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Expressive Communication and Socialization Skills of Five-Year Olds with Slow Expressive Language Development

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Beginning at birth, a child's receptive and expressive language skills are developing in stages. Likewise, the child's socialization skills are progressing in stages. However, it does not seem that communication and socialization are developing independently of each other. Rather, it seems that their development is interrelated. Children learn to speak in a social context, and social situations are necessary for the development of a variety of language structures. On the same note, in order for those language structures to

develop normally, it is necessary for the child to participate in different social situations.

Social interactionists have theorized for some time that human language develops out of the social-communicative functions that language serves in human relations. Vygotsky (1962) theorized that language development, social development, and cognitive development all overlap. He stated that a child's social means of thought is language and referred to this as "verbal thought." This verbal thought process serves a major social function. It is through this verbal thought process that children have the ability to be socialized by others and to socialize with others.

If, in fact, expressive language skills and socialization skills do develop together, it would then seem logical that the child who is late to begin talking would also experience initial deficits in the development of socialization. Subsequently, it would seem that the late-talking child (LT) who has persistent deficits in language would, in turn, maintain chronic deficits in socialization. Results of a study which set out to investigate the differences between two and three-year old subjects with a history of LT and their normal language peers indicated that subjects with a history of LT are, in fact, at risk for persistent delays in both expressive language and socialization (Paul, Spangle Looney, and Dahm, 1991).

The purpose of this study was to compare the language and socialization skills of a group of five-year olds with a history of LT to a group of normal subjects of the same age. If significant differences were found between the two groups in either area, the scores of the subjects with a history of LT at age two would be correlated with their scores at age five to investigate whether a significant relationship existed between their scores at both ages. It was

hypothesized that the subjects with a history of LT would be at risk for long-term delays in both language and socialization. More specifically, the group of subjects with a history of LT, as a whole, would show significant delays in the areas of expressive language and socialization as compared to the normal controls. It was further hypothesized that the subjects with a history of LTs' scores at the age of two would reliably predict their scores at five, given a significant deficit in either area.

The Vineland Adaptive Behavior Scales (VABS) (Sparrow, Balla, & Cicchetti, 1984) was the test instrument used to gather the data at both age levels, five years and two years. Parents of 25 subjects with a history of LT and 25 normal subjects were interviewed by a trained graduate researcher on their child's communication, daily living and socialization skills using the VABS.

Results of an ANOVA and Tukey multiple comparisons indicated that the subjects with a history of LT, as a whole, scored significantly lower than the normal subjects in the areas of expressive communication and socialization at age five. Since a proportion of the test items in the socialization domain of the VABS require the child to verbalize, an item-analysis between the verbal and the nonverbal test items was performed to determine the influence of the verbal test items on the subjects with a history of LTs' socialization scores. Results of the item-analysis indicated that the subjects with a history of LT's poor performance on the socialization scale was due to their deficits in social skills not their deficits in expressive language.

Lastly, a Pearson Product Moment Correlational Test was conducted to investigate the relationship between the subjects with a history of LTs' scores at age two on the communication and the socialization scales and their scores

at age five on the same scales. Results indicated that the subjects with a history of LTs' scores on both the socialization scale and the communication scale at age two correlated significantly with their scores on the socialization scale at age five. Therefore, the subjects with a history of LTs' socialization and communication scores at age two are good predictors of their adaptive social skills at the age of five.

EXPRESSIVE COMMUNICATION AND SOCIALIZATION SKILLS OF FIVE-YEAR OLDS WITH SLOW EXPRESSIVE LANGUAGE DEVELOPMENT

by

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CHAPTER I

INTRODUCTION AND STATEMENT OF PURPOSE

INTRODUCTION

Communication is defined by Nicolosi, Harryman, and Kresheck (1989) as any means by which an individual relates experiences, ideas, knowledge, and feelings to another individual. Likewise, they define social interaction as the interchange of ideas among people. When a person develops the ability to interact with others, socialization has occurred. It seems from these definitions that learning to communicate is within the realm of a larger process of socialization.

It has been theorized that the environment plays an important role in the development of language. Social interactionists believe that human language develops out of the social-communicative functions that language serves in human relations (Bohannon & Warren-Leubecker, 1989). Although an innate predisposition to language may exist, it is thought that interactions with the environment must occur in order for language to mature. Social interactionists emphasize that if language is to develop normally, caregivers need to provide the child with appropriate language experience and child-directed speech.

Social milestones are reached by normally developing children in a sequential order and time frame just as language milestones are. Although extensive data has been gathered on these milestones and when they occur,

little information exists regarding the developmental sequence of social and communicative skills in children with a history of slow expressive language development.

Toddlers with a delayed onset of language may be at risk for long-term delays in expressive language and socialization skills. Unfortunately, it is difficult to distinguish between late-talking children (LT) who are truly language delayed and those who can be safely considered "late bloomers." In the task of finding reliable predictors of risk for chronic language delay, one must examine the acquisition of socialization skills and the social behaviors of LTs.

A study by Paul, Spangle-Looney, and Dahm (1991) investigated whether circumscribed expressive language deficits exist in two-year old LTs or if accompanying deficits in social skills and receptive communication are also present. Results showed that scores on the Vineland Adaptive Behavior Scales (VABS) (Sparrow, Balla & Cicchetti, 1984) were significantly lower in expressive communication, receptive communication, and socialization for the group of LTs at age two as compared to normal subjects. These results imply that social skill deficits are associated with slow expressive language development. With this information, Paul et al. (1991) followed-up by comparing the LTs' scores on the expressive communication and socialization scales of the VABS at age two and age three. Results showed that nearly half of the three year olds with a history of LT had persistent deficits in expressive communication and socialization. These results imply that LTs may be at risk for chronic delays in these areas.

STATEMENT OF PURPOSE

The purpose of this study is to determine whether late-talking toddlers are at risk for long-term delays in socialization skills and expressive communication by examining their scores on the Vineland Adaptive Behavior Scales (VABS) at age five. This information will assist in finding reliable predictors of chronic language delays in LTs. If these predictors are found, early intervention could be provided for those children with expressive language and socialization delays.

