was looking for the horse. After a few minutes, Ms. R. got up and helped Thomas find the horse and then they returned to the floor and picked up the storybook. They talked about how the horse in the book was different from Thomas' play horse, and then Ms. R. turned the page and read on for two or three pages. Thomas grabbed the book and turned back to the one picture of the horse a few pages earlier. Ms. R. commented, "You like that horse, don't you? We'll have to get this book from the library." Then she searched through the bag of books and chose another book about fishing. She showed it to Thomas and they began to look at the pictures and read that book.

Teacher

A third role demonstrated was that of Teacher. Adults who interacted primarily as teachers read pieces of the text (up to 3 or 4 pages at a time) then stopped and asked their child questions about the text. In these interactions adults acted as instructors and focused on children's providing correct answers to their questions. Adults demonstrated consistency in their storybook interaction
behaviors (as did the children). Overall, adults interacted with their children for instrumental purposes, i.e., to teach their child to answer their questions. Adults who interacted with children as a teacher demonstrated many of the following characteristics during their storybook interactions: asked more questions of the child, tried to relate the storybook to the child's own life experiences, shared their own knowledge and experiences with the child, tended to read longer pieces of the story, with fewer pauses, and kept children attending through completion of the storybook.

Seven parents, or 35% of the group, were categorized as teachers in their storybook interactions with their children. No researcher interactions were categorized as teachers.

Example of adult as Teacher.

Emily brought Only the Cat Saw over to Ms. K. and sat on the couch beside her. Ms. K. took the book from Emily and read the title and author and turned to the first page. Ms. K. said, "Emily, can you show me the kitty cat?" Emily pointed to the cat and Ms. K. said, "Right. Good girl," and she began reading the book. After a few pages she stopped and said, "Point to the rooster, Emily." Emily looked at her mother. Ms. K. said, "The rooster, Emily. Like when we went to the farm and you saw the chickens and the rooster. Cock-a-doodle-doo. Remember, Emily?" Ms. K. pointed to the rooster and Emily vocalized, "Cock-a-doodle-doo." Ms. K. continued reading the book for several pages and then stopped and said, "Oh, time for bed. At your bedtime we take a bath, brush teeth, and put on your jammies. Right, Emily?" Emily laughed and nodded.
Player

Adults who interacted with the children as Players acted more spontaneously and shared the focus of the activity with the children. They gave the child increased control over the activity and the topics and they demonstrated a variety of adult storybook interactive behaviors, such as using gestures to pat a picture of a dog or tickling a picture of a baby. These adults read very short pieces of text, often only one to two words, commented more on pictures, and playfully responded to children’s actions as well as words. Three parents (15%), and 15 researcher interactions (75%) were categorized as primarily players in their storybook interactions.

Example of adult as Player.

Brandon and Ms. W. sat on the floor and dumped the bag of books on the floor. Ms. W. said, "Oh, Brandon. Look at all these books." Brandon giggled and pushed at the books to make them scatter. Ms. W. retrieved the books and stacked them in a pile. Brandon looked at Ms. W. and then giggled and pushed the stack over. "Oh, you're so silly, Brandon," said Ms. W. She picked up The New Baby and said, "A baby, Brandon," and she kissed the picture. Brandon grabbed for the book and kissed the picture. "Let's see more babies Brandon," and Ms. W. opened the book. Brandon pulled the book from her and threw it. "No more babies," said Ms. W. Brandon smiled and went to get the baby book.

In summary, the four primary adult roles and the goals of each include: Regulators, whose goal was to keep the child attending to the storybook; Supporters, whose goal was to interact for social enjoyment; Teachers, whose goal was to teach children to answer their questions; and Players, whose goal was to be spontaneous and share the control of
the interaction with their child. Some role flexibility was demonstrated among the parents, particularly between Regulators and Teachers, and Supporters and Players. Regulators and Teachers shared descriptive characteristics in 60% of the interactions. Supporters and Players shared characteristics in 75% of the interactions. Of the four groups, the role of Supporter was the most flexible with sixteen parents demonstrating some characteristics of the Supporter.

The researcher-child interactions were less flexible in that they were defined by the characteristics of only two roles: Supporter and Player. However, in 60% of the interactions, descriptive characteristics were shared.

**Communication Roles**

The category of communication roles addresses the issue of how parents and children and researchers and children communicated during the storybook interaction. The adult’s adaptation to typically developing children’s level of performance (scaffolding) was observed during storybook interactions by Ninio and Bruner (1978). Likewise, adult mismatching, or communicating beyond the child’s boundaries, with children who are developmentally delayed has been described by Mahoney, Finger, and Powell (1985). In the present study, storybook interactions were supported by three primary parent styles (Reader, Waiter, and Talker) and
one researcher style (Communicator). Ten (50%) parents primarily read the words of the story from start to finish to their child (Readers), six (30%) parents read words primarily but would also stop and wait for the child to participate in the interaction in some way (Waiters), and four parents (20%) parents read very few words, and primarily talked about the pictures (Talkers).

**Communication Roles of Parents**

**Readers.**

Parents who were the Readers held and controlled the book most frequently, and tended to dominate the interaction both in actions and in words. These parents would read the words of the story with minimal pausing except to look at or re-direct their child to the storybook. Ten parents or 50% were categorized as Readers in their storybook interactions.

An example of Parent as Reader follows.

Ms. M. looked into the bag of books and pulled out two. She looked at the covers and returned one to the bag. She read the title, author, and the inside dedication before she began reading the story. Anthony sat beside his mother and looked at the book as she read. Often he would put his fingers into his mouth. Ms. M. read steadily until the book was completed. Anthony didn’t move or comment. When the book was completed, Ms. B. turned to Anthony and said, "That was a good one, wasn’t it?" With hand in mouth, Anthony nodded his head yes.

Parents categorized as readers showed the following characteristics in adapting their interactions to their children: They held and controlled the book; they read long pieces of text (often the entire book); they asked the child
questions at the end of the book; they mainly used words to interact; they responded to the child’s use of actions with increased direction and control; the pace of the interaction was rapid; and they maintained reading for as long as possible, often until the book was completed.

Waiters.

Parents who were Waiters would frequently stop reading at the end of a page or two (or sometimes less) and ask a question, or point out a picture. They would hold the book close to the child and invite the child to participate by verbally or physically cuing the child to look at a certain picture or to turn a page. Six parents or 30% were categorized as waiters in their primary supportive style of interaction with their children.

An example of Parents As Waiters follows.

Ms. J. picked a book from the bag and said to Helen, "This one looks good. It’s about a Grandpa." She read the title and turned to the first page and said, "See the Grandpa. He looks like your Grandpa." Helen nodded and pointed to the picture. Ms. J read the first two pages. Helen began to squirm and point to pictures in the book. Ms. J. would tell Helen what the pictures were and often point to Helen’s body or clothing. "That’s a big, wet boot. Kind of like your shoe." Then she would pick up Helen’s shoe and wiggle it. Ms. J continued reading one or two pages and stopping to ask Helen a question or point out a picture. Whenever Helen became less interested, Ms. J. would ask her to point to a picture or turn the page, until the book was completed.

Parents categorized as waiters demonstrated the following characteristics while supporting their children’s interactions: They held the book close to the child, they read one or two pages and stopped to ask questions or point
out a picture, the activity was shared and they kept the child attending, they responded to some of the child's communicative gestures, the adult waited and cued the child to respond, the interaction was paced slowly and the child had time to participate, and they tried to maintain the interaction by reading less and asking more questions.

Talkers.

Parents who were primarily talkers followed their children's lead and allowed them more choices during the interaction then did parents who were readers. For example, children often held the book while the parent commented on what the child was looking at or pointing to. The child turned the pages and had more control of the pace and direction of the interaction. These parents encouraged their child to look and point at pictures or answer questions about the pictures posed by the parent. On the whole these parents tended to initiate less and respond more. Four parents, or 20%, were categorized as talkers in how they supported their children during the storybook interactions.

An example of Parents as Talkers follows.

Ms. G. gave Jesse a book and he threw it on the floor. Jesse went to the bag of books and pulled one from the bag. He sat by his mother and opened the book. Ms. G. said, "Look at the cow." Jesse began snorting like a pig. Ms. G. said, "It's not a pig Jesse. It's a cow. Mooo." Jesse laughed and continued to snort like a pig as he turned two more pages. Ms. G commented on how silly Jesse was behaving. Jesse pointed to a picture and said, "Bird, Momma." "Yeah a bird. It's flying," said Ms. G. Jesse closed the book and leaned over to pull out another one from the bag. Ms. G.
looked at the cover and read, "My Mom Is Fantastic. That sounds like a good one, Jesse." Jesse jumped up and down on his mother's leg pointing and commenting on pictures that interested him.

Parents categorized primarily as talkers in their interactive supportive style demonstrated these characteristics during their storybook interactions with their children: The child often held and controlled the book; parents often talked about pictures, parents responded to children's communicative gestures and comments, parents talked about people, animals, and activities occurring in the child's immediate environment and expanded on the child's communication, parents physically prompted children to take a turn, and the interactive pace varied with the child.

**Communication Role of Researcher Partner.**

In comparison to the parents, the researcher maintained an interactive model that was individually focused on each child and followed five constant principles of communicative interaction: balance, match, responsiveness, nondirectiveness, and emotional attachment. The researcher style of doing about as much as the child (balance), acting and communicating in ways the child can act (match), following the child's direction during the interaction (nondirectiveness), responding to the child's interests and communications (sensitive responsiveness), and being a
playful Partner (emotional attachment) enabled children to demonstrate different levels of communicative performance not evidenced with their parent. This communicator role of Partner consisted of a series of interactive styles based on the ECO Lit. These adult interactive styles were incorporated to encourage children's interaction and active participation.

The child developmental competencies of social play, turntaking, nonverbal communication, language, and conversation were supported through the use of the adult interactive styles. In the researcher-child interactions the adult rarely read the text and in some cases seldom talked. Instead, she engaged children at their level of performance (developmental match) and used the book as an anchor for the interaction. Also the adult followed the child's interests and included more of the child's immediate interactive environment into the storybook interaction (nondirectiveness). For example, with a minimally communicative child the interactive exchange may have consisted of taking turns pushing the books off of the sofa (turn taking) or alternately patting the storybook.

The physical and social environment of the child was included more by incorporating situations specific to individual children (varied used of pragmatic language). For example, one child needed oral suctioning during the researcher-child storybook interaction. Following the
incident, the adult pretended to suction a picture of a child from the book. The child then imitated the action and "suctioned" other pictures of children during the interaction.

In these interactions children often communicated nonverbally with actions and sounds. They participated in the interaction with a wider range of actions, but with few conventional words or phrases (nonverbal communication). One characteristic of the researcher's interactive style was her use of waiting for the child to say or do something (balance). This made each Partner's participation more equal and made the children look more equal in their communicative participation.

An example of Researcher as Partner follows. The researcher sat next to Leah and said, "What book?" Leah looked at the researcher, smiled, and grabbed a book. The researcher took the book from Leah and teasingly said, "Mine." Leah looked surprised, but then grabbed the book back and pushed it onto the floor. "Boom!" vocalized the researcher. Leah pushed another book and the researcher again said, "Boom!" Leah laughed and continued the activity until all of the books were on the floor. The researcher looked at the books on the floor and said, "All down." Leah put a hand out toward the books and grunted. The researcher said, "Books," and picked up the books.
The researcher demonstrated several characteristics to support the child's participation. The book was used as a focus for interaction and communication (social play) while the adult responded to children's actions and vocalizations, as well as to their words (nonverbal communication) and acted and communicated about as much as the child (balance). The researcher also extended the interaction beyond the book, including objects and events from the child's environment and activities (elaborated language pragmatics) and maintained a playful interactive exchange without emphasis on completion of a task or achieving correct answers (social play). The adult also commented frequently rather than asking questions or directing children to encourage children's frequent responding on topics of their interest (conversational variety and nondirectiveness).

In summary, adults' abilities to fine tune their interactive style to the child's zone of proximal development (Vygotsky, 1978) describes the ways the storybook interactions were socially mediated. Half of the parents read long pieces of text to preverbal and early verbal children. The other half asked frequent questions or used extended verbalizations during their interactions. In most cases the researcher's mediation of the storybook interactions contrasted dramatically to the parent's mediation.
Interaction Management Styles

In addition to these main types of adult support of the storybook interactions, adult strategies for keeping interactions going were of particular interest, given that the longer children are actively engaged in developmentally appropriate, socially constructed interactions the greater their opportunities for learning. Included with interaction management styles are the general issues of how adults established and maintained the pace of the interaction and how the adult waited (or failed to wait) for the child to participate.

Interactive Pace

The pace of the interaction seemed to follow children’s level of attention. Regardless of the adult role or the communication role, if children’s interest seemed to wander away from the story book the parent would typically change the pace of the interaction (talk faster or slower, ask more questions or use more animation in their voice) to direct their attention back to the book. Parents appeared sensitive to their child’s level of attention and interest in the interaction; they were continually checking and monitoring their children to make adjustments to the interaction to keep children attending to the story.
Example of parent changing interactive pace to keep the child interacting.

Joe and Ms. V. had looked at two books when Joe began to squirm off of the sofa. Ms. V.'s first strategy was to grab Joe and reposition him on her lap. After several seconds, when Joe began to squirm again she started reading faster, pointing to pictures, and physically jiggling Joe to re-engage him in the interaction. They soon finished the book (before arriving at the end of the story), and Ms. V. picked a book about farm animals saying, "Ooo, Joey. Look at the horsie. What does a horsie say?"

If changing the pace of the interaction failed to bring the child back to focus on the book, parents would suggest that they take a break from the storybook and try to return to it later. Seldom did parents slow the pace of the interaction in response to a child's waning attention; rather, their response was to do more, faster.

Use of Questions in the Interaction

Adults demonstrated several strategies for involving children in the interaction. A primary strategy, demonstrated by parents of both verbal and nonverbal children, was to ask questions or direct the child to look at some aspect of the picture book.

Example of parent asking questions to keep the child interacting.

Ms. C. and Alan are sitting together in a chair looking at Airport. Ms. C. asks, "Do you see the airplane, Alan? Look at this one flying away. Point to the airplane for Mommy, Alan." Alan hits the book several times with his open hand and Ms. C. says, "Turn the page, Alan."
This example demonstrates the parent’s responsiveness to a nonverbal communicative attempt and her willingness to attribute meaning to her child’s small actions. In the example with Alan, he had not turned any pages prior to his parent’s comment. He was sitting by his mother watching both the book and his mother, vocalizing occasionally. In order to involve Alan in the interaction, Ms. C. asked questions, directed him to a particular aspect of the picture, and finally interpreted his actions as active participation in the activity.

Additional Strategies to Maintain Interactions

Other strategies parents employed to involve children in the interaction included changing from primarily reading words to commenting on pictures and stopping more frequently for children to do something. Parents would often begin to stop at the end of a page and comment on the pictures after the main business of reading the words on the page was done. When the mother stopped at the end of the page she would usually ask a question or direct the child to point to some aspect of the picture. Parents also related the story or pictures to the child’s own life or changed the book to one that the mother thought might be more interesting to the child.

All of these strategies for involving the child more into the meaningful construction of the interaction resulted
in mothers doing more of something: asking questions, directing the child’s attention, and changing the book. Almost all of the time the result was that the child stayed in the interaction for a few seconds more, but ultimately the interaction soon ended. Only when the child was given more control to initiate a new game or choose a new book did the interaction continue for more than a few seconds.

Example of how sharing control kept the child in the interaction.

Eleanor and Ms. P. were sitting on the floor looking at storybooks. Eleanor looked at the book and held it in her lap while Ms. P. tried to read the words. When they reached the end of the page Ms. P. tried to turn to the next page. Eleanor screamed and pulled the book from her mother, holding it away from her mother’s grasp. Ms. P. said, "Okay, okay, Ellie. You can have the book. Let’s just turn the page to see what’s on the next page." Eleanor refused to give Ms. P. the book. After several seconds, Ms. P. chose a different book and began to comment on the pictures. Eleanor put her book down, scooted over to her mother, and took this book from her mother. Ms. P. continued to point out pictures but made no effort to take the book back or to turn the pages. Rather she continued to comment on the pictures and relate certain pictures to Eleanor’s own family.

In summary, these adult mediations of the communication around the storybook interactions are the critical sites for both communication and literacy learning. The identification of specific adult strategies that support children’s active participation is fundamental to a social constructive model of intervention that considers early communication and early literacy mutually developing and of reciprocal developmental power.
Parent Interview Results

In addition to videotaped observations of parent-child storybook interactions, parents were also interviewed about their reasons for engaging in storybook reading with their child and the benefits both to themselves and to their child from the reading. Parents' views often corroborated the four roles in which they were observed to engage: Regulator, Supporter, Teacher, and Player.

Parents who were categorized as Regulators in the study described their reasons for engaging in storybook interactions as letting their child hear the story and learning from it. Their purpose was instrumental in that they wanted their children sit and attend to the story. Parents who interacted as Regulators described the purposes of storybook reading as:

1. "So he can figure out what I'm talking about."
2. "To keep her pretty much on target, as much as possible."
3. "To give him different input."
4. "To involve her and keep her attention."
5. "To build a relationship with my child."

Parents categorized as Supporters described the reasons for engaging in storybook interactions as getting their child exposed to and involved with the world. Their purpose was more social in that they wanted to help their child
understand and become part of the world. These parents described the reasons for storybook interactions as:

1. "To develop his imagination."
2. "To have a relaxing, not rushed time together."
3. "Because she enjoys it."
4. "You can get alot from it, like language and reading skills."
5. "To learn what words mean."
6. "To help with her attention span and for teaching her words."

Parents categorized as Teachers described the reasons for engaging in storybook interactions as practice for the child to learn words or gain knowledge about the world. Their purpose was primarily instrumental in that they wanted their child to "get the storybooking right" and to learn from the interaction. These parents described the purposes of storybook reading with their child as:

1. "To get the communication."
2. "To get the language."
3. "To help her attention span."
4. "To learn names of things."
5. "To help their reading skills."
6. "To give him different input."
7. "To learn the turntaking."
8. "To prepare him for the sound of language."
9. "To teach him stories have rhythm."
10. "To help him learn how to talk."
11. "To help with his fine motor, picking things up and turning pages, and things."
12. "To develop his imagination."

Parents who were identified more often as Players interacted by commenting more on pictures, letting their child do as much as they were doing, responding more frequently to their child’s actions as well as his/her words, and waiting longer for their child to do or say something. These parents were more likely to give the child more control during the interaction and their reasons for engaging in storybook interactions with their children were more social and interactive:

1. "To have a special time."
2. "To establish a relationship early on so when she does need me she’ll come to me with her problems."
3. "To have some one-on one time together."
4. "To get her to wind down and be close to her."
5. "To sit and cuddle."