The VABS scores of a group of children identified at age two as late talkers will be compared to the scores of normal subjects when both groups are five years of age. The study will seek to determine whether deficits exist on the part of the five-year olds with a history of LT on any of three domains of the VABS (Expressive Communication, Receptive Communication, and Socialization) or in their overall adaptive behavior (Adaptive Behavior Composite [A.B.C.]). If so, the scores of the five-year olds with a history of LT will be correlated with the scores of the same diagnostic group at age two to determine if a significant relationship exists between the two scores. Although the data will be analyzed for three domains of adaptive behavior as well as for the average of these domains (A.B.C), it is hypothesized that deficits will only be found in expressive communication and socialization. Further, it is hypothesized that scores obtained at age two on the VABS for the subjects with a history of LT will be reliable predictors of their scores at age five.

The questions that this study poses are:

1. Are late-talking toddlers at risk for long-term delays in expressive language and socialization skills?
2. Do significant differences exist between the expressive communication of five-year olds with a history of LT and that of their normal language peers as measured by the VABS?
3. Do significant differences exist between the socialization skills of five-year olds with a history of LT and that of their normal language peers as measured by the VABS?
4. Do communication and socialization scores on the VABS at the age of two reliably predict performance at age five?

DEFINITION OF TERMS

The following operational definitions were used for the purpose of this study. Some of the terms were defined by Sparrow et al. (1984) in the Vineland Adaptive Behavior Scales (Survey Form) manual which was the instrument used in this study.

Portland Language Development Project (PLDP): a longitudinal study investigating the long-term prognosis of toddlers with slow expressive language development (Paul, 1991).

Late Talking Toddlers/Late Talkers (LT): At entrance into the PLDP, subjects were classified as late talkers if the parents reported them as being normal in all aspects of development except for speech and they had expressive vocabularies of 50 or fewer words at 20-34 months, according to the Language Development Survey (LDS) (Rescorla, 1989).

Normal subjects: At entrance into the PLDP, subjects were classified as normal if they had expressive vocabularies of more than 50 words at 20-34 months, by parent report on the LDS.

Expressive communication: According to the VABS manual, expressive communication is "what the individual says" which includes pre-speech expression, beginning to talk, interactive speech, using abstract concepts, speech skills, and expressing complex ideas (Sparrow et al., 1984, p. 114).

Socialization skills: According to the VABS manual, socialization skills can be divided into three parts: interpersonal relationships (how the individual interacts with others); play and leisure time (how the individual plays and uses leisure time); and coping skills (how the individual demonstrates responsibility and sensitivity to others) (Sparrow et al., 1984, p. 114).

CHAPTER II

REVIEW OF THE LITERATURE

The process by which people exchange information and ideas is referred to as communication. Communication takes place between a sender and a receiver involved in a social interaction. Language is not only the tool by which humans convey messages, but also a powerful medium of socialization (Owens, 1988). As children develop, they play an active role in the complex process of interactions with others. This process of socialization is integrated with the process of language development. Children need to be exposed to social situations to learn language successfully, but they also need expressive language skills to contribute to social interactions. The development of communication as a function of socialization will be discussed. The test instrument that was used to measure socialization development, the Vineland Adaptive Behavior Scales (VABS) (Sparrow, Balla, Cicchetti, 1984), will also be briefly reviewed.

NORMAL COMMUNICATIVE DEVELOPMENT

Social interaction theory, also known as the communication approach, views social interaction as primary for the development of language. It does not, however, disclaim the notion that language is rule-governed nor that language has a biological as well as a social basis. This approach views organization on the level of social interaction emphasizing the rules of turn-

taking, reversals, and topic/comment. Proponents of this approach stress the importance of the intention behind the utterance rather than just the grammatical structure of the utterance (Sameroff and Harris Fiese, 1988).

Through the use of speech, primarily adults establish social interactions with children which play an important role in the child's language development. "Language development is at the center of what Vygotsky calls 'the social line of development' which interacts with 'the natural line of development' in ontogenesis and in phylogenesis." (Vygotsky, 1962, cited in Fletcher and Garman, 1986, p. 12).

Socialization, as put forth by Damon (1983), is an integrating function of social development. The functions of socialization include establishing and maintaining relationships, becoming an accepted member of society, regulating one's behavior according to the standards of society, and basically getting along with other individuals. The process of socialization begins at birth and continues throughout a child's development. Children experience all of the needs and demands of socialization, and they adopt certain behavioral standards which guide them towards socialibility as part of their integration into society. Although caregivers put a lot of effort into trying to transmit these standards to their children, children are not passive recipients of social input. According to Damon (1979), children play active roles in creating social experiences that will influence their development.

The process of communication through socialization truly begins at birth. According to Als (1979), a complex, regulatory feedback system exists between newborn and caregiver which launches the complex functioning of the child's social development. When observing communication exchanges between newborns and their mothers, a complex regulation of the behavior

between the two partners is apparent. When a newborn is startled and begins to fuss, the mother is likely to hold the baby close to her. The baby will then reduce his activity and regain comfort. In this exchange, the mother was called forth by the newborn's motor and state disorganization. After the mother provides close contact, the newborn reestablishes a state of ease and comfort. This interaction demonstrates how children learn that they are effective social agents who have at least some control over their own experiences (Zigler, Lamb, and Child, 1982). The infant's actions during this exchange did not only have a social basis but also a communicative function since a message was sent to the mother regarding the infant's needs.

Communication is taking place between the infant and the caregiver from the moment the child is born. Within the process of communication, social skills are progressing simultaneously with the development of language skills. In infancy, communication and interactions with others are conveyed through the use of reciprocal gaze, focusing on an object through joint attention, taking turns, making reference to or calling attention to objects and events, and regulating the behaviors of others. These communicative events are precursors to conventional language use (Lahey, 1988). Infant communicative behaviors become much more intentional as the child gets older as evidenced by a number of behaviors: if the child pairs eye contact with gestures or vocalizations; if the child's gestures and vocalizations become more consistent; if after gesturing or vocalizing, the child waits for a response from the communication partner; or if the child continues to communicate or modify his behavior when he is not understood (Sachs, 1989). Other behaviors viewed as pre-speech acts in infants are showing, pointing, giving and "attitudinal vocalizations" such as the varying types of crying

(Bretherton and Bates, 1979). These pre-speech acts not only serve a communicative function but also a social function. Bretherton and Bates (1979) suggest that preverbal interactions and dialogues are predictive of dialogues in later life. The infant builds on the behavioral and organizational skills that he/she acquires in stages in order to construct more complex behavioral and organizational skills as an older child.

Throughout the course of language development, children are also reaching an abundance of social milestones. As children are being socialized by the people around them, they are also learning how to be social beings themselves. Again, simultaneous with the development of socialization is the development of language skills. Children's receptive language begins to develop from the moment they are born. In order to communicate with others expressively, infants are participating in a variety of social behaviors which follow a developmental sequence. Around the age of two-months, the normally-developing infant consistently attends to the caregiver's face. In addition, the infant is beginning to smile more and more. At five-months the infant communicates his feelings to others by differentiating his/her responses to angry voices versus pleasant voices by either crying or laughing. Around nine-months of age, the baby engages in simple social games with others such as pat-a-cake (Nicolosi, Harryman, and Kresheck, 1989).

Beginning at the age of 12-months, after learning the meaning of words receptively, children begin to produce their first words (Bloom and Lahey, 1978; Dale, 1976; Ingram, 1989). Dale (1976) describes the child's first 50 words, which are usually acquired between 12 and 18 months, as consisting primarily of general nominals (*ball, juice, dog*), specific nominals (*mommy*, pet names) and action words (*give, bye-bye*). Less common words

are the modifiers (*red, dirty, mine*), personal-social words (*no, yes, please*), and function words (*what , for*). Bloom and Lahey (1978) describe the child's beginning vocabulary as primarily consisting of substantives which refer to particular objects, relational words which indicate the behaviors shared by objects, and social routine words such as *hi, bye-bye* and *thank you*.

Between the ages of one and two years, because of the child's acquisition of a small expressive vocabulary, the child is able to indicate what he wants and respond to others using both gestures and vocalizations (Nicolosi, Harryman, and Kresheck, 1989). Single words at this stage are used to express a variety of social intentions including commenting, expressing location, commanding, and negating (Dale, 1976). Bloom (1970) describes this use of single words as 'one-word sentences' since the extra-linguistic behaviors (reaching, pointing, whining) paired with the words convey various meanings prior to the development of syntax.

Beginning around the age of one, according to Bruner (1975), children do not only express their own intentions, but they can also infer intentions in others. During an interaction between two persons, a relationship exists between the agent, the action, the object, and the recipient. Bruner claims that, by the age of one, the child fully understands these relationships and is able to act on them. He believes that the child learns these relationships during mutual play with the caregiver. Social games such as peek-a-boo and pushing a ball back and forth involve complex role shifting between partners and ritualized and repeated play on objects. Bruner further points out that this form of play has the effect of "drawing the child's attention to communication itself, and to the structure of the acts in which communication is taking place." (p.10). An interaction, such as this, between

a small child and an adult not only acts as a form of socialization but also as a form of communication.

From around two years on, talking becomes more central to a variety of events and social interactions in life. Garvey (1984) examines some of the ways in which talking serves important social goals. Talking is used to initiate and construct focused engagements such as teaching, trading, and playing. It is used to shape and organize children's group activities. It also contributes to friendships. Talking, according to Garvey, is the most common means of conducting a social event. It is extremely sensitive to the context and purposes it serves for that event. This description further clarifies the position that communication is an integral component of socialization, and that communication skills truly grow from social interactions.

Around the age of two, as the child's vocabulary is expanding, multi-word utterances begin to appear. The child begins to speak about objects, people and actions using two-word utterances. He expresses various concepts through semantic relations such as agent + action, action + object, agent + object, action + location, entity + location, possessor + possession, entity + attribute, and demonstrative + entity (Tager-Flusberg, 1989). Three-word combinations begin to be used when approximately half of the child's utterances consist of two-words. By recombining and expanding on his repertoire of two-word semantic relations, the child produces such combinations as agent + action + object or agent + action + location (Owens, 1988). In addition to the expansion of syntactical structures, the child is reaching an abundance of social milestones, both verbal and nonverbal. From two to two-and-a half-years, the child is able to copy domestic activities during simultaneous play, repeat actions that were though to be humorous,

and energetically explore the environment. The child also begins to engage in more parallel play and imitate simple actions. From two-and-a half to three-years old, the child begins to play "make-believe." He/she will also begin to watch other children play and join in on his/her own. In addition, the two-year old has more disputes with others than at any other age. They insist on being independent and throw tantrums when they are unable to express their immediate needs (Nicolosi, Harryman, and Kresheck, 1989).

When children reach three years, their language has developed to a close approximation to adult standards. They are speaking in simple sentences that truly resemble adult structures. They produce a variety of sentence types, such as negatives, yes/no questions, wh- questions, and imperatives. Fourteen grammatical morphemes, which were studied by Brown (1973) because of their ease of identification in spontaneous speech, have also been acquired by the age of three. Around this age, socially, children's play becomes more interactive. They begin to play more vividly and more cooperatively by using appropriate turn-taking skills with others. The child at this age also begins to show affection with younger siblings and children as well boss and criticize younger ones (Nicolosi, Harryman, and Kresheck, 1989). Communication such as this serves, primarily, a social function.

As the child approaches age four, his sentences become more complex with a greater amount of embedded clauses (Owens, 1988; Tager-Flusberg, 1989). But the period when morphological development is truly at its peak is between four and seven years. The child is now beginning to form compound sentences by conjoining two sentences with a conjunction such as *and, or, because, if, when, after,* and *since*. Morpheme-combining is also taking place.

A variety of complex grammatical constructions, such as passives, coordinations, and relative clauses, are beginning to be used (Owens, 1988; Tager-Flusberg, 1989). The child's social experiences are also expanding rapidly between the ages of four and seven. Between four and five-years, the child enjoys playing dress-up in adult's clothing, enjoys showing off, and often calls attention to him/herself. Around this age, children also begin to show concern, provide sympathy and protect younger siblings or playmates in distress. As children near the age of seven, they play table games and complicated floor games, and they play with imaginary playmates. The older the child gets, the more socially comfortable he/she becomes. The older child will begin to explore his/her neighborhood and conform to adult ideas. In addition, older children will ask adults about the meaning of words and ask for help when it is needed.

In summary, normal children progress through stages of language production developing from vocalizations and gestures as infants to complex grammatical constructions at school-age. But this hierarchy of language productions is not developing in a vacuum, it is developing in the context of socialization. Children are reaching an abundance of social milestones as they develop their communication skills. Some of these social milestones are nonverbal in nature, but the majority of social events and social experiences a child encounters serve a communicative function. Language is the tool by which socialization occurs, and socialization is the medium through which language is expressed.