All of the parents reported that reading storybooks with their children would benefit the child and give them time with their child. The most common reasons for reading to children included to spend one on one time together, to share quiet close time together, and to teach their children about reading and talking. All of the parents also believed that reading with their child would help them learn to
communicate. Most thought that by spending time alone with their child and reading and talking about books the child would learn to talk or talk more or better.

Specific Performance Data Across Categorical Dimensions

Child Status

The ECO Lit for children was developed as an observational tool for assessing the interaction, communication, and early literacy behaviors of preverbal and early verbal children. The tool allows ratings for the child on the developmental categories of social play and exchange, nonverbal communication, language, conversation, and early literacy. Specific scale items for each developmental area are illustrated in Table 12.

Ratings were made on the children’s performances with their mothers in storybook interactions lasting from 15 to 30 minutes. Table 13 presents the mean scores for each of the 20 children, on each of the five developmental categories, as measured by the ECO Lit. Coding for the scores was as follows: a score of 1 indicated a behavior was never observed, 2 that a behavior was seldom observed, 3 a behavior was occasionally observed, 4 a behavior was often observed, and 5 a behavior was consistently observed. The ranges (R) and means (M) of ratings for each subscale were as shown in Table 14.
Table 12

ECO Lit for Children

__________________________

Social Play & Exchange

1. Enjoys reading with partner.
2. "Reads" alone.
3. Pays attention to both book and partner.
4. Takes turns with partner.
5. Cooperates with partner.

Nonverbal Communication

1. Communicates with gestures.
2. Communicates with sounds.
3. Imitates partner's actions.
4. Imitates partner's sounds.

Language

1. Imitates partners words.
2. Responds when partner comments.
3. Answers questions with words.
4. Communicates with words.
5. Talks to partner for the fun of it.
6. Talks to request or control.
7. Talks to self.

Conversation

1. Talks about a variety of topics.
2. Stays communicating on a topic.
3. Talks inappropriately or off topic.

Early Literacy

1. Attempts to turn pages of book.
2. Points to pictures.
3. Points to print.
5. Predicts story events (What happens next?).
6. Reads letters.
7. Reads words.
8. Labels illustrations.
9. Initiates familiar, repetitive phrases from story.
10. Responds with predictable phrase when adult pauses.
11. Initiates comments about story.
12. Extends conversation from story.

__________________________
Table 13
ECO Lit Status Data of Children in Storybook Interactions with Parent

<table>
<thead>
<tr>
<th>Child</th>
<th>Social Play &amp; Exchange</th>
<th>Nonverbal Communication</th>
<th>Language</th>
<th>Conversation</th>
<th>Early Literacy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child C</td>
<td>2.40</td>
<td>2.25</td>
<td>NA</td>
<td>NA</td>
<td>2.66</td>
</tr>
<tr>
<td>Child F</td>
<td>3.20</td>
<td>1.75</td>
<td>2.70</td>
<td>1.30</td>
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<tr>
<td>Child E</td>
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<td>2.67</td>
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<td>NA</td>
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</tr>
<tr>
<td>Child B</td>
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<td>1.85</td>
<td>NA</td>
<td>2.50</td>
</tr>
<tr>
<td>Child E</td>
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<td>2.75</td>
<td>2.60</td>
<td>NA</td>
<td>2.20</td>
</tr>
<tr>
<td>Child N</td>
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<td>2.50</td>
<td>NA</td>
<td>NA</td>
<td>3.00</td>
</tr>
<tr>
<td>Child O</td>
<td>1.80</td>
<td>2.50</td>
<td>NA</td>
<td>NA</td>
<td>1.75</td>
</tr>
<tr>
<td>Child G</td>
<td>3.60</td>
<td>2.25</td>
<td>4.00</td>
<td>2.67</td>
<td>3.25</td>
</tr>
<tr>
<td>Child J</td>
<td>2.80</td>
<td>3.00</td>
<td>NA</td>
<td>NA</td>
<td>2.67</td>
</tr>
<tr>
<td>Child K</td>
<td>3.20</td>
<td>2.50</td>
<td>2.28</td>
<td>3.00</td>
<td>2.75</td>
</tr>
<tr>
<td>Child R</td>
<td>3.20</td>
<td>2.25</td>
<td>2.14</td>
<td>1.67</td>
<td>1.33</td>
</tr>
<tr>
<td>Child Q</td>
<td>3.00</td>
<td>3.00</td>
<td>3.17</td>
<td>1.67</td>
<td>1.91</td>
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<tr>
<td>Child P</td>
<td>3.00</td>
<td>1.25</td>
<td>2.40</td>
<td>2.00</td>
<td>1.75</td>
</tr>
<tr>
<td>Child A</td>
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<td>2.75</td>
<td>1.57</td>
<td>NA</td>
<td>2.40</td>
</tr>
<tr>
<td>Child S</td>
<td>3.20</td>
<td>1.75</td>
<td>3.28</td>
<td>2.67</td>
<td>1.58</td>
</tr>
<tr>
<td>Child L</td>
<td>2.60</td>
<td>2.00</td>
<td>3.70</td>
<td>2.67</td>
<td>3.75</td>
</tr>
<tr>
<td>Child D</td>
<td>3.40</td>
<td>3.00</td>
<td>4.50</td>
<td>NA</td>
<td>3.25</td>
</tr>
<tr>
<td>Child I</td>
<td>3.60</td>
<td>3.50</td>
<td>3.00</td>
<td>NA</td>
<td>4.50</td>
</tr>
<tr>
<td>Child T</td>
<td>2.60</td>
<td>1.50</td>
<td>3.20</td>
<td>NA</td>
<td>3.50</td>
</tr>
<tr>
<td>Child M</td>
<td>3.60</td>
<td>3.50</td>
<td>3.85</td>
<td>4.00</td>
<td>4.20</td>
</tr>
</tbody>
</table>

Note: Average child scores on each competency during storybook interactions with their mothers.
The average ratings on all five dimensions fell between seldom and occasionally (2-3) with social play & exchange and language receiving the highest average ratings. The children’s performance showed the greatest range for the early literacy and language dimensions. Thus, the group of 20 were judged to be just beginning to interact and communicate in the storybook interactions with their parents.

Of the 100 total ratings (five dimensions for 20 children), 16 received a 1 (never), 34 received a 2 (seldom), 28 received a 3 (occasionally), 6 received a 4 (often), and no child received a 5 (consistently). Sixteen of the 100 ratings were judged as NA (not applicable), as in the case of a conversation score for a nonlinguistic child.
Across all of the dimensions, 78% of the children were rated occasionally or less. The group of children then, could be characterized on the lower performance level of all five dimensions. During storybook interactions, this group of atypically developing children with language delays, generally did not actively stay in interactive exchanges with their parents on a consistent basis. Neither did they consistently exchange ideas and information, or express meanings and ideas on a shared topic as operationalized by the observational tool (ECO Lit).

Figure 1 graphically illustrates for all 20 children percentages of ratings for each of the six scores (1 - 5 and NA) for each of the developmental dimensions. For example, Figure 1 shows that 100% of the ratings of social play & exchange were 3 (occasionally) or lower with 55% rated as occurring occasionally (3), 40% as 2 (seldom), and 5% as 1 (never).

Similarly in Figure 1, 100% of the ratings for nonverbal communication were 3 (occasionally) or less; however, in contrast to social play & exchange, a greater proportion of children were judged as seldom or less (75%). The ratings on the language items showed the greatest range of scores with 65% rated as occasionally or less. The children received the lowest scores on conversation, with slightly over half (55%) rated as NA. Finally, 60% of the children were rated as performing seldom or less on the
Figure 1

Children's Percentages of Ratings Percentages of Each of the Six Ratings for Each Developmental Dimension
early literacy dimension, with 25% rated as occasionally, and 15% as often. Clearly these results indicate that children were at the lower end of communication development in their storybook interactions with their mothers, particularly in the areas of social play & exchange and nonverbal communication.

**Parent Status**

Ratings of parent behaviors were completed on six adult interactive styles that developmental and clinical research have widely concluded to be instrumental to a young child’s communication development: interactive balance, match, responsiveness, nondirectiveness, emotional attachment, and early literacy. Each score represents an average of the ratings from each adult style area. (See Table 15 for the scale items considered in the adult ratings.)

Parents were evaluated on a 5-point scale, in which scores indicated the degree to which the behavior occurred. The ratings were made on 15-30 minutes of adult interactive performance with their children during storybook interactions. Table 16 illustrates average parent scores on each interactive strategy. The ranges (R) and mean (M) scores are shown in Table 17.
Table 15

**ECO Lit: Adult Assessment**

<table>
<thead>
<tr>
<th>Balance</th>
<th>Match</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Gives child time to take a turn.</td>
<td>1. Acts like the child.</td>
</tr>
<tr>
<td>2. Expects child to respond.</td>
<td>2. Communicates nonverbally like the child.</td>
</tr>
<tr>
<td>3. Keeps the child in back and forth interaction.</td>
<td>3. Talks using the child’s language length.</td>
</tr>
<tr>
<td>4. Changes when the child changes.</td>
<td>4. Communicates about the child’s interests.</td>
</tr>
<tr>
<td>5. Interacts at the child’s pace.</td>
<td>5. Shows the child the next step in communication.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Responsiveness</th>
<th>Non-Directiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Responds to the child’s actions.</td>
<td>1. Follows the child’s interests.</td>
</tr>
<tr>
<td>2. Treats the child’s actions as messages.</td>
<td>2. Talks about the child’s ideas.</td>
</tr>
<tr>
<td>3. Responds when the child talks.</td>
<td>3. Lets the child take the lead.</td>
</tr>
<tr>
<td>4. Responds to sounds.</td>
<td>4. Shares the choice of topic.</td>
</tr>
<tr>
<td>5. Responds to gestures.</td>
<td>5. Keeps the child on topic.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Emotional Attachment</th>
<th>Early Literacy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Actively enjoys the child.</td>
<td>1. Asks child questions.</td>
</tr>
<tr>
<td>3. Shows a childlike playful style.</td>
<td>3. Talks about pictures.</td>
</tr>
<tr>
<td>4. Shows confidence with the child.</td>
<td>4. Extends conversation from story.</td>
</tr>
<tr>
<td>5. Is animated and attention getting.</td>
<td>5. Talks about words.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>7. Asks child to predict story events.</th>
</tr>
</thead>
<tbody>
<tr>
<td>8. Lets the child narrate a story.</td>
<td></td>
</tr>
</tbody>
</table>
The average ratings on all dimensions were between never and often, with responsiveness and emotional attachment receiving the highest average ratings of the six subscales. Parents interacted with children across a wide range of the six styles.

The distribution of the 120 ratings (six dimensions for 20 parents), was as follows: 22 received a 1 (never), 46 received a 2 (seldom), 34 received a 3 (occasionally), 17 received a 4 (often), and one received a 5 (consistently), (see Table 16 for score summaries).

Across all of the dimensions, 84% of the ratings of parents' interactive behaviors were occasionally or less. This group of parents can be characterized on the lower performance level of all six dimensions. The study then is based on a group of parents who generally did not exhibit facilitative interactive performance in Interactive balance, match, responsiveness, nondirectiveness, emotional attachment, and early literacy, as operationalized by the taxonomy of the ECO Lit Scale.

Figure 2 graphically illustrates percentages of parents receiving each of the five ratings (1-5) for each of the interactive dimensions. Inspection of the group reveals that over half the parents performed very low (1 = never; 2 = seldom) on three interactive styles: balance, match, and nondirectiveness.
TABLE 16
Status Data of Parents in Storybook Interactions With Children

<table>
<thead>
<tr>
<th>Name</th>
<th>Balance</th>
<th>Match</th>
<th>Responsiveness</th>
<th>Non-directive</th>
<th>Emotional Att.</th>
<th>Early Literacy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. C</td>
<td>1.60</td>
<td>1.20</td>
<td>2.80</td>
<td>2.00</td>
<td>2.00</td>
<td>1.75</td>
</tr>
<tr>
<td>2. F</td>
<td>1.40</td>
<td>1.20</td>
<td>4.20</td>
<td>1.67</td>
<td>2.30</td>
<td>2.10</td>
</tr>
<tr>
<td>3. H</td>
<td>1.80</td>
<td>1.00</td>
<td>4.25</td>
<td>1.80</td>
<td>2.50</td>
<td>3.30</td>
</tr>
<tr>
<td>4. B</td>
<td>2.40</td>
<td>1.80</td>
<td>2.50</td>
<td>2.16</td>
<td>2.89</td>
<td>2.00</td>
</tr>
<tr>
<td>5. E</td>
<td>2.60</td>
<td>2.00</td>
<td>2.30</td>
<td>2.16</td>
<td>2.80</td>
<td>3.40</td>
</tr>
<tr>
<td>6. N</td>
<td>3.40</td>
<td>1.20</td>
<td>2.80</td>
<td>2.00</td>
<td>2.50</td>
<td>3.75</td>
</tr>
<tr>
<td>7. O</td>
<td>2.00</td>
<td>1.80</td>
<td>3.50</td>
<td>1.50</td>
<td>3.30</td>
<td>2.60</td>
</tr>
<tr>
<td>8. G</td>
<td>2.20</td>
<td>1.75</td>
<td>3.60</td>
<td>2.50</td>
<td>2.50</td>
<td>2.25</td>
</tr>
<tr>
<td>9. J</td>
<td>3.00</td>
<td>1.80</td>
<td>3.80</td>
<td>1.80</td>
<td>3.00</td>
<td>3.25</td>
</tr>
<tr>
<td>10. K</td>
<td>1.80</td>
<td>1.40</td>
<td>4.30</td>
<td>3.16</td>
<td>3.00</td>
<td>2.25</td>
</tr>
<tr>
<td>11. R</td>
<td>3.40</td>
<td>2.60</td>
<td>3.16</td>
<td>2.17</td>
<td>2.80</td>
<td>2.50</td>
</tr>
<tr>
<td>12. O</td>
<td>2.60</td>
<td>1.60</td>
<td>4.00</td>
<td>3.00</td>
<td>3.00</td>
<td>2.30</td>
</tr>
<tr>
<td>13. P</td>
<td>2.00</td>
<td>2.40</td>
<td>3.16</td>
<td>3.50</td>
<td>3.60</td>
<td>2.50</td>
</tr>
<tr>
<td>14. A</td>
<td>2.80</td>
<td>2.00</td>
<td>4.17</td>
<td>2.33</td>
<td>3.67</td>
<td>1.38</td>
</tr>
<tr>
<td>15. S</td>
<td>2.40</td>
<td>2.25</td>
<td>4.30</td>
<td>2.30</td>
<td>3.80</td>
<td>2.75</td>
</tr>
<tr>
<td>16. L</td>
<td>2.60</td>
<td>1.80</td>
<td>4.40</td>
<td>3.00</td>
<td>3.30</td>
<td>3.50</td>
</tr>
<tr>
<td>17. D</td>
<td>3.60</td>
<td>2.40</td>
<td>3.17</td>
<td>3.00</td>
<td>3.30</td>
<td>3.00</td>
</tr>
<tr>
<td>18. I</td>
<td>4.20</td>
<td>2.80</td>
<td>4.30</td>
<td>3.17</td>
<td>3.50</td>
<td>2.00</td>
</tr>
<tr>
<td>19. T</td>
<td>4.20</td>
<td>3.40</td>
<td>4.10</td>
<td>4.50</td>
<td>4.30</td>
<td>1.80</td>
</tr>
<tr>
<td>20. N</td>
<td>4.00</td>
<td>4.00</td>
<td>4.80</td>
<td>4.17</td>
<td>5.00</td>
<td>3.60</td>
</tr>
</tbody>
</table>

Note: Average parent scores on each interactive strategy, during storybook interactions with their children.
Table 17

ECO Lit Ranges and Means for Parents

<table>
<thead>
<tr>
<th></th>
<th>(R)</th>
<th>(M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balance</td>
<td>1.40-4.20</td>
<td>2.70</td>
</tr>
<tr>
<td>Match</td>
<td>1.00-4.00</td>
<td>2.02</td>
</tr>
<tr>
<td>Responsiveness</td>
<td>2.30-4.80</td>
<td>3.68</td>
</tr>
<tr>
<td>Nondirectiveness</td>
<td>1.50-4.50</td>
<td>2.59</td>
</tr>
<tr>
<td>Emotional Attachment</td>
<td>2.00-5.00</td>
<td>3.15</td>
</tr>
<tr>
<td>Early Literacy</td>
<td>1.38-3.60</td>
<td>2.59</td>
</tr>
</tbody>
</table>

Figure 2 also shows that the parents were judged relatively higher on emotional attachment with the half of parents rated as occasionally (3). The majority of parents (80%) were viewed as responsive to their children with scores of occasionally (3) or often (4). On the early literacy scale, half the parents were rated as seldom (2) or less.

In summary, the parents in the study were rated at the lower end of performance on four of the six interactive principles (balance, match, nondirectiveness, and early literacy), and relatively higher on two principles: responsiveness and emotional attachment, during their storybook interactions with their children.

Child Performance with Researcher

The ratings of each child’s interactive behaviors were also made on 15-minute interactions with the researcher in
Figure 2

Parents' Percentages of Ratings Percentages of Each of the Six Ratings for Each Developmental Dimension
The researcher was trained in academic, clinical, and research principles of social communication development for five years, and was established as reliable in both performing and evaluating the interactive styles. She was trained to use the ECO Lit as both an assessment and treatment model for communicating with children and practiced the model in over 500 hours of clinical practice. During this interaction the researcher attempted to interact with all the children with a stable interactive style, that was finely tuned to each individual child's actions and communications. Thus, while the researcher's interactive style shifted from child to child, the purpose of these adult adjustments was to consistently fine tune the adult's style with the individual child by deliberately utilizing the interactive strategies of balance, match, responsiveness, nondirectiveness, and emotional attachment. (See Table 15 for specific components that guided the researcher's interaction styles.) Table 18 illustrates the children's mean performance scores with the researcher and the parent for each of the 20 children on each of the five dimensions (social play & exchange, nonverbal communication, language, conversation, early literacy) measured by the ECO Lit Scale.