Delayed Development

Language impairment, according to Fey (1986), is a "significant deficit in the child's level of development of the form, content, or use of language" (p. 31). Studies have found that children with language disorders do not develop language in a different manner than normal children, but rather in a delayed manner. Also, once delayed children acquire normal language, they do not use it as creatively as normal children thus producing less varied utterances (Morehead and Ingram, 1973; Leonard, Schwartz, Chapman, Rowan, Prelock, Terrell, Weiss, and Messick, 1982). Usually, these deficits are actual delays in the onset of production of various semantical and syntactical forms (the 'content and form'). Thus a child with a language delay will be late producing his first words, semantic-syntactic constructions and morphological inflections (Fey, 1986).

Aside from delays in the content and form of language, delays also exist in the 'use' of language. Language is used to achieve communicative or social functions. This aspect of language, often referred to as developmental pragmatics, is necessary to gain social competence (Reed, 1986). According to Schieffelin and Ochs (1986), since the processes of language acquisition and the process of socialization are integrated, the process of acquiring language is deeply affected by the process of becoming a competent member of society. In order for a child to communicate effectively to another person, the social aspect of language must be intact. Children who suffer delays in the content, form and use of language also experience deficits in their social interactional skills with other people as well as in their overall language skills.

Paul, Spangle Looney, and Dahm (1991) examined the scores of 21 late-talking children (LT) at the age of two on the Vineland Adaptive

Behavior Scales (VABS) (Sparrow, Balla, and Cicchetti, 1984) to determine whether circumscribed expressive language deficits existed or whether accompanying deficits in socialization skills also existed. After comparing the scores to a group of normals, the LT group scored significantly lower in both expressive communication and socialization. In addition, Paul et al. (1991) sought to determine whether the same group of LTs were at risk for persistent language delays by examining their performance on the same measure at the age of three. These results showed that the expressive communication and socialization deficits persisted in nearly half of the subjects with a history of LT. This indicates that LTs are at risk for persistent expressive language delays with accompanying deficits in social skills.

After examining the test items contained in the socialization domain of the VABS, Paul et al. (1991) found that some of the items required the child to verbalize such as using the word "please." Since these verbal test items could possibly deflate the LT's socialization domain scores, if, in fact, no socialization deficits exist, an item analysis comparing performance between verbal and nonverbal items on the socialization domain was completed. Results of the item analysis indicated that the normal subjects scored significantly higher on the nonverbal test items than did the LTs; therefore, the deficits shown in socialization skills were not influenced by the verbal test items in that domain.

The literature and the results of the Paul et al. (1991) study lead this writer to believe that further investigations need to be made in the area of socialization skill development and delay as it relates to expressive language development and delay. It can be predicted from the previous findings that

social skill deficits may exist in conjunction with expressive communication deficits, and the co-existence of these deficits may be reliable indicators of chronic language and academic difficulties in later life. Using the same group of subjects at age five that were used by Paul et al. (1991) at ages two and three, this study hopes to investigate the relationship between socialization delays and expressive communication delays over the long term and determine whether the presence of these deficits at an early age is a reliable predictor of deficits in the early school-age period.

VINELAND ADAPTIVE BEHAVIOR SCALES

The Vineland Adaptive Behavior Scales (VABS) (Sparrow, Balla, and Cicchetti, 1984) assesses an individual's personal and social sufficiency by means of a structured interview format with the parent or primary caregiver of the individual being assessed. The Survey Form contains 297 items and measures adaptive behavior in four domains each with their own subdomains. The four domains are: Communication (receptive, expressive, and written), Daily Living Skills (personal, domestic, and community), Socialization (interpersonal relationships, play and leisure time, and coping skills) and Motor (gross and fine). The Survey Form also contains an optional Maladaptive Behavior domain to assess any undesirable behaviors which may interfere with the individual's adaptive functioning. An overall Adaptive Behavior Composite for all of the domains can be obtained.

The VABS was nationally standardized on 3,000 children from birth through 18 years 11 months. The sample contained subjects from all socioeconomic background and subjects from white and minority races or ethnic groups. The sample was obtained through a national pilot study.

The VABS is a reliable and valid test instrument. Split-half coefficients for the Survey Form's Adaptive Behavior Composite are excellent with the coefficients ranging from .89 to .98 (mean .94). Test-retest reliability is very good with the majority of the coefficients for the domains and the Adaptive Behavior Composite in the .80's and .90's. The average differences for the domains and the Adaptive Behavior Composite ranged from -0.9 to 2.0 standard score units (1/16 to 1/8 of a standard deviation). Ninety percent of the items had excellent interrater reliability and the remaining ten had adequate reliability. Construct, content, and criterion-related validity data are also quite adequate (Sparrow et al., 1984).

When comparing the VABS to standardized measures of language skills, Soriano, Paul and Cohen (1988) found that the VABS communication domain scores correlated highly with other standardized measures of receptive and expressive language. These findings, therefore, indicate that a parent interview method is a reliable estimate of language skills.

The format of the VABS is a structured interview with the primary caregiver of the child. The interviewer begins by establishing rapport with the caregiver and explaining the purpose of the assessment. Each domain is introduced and general questions regarding the child's habitual behaviors are then asked. Emphasis is on whether the activity is usually or habitually performed, and if the child performs the activity regularly rather than someone else doing it for him. After the caregiver has expanded upon these questions, specific probing for certain behaviors takes place.

SUMMARY

Children with normal language capacities reach a wide variety of language milestones and social milestones through the course of their development. Socialization skills are closely integrated with the development of language because children learn to speak in a social context. The use of language becomes the instrument by which humans participate in social interactions. Just as social situations are necessary for the development of normal language; normal expressive language is necessary for the development of social skills.

The literature suggests that socialization and expressive language develop together; therefore, it seems that the child who is delayed in his expressive language may also show deficits in the acquisition and development of socialization skills. This study will attempt to determine whether late-talking toddlers are delayed in the development of social skills as well as expressive communication skills. Deficits in these skills may be a strong indicator as to whether a language delay truly exists. This information should then contribute to understanding the profile of the child who is actually language delayed rather than just the 'late-bloomer' who will eventually catch up and have normal language.

CHAPTER III

METHODS AND PROCEDURES

SUBJECTS

The group of subjects that were used in this study are part of the Portland Language Development Project (PLDP), a longitudinal study investigating the long-term prognosis of toddlers with slow expressive language development (Paul, 1991).

PLDP Subject Recruiting Procedures

Seventy-six subjects were selected at the ages of 20-34 months from a pool of approximately 300 children. The pool consisted of children recruited in local pediatric clinics and by local media sources. Families of all subjects identified in this pool who met criteria for late-talker (LT) (see below) were invited to join in a longitudinal study of language development. A control group of 20-34-month olds with normal language development was selected from the pool to match the LT group in age, socioeconomic status, and sex ratio.

Upon entrance into the PLDP, parents completed Rescorla's Language Development Survey (LDS) (1989). The LDS is a questionnaire which contains both a checklist of the 300 most common words found in a child's early vocabulary and a space on which to enter the child's three longest utterances. Previous studies have indicated that parent checklists are valid and reliable measures of toddler's vocabulary size (Rescorla, 1989; Reznick

and Goldsmith, 1989; Dale, Bates, Reznick, and Morisset, 1989). Rescorla (1989) showed that the LDS had high reliability, validity, sensitivity and specificity in identifying language delay in toddlers. Subjects, in the PLDP, were classified as LTs if they were reported by parents as being normal in all aspects of development except for speech and had expressive vocabularies of 50 or fewer words at 20-34 months, by parent report on the LDS. Subjects classified as normal had expressive vocabularies of more than 50 words at 20-34 months, according to the LDS.

Description of Subjects for the Present Study

Subjects include 50 children; 25 being classified as late talkers (LTs) at age two and an equal number of subjects classified as normal at the same age, by the above criteria. These 50 subjects were selected from the larger cohort of children participating in the PLDP according to whether their files were complete. The control group for the present study was matched to the LT group on the basis of chronological age, sex ratio, race, and socioeconomic status (SES). The group of subjects with a history of LT consists of 19 males and 6 females (76% males) with a mean age of 25.2 months at intake into the study (standard deviation 4.53 months). The control subjects include 17 males and 8 females (68% males) with a mean age of 24.9 months at intake into the study (standard deviation 5.02 months). Of the LT subjects, 24 are Caucasian (96%) with one being Black. Twenty of the normal subjects are Caucasian (80%) with one being Black and four being of Mixed Race. Mean SES was based on a four-factor index combining occupation and education status of the parent(s) (Myers and Bean, 1968). Weighted scores were obtained and an overall score from 1 to 5 was derived for each subject with 1 being the highest SES level and 5 the lowest. The subjects with a history of

LT have a mean SES level of 2.9 (standard deviation 1.01) and the normal group has a mean SES level of 2.9 (standard deviation 1.32). Means and standard deviations for demographic information on each group of subjects are listed in Table I.

TABLE I

MEANS AND STANDARD DEVIATIONS FOR SUBJECTS WITH A HISTORY OF LT AND NORMAL SUBJECTS

	Subjects with a history of LT		Normal Subjects	
	N = 25 Mean	S.D.	N = 25 Mean	S.D.
CA at intake (months)	25.2	4.53	24.9	5.02
CA at follow up (months)	62.6	2.99	61.8	1.96
SES (1 to 5 scale)	2.9	1.01	2.9	1.32
Vocab. size (# of words at intake)	32.9	26.8	187.1	92.0

Children in both groups passed observational screening for physical handicaps, mental retardation, or other disability which might preclude normal development of language. Subjects included in the study have received standard scores of 85 or higher on either the Bayley Scales of Infant Development (Bayley, 1969) or the Stanford-Binet Intelligence Scale (Terman and Merrill, 1960) given at entrance into the study.

At intake into the PLDP, all of the subjects passed a hearing screening conducted at 25 dB at 500, 1000, 2000, & 4000 Hz respectively. Testing was done in sound field conditions using speech stimuli and visual audiometry in a sound-proof booth. In addition, all subjects passed a screening at 20 dB at 500, 1000, 2000, & 4000 Hz at age five. Screenings were conducted by an audiologist or a graduate-level audiology student certified in hearing screening.

INSTRUMENTATION

The Vineland Adaptive Behavior Scales Survey Form (VABS) (Sparrow, Balla, and Cicchetti, 1984) was the assessment instrument used. The VABS is nationally standardized to assess adaptive behavior functioning. The VABS contains four domains which divide into eleven subdomains. These include: Communication domain (receptive, expressive & written); Daily Living Skills domain (personal, domestic & community); Socialization domain (interpersonal relationships, play and leisure time & coping skills); and Motor Skills domain (gross & fine). A standard score of the average of all domains, referred to as the Adaptive Behavior Composite, is also obtained. Although the purpose of this study is to look at the socialization skills and the expressive communication skills of subjects with a history of LT, data has been gathered for all of the domains and their subdomains on the VABS.

Procedures

The primary caregiver of each subject was interviewed by a trained graduate researcher using the Vineland Adaptive Behavior Scales Survey Form (Sparrow et al., 1984) at entrance into the study, when the subjects

were between 20-34 months and again during the time the subjects were five years of age. The interview began by establishing rapport with the caregiver and explaining the purpose of the interview. General questions were asked about the child's performance in each domain and further probing followed when necessary. The raw scores received for both groups at age 5 will be examined and compared to the scores previously obtained at age 2.

Reliability of Data

Vineland interviews for all subjects involved in the study were completed by trained graduate researchers. Approximately 10% of the interviews were randomly selected to be scored by two researchers simultaneously. While one researcher was conducting the actual interview with the parent and scoring the results, the additional researcher was listening to the interview and scoring along. After each interview and scoring process was complete, two sets of scores remained for each subject chosen. As all scores were arrived at independently by the two researchers, interrater reliability was calculated to determine the percentage of agreement for all items scored on each domain of the VABS. The overall reliability obtained on the VABS at intake into the PLDP was 99%, and the overall reliability at the age of five was 98%.

DATA ANALYSIS

The scores from the VABS that were analyzed for this study were the raw scores and the standard scores. The standard scores for each domain on the VABS were used in the presentation of descriptive statistics. Standard scores were used for this purpose, rather than raw scores or age equivalent

scores, as they should remain constant over time for the group of normals given no confounding variables.