As Table 18 illustrates fifteen of the twenty children (or 75%) were rated as interacting and communicating at a
Table 18

Differences in Child Performance with Parent and Researcher

<table>
<thead>
<tr>
<th>Social Play &amp; Exchange</th>
<th>Nonverbal Communication</th>
<th>Language</th>
<th>Conversation</th>
<th>Early Literacy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Parent</td>
<td>Researcher</td>
<td>Parent</td>
<td>Researcher</td>
</tr>
<tr>
<td>Child A</td>
<td>X (.8)</td>
<td>X (1.2)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Child B</td>
<td>X (.8)</td>
<td>X (-.8)</td>
<td>X (1.1)</td>
<td>X (2.3)</td>
</tr>
<tr>
<td>Child C</td>
<td>X (.2)</td>
<td>X (.7)</td>
<td>X (1.9)</td>
<td>-</td>
</tr>
<tr>
<td>Child D</td>
<td>X (-.2)</td>
<td>X (.8)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Child E</td>
<td>X (-.4)</td>
<td>X (.7)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Child F</td>
<td>same</td>
<td>same</td>
<td>X (-.3)</td>
<td>X (-1.0)</td>
</tr>
<tr>
<td>Child G</td>
<td>X (1.2)</td>
<td>X (1.0)</td>
<td>X (-.5)</td>
<td>-</td>
</tr>
<tr>
<td>Child H</td>
<td>X (.2)</td>
<td>X (1.0)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Child I</td>
<td>same</td>
<td>same</td>
<td>X (1.0)</td>
<td>X (.8)</td>
</tr>
<tr>
<td>Child J</td>
<td>same</td>
<td>same</td>
<td>X (.5)</td>
<td>X (.4)</td>
</tr>
<tr>
<td>Child K</td>
<td>same</td>
<td>same</td>
<td>X (-.2)</td>
<td>X (.8)</td>
</tr>
<tr>
<td>Child L</td>
<td>X (.8)</td>
<td>X (-.3)</td>
<td>X (1.4)</td>
<td>X (.6)</td>
</tr>
<tr>
<td>Child M</td>
<td>X (.8)</td>
<td>X (1.5)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Child N</td>
<td>X (-1.2)</td>
<td>X (.7)</td>
<td>X (-1.2)</td>
<td>X (-1.1)</td>
</tr>
<tr>
<td>Child</td>
<td>Parent</td>
<td>Researcher</td>
<td>Parent</td>
<td>Researcher</td>
</tr>
<tr>
<td>-------</td>
<td>--------</td>
<td>------------</td>
<td>--------</td>
<td>------------</td>
</tr>
<tr>
<td>O</td>
<td>X (.2)</td>
<td>X (1.2)</td>
<td>X (.3)</td>
<td>same</td>
</tr>
<tr>
<td>P</td>
<td>X (-.8)</td>
<td>X (.3)</td>
<td>X (-2.0)</td>
<td>-</td>
</tr>
<tr>
<td>Q</td>
<td>X (1.2)</td>
<td>X (1.3)</td>
<td>X (-.6)</td>
<td>X (-.7)</td>
</tr>
<tr>
<td>R</td>
<td>X (.2)</td>
<td>X (1.5)</td>
<td>same</td>
<td>same</td>
</tr>
<tr>
<td>S</td>
<td>same</td>
<td>same</td>
<td>X (.5)</td>
<td>X (.3)</td>
</tr>
<tr>
<td>T</td>
<td>X (.6)</td>
<td>X (.2)</td>
<td>X (1.5)</td>
<td>X (1.9)</td>
</tr>
</tbody>
</table>

**Note.** Differences in child scores with Researcher or Parent.  
* X = Child scored higher with this adult.  
*Score in parentheses = Difference Score
higher level on their overall performance (average scores) during the storybook interaction with the researcher. Of the 168 ratings (20 children rated on five competencies with both researcher and parent, NA scores in language and conversation were not included) 62% of the children performed at a higher level with the researcher than with their own parent.

Table 18 also shows children’s relative performance with their parent or with the researcher on each developmental competency. When children did not demonstrate competency in a developmental area they received a blank score. In terms of the five developmental areas, children performed higher with the researcher in social play & exchange (50%), nonverbal communication (70%). In language, six of the 15 children rated (40%) scored higher with the researcher (five children received scores of NA, and one child received the same score for both parent and researcher). In conversation, two of the eleven children (18%) scored higher with the researcher (nine children received scores of NA, and one child received the same score for both researcher and parent). In early literacy, 9 of the 20 children (45%) scored higher with the researcher with 4 children scoring the same with the researcher and parent in the area of early literacy. A t-Test was used to analyze the significance of the difference between children’s mean performance with parents and with the researcher.
Differences were analyzed by each child, developmental area (social play and exchange, non-verbal communication, language, conversation, and early literacy) and by the overall scores. The findings showed there were no significant differences on children's overall scores and on four of the five developmental areas: social play and exchange, language, conversation, and early literacy. However, a significant difference was determined in the developmental area of nonverbal communication: $F(2.63)$, $DF(19, 19)$, $p = <.05$.

The researcher's interactive behavior was also evaluated on the six adult interactive principles. The ratings were made on 15 minutes samples of the researcher's interactions with children during storybook interactions. Table 19 presents the ranges and mean scores for the researcher and parents on each of the six adult interactive principles from the ECO Lit.

Across all of the interactive styles, 84% of the researcher's interactive ratings were higher than the parent's ratings. In terms of each interactive strategy, the researcher received higher scores higher than the parent on balance (90%), match (100%), nondirectiveness (90%), responsiveness (90%), emotional attachment (95%), and early literacy (40%).
Table 19

ECO Lit Mean and Range Scores for Researcher and Parent

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Range</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parents' balance</td>
<td>1.4 - 4.2</td>
<td>2.7</td>
</tr>
<tr>
<td>Researcher's balance</td>
<td>2.2 - 4.6</td>
<td>3.9</td>
</tr>
<tr>
<td>Parents' match</td>
<td>1.0 - 4.0</td>
<td>2.0</td>
</tr>
<tr>
<td>Researcher's match</td>
<td>2.8 - 4.6</td>
<td>4.0</td>
</tr>
<tr>
<td>Parents' nondirectiveness</td>
<td>1.5 - 4.5</td>
<td>2.6</td>
</tr>
<tr>
<td>Researcher's nondirectiveness</td>
<td>3.2 - 4.8</td>
<td>4.2</td>
</tr>
<tr>
<td>Parents' responsiveness</td>
<td>2.3 - 4.8</td>
<td>3.5</td>
</tr>
<tr>
<td>Researcher's responsiveness</td>
<td>3.2 - 5.0</td>
<td>4.6</td>
</tr>
<tr>
<td>Parents' emotional attachment</td>
<td>2.0 - 5.0</td>
<td>3.2</td>
</tr>
<tr>
<td>Researcher's emotional attachment</td>
<td>3.8 - 5.0</td>
<td>4.6</td>
</tr>
<tr>
<td>Parents' early literacy</td>
<td>1.3 - 3.6</td>
<td>2.6</td>
</tr>
<tr>
<td>Researcher's early literacy</td>
<td>1.6 - 3.7</td>
<td>2.3</td>
</tr>
</tbody>
</table>

The data comparing researcher and parent interactive styles shows that while the researcher regularly used 5 of the 6 interactive styles: balance, match, nondirectiveness, responsiveness, and emotional attachment (mean scores above 3.9), parents seldom used 4 of the 6 styles: balance, match, nondirectiveness, early literacy (mean scores below
2.9). There were two areas where the parents demonstrated relatively higher levels of competency: mean scores of occasionally (3.0 – 3.9) on the styles of emotional attachment and responsiveness. Also there was one area where the researcher scored seldom (2.3) on early literacy.

In summary, these data suggest that children were more nonverbally communicative during the storybook context with the researcher who used a developmentally appropriate model during the interactions, than with their parents who were not instructed as to how to act.

Findings on Selected Issues

In addition to the descriptive, emergent analyses completed, certain questions were generated from both clinical observations of preconversational children and their parents and/or from theoretically driven research. Specific questions of interest follow:

1. What were the interactive and communicative features that characterized the parents of high and low participating children during storybook interactions?

2. What were the interactive and communicative features that distinguished the parents of verbal and nonverbal children?

3. What were the interactive and communicative features of children who were highly interactive and communicative during their storybook interactions with the researcher and
low performing during storybook interactions with their parent?

To address these questions, data from children's performance on the ECO Lit, fieldnotes on the parent-child storybook interaction, and video observations were integrated. In order to characterize these differences between high and low parents and children, the procedure of extreme case sampling (comparison of the two highest and two lowest performing dyads) was utilized (Patton, 1987). Patton suggests that the purposeful selection of extreme cases maximizes and clarifies the factors of interest and importance and should be information rich.

High and Low Participating Children and their Parents

The first question concerned the interactions of high and low participating children and their parents. In this analysis, "participation" was defined as frequently performing in four areas of communication development: social play and exchange, nonverbal communication, language, and conversation, as measured by the child’s scores on the ECO Lit. First, children were ranked by their level of participation. The two highest and two lowest scoring children (and their parents) were selected for analysis.
Table 20

Rank Ordering of Children by Participation Scores

<table>
<thead>
<tr>
<th>Name</th>
<th>Interaction Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child D</td>
<td>3.80</td>
</tr>
<tr>
<td>Child M</td>
<td>3.74</td>
</tr>
<tr>
<td>Child I</td>
<td>3.37</td>
</tr>
<tr>
<td>Child G</td>
<td>3.13</td>
</tr>
<tr>
<td>Child J</td>
<td>2.90</td>
</tr>
<tr>
<td>Child E</td>
<td>2.75</td>
</tr>
<tr>
<td>Child K</td>
<td>2.75</td>
</tr>
<tr>
<td>Child L</td>
<td>2.74</td>
</tr>
<tr>
<td>Child S</td>
<td>2.73</td>
</tr>
<tr>
<td>Child Q</td>
<td>2.71</td>
</tr>
<tr>
<td>Child H</td>
<td>2.64</td>
</tr>
<tr>
<td>Child A</td>
<td>2.64</td>
</tr>
<tr>
<td>Child W</td>
<td>2.55</td>
</tr>
<tr>
<td>Child T</td>
<td>2.43</td>
</tr>
<tr>
<td>Child C</td>
<td>2.33</td>
</tr>
<tr>
<td>Child B</td>
<td>2.33</td>
</tr>
<tr>
<td>Child R</td>
<td>2.32</td>
</tr>
<tr>
<td>Child F</td>
<td>2.24</td>
</tr>
<tr>
<td>Child P</td>
<td>2.16</td>
</tr>
<tr>
<td>(Child O)</td>
<td>2.15</td>
</tr>
</tbody>
</table>

Note. Rank ordering of children by participation scores.
Children's level of participation was estimated by determining an overall interaction score from the ECO Lit as follows:

\[
\text{Participation Score} = \frac{(\text{Social Play & Exchange} + \text{Nonverbal Communication} + \text{Language} + \text{Conversation})}{\# \text{ of competencies scored}}
\]

See Table 20 for the rank ordering of children by their participation scores. (Note that the lowest interaction score was obtained by Child O. However, he was not selected for inclusion in the profiling due to his unique interaction pattern in which he consistently failed to participate in the activity. It should be noted that Child O was the only one of twenty children who was not generally co-operative during the storybook interaction.)

The child profiles for the two highly participative children (Child M and Child D) and the accompanying parent profiles are illustrated in Figure 3.

Child D and Child M's ECO Lit profiles illustrate that they participated in the developmental dimensions of social play & exchange, nonverbal communication, language, conversation (Child M only) and early literacy occasionally to often. The parent profiles show that four of the five interactive styles (balance, responsiveness, nondirectiveness, and emotional attachment) were used occasionally or often by both parents. One interactive principle (match) was seldom used by Child D, but often used by Child M.
Figure 4 also shows the adult and child profiles for the two lowest participating children (Child P and Child F). These figures illustrate that both Child P and Child F scored seldom to never on the child dimensions of nonverbal communication, language, conversation, and early literacy. Both children scored occasionally in the area of social play & exchange. Parent profiles for these children show a wider range of scores. Both parents scored never to seldom on balance and match, but occasionally to often on responsiveness, never to occasionally on nondirectiveness, and seldom to occasionally on early literacy. Figure 3

Figure 3 shows that the high participating children are consistently rated slightly higher on four of the five developmental dimensions: nonverbal communication, language, conversation, and early literacy. The competency area of social play & exchange is rated similarly for the children.

In the comparison of parent profiles for high and low participation children, parents of the high participators were consistently rated higher on the strategies of balance and match. The other interactive styles: emotional attachment, responsiveness, and nondirectiveness were rated with one of the high participating children scoring high.
Figure 3

Parent and Child Profiles for High Participation Children
Figure 4

Parent and Child Profiles for Low Participation Children
These profiles tentatively suggest that certain ECO Lit child dimensions (nonverbal communication, language, conversation, and early literacy) and certain ECO Lit adult dimensions (balance and match) characterize the four children and parents who were rated as high/low participators during the storybook interactions. High participating children were rated higher on nonverbal communication, language, conversation, and early literacy. Parents of these the two higher participating children were rated higher on interactive balance and match.

A continuum of levels of parent-child participation was apparent from the fieldnote data and video observations. Dyads ranged from those who actively participated together co-constructing the interaction with both initiating and responding with a variety of actions, sounds, or words to dyads where parents were dominant and children were responsive or inactive. In participative dyads, the children engaged with both the adult and storybook with words or with actions (i.e., turning pages, pointing to pictures, and choosing books). Children who were engaged in the storybook interaction were actively included in the activity; they were co-constructors in the meaning making of the interaction. Parents of these engaged children often included a wider range of child behaviors as meaningful and relevant to the interaction.
Example of a Highly Participating Child and Parent

Adrian and her mother sat close together on the floor. Adrian pulled on the bag of books and they fell over with several spilling out onto the floor. Ms. H. picked up Come Play with Us and read the title page. Adrian directed her attention to her mother and started making sounds, rocking back and forth, and reaching for the book. As Ms. H. read one page, and then a second, Adrian vocalized more loudly until Ms. H. gave Adrian the book. Adrian turned pages, pointed to pictures, and continued to vocalize about the book. Ms. H. responded to Adrian’s vocalizing as if she understood what Adrian was saying, "Oh, he looks like Daddy, doesn’t he?" Adrian squealed loudly and then reached over and grabbed My Dog. Again she rocked back and forth excitedly, vocalized and opened the book. Ms. H. commented that she doesn’t usually give Adrian a bag of books at one time when they read; typically she gives her only one book at a time. She also stated that she was surprised that Adrian stayed in the storybook activity for 30 minutes.

Children who were low participators in the interaction did less with their parent and the book and showed a more restricted range of storybook behaviors. Children responded less and more often only when prompted; parents tried to direct the child’s attention to certain pictures, asked questions about the pictures, or changed story books. These children followed the adults more, initiated less, and demonstrated a more restricted range of interactive behaviors. Their communicative attempts were less contingent; that is, they did not follow the preceding comment or even the context of the storybook. Parents tried to redirect children to certain ways of participating, i.e., pointing to pictures, turning pages, labelling pictures.
Example of a Less Participating Child and Their Parent

Lilley and her mother were sitting on the couch reading *The Lady with the Alligator Purse*. Lilley sat close to her mother with her hands folded in her lap. She frequently looked up at her mother and smiled. Ms. K. read one page and stopped and asked Lilley to point to the alligator purse. Lilley looked at her mother and smiled. Ms. K. asked Lilley to point to the lady. Lilley responded by wiggling her body all over and again smiling up at her mother. Ms. K. read another two pages and stopped, commenting on how silly the lady acted. Lilley responded by looking at her mother and verbalized, "Fan," and pointed to the ceiling fan. Ms. K. picked a different storybook, *Buzz Buzz Buzz*, she read the title and asked Lilley to show her the bee. This time Lilley pointed to the picture and smiled at her mother.

In summary, the two dyads identified as highly participative demonstrated these characteristics: higher child ECO Lit scores on nonverbal communication, language, conversation, and early literacy, higher parent ECO Lit ratings on balance and match, children who initiated and responded using words and actions, and parents and children who demonstrated a range of storybook interaction behaviors.

The two dyads identified as less participative demonstrated these characteristics: lower child ECO Lit scores on nonverbal communication, language, conversation and early literacy, lower parent ECO Lit ratings on balance and match, children responded less and followed adults more, a restricted repertoire of both child and adult storybook behaviors, and communication that was less contingent and conversational.
Differential Features of Parents of Verbal and Nonverbal Children

The next question concerned identifying differential features of parents of verbal and nonverbal children. In order to distinguish children who were typically verbal or nonverbal, three measures of children's communicative performance were utilized: the child's ECO Lit scores with the parent, the child's ECO Lit scores with the researcher, and the child's Expressive Language Age score from the REEL-2.

Children's performance was then rank-ordered on each of these three measures and an average ranking was obtained. See Appendix L. The child's overall ranking (from the average rank) was determined and each child was ranked from 1-20. A score of one indicated the most verbal child and a score of 20 indicated the most nonverbal child. From this ranking, the five highest (most verbal) and five lowest (most nonverbal) children were identified to address the question of how parents of verbal and nonverbal children interact and communicate differentially during their storybook interactions. The five highest ranking verbal children identified were Child L, Child I, Child S, Child J, and Child M. The five lowest ranking, nonverbal children were Child B, Child H, Child P, Child C, and Child A.

In this analysis of five verbal and five nonverbal children, the parents of verbal children had consistently
higher scores on balance and emotional attachment than the parents of nonverbal children. (See Figures 5 and 6.) Four of the five parents of verbal children were rated higher on responsiveness and nondirectiveness and three of the five parents of verbal children scored higher on interactive match and early literacy.

By interactive style, parents of verbal and nonverbal children scored as follows: balance: verbal children—seldom to often, nonverbal children—never to seldom; match: verbal children—never to often, nonverbal children—never to seldom; responsiveness: verbal children—occasionally to often, nonverbal children—seldom to often; nondirectiveness: verbal children—never to often, nonverbal children—never to occasionally; emotional attachment: verbal children—occasionally to consistently, nonverbal children—seldom to occasionally; early literacy: verbal children—seldom to occasionally, nonverbal children—never to occasionally.

In summary, the interactive styles of the parents of verbal children were rated higher than the interactive styles of nonverbal children across all interactive strategies. In particular, parents of verbal children were consistently rated as more balanced and emotionally attached during their storybook interactions.
Figure 5

Parent Scores on ECO Lit for Five Verbal Children

Note. Parent Eco Lit scores by interactive styles for the five highest ranking verbal children.
Figure 6

Parent Scores on ECO Lit for Five Nonverbal Children

Note. Parent ECO Lit scores by interactive style for the five lowest ranking verbal children.
Through videotape and fieldnote analysis parents of verbal children were identified as waiting more for their children to participate and giving them time to both initiate and respond. Additionally, they showed active enjoyment of their children and were more relaxed and playful in their interactions.

Example of Verbal Child with Parent

Stephen and Ms. B. sat in a rocking chair to read books together. Ms. B. picked a book from the bag, showed it to Stephen, and asked him if he wanted to read that one. Stephen nodded and Ms. B. opened the book and commented on the children in the pictures. Stephen pointed to one of the children and said, "She's with her Daddy." Ms. B. replied, "Yes, her Dad is taking her to school." "I go to school too," said Stephen, "but you bring me, not Daddy." "I usually drive you to school and what do we do sometimes?" said Ms. B. "Get a donut!" exclaimed Stephen. "We stop and I get a chocolate donut and chocolate milk." "Then we go to school like this girl and her Dad," said Ms. B.

In contrast to this interaction of a verbal child and his parent, parents of nonverbal children tended to have a more rapid pace during the storybook interaction. Frequently this resulted in parents doing more than children and in children having less time to initiate and respond.

Example of Nonverbal Child with Parent

Ms. T. called Pamela over to the sofa and picked her up beside her. She pulled the bag of books over to the coffee table and took three or four from the bag. Ms. T. looked at two books and returned them to the bag before choosing My Dog. Ms. T. showed Pamela the book and then opened to the first page and began reading. After three pages Pamela made a noise and wiggled to get down. Ms. T. scooted Pamela back onto the couch and said, "Look, Pamela, let's finish this book about the doggie." She continued reading the book to
Relationship of Adult Performance to Child Performance

The third question was concerned with the relationship of adult behavior to child performance inherent in Vygotsky's (1978) theory of the zone of proximal development. The zone of proximal development refers to that level of children's performance that can be attained with the support of a more developed person. In other words, the zone of proximal development is the range between children's actual, unassisted performance and their potential performance with interpersonal and environmental factors adapted them. For this question we have identified those children who scored high on the ECO Lit during their interactions with the researcher (who consistently used a supportive, developmentally matched interactive style) and those who scored low during their interactions with their parents. In order to identify children who scored high with the researcher and low with their parent, children were ranked by their average overall ECO Lit scores with their parent and the researcher (Table 21). Four children were identified as scoring high with the researcher (in the top ten children) and low (in the bottom 10 children) with their parent. These children (Child Q, Child A, Child F, and Child C) were selected for analysis.
Of the twenty ratings (four children on five competency areas), thirteen were higher with the researcher. In terms of the five child competencies, children were rated highly with the researcher as follows: social play & exchange: 75%, nonverbal communication: 50%, language: 100%, conversation: 100%, early literacy: 75%.

These children (who scored relatively high with the researcher and relatively low with their parent) demonstrated different competencies, particularly in their language and conversation levels, secondary to the adult interactive support they received during their storybook interactions. The children were able to change their interaction and communication style during interactions with the researcher even when the researcher’s style of interaction differed dramatically from the parent’s style. The children who were able to change their interactive behaviors in response to the researcher frequently demonstrated interactive and communicative competencies that were not observed during interactions with their mothers.

**Contrasting Example of Child with Parent and Child with Researcher**

Tonya sat on the couch by her mother’s side as she read the words from the storybook. She would reach out to pat the book and occasionally she would turn a page of the book.
Table 21

**Overall Rank Order of Children on ECO Lit with Parent and Researcher**

<table>
<thead>
<tr>
<th>Parent</th>
<th>Researcher</th>
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<td>Child C *</td>
<td>Child P</td>
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<tr>
<td>Child F *</td>
<td>Child O</td>
</tr>
<tr>
<td>Child P</td>
<td>Child T</td>
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<td>Child B</td>
<td>Child H</td>
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<td>Child T</td>
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<td>Child O</td>
<td>Child B</td>
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<td>Child A *</td>
<td>Child G</td>
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<tr>
<td>Child R</td>
<td>Child K</td>
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<td>Child Q *</td>
<td>Child M</td>
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<tr>
<td>Child K</td>
<td>Child R</td>
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<tr>
<td>Child S</td>
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<td>Child L</td>
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<tr>
<td>Child M</td>
<td>Child I</td>
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*Note.* Children’s rank order during interactions with parent and researcher.
Ms. R. mainly read the words, but would stop to give Tonya time to turn pages. Tonya’s rate and diversity of participation was slow and limited.

The researcher-child interaction consisted initially of taking turns pushing the books onto the floor. Later, Tonya’s pacifier was included by the researcher in the book activity. Tonya then offered the pacifier to the picture of the animal in the book and to the researcher. In the researcher-child interaction Tonya was more active and showed a wider range of socially playful behaviors than with her mother.

Some children who demonstrated less active storybook interactions styles with their mothers responded with the same less active styles when interacting with the researcher. The children who were less active with both their parent and the researcher appeared to know one way of "doing" storybooks. When the adult did not act in ways the children were accustomed to having adults act, the children responded either by continuing with the interactive style they were familiar with, or by becoming wary and doing less. These children who were less interactive, both with their parents and the researcher, watched the researcher more than the storybook and would occasionally cry or try to physically leave the interaction.

Several differences between the researcher-child and parent-child storybook interactions were observed. The
first was the wider range of activities included in the storybooking with the researcher. For example, books might be used as toys: they might be placed on the child’s or researcher’s head and fall off, they might be slapped shut to make a loud noise, or they may be pushed off the sofa and picked up again in a game of pick up. Another difference with the researcher-child interactions was the slowed pace of the interaction, particularly with less participative children. Frequently the researcher would wait for several seconds for a child to initiate a movement or vocalization and then respond. This behavior of researcher waiting for the child also related to the wider range of behaviors seen in the interaction. Also, children demonstrated a wider range of nonverbal behaviors, many times incorporating activities from their own experiences into the storybook interaction.

Example of Researcher-Child Incorporation of Child’s Experiences

Michael and the researcher were sitting on the floor looking at a book when Michael began coughing repeatedly. Ms. S. came into the room and turned on a suction machine to help clear Michael’s mouth of mucous. This intervention lasted less than a minute and then Ms. S. left the room again. After the researcher and Michael began looking at the book again he coughed one or two more times. The
researcher picked up the suctioner and held it to the book to pretend to suction the character in the book. After watching the researcher, Michael would cough, pick up the suctioner, and pretend to suction the girl in the book.

Summary of All Findings

During storybook interactions with their parents this group of children was rated as demonstrating relatively low levels of performance on interaction and communication in terms of six major parameters: social play & exchange, nonverbal communication, language, conversation, and early literacy. The dimensions of the six skills are operationalized by the taxonomy inherent in an observational tool, the ECO Lit, which was adapted for this study. Generally, children were observed to perform at the lower end of communication development in their storybook interactions with their parents.

Parents could also be characterized as performing at lower levels of interactive performance on the adult styles of balance, match, nondirectiveness, emotional attachment, and early literacy. Parents did perform at a relatively higher level on the interactive style of responsiveness.

During storybook interactions with the researcher three-fourths of the children improved their levels of interactive performance when compared with their performance with their parents, particularly in three areas: social
play & exchange, nonverbal communication, and early literacy. Lack of substantial changes in language and conversation were found and may be due to the generally low levels of these competencies across children.

Children who were identified as high participators were rated high on four of the five developmental dimensions: nonverbal communication, language, conversation, and early literacy. High participators were often included by parents as co-constructors in the interaction. Likewise parents of the high participators were rated higher on the adult interaction styles of balance and match and demonstrated a flexible repertoire of parent storybook behaviors that were adaptive to the child’s performance changes.

Two of the adult interactive styles, balance and emotional attachment, appeared to be related to children’s verbal/nonverbal status. Parents of verbal children consistently were rated higher on balance and emotionally attachment during their storybook interactions.

Finally, children who were rated high with the researcher but low with their parent, performed consistently higher on the child competencies of language and conversation.
CHAPTER V
DISCUSSION

The challenge remains essential to discover explicitly how clinical discourse can enable--or unintentionally disable--children's active participation as collaborators in their own learning (Silliman & Wilkinson, 1991).

Introduction

The major purposes of the present study were to describe the storybook interactions of atypically developing children with their parents and the researcher, to describe parents' beliefs and attitudes about early literacy and communication, and to provide preliminary data on the use of a behavioral rating scale for analyzing children's and adult's performance in storybook interactions. The study can be partially summarized in a series of findings. First, the group of children was mainly passive rather than proactive in their interactions with their parents. Second, most parents were communicatively dominant in their interactions with their children and they viewed storybook interactions primarily as cognitive opportunities to teach their child oral language. Third, children's active
interactive and communicative performance improved contingent upon the interactive style of the adult partner (i.e., the adult’s use of a finely tuned, social constructive model of interaction.) The majority of the children interacted and communicated more with the researcher who was a communication partner who used a social constructive model than with their parents who mainly used a more adult-centered didactic model. Fourth, a series of assessment tools were developed and submitted to preliminary testing in the study. Fifth, the qualitative analyses resulted in the identification of child and adult roles that characterized the interactions and can be used to further study early literacy communication.

Five themes relating early literacy and communication that emerged from the study are discussed. Those themes include: the relationship of adult communication styles to children’s levels of participation, the benefits of a communicative approach to early literacy for children’s communication development, an expanded definition of early literacy to include children who are preverbal and preconversational, the communicative use of storybooks as an efficient locus for children’s learning both literacy and language, and the implications of the reciprocal developmental power of early literacy and early communication for assessment and treatment. The discussion is organized to provide operational definitions of key
concepts, relate research from the literature to the study, discuss how findings from the present study extend previous research, and to discuss possible implications of the findings.

The Relationship of Adult Style to Children's Participation

The relationship of adult communication style to children's level of participation in storybook interactions was evident when contrasting adult-directed interactions (identified as primarily Teachers and Regulators) with those that were child-directed (identified as primarily Supporters or Players). Adults (both parents and researcher) in child-directed interactions supported children by focusing on children's interactive and communicative competencies without focusing exclusively on language or reading. Children shared control of the interaction with their adult partner and they maintained longer exchanges with the adult partner and the book. In these reciprocal relationships, children and adults influenced each other mutually, each partner extended the interaction with actions, vocalizations, or verbalizations. Children and adults used the book to facilitate interaction and communication, rather than reading. Through adult support of children's social play, turn taking, and nonverbal communication competencies, adults in child-directed interactions encouraged children's
active participation at the child's level of communication development. If activity is necessary for learning, then one major form of activity in storybook interactions is communication. Child-directed interactions kept children actively engaged in storybook interactions and increased children's opportunities for social and cognitive learning.

In adult-directed interactions, adults determined the content and direction of the interaction and children were more passive, responsive, and minimally verbal. Often adults focused mainly on verbal language (with preverbal children). Consequently, children were passive and responsive as they did not yet possess the language skills to participate verbally in the interactions. These parents read the storybooks as if their expressive language alone was enough for children to learn; they did not appear to value the importance of active child participation. These findings were particularly striking for those children who dramatically changed their level of participation in interactions with the researcher (who was child-directed) in contrast to their parents (who were generally adult-directed). When the researcher supported children's social play, turn taking and nonverbal communication and followed the children's lead (sharing control with children), the children participated more and stayed interacting longer.

Literature on parents and typically developing children in storybook interactions (Snow & Goldfield, 1982; Snow,
1984; Sulzby, 1986) suggests that certain adult interactive styles facilitate children’s early literacy and language. For example, Sulzby’s (1985) interactive literacy continuum considers a parent’s use of directiveness, and a focus on labelling as a positive interaction strategy because it enables children to build an internal story schema and extend verbal conversations. Many parents in the present study demonstrated these interactive styles (directiveness and a focus on labeling). Paradoxically, the effects of these parent behaviors which are supportive with older conversational children appear to restrict the participation of preverbal children in the storybook interactions. In the present study, these adult styles appeared to limit children’s opportunities for mutual engagement and rendered them more passive and less interactive. The critical difference between previous studies and the present one is the developmental level of the children. Children in the present study were preconversational in their communication development and primarily sensorimotor in their cognitive development. Some of those adult interactive strategies that facilitated literacy and language in more mature children restricted the interaction and communication of less developed children. When children do not yet habitually engage in verbal exchanges, different adult interactive strategies may be indicated to support and engage children in mutually constructed storybook
interactions. Those adult strategies utilized in the present study consisted of five main adult interaction styles: interacting at children's level of communication development (developmental matching), waiting for children to initiate and respond (interactive balance), responding to actions as communication (sensitive responsiveness), following the child's interests and actions (adult nondirectiveness) and being playful and interactive (emotional attachment).

In the present study, reciprocal interactions within joint activities were established and maintained when storybook interactions were child-directed and developmentally appropriate. These children demonstrated their potential developmental levels (upper limits of their zone of proximal development, ZPD) when adults interacted to support children's active participation (adult use of developmentally appropriate practices, DAP) in the storybook interactions. Three theoretical concepts are helpful to explain the differences in children's and adult's performances and to extend theory and practice: ZPD (Vygotsky, 1978), DAP (Bredecamp, 1987), and joint activity dyads (Bronfenbrenner, 1979). Vygotsky (1978) explained the difference between children's actual vs. their potential performance as the zone of proximal development (ZPD), thus suggesting a continuum of children's abilities dependent upon the social support of a more mature partner. Bredecamp
(1987) proposed the concept of DAP in the context of developing early childhood curricula that support preschool children at their current developmental levels. Bredecamp emphasized that early childhood practices need to focus on establishing the social and emotional bases for children's later learning. Bronfenbrenner (1979) has argued that the adult-child dyad is the minimal unit for analyzing children's development and that joint activity dyads are more conducive to children's learning than disconnected ones. (Joint activity dyads occur when adults and children are engaged in reciprocal interactions with a gradual shifting of the balance of power to the developing person.)

These three constructs were used to analyze the findings of adult and child performances in the present study. In the storybook interactions children demonstrated their ZPD during interactions with adults who used interaction styles that varied in their levels of developmental appropriateness. As Bronfenbrenner suggested, valid assessment of children's performance needs to be considered in the context of children's natural learning partners. Children's performance range (ZPD) was viewed in the context of the adult's use of a range of developmentally appropriate interaction styles. The specifics of what constituted a developmentally appropriate or developmentally less supportive adult interaction style was determined by
looking at whether a joint activity interaction was established and maintained between children and adults.

Implications of these findings suggest that children's interactive and communicative performance may be less a function of children's status alone than it is of their relationship with the adult in the interaction, consequently including children's primary adult partners in the assessment and treatment of children's early communication and early literacy may be indicated. Additionally, adult interactive styles that facilitated young children's active nonverbal participation may differ from interactive styles that facilitate verbal interaction.

**Benefits of a Communicative Approach to Early Literacy for Children's Communication Development**

A primary tenet of this study has been that a communicative approach to early literacy benefits communication development at this early level of children's development. A communicative approach to early literacy does not require that children use language in order to participate in storybook interactions and it can support and encourage early communication learning through a focus on nonverbal action dialogues.

Storybook interactions provide a constant, stable, and reliable source of repetitive communication routines in which children may learn to communicate meaning nonverbally
Picture storybooks also provide a stable joint reference that is concrete and can be used to relate to specific routines of a child's life, such as going to preschool, playing with a dog or cat, or playing with a parent. Storybook interactions may be one of the few childhood routines where joint attention is sustained. The fleeting contacts and normal social commerce of daily living may not offer the opportunity for the extended development of meanings offered in storybook interactions.

Illustrations from storybooks provide iconic representations that can be treated as objects to act upon, as well as symbolic representations to talk about. In the present study adults who used pictures as joint references in the interaction were successful in engaging nonverbal and early verbal children in back and forth exchanges. By definition, picture storybooks convey their messages through two media, illustrations and writing. Meaning is conveyed in both the art and the text (Huck et al., 1987). Cochran-Smith (1986) suggests that picture storybook texts are written in a conversational style that facilitates social interaction between adults as story readers and children as listeners and responders.

Adult focus on illustrations rather than text, allowed children who were primarily interactive and nonverbally communicative to participate meaningfully in the storybook
interactions. At the same time, pictures could be used as conversational referents to facilitate collaborative talk with primarily linguistic children. Adult facilitation of action dialogues consisted of adult-child exchanges with actions, gestures, and facial expressions and focused on social interaction within the storybook context. In the present study action dialogues mainly occurred when adults interacted within children's zones of proximal development (Vygotsky, 1978) using a developmentally appropriate communication model (Bredecamp, 1987). For example, when a child pushed the book off of the sofa, the adult pushed a book off of the sofa and then waited for the child to do something else.

Adult use of a developmentally appropriate model consisted of five main adult interaction styles: interacting at children's level of communication development (developmental matching), waiting for children to initiate and respond (interactive balance), responding to actions as communication (sensitive responsiveness), following the child's interests and actions (adult nondirectiveness) and being playful and interactive (emotional attachment).

These findings from the storybook interactions of atypically developing children and adults are consistent with research findings from typically developing children in storybook interactions. This research suggests that children learn to interact and communicate in the storybook
interactions through socially constructed interactions and social learning. However, the present study also suggests that developmentally appropriate interaction partners are fundamental to young children's active participation. Perhaps some of atypically developing children's difficulties with later language and literacy reside in these early storybook interaction practices, i.e., they have had limited opportunities for joint social construction. One strategy parents and teachers of children at these early levels of communication development may employ to engage children in more active co-constructions of storybook interactions is to focus interactions around pictures as catalysts for communication.

Expanded Definition of Emergent Literacy: Inclusion of Children Who are Preconversational

Children with developmental delays have traditionally been excluded from the conventional literacy paradigm which assumed that children already had oral language and defines literacy primarily in cognitive terms. The dominance of the "reading readiness" approach to literacy learning (children will learn to read when they are neurologically mature) was based on a biological maturation theory of development (Teale & Sulzby, 1991). The assumption was that children can learn to read only after they have acquired the neurological maturity necessary to begin reading. This
implies that a child with developmental delays may never mature sufficiently to learn to be literate.

Emergent literacy research redefined a paradigm for early literacy learning as consisting of socially constructed interactions in which the functional contexts of reading, writing, and talking are mutually developing (Sulzby & Teale, 1991). In this expanded definition of literacy, children with developmental delay are no longer excluded from early literacy learning if they can participate in storybook interactions using a variety of interaction modes. Children with developmental delays demonstrate a longer sensorimotor or preconversational stage of development, which suggests that they have a greater need for adult interactions at the action or motor level of development (Goodman, 1992).

Findings from the present study suggest that children at the early stages of social communication (preconversation) and cognitive development (sensorimotor) can participate meaningfully in storybook exchanges. However, the definition of emergent literacy may need further expansion to include children at the sensorimotor stage of social action routines with storybooks. We can make storybooking something for children to do at the action stages of development, rather than only something to be taken in. Just as nonverbal communication actions such as spontaneous facial expressions, sounds, and body movements
are the precursors to children's early words, so too can these movements prepare children for the symbolic representation involved in literacy.

A key finding in the present study was the ameliorative change in children's performance in interactions with the researcher who used a socially constructive and developmentally matched interaction style. In these storybook interactions, the same children who were passive in storybook routines with their parents were active in storybook interactions with the researcher. As the adult partner changed and used an interactive style designed to increase children's communication and interaction, the children participated and communicated more. This increase in children's active involvement and participation in the storybook interactions is particularly important to young children with delays who often exhibit a lower rate of behavior, and thus have fewer opportunities for social feedback and learning. The theoretical and applied research of Piaget (1977), Bruner (1983), and Vygotsky (1978) all suggest that activity is necessary for children's learning. In a social constructive theory of learning, social activity becomes the context in which meanings are produced both for communicative and cognitive development. Findings from the present study suggest a developmentally appropriate interaction model to increase young children's social activity.
Data from parent interviews also suggested that the context (or use) of storybook reading in these families' lives was rather rigid, viewed primarily as cognitive tasks to access knowledge for their children, or as mechanisms for teaching their children the cognitive aspects of language such as vocabulary. In this way the interviews and observations of parent's interactions corroborate each other; both support the finding that parents view storybook interactions as primarily cognitive teaching opportunities. However, as Piaget (1977), Bruner (1983), and Vygotsky (1978) suggest, activity and participation are necessary for the construction of children's learning. Focusing on children's active social constructions during the storybook interactions may yield improved social communication and social cognition.