Both raw scores and standard scores were used separately for the inferential statistics to compare performance on subdomain scores. Raw scores were entered into the two-way analysis of variance (ANOVA) parametric test using the scores obtained at five years on each domain of the VABS between the normal and late-talkers. The ANOVA was used to compare the two levels of the independent variable; that is, the scores of the five-year olds with a history of LT as compared to the scores of the normal group of controls on each domain of the VABS. The ANOVA was used to determine if any significant differences exist between the two diagnostic groups on the various domain scores. Post hoc analysis was completed using a Tukey multiple comparisons procedure in order to determine the level of significance between the two groups on each individual domain. The scores were analyzed between the two groups on the following levels:

1. Receptive Communication scores of the group of five-year olds with a history of LT compared to the Receptive Language scores of the normal group.

2. Expressive Communication scores of the group of five-year olds with a history of LT compared to the Expressive Language scores of the normal group.

3. Socialization scores of the group of five-year olds with a history of LT compared to the Socialization scores of the normal group.

Data from the daily living skills domain of the VABS was not examined in this study since previous research by Paul, Spangle Looney and Dahm (1991) found no differences between the subjects with a history of LT and the normal subjects on that domain.

A two-tailed *t*-test for unmatched groups was used to compare the mean standard scores of the socialization domain, the communication domain and the adaptive behavior composite (an average of all domains) between the two diagnostic groups.

A portion of the test items in the socialization domain of the VABS require the child to verbalize, such as using the word "please" or addressing people by name. Since these verbal test items could possibly influence the scores received by the subjects with a history of LT in this domain, if they are found to score significantly lower than the normals on the socialization scale, an item analysis comparing performance between the verbal and nonverbal test items on the socialization scale was completed. Previous results of an item analysis of the subjects with a history of LT's performance at age two (Paul, Spangle Looney and Dahm, 1991) indicated that the normal subjects scored significantly higher on the nonverbal test items than did the subjects with a history of LT. That is, even when the verbal test items were removed from the socialization scale, the subjects with a history of LT still scored lower than their normal peers. In this study, the subjects with a history of LT's performance on the socialization scale was examined not only for overall score, but for performance on verbal and nonverbal socialization items. A *t*-test was used to compare the two diagnostic groups on the number of nonverbal socialization items that received a passing score. The same procedure was used to compare performance on the verbal socialization items. This analysis helped to decide whether poor performance on the socialization scale was accounted for by poor language skills, or whether the subjects with a history of LT scored more poorly on socialization even in nonverbal areas.

In addition to finding significant differences between the subjects with a history of LT and the normal subjects, correlational testing was also completed. A Pearson product moment correlation parametric test was done on the communication and socialization domains of the VABS to compare the standard scores of the late-talkers at age two to their scores at age five. This was done to determine if the scores at age two correlated significantly with the scores at age five. If the two scores on either domain correlated significantly, it could be assumed that early delays are reliable predictors of continued delays in later life.

CHAPTER IV

RESULTS AND DISCUSSION

RESULTS

The purpose of this study was to compare the expressive language skills and socialization skills of five-year olds who have a history of slow expressive language development to normal children of the same age level. Results from a parent interview instrument, the Vineland Adaptive Behavior Scales (VABS) (Sparrow, Balla, and Cicchetti, 1984), were analyzed using a two-way analysis of variance (ANOVA) and two-tailed *t*-tests. Correlational testing, using a Pearson product moment correlational test, was completed between the late-talkers standard scores at age two and at age five.

The primary question of study is whether late-talking toddlers are at risk for long-term delays in expressive language and socialization skills. More specifically, questions were posed as to whether or not significant differences exist between the expressive communication of five-year olds with a history of LT and normal five-year olds and between the socialization skills of five-year olds with a history of LT and normal five-year olds, according to scores obtained on the VABS.

To answer these questions, mean raw scores on the receptive communication subdomain, the expressive communication subdomain, and the socialization domain of the VABS were compared between the subjects

with a history of LT and the normal subjects using a two-way ANOVA. Raw score means and standard deviations obtained are presented in Table II.

TABLE II

RAW SCORE MEANS AND STANDARD DEVIATIONS FOR SUBJECTS WITH A HISTORY OF LT AND NORMAL SUBJECTS

	Subjects with a history of LT		Normal Subjects	
	N = 25 Mean	S. D.	N = 25 Mean	S. D.
Receptive Comm.	24.1	.33	24.5	.77
Expressive Comm.	47.5	5.32	51.4	4.02
Socialization	66.6	7.01	71.7	6.41

Results of the ANOVA indicated that significant differences, at the .01 level, existed between the two groups, among the three domains, and in the interaction between the two groups and the three domains (Table III). The significant interaction effect indicates that the patterns of scores were significantly different amongst the subjects with a history of LT and the normal subjects. Figure 1 shows that the two groups were similar in receptive scores but more widely separated in other areas. This difference among scores accounts for the interaction effect.

Post hoc testing was completed using a Tukey multiple comparisons procedure in order to compare the scores on each domain between the two groups of subjects and determine which pairs of means were significantly different. When compared to the normal group, the subjects with a history of LT were found to score significantly lower ($p < .01$) on the expressive

communication and the socialization domains (Table IV). No differences in receptive communication were found amongst the two groups.

TABLE III

SUMMARY OF TWO-WAY ANOVA

Squared Multiple R: 0.953 Standard Error of Estimate: 13.27

Variable	F-score	Probability
Group of subjects	35.92	0.000*
Group of raw scores	504.45	0.000*
Interaction effect	31.6	0.000*