Consequently, developmentally appropriate adult interaction styles will focus on facilitating children's active participation during storybook interactions. The present study provides a model for including children with developmental delays into storybook interactions and structuring the interactions to facilitate communication and literacy. This model may be viewed as providing a social infrastructure for children's readiness to interact with both written and oral symbols. A social constructive approach to early literacy that focuses primarily on oral language or verbal communication limits the opportunities of
interactive and communicative nonverbal children for early literacy learning. The answers to the question "What do children need to do before they talk?" may be similar to the answers to the question "What do children need to do before they are literate?"

The Communicative Use of Storybooks as an Efficient Locus for Children's Learning Language and Literacy

A communicative storybook interaction focuses on both adult and child participation. The storybook interaction is reciprocal and playful and includes nonverbal as well as verbal communication. Partners in the storybook interaction share control and direction in the exchange and the timing and pacing of the interaction matches the developmental level of the child. There is an increased focus on pictures rather than text and the content of the story serves as a catalyst for communication rather than restricting communicative topics. In communicative storybook interactions, literacy learning is viewed as an active process, consequently increasing children's activity and participation and increasing their learning.

Previous studies of the storybook interactions of typically developing children and adults have largely focused on the verbal dialogue that surrounds the interaction (Snow & Ninio, 1986): how adults linked information from storybooks to children's own life
experiences (Cochran-Smith, 1984; Heath, 1982), how parents changed their level of verbal directiveness with nonverbal or primarily verbal children (Pelligrini et al., 1985), and how parents demonstrated nonverbal affective rituals during the storybook interactions (Lamme & Packer, 1986). Certain similarities to previous research with typically developing children and parents in storybook interactions were observed in the present study. Many parents from the present study used labelling of pictures or dialogic interaction as their regular interactive form (Snow & Ninio, 1986). Parents demonstrated nonverbal affective rituals such as sitting close, touching, and patting the book (Lamme & Packer, 1986). Parents also linked information from the storybook to the child's own experiences (Cochran-Smith, 1986; Heath, 1982). Some parents focused their child on specific objects or characters from the storybook, rather than on the overall study (Sulzby, 1985, 1988). Mothers of young nonverbal children were more directive (asking children to label pictures) than mothers of older primarily linguistic children (Pelligrini et al., 1985). Overall, these parents of young atypically developing preschool children demonstrated interaction styles that were similar to the Roadville parents in Heath's (1983) study. They were directive and dominant and rarely extended information or skills beyond the immediate context of the interaction.
Vygotsky's (1978) zone of proximal development (ZPD) and his social constructive model of children's learning in which learning first occurs on a social level followed by an internal cognitive level was again helpful to understand how adults may assist children's learning in storybook interactions. Children's ZPD represents that social level on which learning is initiated. To facilitate children's cognitive learning, adults can utilize children's ZPD as a starting point for assisted learning.

The present study provides initial data on the nature of the social construction of young atypically developing children's storybook interactions with their parents and the researcher. Findings suggest that the majority of parents read extended portions of the text to their children, while children passively listened to their parents and responded minimally.

During interactions with the researcher, who utilized a socially constructive interactive model, children were regularly more interactive and communicative often demonstrating verbal and nonverbal competencies not often seen with their parent. In these interactions both researcher and children demonstrated a wider variety of nonverbal and verbal behaviors during the interactions than did their parents and the same children. Adult scaffolding (Ninio & Bruner, 1978; Vygotsky, 1978) and sensitive responsiveness to children's actions, gestures, and
expressions (Greenspan, 1992; Snow, 1984) provided developmentally appropriate support for these preconversational children to demonstrate their communicative literacy. In contrast, in conventional literacy, learning is defined primarily as a passive storage of information. In adult-directed storybook interactions children were more passive. They responded only when directed, and rarely initiated communication (demonstrating a low rate of self-directed communication). The adults, in adult-directed interactions, regularly interacted and communicated beyond the child’s level of communication; they initiated comments and asked questions and focused on teaching children language.

The results from the present study also suggest that preconversational children can increase their sensorimotor activity in storybook interactions. However, children’s active participation depends on their adult partner. Previous research (Girolometto, 1988; Lieven, 1984; MacDonald, 1989; Mahoney, 1988) has indicated that certain adult interaction styles (nondirectiveness, interactive balance, matching, sensitive responsiveness, and emotional attachment facilitate children’s interaction and communication in storybook interactions, therefore this may be the direction to take with children with developmental delays.
An underlying assumption of the present study was that communication and interaction are central to both early literacy and early language learning and that storybook interactions provide both an efficient locus and active process for learning to talk and read and write. Storybook interactions have the potential to provide the context for communicative turn taking and social interaction for preconversational children, as well as for teaching words and story re-telling for conversational children.

The majority of children in the present study were preconversational or early verbal consequently communicative literacy consisted of making interactions active exchanges relating either directly or tangentially to the content of the storybook. The more active children are in their social play, turn taking and nonverbal communication at this stage of development, the more they are learning. Conversely, children who are regularly passive in their storybook interactions miss the active participation that supports learning, and do not engage in the active social interactions necessary for later language and literacy learning. Prolonged periods of child passivity in storybook interactions may be particularly detrimental for children with developmental delay due to their longer sensorimotor or preconversational stages of development. This may result in a prolonged failure to develop the social infrastructures necessary for later language and literacy development. A
communicative use of storybooks may therefore facilitate early literacy more than an adult-teaching approach. A major conclusion of the present study is that more communicative interactions can facilitate literacy and literacy participation can facilitate communication development in atypically developing children.

Implications of the Reciprocal Developmental Power of Early Literacy and Early Communication for Assessment and Treatment

Children's active participation in storybook interactions was strongly linked to the interactive style of their partner, consequently one cannot assume that a child's performance with one partner necessarily reflects what a child can do in other interpersonal contexts. In the present study children's interactions with an adult partner who uses a developmentally appropriate finely tuned model demonstrated children's communicative and literacy competencies.

The findings from the present study provide tentative support for a social constructive model of the reciprocal development of early literacy and early communication development. Findings further suggest that certain styles of adult mediation help children construct meanings better than others.
Two assessment and treatment tools were developed in the present study to observe children and adults in storybook interactions: the ECO Lit (Appendix B) and the Qualitative Scale (Appendix K). The ECO Lit was designed to describe children's interactions and adult interactive styles during storybook interactions. It is an observational tool developed to integrate literacy and communication goals and to guide adults in storybook interactions to facilitate communication and early literacy. The ECO Lit provides a practical vehicle for including both partners during the storybook interaction. Children's performance does not lie solely within the child, but is to a large extent a result of the adult's style of interaction. Thus, the study provides initial findings on a model that addresses both partners in the process of language and literacy learning.

Additionally, the Qualitative Scale provided insight and direction for analyzing a variety of factors of the adult-child relationship during the storybook interaction. The Qualitative Scale consists of an observational checklist to assess more global aspects of the adult-child relationship such as child and adult roles and temporal features of the interaction. The Qualitative Scale can be used to educate parents as to the effects of a variety of adult and child roles and strategies on children's active participation and communication in the storybook.
interactions. Together, the Qualitative Scale and the ECO Lit findings suggested that a majority of parents were adult-directed in their interactions with their children, and that children were passive in their interactions with many adults. The Qualitative Scale also confirmed that children were more active with the researcher who was child-directed and focused on communication in the interactions.

A series of these educational guides for increasing children's communication in early literacy interactions was developed in the present study to provide parents with some direction for increasing their communicative literacy (Appendix I). Table 22 shows an example of an Early Reading/Early Writing guideline.

Table 22
Examples of Reading and Writing Guidelines

| EARLY READING - Matching what the child can do. |

| What Is It? | To act and communicate in ways that motivate the child to stay actively with you. What you say and do can influence children to do and say things he/she sees and hears from you. Children may attempt to try out behaviors they see or hear from you if you make it look like fun and if it is within the child's ability. |
| How To Do It? | To effectively match children, watch them to see what they do in their daily routines. Once you know how the child acts and communicates in a variety of situations, you can relate the actions and messages you use to the child's level. You will find that both horizontal and vertical |
watching can work to keep the child interacting and at more challenging levels. Horizontal matching means using actions and messages similar to the child's. If he brushes his hair, you might comb your hair, for example. Vertical matching means using actions slightly more advanced. To match vertically, you might imitate and expand upon a vocalization. For example, if the child vocalizes "ah, ah" to get what he wants, you might say "ah, ah-want," or "ah-ah-milk." Another way to vertically match is to use a slightly more complex action or vocalization. If the child picks up a phone receiver, you might pick it up as well, then put it to your ear and make a sound into the receiver.

<table>
<thead>
<tr>
<th>LESS LIKE THIS</th>
<th>MORE LIKE THIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shane: (Sits flipping through a magazine.)</td>
<td>Shane: (Sits, flipping through a magazine.)</td>
</tr>
<tr>
<td>Mom: &quot;That's my new magazine. Here, let me get an old one for you.&quot;</td>
<td>Mom: (Picks up a magazine she sees and points to a picture of a flower.) &quot;Ooo-pretty.&quot;</td>
</tr>
<tr>
<td>Shane: (Keeps looking, allows Mom to make the switch, then continues on.)</td>
<td>Shane: (Glances over at her picture.)</td>
</tr>
<tr>
<td>Mom: I honestly don't know what you get out of doing that. But, so long as you don't wreck my good magazines, I guess it's okay.&quot;</td>
<td>Mom: (Points to another flower.) &quot;Hey.&quot;</td>
</tr>
<tr>
<td>Shane: (Keeps flipping.)</td>
<td>Shane: (Points at it, too.)</td>
</tr>
</tbody>
</table>

**Why Less?**

Mom's world is one of words. Shane's world is one of actions. He won't be likely to change his magazine behaviors because no one in his environment provides models within his ability to perform. Mom uses talking with Shane, then puts away the object of their mutual interest, substituting one he can ruin if he likes. Otherwise, she does little to redirect his interest or give him ideas of other behaviors he might try out. He remains stuck in a rather uninteresting world because all that he sees or hears is too advanced for him to learn from.

**Why More?**

Mom gradually attracts Shane's attention by pointing and sounding in ways she thinks he might be able to do himself. After a glance of interest, he gradually starts to point as well, and by the last turn of their brief exchange he couples a vocalization with his pointing. The two do not exactly imitate each other, rather, they create a mini conversation, trading similar actions and sounds. Most importantly, they share joint attention and action, creating a place where further social and communication skills may be nurtured.
Why Is It Important?

Matching gives children models of actions and messages they can use in interactions with you. The idea behind matching is for children to notice that you do things similar enough to them that they begin to try some of them out themselves, either directly or in deferred imitation. Consider yourself as planting seeds for actions and messages. You may plant many seeds, but it is unlikely that all will germinate. The more effectively you plant, the more likely the seeds will grow.

Possible Problems or Concerns

You may feel that words should be enough to get a child to do the things we want them to do. Consider changing your aim to improving interaction and communication skills. Provide the child with effective models of actions and messages during storybook reading. You may find that you are more likely to create places where the two of you can develop a creative relationship, as well as improve his social and communication skills.

EARLY WRITING - Interactive Scribbling

<table>
<thead>
<tr>
<th>LESS LIKE THIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult: &quot;Let's work on our shapes.&quot; (Extends chalk to the child.)</td>
</tr>
<tr>
<td>Child: (Throws himself on the floor.) &quot;Ah, ah.&quot;</td>
</tr>
<tr>
<td>Adult: &quot;You can work. Stop that.&quot; (Gives chalk to the child.)</td>
</tr>
<tr>
<td>Child: (Throws chalk the adult gives him.)</td>
</tr>
<tr>
<td>Adult: &quot;Here, I can work. I can draw a circle.&quot; (Draws one, extends the chalk to the child.)</td>
</tr>
<tr>
<td>Child: (Puts a small mark on the board, wipes away tears.)</td>
</tr>
<tr>
<td>Adult: &quot;That's not a circle. You need to work harder.&quot;</td>
</tr>
<tr>
<td>Child: ( Throws himself back down again.)</td>
</tr>
<tr>
<td>Adult: &quot;You can't play all day. This is work time. Go to your corner until you can straighten out.&quot;</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MORE LIKE THIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult: &quot;Hey, look.&quot; (Makes a mark on the chalkboard, gives chalk to the child.)</td>
</tr>
<tr>
<td>Child: &quot;Ay, ay.&quot; (Picks up on adult's excitement, takes chalk and makes a bunch of dots.)</td>
</tr>
<tr>
<td>Adult: &quot;Dot, dot, dot.&quot; (Dots the chalkboard.)</td>
</tr>
<tr>
<td>Child: (Draws a long line and laughs, gives chalk back to the adult.)</td>
</tr>
<tr>
<td>Adult: &quot;Ooo--line.&quot; (Imitates the child's line.)</td>
</tr>
<tr>
<td>Child: &quot;Ooo.&quot; (Draws a curvy line.)</td>
</tr>
<tr>
<td>Adult: &quot;Hey, circle.&quot; (Makes a circle.)</td>
</tr>
<tr>
<td>Child: &quot;Ay, ay.&quot; (Attempts a circle.)</td>
</tr>
<tr>
<td>Adult: &quot;Circles, circles.&quot; (Makes a series of circles.)</td>
</tr>
</tbody>
</table>
Table 22 (continued)

<table>
<thead>
<tr>
<th>Avoid These Problems</th>
<th>Try These Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of Playfulness; Mismatched Communication</td>
<td>Imitate &amp; Animate; Match Child’s Communication</td>
</tr>
<tr>
<td>The adult uses the word “work” and a negative attitude toward the child as his/her major way of making contact. The adult’s lack of playfulness gets a negative reaction from the child and sends messages far above the child’s ability to perform, mismatching him/her on every turn. Their interaction never really gets off the ground.</td>
<td>The adult uses animation and action to show the child their “work” together can be fun. The adult imitates the child’s actions at the board, showing values for what the child does. By modeling simple sounds, gestures, and single words the adult matches the child’s ways of communicating. They trade a single piece of chalk back and forth to create a partnership between them.</td>
</tr>
</tbody>
</table>

**VARIATIONS**

Try the technique with pencil and paper, crayons and coloring books, magic markers on any surface, magic slates, and any other drawing activity.

These educational guides illustrate how adults might communicatively interact with children during reading and writing events. Children’s active participation is a central goal of the interaction. These guides may be used to promote communicative literacy or as a curricula tool for early literacy and communication in early intervention. The guides consist of contrasting examples of child-directed vs. adult-directed interactions in reading and writing contexts. They may be used to educate parents and teachers about how to make early literacy and early communication more social and communicative as well as more cognitive, and to educate adults as to the variety and effectiveness of their communicative roles during storybook interactions with children.
Another implication of this study is the importance of a dynamic model for the assessment and treatment of both children and their primary interactive partners. This early literacy/early communication model suggests that the interaction and communication of adults and atypically developing children that surrounds the storybook context can efficiently facilitate communication for both language and literacy. The integration of early communication and early literacy provides an efficient locus for intervention with children with delays, and adds to the reciprocal developmental power of each. This suggests that developmentally appropriate communication exchanges support literacy learning and storybook interactions provide structural support systems for language learning. Through an integrated treatment model for communication and literacy, parents can be educated to use the inherent power in storybook interactions to facilitate communication for literacy and language simultaneously.

Conclusion

Literature on the early literacy learning of typically developing children suggests that children do not wait until they are deliberately "taught" to learn about literacy. Similarly, early communication research suggests that children do not wait until they are talking to learn oral language. The findings of the present study suggest that
adults do not have to wait until children talk to engage successfully in communicative storybook interactions. The present study provides a preliminary model for engaging children in storybook interactions at the early imitative and turn taking levels of communication development.
APPENDIX A

CONSENT FORM
PERMISSION FOR VIDEO TAPE
PARENT-CHILD COMMUNICATION PROJECT
Appendix A

CONSENT FORM

PERMISSION FOR VIDEOTAPING

PARENT-CHILD COMMUNICATION PROJECT

I give the Parent-child Communication project permission to videotape samples of me and my child's participation in the research project "Parent-Child Communication During Storybook Interactions." I further give permission for the video tapes to be used for research and training purposes both with The Ohio State University and at training workshops designed to help children with communication delays.

I understand that I can at any time withdraw my permission without any questions or consequences on services to my child.

Child's Name ________________________________
Parent's Name ______________________________
Parent's Signature __________________________
Today's Date ______________________________
APPENDIX B

ECO LITERACY ASSESSMENT:
CHILD
&
ADULT
ECO LITERACY Assessment:

Child

&

Adult

Name of Child ____________________________
Date ____________________________
Person Recording ____________________________
Partner ____________________________
Relationship to the Child ____________________________
Title of the Book ____________________________
Type of Text ____________________________
ECO LITERACY: CHILD ASSESSMENT

Describe how often you observed the events below during the child's interactions with books.

1 = Never  2 = Seldom  3 = Occasionally  4 = Often  5 = Consistently
NA = not applicable to the interaction

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Play &amp; Exchange: Child actively stays with people, in give and take exchanges, without a specific job to complete.</td>
<td></td>
<td></td>
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<tr>
<td>1. Enjoys reading with partner</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
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<tr>
<td>2. &quot;Reads&quot; alone</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
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<tr>
<td>3. Pays attention to both book and partner</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
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<tr>
<td>4. Takes turns with partner</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
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<tr>
<td>5. Cooperates with partner</td>
<td>1 2 3 4 5</td>
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<tr>
<td>Nonverbal Communication: Child exchanges ideas, needs, and information in any way possible.</td>
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<tr>
<td>6. Communicates with gestures</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>7. Communicates with sounds</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Initiates partner's actions</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>9. Initiates partner's sounds</td>
<td>1 2 3 4 5</td>
<td></td>
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<tr>
<td>Language: Child demonstrates the habit of expressing meaning and words in sentences.</td>
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<tr>
<td>10. Initiates partners words</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Responds when partner comments</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>12. Answers questions with words</td>
<td>1 2 3 4 5</td>
<td></td>
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<tr>
<td>13. Communicates with words</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>14. Talks to partner for the fun of it</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
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<tr>
<td>15. Talks to request or control</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. Talks to self</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Conversation: The child exchanges words with two or more persons on a shared topic.</td>
<td></td>
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</tr>
<tr>
<td>17. Talks about a variety of topics</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>18. Stays communicating on a topic</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19. Talks inappropriately or off topic</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Early Literacy: Child is interested in and communicates about print.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20. Attempts to turn pages of book</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21. Points to pictures</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22. Points to print</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23. Comments on connections between book and life</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24. Predicts story events (What happens next?)</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25. Reads letters</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>26. Reads words</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27. Labels illustrations</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28. Initiates familiar, repetitive phrases from story</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29. Responds with predictable phrase when adult pauses</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30. Initiates comments about story</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>31. Extends conversation from story</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Average Competency Ratings:
Social Play & Exchange _____  NVL _____ Language_____  Conversation _____
Early Literacy _____
ECO LITERACY: ADULT ASSESSMENT

Describe how often you observe the events below during adult child interaction with books. Circle the number that applies.

1 = Never    2 = Seldom    3 = Occasionally    4 = Often    5 = Consistently
NA = not applicable to the interaction

<table>
<thead>
<tr>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balance</td>
</tr>
<tr>
<td>1. Gives child time to take a turn. ..................................</td>
</tr>
<tr>
<td>2. Keeps child in back and forth interaction. .........................</td>
</tr>
<tr>
<td>3. Changes when the child changes. .....................................</td>
</tr>
<tr>
<td>4. Interacts at the child's pace. ......................................</td>
</tr>
<tr>
<td>Match</td>
</tr>
<tr>
<td>1. Acts like the child. ..................................................</td>
</tr>
<tr>
<td>2. Communicates nonverbally like the child. .........................</td>
</tr>
<tr>
<td>3. Communicates about the child's interests. .........................</td>
</tr>
<tr>
<td>4. Shows the child the next step in communication. ..................</td>
</tr>
<tr>
<td>Responsiveness</td>
</tr>
<tr>
<td>1. Responds to the child's actions. ...................................</td>
</tr>
<tr>
<td>2. Treats the child's actions as messages. ..........................</td>
</tr>
<tr>
<td>3. Responds when the child talks. .....................................</td>
</tr>
<tr>
<td>4. Responds to sounds. ..................................................</td>
</tr>
<tr>
<td>5. Responds to gestures. .................................................</td>
</tr>
<tr>
<td>6. Responds to child's emotions. .......................................</td>
</tr>
<tr>
<td>Non-Directiveness</td>
</tr>
<tr>
<td>1. Follows the child's interests. .....................................</td>
</tr>
<tr>
<td>2. Talks about the child's ideas. ....................................</td>
</tr>
<tr>
<td>3. Shares the choice of topic. .........................................</td>
</tr>
<tr>
<td>4. Keeps the child on topic. .........................................</td>
</tr>
<tr>
<td>5. Comments. ..............................................................</td>
</tr>
<tr>
<td>Emotional Attachment</td>
</tr>
<tr>
<td>1. Actively enjoys the child. .........................................</td>
</tr>
<tr>
<td>2. Puts child at ease. ..................................................</td>
</tr>
<tr>
<td>3. Shows a childlike playful style ...................................</td>
</tr>
<tr>
<td>4. Shows confidence with the child. ..................................</td>
</tr>
<tr>
<td>5. Talks without judgment and criticism. .............................</td>
</tr>
<tr>
<td>Early Literacy</td>
</tr>
<tr>
<td>1. Asks child questions. ..................................................</td>
</tr>
<tr>
<td>2. Relates book to child's life. ......................................</td>
</tr>
<tr>
<td>3. Talks about pictures. ...............................................</td>
</tr>
<tr>
<td>4. Extends conversation from story. ...................................</td>
</tr>
<tr>
<td>5. Gives open phrases for child to complete. .........................</td>
</tr>
<tr>
<td>6. Lets the child narrate a story. ...................................</td>
</tr>
</tbody>
</table>

Average Principles Ratings
Bal ______ Match______ Res ____ MD _____ EA _____ EA LIT _____
## Section IV. Items by Age Levels of Development

### Stage I. PHONEMIC LEVEL DEVELOPMENT—BIRTH TO 3 MONTHS*

#### Age Periods**

**0 to 1 month**

<table>
<thead>
<tr>
<th>Receptive Language†</th>
<th>Expressive Language‡</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>R1.</strong> Startle response to loud, sudden noises.</td>
<td><strong>E1.</strong> Frequent crying.</td>
</tr>
<tr>
<td><strong>R2.</strong> Actively arrested when approached by sound.</td>
<td><strong>E2.</strong> Begins random vocalizing other than crying.</td>
</tr>
<tr>
<td><strong>R3.</strong> Often quieted by a familiar, friendly voice.</td>
<td><strong>E3.</strong> Vocal-like sounds similar to &quot;E&quot; and &quot;A&quot; predominates.</td>
</tr>
</tbody>
</table>

**1 to 2 months**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequently gives direct attention to other voices.</td>
<td>Appears to listen to speaker.</td>
<td>Often looks at speaker and responds by smiling.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Has a &quot;special&quot; cry for hunger.</td>
<td>Sometimes repeats the same syllable while cooing or babbling.</td>
<td>Develops vocal signs of pleasure.</td>
</tr>
</tbody>
</table>

**2 to 3 months**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Responds to speech by looking directly at speaker's face.</td>
<td>Now regularly localizes speaker with eyes.</td>
<td>Frequently watches lips and mouth of speaker rather than whole face.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Occasionally responds to sound stimulation or speech by vocalizing.</td>
<td>When played with, laughs and uses other vocal expressions of pleasure.</td>
<td>Vocalizes occasionally with two or more different syllables.</td>
</tr>
</tbody>
</table>

### Stage II. MORPHEMIC LEVEL DEVELOPMENT—3 TO 9 MONTHS

**3 to 4 months**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Now deliberately turns head and eyes toward the source of the voice.</td>
<td>Looks about in search of out-of-sight speakers in the room.</td>
<td>Usually brightened or disturbed by angry vocal inflection patterns.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Often laughs during play with objects.</td>
<td>Babbles (regularly repeats series of same sounds, especially when alone).†</td>
<td>Often uses sounds like &quot;P,&quot; &quot;B,&quot; or &quot;M.&quot;</td>
</tr>
</tbody>
</table>

---

*See Appendix A in the REEL—2 Manual for narrative discussion of stages of emergent language development.

**For detailed scoring instructions see the REEL—2 Manual.

†See the glossary in the REEL—2 Manual for definitions of terms.
### 4 to 5 months

- **R13.** Regularly localizes source of voice with accuracy.
- **R14.** Occasionally seems to recognize and respond to his or her own name.
- **R15.** Usually stops crying when someone talks to him or her.

---

- **E13.** Now uses some back vowel sounds similar to “O” and “U.”
- **E14.** Expresses anger or displeasure by vocal patterns other than crying.
- **E15.** Usually stops babbling in response to vocal stimulation, but now may occasionally continue babbling for a short time.

### 5 to 6 months

- **R16.** Appears by facial and bodily gestures to be able to distinguish general meanings of (a) warning, (b) anger, and/or (c) friendly voice patterns.
- **R17.** Appears to recognize some words like “daddy,” “bye-bye,” “mama,” etc.
- **R18.** Stops or withdraws in response to “no” at least half of the time.

---

- **E16.** Takes the initiative in vocalizing and babbling directly at others.
- **E17.** Occasionally vocalizes with 3 or more different syllables at one time.
- **E18.** Now plays at making sounds and vocal noises whether alone or with others.

### 6 to 7 months

- **R19.** Now appears to recognize names of family members in connected speech, even when the person named is not in sight.
- **R20.** Responds with appropriate arm gestures to such words as “up,” “high,” “bye-bye,” etc.
- **R21.** Gives some attention to music or singing.

---

- **E19.** Begins some frequent 2-syllable babbling (often repeats combinations of 2 or more different sounds).
- **E20.** At least half of the time responds with vocalizations when called by name.
- **E21.** Uses some word-like vocal expressions (appears to be naming some things in his or her own “language”).

### 7 to 8 months

- **R22.** Frequently appears to listen to whole conversations between others.
- **R23.** Now regularly stops activity when her or his name is called.
- **R24.** Appears to recognize the names of a few common objects by localizing to them when their names are spoken.

---

- **E22.** Begins some 2+ syllable sentence-like jargon utterances using only occasional, true recognizable words.
- **E23.** Plays speech-gestures games like “pat-a-cake” or “peek-a-boo.”
- **E24.** Occasionally “sings along” with some familiar song or music without using true words.
### Stage II. SYNTACTIC LEVEL DEVELOPMENT—9 TO 18 MONTHS

#### 8 to 9 months

| R25. | Appears to understand some simple verbal requests like, “Come here.” |
| R26. | More regularly stops activity in response to “No,” or “Stop that!” |
| R27. | Will sustain interest (up to a full minute) in looking at pictures if they are named by an adult. |
| E25. | Uses some gesture language (such as shaking head appropriately for “no,” pointing, etc.). |
| E26. | Often mimics the sounds and number of syllables used in vocal stimulation by others. |
| E27. | Utterances now contain more consonants than at the 6-month stage. |

#### 9 to 10 months

| R28. | Appears to enjoy listening to the names of new words. |
| R29. | Generally able to listen to speech without being distracted by other competing sounds. |
| R30. | Often gives toys or other objects to a parent or to others on verbal request. |
| E28. | Speaks first words. These are often “da-da,” “ma-ma,” “bye-bye,” or the name of a pet or a toy. |
| E29. | Uses some exclamations like “oh-oh.” |
| E30. | Also uses some jargon (short sentence-like utterances of 4 or more syllables without true words). |

#### 10 to 11 months

| R31. | Occasionally follows simple commands like “Put that down.” |
| R32. | Appears to understand simple “where” questions like “Where is the ball?” or “Where is Daddy?” |
| R33. | Responds to rhythmic music by bodily or hand movements in approximate time to the music. |
| E31. | Usually now vocalizes in varied jargon patterns while playing alone. |
| E32. | Initiates speech-gestures games like “pat-a-cake” or “peek-a-boo.” |
| E33. | Occasionally tries to imitate (repeat) new words heard. |

#### 11 to 12 months

| R34. | Demonstrates understanding by responding with appropriate head and body gestures to several kinds of verbal requests. |
| R35. | Generally shows intense attention and response to speech over prolonged periods of time. |
| R36. | Demonstrates understanding by making appropriate verbal responses to some frequent requests (for example, “Say bye-bye”). |
| E34. | Uses 3 or more words with some consistency. |
| E35. | Now, most often “talks” to toys, objects, and people throughout the day, using longer verbal patterns. |
| E36. | Frequently responds to songs or rhymes by vocalizing (sings or recites along). |
12 to 14 months

- R37. Appears to understand some new words each week.
- R38. Seem to better understand the psychological feeling and shades of meaning of most speakers.
- R39. Now will sustain interest for 2 or more minutes in looking at pictures, if they are named.
- E37. Uses 5 or more true words with some consistency.
- E38. Attempts to obtain desired objects by using voice and some words in conjunction with pointing and gesturing.
- E39. Some true words now more frequently occur in jargon utterances.

14 to 16 months

- R40. Demonstrates understanding by carrying out double verbal requests to select and bring some familiar object from another room, and so forth.
- R41. Recognizes and can identify by pointing to many objects (or pictures of objects when they are named).
- R42. Clearly recognizes names of various large parts of the body (such as hair, mouth, ears, hands, etc).
- E40. Consistently uses 7 or more (up to 20) true single words.
- E42. Most communication is now accomplished by using some true words along with frequent gestures.

16 to 18 months

- R43. Comprehends simple questions and can carry out up to two consecutive related directions with a ball or other object.
- R44. Now learns and associates new words each week in broad categories (such as the names for new items of foods, clothing, animals, etc).
- R45. From a single request, identifies 2 or more familiar objects from a group of many familiar objects (e.g., "Pick up the ball and the block.").
- E43. Begins using words rather than gestures to express wants and needs.
- E44. Begins repeating words overheard in conversation.
- E45. Evidences a continual but gradual increase in speaking vocabulary (3–4 new words each month).

Stage IV. SEMANTIC LEVEL DEVELOPMENT—18 TO 36 MONTHS

18 to 20 months

- R46. Upon verbal request points to several parts of the body and various items of clothing shown in large pictures.
- R47. Demonstrates understanding by appropriate responses to such action words (verb forms) as "sit down," "come here," "stop that," etc.
- R48. Demonstrates some understanding of distinctions in personal pronouns (such as "give it to her," "give it to me," etc).
- E46. Imitates some 2-word and 3-word sentences frequently heard.
- E47. Imitates environmental sounds (such as motors, animals, etc) during play.
- E48. Now has a speaking vocabulary of at least 10 to 20 words.
### 20 to 22 months

<table>
<thead>
<tr>
<th>R49.</th>
<th>Now follows a series of up to 3 very simple but related commands.</th>
</tr>
</thead>
<tbody>
<tr>
<td>R50.</td>
<td>Recognizes new words daily at an ever increasing rate.</td>
</tr>
<tr>
<td>R51.</td>
<td>Recognizes and identifies most common objects and pictures of common objects when they are named.</td>
</tr>
<tr>
<td>E49.</td>
<td>Begins combining words into simple 2- or 3-word sentences (like &quot;I go bye-bye,&quot; &quot;Daddy come,&quot; etc.).</td>
</tr>
<tr>
<td>E50.</td>
<td>Speaks more and more (1 or 2) new true words each week.</td>
</tr>
<tr>
<td>E51.</td>
<td>Attempts to tell about experiences using a combination of jargon and some true words.</td>
</tr>
</tbody>
</table>

### 22 to 24 months

<table>
<thead>
<tr>
<th>R52.</th>
<th>Upon verbal request, can select 1 item from a group of 5 or more varied items (such as comb, spoon, etc.).</th>
</tr>
</thead>
<tbody>
<tr>
<td>R53.</td>
<td>Appears to understand the meaning and reason of longer sentence utterances, not just the words (i.e., now decodes simple syntax well).</td>
</tr>
<tr>
<td>R54.</td>
<td>Understands some complex sentences (for example, &quot;When we get to the store, I'll buy you an ice cream cone.&quot;).</td>
</tr>
<tr>
<td>E52.</td>
<td>Occasionally now uses 3-word sentences (such as &quot;There it is,&quot; &quot;Play with blocks,&quot; etc.).</td>
</tr>
<tr>
<td>E53.</td>
<td>Refers to self by using her or his own name occasionally.</td>
</tr>
<tr>
<td>E54.</td>
<td>Begins using some pronouns (but makes errors in syntax—e.g., &quot;we godad&quot; instead of &quot;we went&quot;).</td>
</tr>
</tbody>
</table>

### 24 to 27 months

<table>
<thead>
<tr>
<th>R55.</th>
<th>Demonstrates an understanding of several action words (verb forms) by selecting appropriate pictures (for example, correctly chooses which picture shows eating, swinging, throwing, etc.).</th>
</tr>
</thead>
<tbody>
<tr>
<td>R56.</td>
<td>When asked, now points to 3 or more smaller parts of the body (such as chin, elbow, eyebrow, ankle, etc.).</td>
</tr>
<tr>
<td>R57.</td>
<td>Recognizes some extended family name categories (such as uncle, grandma, cousin, etc.).</td>
</tr>
<tr>
<td>E55.</td>
<td>Now usually uses 2-word or 3-word sentences.</td>
</tr>
<tr>
<td>E56.</td>
<td>Now uses some personal pronouns correctly (I, you, he, it, me, etc.).</td>
</tr>
<tr>
<td>E57.</td>
<td>Asks for help verbally for some personal needs (such as washing hands, getting a drink, going to the toilet, etc.).</td>
</tr>
</tbody>
</table>

### 27 to 30 months

<table>
<thead>
<tr>
<th>R58.</th>
<th>Demonstrates an understanding of word category associations through functional identification (correctly answers such questions as &quot;What do you eat with?&quot; &quot;What do you wear?&quot; etc.).</th>
</tr>
</thead>
<tbody>
<tr>
<td>R59.</td>
<td>Understands size difference adjectives (correctly selects &quot;the little doll,&quot; &quot;the small book,&quot; &quot;the large bowl,&quot; etc. from among a group of similar objects).</td>
</tr>
<tr>
<td>R60.</td>
<td>Names and identifies at least one color correctly.</td>
</tr>
<tr>
<td>E58.</td>
<td>Refers to self by using a pronoun rather than by his or her proper name.</td>
</tr>
<tr>
<td>E59.</td>
<td>Can count or repeat two or more numbers correctly in sequence.</td>
</tr>
<tr>
<td>E60.</td>
<td>Can count or repeat two or more numbers correctly in sequence.</td>
</tr>
</tbody>
</table>
### 30 to 33 months

| R61. | Demonstrates an understanding of most common verbs. |
| R62. | Now understands and can respond meaningfully to most very long and complex sentence requests or commands. |
| R63. | Demonstrates an understanding of most common adjectives. |

| E61. | Tells gender when asked, "Are you a boy or a girl?" |
| E62. | Names and talks about what she or he has scribbled or drawn when asked. |
| E63. | Gives both first and last name when asked. |

### 33 to 36 months

| R64. | Asks questions and shows interest in explanations of "why" things are and "how" things function. |
| R65. | Now can carry out up to three or more verbal commands given in one long utterance. |
| R66. | Demonstrates an understanding of several prepositions (such as in, on top of, on, under, in front, behind, etc.). |

| E64. | Regularly can now basically relate experiences from the recent past (what happened while he or she was "out" or separated from parent). |
| E65. | Uses several verb forms correctly in speech or relating what is going on in action pictures (like throwing, swinging, talking, etc.). |
| E66. | Uses some plural forms correctly in speech. |

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NOTES (language disorders, medical history, research notes, etc.)

Administered by ____________________________
APPENDIX D

DEVELOPMENTAL FINDINGS ON RELIABILITY
OF THE ECO SCALES: RESOURCE FOR THE
ECO LIT
How do ratings of interactions on the ECOScale vary with raters? To help answer this question, the ECOScale authors studied the agreement between a criterion rater and one or more raters trained to use the ECOScale. The study actually consisted of three different phases related to the larger study of the effects of ECO intervention. The first was a training phase, the second a phase in which the trained raters were checked by a program developer in preparation for an experimental study, and the third a phase in which a program developer checked the trained raters’ judgments of experimental data.

All three phases used a method developed by Rosenberg and Robinson (1943) for calculating agreement. In this method, each point of discrepancy on the 9-point ECOScale is converted to 11% discrepancy. Thus, if one rater rated an item as 6 and another rater rated the item as 5, the level of agreement between the two is said to be (100% minus 11% of 11%) = 89%. To ensure an average discrepancy no larger than plus or minus 1 scale point, the investigators established 89% as the criterion at or above which they considered the rater to be reliable.

Phase One: Initial Training to Criterion. To train to a criterion for interrater agreement established by the program developers, each rater took part in at least 15 hours of rating videotaped interaction samples on one of the four ECOScale interaction scales (Child Goals, Adult Strategies, Interactive Goals, or Problems) and comparing their ratings with ratings made by a program developer. A rater trained to criterion by observing an interaction sample, rating the sample on all of the items on one of the four interaction scales, observing the tape again, and revising scores as needed based on the second observation. Then the rater compared scores with a rating made by a trained rater. The two raters then discussed discrepancies based upon their clinical experience as well as the current relevant literature. The training discussion continued until raters agreed upon a rating. Training continued until raters achieved a minimum of 89% agreement across a minimum of 10 training tapes.