*significant at $p < .001$ level

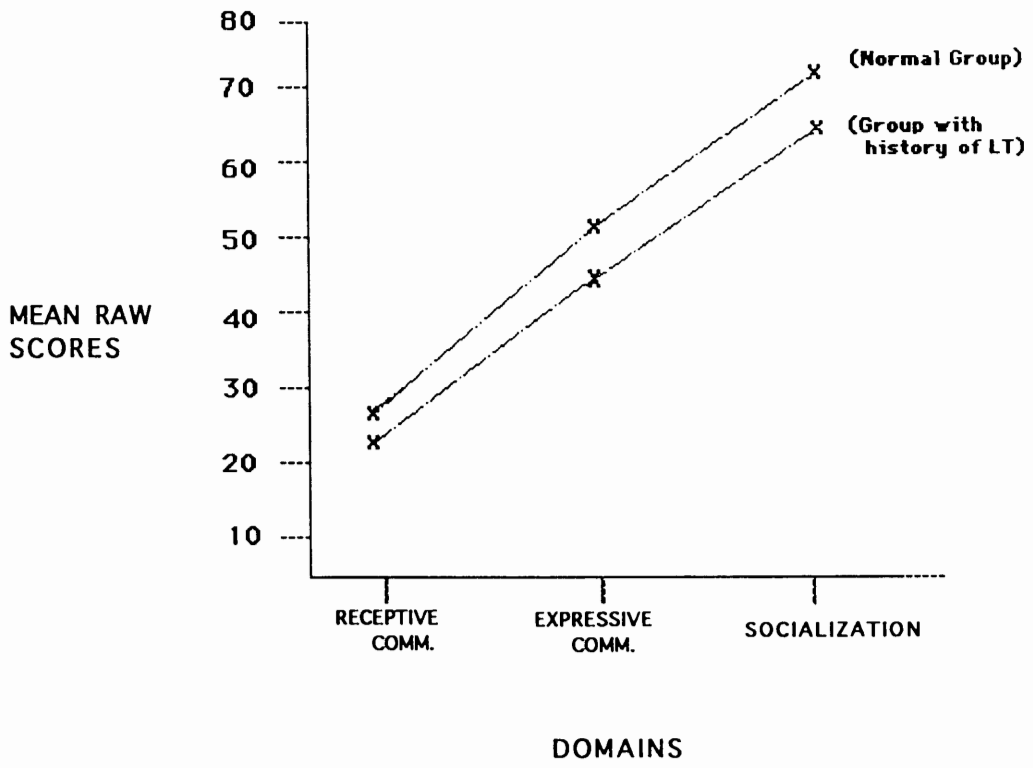

Figure 1. Main interaction effect between the subjects with a history of LT and the normal subjects.

TABLE IV

SUMMARY OF TUKEY MULTIPLE COMPARISONS TEST BETWEEN MEAN RAW SCORES FOR SUBJECTS WITH A HISTORY OF LT AND NORMAL SUBJECTS

	Subjects with a history of LT	Normal Subjects	*t*-Value	Probability
Receptive Comm.	24.12	24.52	2.39	NS
Expressive Comm.	47.52	51.40	2.91	0.005*
Socialization	66.60	71.68	2.68	0.010*

(Degrees of Freedom = 23)
*significant at $p < .01$ level

In addition to the ANOVA and Tukey tests, two-tailed *t*-tests were completed to compare the standard scores between the two groups for the overall communication domain, the overall socialization domain and the adaptive behavior composite (A.B.C.). Significant differences at the .01 level were found between the two groups in all areas (Table V).

Since the Tukey multiple comparisons test determined that the subjects with a history of LT scored low on the socialization scale, an item analysis was completed between the verbal and nonverbal test items in the socialization domain to determine if the verbal items influenced the low scores received on the socialization domain. The separation of the verbal and nonverbal test items is listed in appendix B. A two-tailed *t*-test was used to examine the subjects with a history of LT's performance on the verbal items and the nonverbal items of the socialization domain and compare those scores

TABLE V

SUMMARY OF TWO-TAILED *t*-TESTS BETWEEN MEAN STANDARD SCORES FOR SUBJECTS WITH A HISTORY OF LT AND NORMAL SUBJECTS

	Subjects with a history of LT	Normal Subjects	*t*- Value	Probability
Communication	83.8	93.2	3.58	0.001*
Socialization	85.6	92.9	2.78	0.008*
A. B. C.	80.8	90.6	3.77	0.000*

(Degrees of Freedom = 48)
(Critical Value = 2.41)
*significant at $p < .01$ level

to those of the normal subjects. Results of this analysis indicate that significant differences, using a $p < .01$ criteria, do not exist between the two groups for either the verbal socialization scores or the nonverbal socialization scores. However, the trend was approaching significance for the nonverbal test items between the two groups. These results suggests that the verbal test items within the socialization scale did not affect the subjects with a history of LT's overall socialization score. In other words, poor performance in the area of socialization cannot be accounted for by poor language skills for the subjects with a history of LT. Since the difference between the two groups on the nonverbal test items was approaching significance, combined with the significant differences overall on the socialization domain, it can be assumed that the subjects with a history of LT, as a group, have lower social skills than the normal subjects even when the skill requires no verbalization (Table VI).

TABLE VI

SUMMARY OF TWO-TAILED *t*-TESTS BETWEEN MEAN VERBAL AND NONVERBAL SOCIALIZATION SCORES FOR SUBJECTS WITH A HISTORY OF LT AND NORMAL SUBJECTS

	Subjects with a history of LT	Normal Subjects	*t*- Value	Probability
Verbal	15.2	17.4	2.13	NS
Nonverbal	51.4	54.3	2.61	0.012*

(degrees of freedom = 48)
(critical value = 2.41)
*approaching significance at $p < .01$ level

The results of the Tukey multiple comparisons test indicated that significant differences existed between the subjects with a history of LT and the normal subjects at five-years old in the areas of communication and socialization; therefore, correlational testing was completed on the communication and socialization standard scores of the VABS between the subjects with a history of LT's scores at age two and their scores at age five. A Pearson product moment correlation parametric test was used to determine if a significant relationship existed between a standard score at age two and a standard score at age five. Results indicated that the subjects with a history of LT's standard scores on the communication domain and the socialization domain at two years correlated significantly with their standard scores on the socialization domain at five years. These results suggest that a subject's scores at the age of two in the areas of communication and socialization are reliable predictors of the same subject's performance in the area of

socialization at the age of five. The significant correlations between the two ages are illustrated on the correlational matrix in Figure 2.

		FIVE-YEARS	
		Socialization	Communication
TWO-YEARS	Socialization	.678*	.365
	Communication	.568*	.404

(degrees of freedom = 23; critical value: r = .54)
*significant at $p < .01$ level

Figure 2. Pearson correlation matrix for the communication and socialization standard scores of subjects with a history of LT at age two and age five.

DISCUSSION

The results from this study indicate that children who were identified as late-talkers (LT) at the age of 20-34 months, due to an expressive vocabulary of less than 50 words, are at risk for persistent delays in the areas of expressive communication and socialization at the age of five. Twenty-five subjects with a history of LT performed significantly more poorly on the expressive communication and socialization domains of the Vineland Adaptive Behavior Scales (VABS) at the age of five when compared to a group

of normal subjects. The subjects with a history of LT, as a group, caught up in their receptive communication skills; however, they continued to show persistent deficits in the areas of expressive communication and socialization.