Phase Two: Preexperimental Reliability. To compute interrater agreement on the ECOScale in preparation for an experimental study of ECO program treatment effects, raters also rated nine, 3-minute videotaped samples of adult-child play. These samples were collected to represent the range of handicapped children commonly assessed with the ECOScales and to reflect a range of levels of effectiveness with the adult samples. Each rater independently viewed each sample twice, rated the tape on one of the ECOScales, and viewed the sample again to allow revision of the original rating. This set of samples allowed a rater to demonstrate reliability on interactions representing low, middle, and high values of the scale. The raters were considered
ECOScales Manual

Table 6.15
Percentage Agreement
Between a Criterion Rater
and Two Raters on the Adult
Strategies Items of the
ECOScales in Preparation
for an Experimental Study
\((n = 9\) samples)

<table>
<thead>
<tr>
<th>Items</th>
<th>Rater 1</th>
<th>Rater 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Maintain and balance turntaking</td>
<td>90.2</td>
<td>91.4</td>
</tr>
<tr>
<td>2. Wait, signal, and expect</td>
<td>90.2</td>
<td>89.0</td>
</tr>
<tr>
<td>3. Match child behavior</td>
<td>89.0</td>
<td>89.0</td>
</tr>
<tr>
<td>4. Initiate and animate</td>
<td>86.6</td>
<td>90.2</td>
</tr>
<tr>
<td>5. Match child progressively</td>
<td>93.9</td>
<td>86.6</td>
</tr>
<tr>
<td>6. Respond to the child</td>
<td>87.8</td>
<td>86.6</td>
</tr>
<tr>
<td>7. Verbally match child</td>
<td>95.1</td>
<td>86.6</td>
</tr>
<tr>
<td>8. Develop verbal topics</td>
<td>95.1</td>
<td>82.9</td>
</tr>
<tr>
<td>9. Maintain balanced conversations</td>
<td>86.6</td>
<td>82.4</td>
</tr>
<tr>
<td>10. Have social conversations</td>
<td>89.0</td>
<td>82.9</td>
</tr>
<tr>
<td>11. Direct child effectively</td>
<td>95.1</td>
<td>91.4</td>
</tr>
<tr>
<td>Average Reliability</td>
<td>90.7</td>
<td>87.0</td>
</tr>
</tbody>
</table>

Table 6.16
Percentage Agreement
between a Criterion Rater
and Two Raters on the Child
Goals Items of the
ECOScales in Preparation
for an Experimental Study
\((n = 9\) samples)

<table>
<thead>
<tr>
<th>Items</th>
<th>Rater 1</th>
<th>Rater 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Use actions functionally, meaningfully</td>
<td>93.9</td>
<td>93.9</td>
</tr>
<tr>
<td>2. Show a turntaking play style</td>
<td>91.8</td>
<td>85.3</td>
</tr>
<tr>
<td>3. Intentionally communicate with others</td>
<td>87.8</td>
<td>87.8</td>
</tr>
<tr>
<td>4. Communicate nonverbally</td>
<td>90.2</td>
<td>89.0</td>
</tr>
<tr>
<td>5. Communicate verbally</td>
<td>92.7</td>
<td>95.0</td>
</tr>
<tr>
<td>6. Make self understood</td>
<td>86.6</td>
<td>92.7</td>
</tr>
<tr>
<td>7. Use varied vocabulary</td>
<td>96.3</td>
<td>90.2</td>
</tr>
<tr>
<td>8. Follow grammatical rules</td>
<td>83.1</td>
<td>92.7</td>
</tr>
<tr>
<td>9. Converse for a variety of reasons</td>
<td>91.4</td>
<td>93.4</td>
</tr>
<tr>
<td>10. Stay in verbal conversations</td>
<td>93.9</td>
<td>92.7</td>
</tr>
<tr>
<td>Average Reliability</td>
<td>90.9</td>
<td>90.8</td>
</tr>
</tbody>
</table>

Table 6.17
Percentage Agreement
between a Criterion Rater
and Two Raters on the
Interactive Goals Items of the
ECOScales in Preparation
for an Experimental Study
\((n = 9\) samples)

<table>
<thead>
<tr>
<th>Items</th>
<th>Rater 1</th>
<th>Rater 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Becoming play partners</td>
<td>90.2</td>
<td>87.7</td>
</tr>
<tr>
<td>2. Becoming turntaking partners</td>
<td>94.3</td>
<td>84.1</td>
</tr>
<tr>
<td>3. Becoming communicating partners</td>
<td>87.7</td>
<td>85.5</td>
</tr>
<tr>
<td>4. Becoming language partners</td>
<td>87.7</td>
<td>82.8</td>
</tr>
<tr>
<td>5. Becoming conversational partners</td>
<td>93.8</td>
<td>92.6</td>
</tr>
<tr>
<td>Average Reliability</td>
<td>90.8</td>
<td>85.7</td>
</tr>
</tbody>
</table>

Table 6.18
Percentage Agreement
between a Criterion Rater
and Two Raters on the
Problem Items of the
ECOScales in Preparation
for an Experimental Study
\((n = 9\) samples)

<table>
<thead>
<tr>
<th>Items</th>
<th>Rater 1</th>
<th>Rater 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADULT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Directive, controlling style</td>
<td>90.2</td>
<td>84.1</td>
</tr>
<tr>
<td>2. Mismatch</td>
<td>89.0</td>
<td>82.3</td>
</tr>
<tr>
<td>CHILD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Low interactive participation</td>
<td>81.6</td>
<td>74.8</td>
</tr>
<tr>
<td>4. Low communicative participation</td>
<td>84.1</td>
<td>75.5</td>
</tr>
<tr>
<td>5. Low verbal and pragmatic skills</td>
<td>81.6</td>
<td>76.6</td>
</tr>
<tr>
<td>INTERACTION</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Lack of active togetherness</td>
<td>90.2</td>
<td>84.1</td>
</tr>
<tr>
<td>7. Lack of playfulness</td>
<td>89.0</td>
<td>85.3</td>
</tr>
<tr>
<td>8. Poor conversations</td>
<td>84.1</td>
<td>78.0</td>
</tr>
<tr>
<td>Average Reliability</td>
<td>86.2</td>
<td>80.6</td>
</tr>
</tbody>
</table>
Validity and Reliability of the ECOScales

Phase Three: Experimental Reliability. To maintain an acceptable level of interrater reliability throughout the experimental study of ECO treatment effects, one of the program developers rated more than 25% of the 135 4-minute videos and compared ratings with the ratings made by the rater. The same method of viewing and rating described for the preexperimental phase was used for the experimental phase. That is, two rater rated the experimental topics, which involved dyads not rated in the preexperimental topics. Tables 6.19 through 6.22 present the percentage agreement between the ratings of the experimental samples by the program developer and each of the two rater participating.

To control for possible rater bias resulting from expectations of progress over time, the experimental procedure included randomizing the samples of the videotaped interactions prior to rating. Each sample ran 4 minutes and consisted of the second through fifth minutes from a 5-minute interaction.

Table 6.19
Percentage Agreement between a Criterion Rater and Two Raters on the Adult Strategies Items of the ECOScales in an Experimental Study of ECO Treatment Effects (n = 29 samples)

<table>
<thead>
<tr>
<th>Items</th>
<th>Rater 1</th>
<th>Rater 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Maintain and balance turntaking</td>
<td>89.1</td>
<td>87.2</td>
</tr>
<tr>
<td>2. Wait, signal, and expect</td>
<td>90.4</td>
<td>89.4</td>
</tr>
<tr>
<td>3. Match child behavior</td>
<td>86.3</td>
<td>89.8</td>
</tr>
<tr>
<td>4. Imitate and animate</td>
<td>84.9</td>
<td>83.2</td>
</tr>
<tr>
<td>5. Match child progressively</td>
<td>93.8</td>
<td>90.0</td>
</tr>
<tr>
<td>6. Respond to the child</td>
<td>87.6</td>
<td>89.0</td>
</tr>
<tr>
<td>7. Verbally match child</td>
<td>89.0</td>
<td>86.5</td>
</tr>
<tr>
<td>8. Develop verbal topics</td>
<td>89.0</td>
<td>89.0</td>
</tr>
<tr>
<td>9. Maintain balanced conversations</td>
<td>88.3</td>
<td>92.4</td>
</tr>
<tr>
<td>10. Have social conversations</td>
<td>82.3</td>
<td>85.6</td>
</tr>
<tr>
<td>11. Direct child effectively</td>
<td>89.0</td>
<td>88.2</td>
</tr>
<tr>
<td>Average Reliability</td>
<td>88.7</td>
<td>88.5</td>
</tr>
</tbody>
</table>

Table 6.20
Percentage Agreement between a Criterion Rater and Two Raters on the Child Goals Items of the ECOScales in an Experimental Study of ECO Treatment Effects (n = 30 samples)

<table>
<thead>
<tr>
<th>Items</th>
<th>Rater 1</th>
<th>Rater 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Use actions functionally, meaningfully</td>
<td>95.6</td>
<td>90.7</td>
</tr>
<tr>
<td>2. Show a turntaking play style</td>
<td>86.8</td>
<td>81.6</td>
</tr>
<tr>
<td>3. Intentionally communicate</td>
<td>91.2</td>
<td>89.1</td>
</tr>
<tr>
<td>4. Communicate nonverbally</td>
<td>90.1</td>
<td>89.0</td>
</tr>
<tr>
<td>5. Communicate verbally</td>
<td>90.1</td>
<td>96.7</td>
</tr>
<tr>
<td>6. Make self understood</td>
<td>94.5</td>
<td>95.6</td>
</tr>
<tr>
<td>7. Use varied vocabulary</td>
<td>91.2</td>
<td>97.3</td>
</tr>
<tr>
<td>8. Follow grammatical rules</td>
<td>95.6</td>
<td>90.0</td>
</tr>
<tr>
<td>9. Converse for a variety of reasons</td>
<td>97.8</td>
<td>96.7</td>
</tr>
<tr>
<td>10. Stay in verbal conversations</td>
<td>97.8</td>
<td>96.2</td>
</tr>
<tr>
<td>Average Reliability</td>
<td>93.1</td>
<td>93.4</td>
</tr>
</tbody>
</table>

Table 6.21
Percentage Agreement between a Criterion Rater and Two Raters on the Interactive Goals Items of the ECOScales in an Experimental Study of ECO Treatment Effects (n = 35 samples)

<table>
<thead>
<tr>
<th>Items</th>
<th>Rater 1</th>
<th>Rater 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Becoming play partners</td>
<td>91.4</td>
<td>92.2</td>
</tr>
<tr>
<td>2. Becoming turntaking partners</td>
<td>92.1</td>
<td>95.0</td>
</tr>
<tr>
<td>3. Becoming communicating partners</td>
<td>84.7</td>
<td>97.4</td>
</tr>
<tr>
<td>4. Becoming language partners</td>
<td>89.6</td>
<td>94.1</td>
</tr>
<tr>
<td>5. Becoming conversation partners</td>
<td>93.2</td>
<td>96.7</td>
</tr>
<tr>
<td>Average Reliability</td>
<td>90.2</td>
<td>93.1</td>
</tr>
</tbody>
</table>
## ECOScales Manual

<table>
<thead>
<tr>
<th>Items</th>
<th>Rater 1</th>
<th>Rater 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADULT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Directive, controlling style</td>
<td>87.7</td>
<td>93.2</td>
</tr>
<tr>
<td>2. Mismatch</td>
<td>89.0</td>
<td>91.7</td>
</tr>
<tr>
<td>CHILD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Low interactive participation</td>
<td>88.9</td>
<td>87.2</td>
</tr>
<tr>
<td>4. Low communicative participation</td>
<td>91.3</td>
<td>91.1</td>
</tr>
<tr>
<td>5. Low verbal and pragmatic skills</td>
<td>90.8</td>
<td>96.1</td>
</tr>
<tr>
<td>INTERACTION</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Lack of active togetherness</td>
<td>90.2</td>
<td>89.6</td>
</tr>
<tr>
<td>7. Lack of playfulness</td>
<td>90.6</td>
<td>88.3</td>
</tr>
<tr>
<td>8. Poor conversations</td>
<td>91.5</td>
<td>92.0</td>
</tr>
<tr>
<td>Average reliability</td>
<td>89.8</td>
<td>91.2</td>
</tr>
</tbody>
</table>

A rater observed the sample, rated the sample on the scale items, observed the sample again, and revised scores as needed. The two raters measured reliability by rating 25% of the experimental tapes and computing percent agreement between their ratings. The results of the study are described in the validity section of this chapter and are discussed in detail by MacDonald (1989) in Becoming Partners with Children.

It should be noted that the percentage agreement computed in these studies is a measure of absolute, not relative, agreement as correlations would be. Absolute agreement is a more stringent standard for judging reliability and is measuring agreement with the program developer more closely approximates evidence of validity than evidence of traditional reliability.
APPENDIX E

FOCUSED INTERVIEW EARLY LITERACY QUESTIONS
FOR HOME INTERVIEW
FOCUSED INTERVIEW
EARLY LITERACY
QUESTIONS FOR HOME INTERVIEWS

Beliefs
1. Describe some of the benefits to your child of reading with people. Of reading alone?
2. Describe some of the reasons you read books with your child.
3. Describe some of the benefits you get from reading with your child.
4. What makes you believe your child enjoys books?
5. Do you think reading with your child will help your child communicate? How?

Communication During Non-book Times
1. Some children communicate more with books; some communicate less. Describe how your child communicates with you with books compared to how she/he communicates during other play times.

Current Behaviors
1. Who reads stories or picture books to ______? How often?
2. How long do you typically read stories together?
3. What do you read? What are his/her favorites?
4. Does your child ever read without books, e.g., print in the environment, such as signs, cereal boxes, logos, commercials on T.V.?
5. Tell me what ______ does when you are together with books.
   Who starts the activity?
   Who takes the lead?
   Who does the most?
   How do you talk?
   How does ______ communicate?
   Do you mainly talk about the pictures or read the words?
   Do you try to finish the book once you’ve started it?
   Who usually stops the activity?
6. Other children use books for many purposes; does ______ use books for:
   Reading on her/his own?
   Pretending to read?
7. When did ______ first show an interest in books?
8. Does ______ ask you questions about print? About pictures?

9. What kind of reading activities does ______ do at home now? Writing activities?
10. Does your child enjoy reading outside the home with others?

Predictions
1. By what age do you expect your child to read stories on her/his own?
2. How do you think you can help your child learn to read? To communicate?
3. What does _____ need next to do to get ready to read? To write?
4. Do you think learning to read will help _____ talk?

Parent’s Own Reading
1. Do you enjoy reading? Writing?
2. Why do you read?
3. How often do you read? Write?
4. What do you read?
5. How much a part of your daily activities involves reading? How much involves writing?
6. How frequently does _____ see others reading at home?
7. What kind of reading does _____ see others do?
8. Would you describe reading as playtime or worktime?
9. How important is it to you that _____ learn to read?

Changes
1. What changes have you seen in your child’s communication during the last three months? Reading? Writing?
2. Which changes have surprised you the most and why?

About Child’s Disability
1. When did you first realize _____ had a developmental delay?
2. What have professionals told you about your child’s ability to learn?
3. Do you think _____’s problems will interfere with his/her learning to communicate? To read? To write?
APPENDIX F

LETTER TO PARENTS AFTER THEY AGREE TO PARTICIPATE
Dear Parent,

Thank you for agreeing to participate in this early literacy research project. As a parent who reads storybooks with your child, you know that early literacy and communication learning are a part of your child's early experiences.

The study is part of my doctoral research at The Ohio State University. As I explained, we are interested in how children and adults communicate while looking at storybooks, and how parents influence this process. Through studies such as this, we will become more aware of how children develop early literacy and the role played by adults in that process.

In this study, I will videotape you and your child at your home. Also, I will ask you a series of questions relating to your beliefs concerning how your child is learning to talk and read. The home visit will last approximately two hours.

Enclosed with this letter, you will find the following: (1) a permission form to allow us to videotape you and your child and (2) a family information sheet.

Please read all of this information carefully. If you decide to participate in the research project, please complete both of these forms.

I look forward to meeting you and your child.

Please call me at 292-9920 (days) or 236-4908 (evenings) if you have any questions. Thank you for your time and help.

Sincerely,

Paula C. Rabidoux, MA/CCC
Doctoral Candidate

James MacDonald, Ph.D/CCC
Chief of Language, Nisonger Center
Advisor
APPENDIX G

FAMILY DEMOGRAPHICS
FAMILY DEMOGRAPHICS

PLEASE COMPLETE THE FOLLOWING AND RETURN IT TO PAULA RABIDOUX.

Child’s Name:

first middle last

Birthdate: ___________ Gender: male

month day year female

Address: ___________________________________________________________

Street

City State Zip

Family Background

Parent’s Name: ___________________________ Age ______

Occupation: _______________ Educational Level_______

Parent’s Name: ___________________________ Age ______

Occupation: _______________ Educational Level ______

Ethnic Background__________________________________________

African-American Hispanic Native American

European-American Asian Other

Child’s Brothers and Sisters:

<table>
<thead>
<tr>
<th>Name</th>
<th>Age</th>
<th>Grade Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Who does your child currently live with?

___ Biological Mother     ___ Biological Father
___ Adoptive Parents     ___ Parent’s Partner
___ Sisters             ___ Others
___ Brothers

Is your child enrolled in any of the following programs?

___ Daycare              ___ Early Intervention
___ Physical Therapy     ___ Occupational Therapy
___ Preschool           ___ Speech Therapy

Which of the following describes the total income for the household?

___ Under 10,000
___ 10,001 - 20,000
___ 20,001 - 30,000
___ 30,001 - 40,000
___ 40,001 - 50,000
___ 50,001 - 60,000
___ Above 60,000

___ Don’t know or wish to reply

All information is confidential. Your name and your child’s name will not be used in the study.
Storybooks from Bag 2 for the older children.


Storybooks from Bag 1 for the younger children.

APPENDIX I

 PACKET OF PRACTICAL GUIDELINES FOR COMMUNICATING WITH CHILD DURING READING AND WRITING
EARLY READING - Matching what the child can do.

What Is It?  To act and communicate in ways that motivate the child to stay actively with you. What you say and do can influence children to do and say things he/she sees and hears from you. Children may attempt to try out behaviors they see or hear from you if you make it look like fun and if it is within the child's ability.

How To Do It?  To effectively match children, watch them to see what they do in their daily routines. Once you know how the child acts and communicates in a variety of situations, you can relate the actions and messages you use to the child's level. You will find that both horizontal and vertical matching can work to keep the child interacting and at more challenging levels. Horizontal matching means using actions and messages similar to the child's. If he brushes his hair, you might comb your hair, for example. Vertical matching means using actions slightly more advanced. To match vertically, you might imitate and expand upon a vocalization. For example, if the child vocalizes "ah, ah" to get what he wants, you might say "ah, ah-want," or "ah-ah-milk." Another way to vertically match is to use a slightly more complex action or vocalization. If the child picks up a phone receiver, you might pick it up as well, then put it to your ear and make a sound into the receiver.

<table>
<thead>
<tr>
<th>LESS LIKE THIS</th>
<th>MORE LIKE THIS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Shane:</strong> (Sits flipping through a magazine.)</td>
<td><strong>Shane:</strong> (Sits, flipping through a magazine.)</td>
</tr>
<tr>
<td><strong>Mom:</strong>  &quot;That's my new magazine. Here, let me get an old one for you.&quot;</td>
<td><strong>Mom:</strong>  <em>(Picks up a magazine she sees and points to a picture of a flower.)</em> &quot;Ooo-pretty.&quot;</td>
</tr>
<tr>
<td><strong>Shane:</strong> (Keeps looking, allows Mom to make the switch, then continues on.)</td>
<td><strong>Shane:</strong> (Glances over at her picture.)</td>
</tr>
<tr>
<td><strong>Mom:</strong>  I honestly don't know what you get out of doing that. But, so long as you don't wreck my good magazines, I guess it's okay.&quot;</td>
<td><strong>Mom:</strong>  <em>(points to another flower.)</em> &quot;Hey.&quot;</td>
</tr>
<tr>
<td><strong>Shane:</strong> (Keeps flipping.)</td>
<td><strong>Shane:</strong> (Points at it, too.)</td>
</tr>
<tr>
<td><strong>Mom:</strong> <em>(Points back and forth between the two.)</em> &quot;Ooo. Ooo.&quot;</td>
<td><strong>Shane:</strong> &quot;Ooo.&quot; <em>(Points at the one nearest him.)</em></td>
</tr>
</tbody>
</table>
Why Less? Why More?

Mom’s world is one of words. Shane’s world is one of actions. He won’t be likely to change his magazine behaviors because no one in his environment provides models within his ability to perform. Mom uses talking with Shane, then puts away the object of their mutual interest, substituting one he can ruin if he likes. Otherwise, she does little to redirect his interest or give him ideas of other behaviors he might try out. He remains stuck in a rather uninteresting world because all that he sees or hears is too advanced for him to learn from.

Mom gradually attracts Shane’s attention by pointing and sounding in ways she thinks he might be able to do himself. After a glance of interest, he gradually starts to point as well, and by the last turn of their brief exchange he couples a vocalization with his pointing. The two do not exactly imitate each other, rather, they create a mini conversation, trading similar actions and sounds. Most importantly, they share joint attention and action, creating a place where further social and communication skills may be nurtured.

Why Is It Important?

Watching gives children models of actions and messages they can use in interactions with you. The idea behind matching is for children to notice that you do things similar enough to them that they begin to try some of them out themselves, either directly or in deferred imitation. Consider yourself as planting seeds for actions and messages. You may plant many seeds, but it is unlikely that all will germinate. The more effectively you plant, the more likely the seeds will grow.

Possible Problems or Concerns

You may feel that words should be enough to get a child to do the things we want them to do. Consider changing your aim to improving interaction and communication skills. Provide the child with effective models of actions and messages during storybook reading. You may find that you are more likely to create places where the two of you can develop a creative relationship, as well as improve his social and communication skills.
### LESS LIKE THIS

**Adult:** "Let's work on our shapes." (Extends chalk to the child.)

**Child:** (Throws himself on the floor.) "Ah, ah.*

**Adult:** "You can work. Stop that." (Gives chalk to the child.)

**Child:** (Throws chalk the adult gives him.)

**Adult:** "Here, I can work. I can draw a circle." (Draws one, extends the chalk to the child.)

**Child:** (Puts a small mark on the board, wipes away tears.)

**Adult:** "That's not a circle. You need to work harder.*

**Child:** (Throws himself back down again.)

**Adult:** "You can't play all day. This is work time. Go to your corner until you can straighten out.*

### MORE LIKE THIS

**Adult:** "Hey, look." (Makes a mark on the chalkboard, gives chalk to the child.)

**Child:** "Ay, ay.* (Picks up adult's excitement, takes chalk and makes a bunch of dots.)

**Adult:** "Dot, dot, dot.* (Dots the chalkboard.)

**Child:** (Draws a long line and laughs, gives chalk back to the adult.)

**Adult:** "Ooo—line.* (Imitates the child's line.)

**Child:** "Ooo.* (Draws a curvy line.)

**Adult:** "Hey, circle.* (Makes a circle.)

**Child:** "Ay, ay.* (Attempts a circle.)

**Adult:** "Circles, circles.* (Makes a series of circles.)

### Avoid These Problems

Lack of Playfulness; Mismatched Communication

The adult uses the word "work" and a negative attitude toward the child as his/her major way of making contact. The adult's lack of playfulness gets a negative reaction from the child and sends messages far above the child's ability to perform, mismatching him/her on every turn. Their interaction never really gets off the ground.

### Try These Strategies

Imitate & Animate; Match Child's Communication

The adult uses animation and action to show the child their "work" together can be fun. The adult imitates the child's actions at the board, showing values for what the child does. By modeling simple sounds, gestures, and single words the adult matches the child's ways of communicating. They trade a single piece of chalk back and forth to create a partnership between them.

### VARIATIONS

Try the technique with pencil and paper, crayons and coloring books, magic markers on any surface, magic slates, and any other drawing activity.
APPENDIX J

AN EXAMPLE OF INITIAL CODING FOR ETHNOGRAPH
Example of Initial Coding

Child: Lots of sounding, uses sights, lots of physical handling of the book; pointing, patting. He pulls book away from Mom and pushes it to the floor. P chooses the book, T sits on arm of chair. P looks at book and sounds to it. Sounds excitedly (with more animation) when M is getting a book. Opens book and turns 1-2 pages then pushes to floor. P initiates new ideas with a new sign. Lets M know with a scream when he's finished. Reflection: Peter gives the impression of knowing what book he wants; he expresses this in his vocalizing and physical gestures. He is in control of the interaction, when M introduces direction, P rejects it.

Mother: M talks about the pictures and words, turns most of the pages. M asks frequent questions, and uses lots of words in sentences. She offers the choice of books to P once, then puts them in a pile. M tries to interpret (read) P's actions and sounds. She keeps a running commentary. M tries to get P. interested in the book by asking questions. When M tries to initiate interaction P screams. She uses words and an occasional sign when he stops long enough to let her. Reflection: She tries to extend him on a topic but when he resists she follows him. M seems to approach the interaction as she approaches caregiving—something that needs to be done. Major observation is that she lets...
him lead her anyway he wants
to; when he vocalizes a
complaint she lets him move on
or push the book away. Mom
tries to tell a story, but
doesn’t get too far. The
impression is that she would
like to get more done.
+ Peter w/ Researcher

Child: Child stays on book
much longer initially, then he
starts shopping. Points to
pictures, sounds, and turns
pages. Child imitates A’s
actions. Looks through the
stack of books, examines
covers, vocalizes

Directive
Task orientation
Begin
PR
Interactive-length
Beginnings-with-Researcher
APPENDIX K

QUALITATIVE SCALE
Qualitative Scale

Nature of the Relationship
1. Observational Dyad
   a. Adult attends to the child.
   b. Adult responds to the child attention.
   c. Child attends to adult.
   d. Child attends to storybook.
2. Joint Activity Dyad
   a. Adult and child influence what each other does or says.
   b. The child and adult initiate as well as respond.
   c. Each partner’s actions or communications extend the interaction.
3. Unconnected
4. Parallel
5. Primary

Temporal Storybook Interaction Parameters
1. Choosers
   a. Picked the storybooks to read
   b. Changed books less frequently.
   c. Stayed on one book longer.
   d. Abrupt ending to the interaction.
2. Followers
   a. Child chose book
   b. Child browsed book before accepting or rejecting it.
   c. Child and adult actively interacted on one book for a shorter time.
   d. Ending was gradual

Adult Roles
1. Regulator
   a. Acted as conductors of the interaction.
   b. High sensitivity to child’s actions and words.
   c. Read more of text
   d. Created a narrow range of acceptable adult and child behaviors.
   e. Child positioned as reactive.
   f. Kept child attending until story was completed.
   g. Interacted primarily for instrumental purposes.
2. Supporter
   a. Acted as interactive mediators
   b. Included more from the child’s immediate environment in the interaction.
   c. Read text, commented on pictures.
   d. Demonstrated a wider range of parent and
d. Demonstrated a wider range of parent and child behaviors.
e. Child positioned as proactive.
f. Did not try to keep the child interacting to finish the book.
g. Interacted primarily for social purposes.

3. Teacher
a. Acted as instructors, focused on conventionally "right" answers.
b. Shared their own knowledge and experiences with the child.
c. Read text.
d. Demonstrated a narrow range of child and adult behaviors.
e. Child positioned as reactive to adult's questions.
f. Read longer pieces of text, with fewer pauses.
g. Interacted primarily for instrumental purposes.
h. Asked frequent questions.

4. Player
a. Acted spontaneously with same focus as the child.
b. Gave child increased control over activity and topics.
c. Commented on pictures and responded to child's actions as well as words.
d. Allowed a wider range of child and adult behaviors.
e. Child positioned as proactive.
f. Read very short pieces of text, often only 1 or 2 words.
g. Interacted primarily for social purposes.

5. Follower
a. Not observed in these interactions, but frequently a role parents engage in with their atypically developing children.
   1) May not have been observed due to the design of the interaction: Parents volunteered to be part of the study, and were instructed to interact with their child and the storybooks.

Child Roles
1. Proactive
   a. Interacted with their parents as co-constructors, or equal partners.
   b. Regularly initiated and responded.
   c. Actively kept the interaction going, sharing
in the direction of the activity.

d. Acted from their own motivations, using independent and creative communications and actions.

2. Reactive
a. Co-operative and responsive to the adult's lead.
b. Responded regularly but seldom initiated interaction or activity.
c. Lack of sustained back and forth interaction.
d. Showed a routinized repertoire of storybook interaction behaviors.

3. Inactive
a. Limited attention to the adult.
b. Seldom initiated or responded.
c. Slow rate of interaction or communication.
d. Few reasons or opportunities for the child to interact.

4. Resistive
a. Fragmentary attention to the adult.
b. Seldom initiated or responded with the adult.
c. Absence of back and forth interaction.
d. Actively tried to escape from the interaction.

Communication Roles

1. Readers
a. Held and controlled the book.
b. Read the text in its entirety.
c. Asked child questions at the end of the book.
d. Mainly used speech
e. Responded to child's actions by increasing direction and control
f. Dominated activity
g. Rapid pace of interaction
h. Maintained reading as long as possible, until book was finished

2. Waiters
a. Held the book close to the child.
b. Read one or two pages at a time.

c. Asked a question or pointed out a picture every few pages.
d. Kept the child attending to the shared activity.
e. Responded to some of child's actions.
f. Adult would wait and cue child to respond
g. Slower pace of interaction, allowed child more time to participate.
h. Tried to maintain interaction by reading less and asking more questions.
3. Talkers
   a. Child often held and controlled book.
   b. Parents talked about pictures.
   c. Responded to child’s actions and comments throughout the book.
   d. Talked about visible people, animals, and actions, and expanded on the child’s communication.
   e. Used more gestures and actions in their interactions.
   f. Physically prompted the child to take a turn.
   g. Sensitive to child’s attention
   h. Interactive pace varied more with the child.
   i. Tried to continue interactions by pointing out pictures they thought would interest the child.

4. Partner
   a. Book was used as a tool or toy to focus interaction.
   b. Nonverbal communication encouraged with preverbal children.
   c. Incorporated children’s immediate experiences into interaction with storybook.
   d. Followed the child’s lead in activities.
   e. Kept the child in back and forth exchanges.
   f. Waited for child to initiate and respond.
   g. Used a variety of communication pragmatics.

Interactive Management Strategies
1. Consistent pattern of researcher interactive strategies.
   a. Researcher was playful
   b. Waited for child to do or vocalize something.
   c. Pace of interaction was child controlled.
   d. Actively tried to keep child interacting doing any reciprocal activity.
   e. Commented on child’s actions more than questioned.
   f. Acted and communicated in ways the child could imitate.
   g. Responded to actions as if they were communications.
   h. Expanded on child’s topics

2. Children who did more with the researcher (compared to interaction with parent)
   a. Used a wider variety of child and adult storybook behaviors
      1) More nonverbal interaction
      2) Book used more as a prop, main emphasis on play interaction.
   b. Communicated on a variety of topics.
c. Used gestures, sounds, and movements to communicate.
d. Were spontaneous and showed enjoyment
e. Stayed in the same play activity with researcher.
f. Imitated the researcher's actions, sounds, or words.

3. Children who did less with the researcher (compared to interaction with parent)
a. Level of activity in interaction was low.
b. Brief attention to a shared activity.
c. Infrequent initiation or response.
d. Lack of self-initiated verbalizations; mainly imitative.
APPENDIX L

TABLES OF RANK ORDERING OF CHILDREN ON ECO LIT AND REEL-2 INCLUDING SUMMARY RANK TABLE
Tables of Rank Ordering of Children on ECO Lit and REEL-2 Including Summary Rank Table

Table 23
Child REEL-2 Score Ranked

<table>
<thead>
<tr>
<th>Name</th>
<th>REEL-ELA Score</th>
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</thead>
<tbody>
<tr>
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</tr>
<tr>
<td>Child N</td>
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</tr>
<tr>
<td>Child B</td>
<td>14</td>
</tr>
<tr>
<td>Child D</td>
<td>14</td>
</tr>
<tr>
<td>Child A</td>
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</tr>
<tr>
<td>Child E</td>
<td>16</td>
</tr>
<tr>
<td>Child G</td>
<td>16</td>
</tr>
<tr>
<td>Child J</td>
<td>16</td>
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<td>18</td>
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<tr>
<td>Child I</td>
<td>18</td>
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<td>Child K</td>
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<td>Child O</td>
<td>20</td>
</tr>
<tr>
<td>Child P</td>
<td>20</td>
</tr>
<tr>
<td>Child L</td>
<td>24</td>
</tr>
<tr>
<td>Child Q</td>
<td>27</td>
</tr>
<tr>
<td>Child R</td>
<td>30</td>
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<td>Child T</td>
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</tr>
<tr>
<td>Child F</td>
<td>33</td>
</tr>
<tr>
<td>Child S</td>
<td>33</td>
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</tbody>
</table>

Note. Children’s rank order on REEL-2.
Table 24
Child Rankings by ECO Lit Scores with Researcher

<table>
<thead>
<tr>
<th>Name</th>
<th>Researcher Social Play &amp; Exchange</th>
<th>Researcher Nonverbal Communication</th>
<th>Researcher Language</th>
<th>Researcher Conversation</th>
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<td>Child H</td>
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<tr>
<td>Child D</td>
<td>2.6</td>
<td>3.25</td>
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Note. Children’s rank order during interactions with the researcher.
Table 25

Child Rankings by ECO Lit Scores with Parent

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<tr>
<th>Name</th>
<th>Parent SP &amp; Exchange</th>
<th>Parent Nonverbal Communic</th>
<th>Parent Language</th>
<th>Parent Conversation</th>
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<td>1.50</td>
<td>3.20</td>
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<td>Child J</td>
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<tr>
<td>Child I</td>
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<td>3.00</td>
<td></td>
</tr>
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<td>4.00</td>
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Note. Children's rank order during interactions with their parents.
<table>
<thead>
<tr>
<th>NAME</th>
<th>CHILD ECO LIT SCORES WITH PARENT</th>
<th>CHILD ECO LIT SCORES WITH PROFESSIONAL</th>
<th>REEL-ELA SCORE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Social Play &amp; Exchange</td>
<td>Nonverbal Communic</td>
<td>Language</td>
</tr>
<tr>
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<td>2.60</td>
</tr>
<tr>
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<td>3.50</td>
<td>3.00</td>
</tr>
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<td>Child I</td>
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<td>Child A</td>
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<td>2.6</td>
</tr>
<tr>
<td>Child F</td>
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<td>1.75</td>
<td>2.70</td>
</tr>
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<td>Child R</td>
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<td>2.14</td>
</tr>
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<td>3.2</td>
<td>2.50</td>
<td>2.28</td>
</tr>
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<td>Child</td>
<td>L</td>
<td>2.6</td>
<td>2.00</td>
</tr>
<tr>
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<td>-------</td>
<td>-------</td>
<td>-------</td>
</tr>
<tr>
<td>Child</td>
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<td>3.00</td>
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<td>3.2</td>
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</tr>
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<td>Child</td>
<td>T</td>
<td>2.6</td>
<td>1.50</td>
</tr>
<tr>
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<td>1.8</td>
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<td>Child</td>
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<td>3.0</td>
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</tr>
<tr>
<td>Child</td>
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<td>3.50</td>
</tr>
</tbody>
</table>

**Note.** Children’s scores on three measures used to estimate verbal or nonverbal status: ECO Lit with Parent, ECO Lit with Researcher, REEL-2.
Table 27

*Rank Ordering of Children on Each Measure and Average and Overall Rank*

<table>
<thead>
<tr>
<th>Child</th>
<th>Rank on ECO Lit with Parent</th>
<th>Rank on ECO Lit with Researcher</th>
<th>Rank on REEL</th>
<th>Average Rank</th>
<th>Overall Rank</th>
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</thead>
<tbody>
<tr>
<td>Child A</td>
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</tr>
<tr>
<td>Child B</td>
<td>17</td>
<td>15</td>
<td>17</td>
<td>16.33</td>
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</tr>
<tr>
<td>Child C</td>
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<td>11</td>
<td>12.33</td>
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</tr>
<tr>
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<td>Child E</td>
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<tr>
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<td>6.67</td>
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</tr>
<tr>
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<td>19</td>
<td>9.67</td>
<td>10</td>
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</table>
Table 27 (continued)

<table>
<thead>
<tr>
<th>Child</th>
<th>Rank on ECO Lit with Parent</th>
<th>Rank on ECO Lit with Researcher</th>
<th>Rank on REEL-2</th>
<th>Average Rank</th>
<th>Overall Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child O</td>
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<td>19</td>
<td>7</td>
<td>13.67</td>
<td>17 (L)</td>
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<td>20</td>
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<tr>
<td>Child Q</td>
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<td>1</td>
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<td>7</td>
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</tbody>
</table>

Note. Children’s rank order on ECO Lit with parent, ECO Lit with research, and REEL-2; Average ranking and overall ranking.
BIBLIOGRAPHY


Erickson, F. (1986). Qualitative methods in research on teaching. In Merlin C. Wittrock (Ed.), *Handbook of research on teaching*. (3rd ed.).


Hanson, M. J., & Lynch, E. W. (1989). Early intervention: Implementing child and family services for infants and toddlers who are at risk or disabled. Austin, TX: Pro-Ed.