The findings in this study were consistent with those of a previous study by Paul, Spangle Looney, and Dahm (1991). Paul et al. (1991) found that the same group of subjects at the age of two scored significantly lower in receptive communication, expressive communication and socialization skills when compared to the normal group. In addition, they discovered that both the expressive communication and socialization deficits persisted in nearly half of the subjects with a history of LT at the age of three. The results of the Paul et al. (1991) study indicated that LTs are at risk for persistent expressive language delays with accompanying deficits in social skills. The results of the current study further substantiate these findings since the same group of subjects with a history of LT were found to have persistent deficits in both expressive communication and socialization at the age of five.

Since a portion of the test items contained in the socialization domain of the VABS require the child to verbalize, which could possibly deflate the socialization domain scores for the group of subjects with a history of LT, an item analysis comparing performance between verbal and nonverbal items on the socialization domain was completed. The results revealed that performance in the area of socialization cannot be accounted for by poor language skills for those subjects with a history of LT. In other words, children who have a history of LT show deficits in socialization regardless of their language abilities. Since the subjects with a history of LT showed reduced socialization skills when compared to the normal group, even when

the verbal test items were excluded, it can be assumed that LTs are at risk for chronic deficits in social skills regardless of language delay.

Correlational testing between scores at the age of two and scores at the age of five for the subjects with a history of LT revealed that performance at the age of two in the areas of communication and socialization is a reliable predictor of performance in the area of socialization at the age of five. These results suggest that toddlers who are identified as LT are at risk for persistent delays in the area of socialization. The results also suggest that eventhough the child's language skills may catch up and be considered normal at the age of five, deficits may still persist in the area of socialization. Therefore, the toddler who is identified at the age of two as an LT may be at risk for chronic delays in social skills even if language skills catch up to normal. Deficits in socialization skills in the absence of an actual language delay may go undetected when the child reaches the age of five; therefore, it is important for the speech-language pathologist who identifies a child as LT to be aware that the child may be at risk for chronic delays in socialization.

In summary, the questions posed in this study can all be answered positively. The main question this study sought to determine was whether late-talking toddlers are at risk for long-term delays in expressive language and socialization skills. More specifically, it was asked whether significant differences exist between the expressive communication and the socialization skills of five-year olds with a history of LT and that of their normal language peers as measured by the VABS. This study's findings indicate that toddlers who are identified as LT are, in fact, at risk for chronic delays in their expressive communication skills and their socialization skills. This was determined due to the significant differences found between a group of

subjects with a history of LT and a group of normal subjects on the expressive communication and socialization domains of the VABS. The final question posed in this study was whether communication and socialization scores on the VABS at the age of two reliably predict performance at the age of five. This study's findings indicate that performance in the areas of communication and socialization as a toddler does, in fact, predict performance in the area of socialization at the age of five. Therefore, children who were identified as LT as toddlers may catch-up in their language skills but still be at risk for long-term delays in socialization.

CHAPTER V

SUMMARY AND IMPLICATIONS

SUMMARY

Beginning at birth, a child's receptive and expressive language skills are developing in stages. Likewise, the child's socialization skills are progressing in stages. However, it does not seem that communication and socialization are developing independently of each other. Rather, it seems that their development is interrelated. Children learn to speak in a social context, and social situations are necessary for the development of a variety of language structures. On the same note, in order for those language structures to develop normally, it is necessary for the child to participate in different social situations.

Social interactionists have theorized for some time that human language develops out of the social-communicative functions that language serves in human relations. Vygotsky (1962) theorized that language development, social development, and cognitive development all overlap. He stated that a child's social means of thought is language and referred to this as "verbal thought." This verbal thought process serves a major social function. It is through this verbal thought process that children have the ability to be socialized by others and to socialize with others.

If, in fact, expressive language skills and socialization skills do develop together, it would then seem logical that the child who is late to begin talking

would also experience initial deficits in the development of socialization. Subsequently, it would seem that the late-talking child (LT) who has persistent deficits in language would, in turn, maintain chronic deficits in socialization. Results of a study which set out to investigate the differences between two and three-year old subjects with a history of LT and their normal language peers indicated that subjects with a history of LT are, in fact, at risk for persistent delays in both expressive language and socialization (Paul, Spangle Looney, and Dahm, 1991).

The purpose of this study was to compare the language and socialization skills of a group of five-year olds with a history of LT to a group of normal subjects of the same age. If significant differences were found between the two groups in either area, the scores of the subjects with a history of LT at age two would be correlated with their scores at age five to investigate whether a significant relationship existed between their scores at both ages. It was hypothesized that the subjects with a history of LT would be at risk for long-term delays in both language and socialization. More specifically, the group of subjects with a history of LT, as a whole, would show significant delays in the areas of expressive language and socialization as compared to the normal controls. It was further hypothesized that the subjects with a history of LTs' scores at the age of two would reliably predict their scores at five, given a significant deficit in either area.

The Vineland Adaptive Behavior Scales (VABS) (Sparrow, Balla, & Cicchetti, 1984) was the test instrument used to gather the data at both age levels, five years and two years. Parents of 25 subjects with a history of LT and 25 normal subjects were interviewed by a trained graduate researcher on

their child's communication, daily living and socialization skills using the VABS.

Results of an ANOVA and Tukey multiple comparisons indicated that the subjects with a history of LT, as a whole, scored significantly lower than the normal subjects in the areas of expressive communication and socialization at age five. Since a proportion of the test items in the socialization domain of the VABS require the child to verbalize, an item analysis between the verbal and the nonverbal test items was performed to determine the influence of the verbal test items on the subjects with a history of LTs' socialization scores. Results of the item analysis indicated that the subjects with a history of LT's poor performance on the socialization scale was due to their deficits in social skills not their deficits in expressive language.

Lastly, a Pearson Product Moment Correlational Test was conducted to investigate the relationship between the subjects with a history of LTs' scores at age two on the communication and the socialization scales and their scores at age five on the same scales. Results indicated that the subjects with a history of LTs' scores on both the socialization scale and the communication scale at age two correlated significantly with their scores on the socialization scale at age five. Therefore, the subjects with a history of LTs' socialization and communication scores at age two are good predictors of their adaptive social skills at the age of five.

CLINICAL IMPLICATIONS

Results of this study show that late-talkers who had expressive vocabularies of fewer than 50 words at 20-34 months, still evidence a delay in

language skills and socialization skills at five-years of age. In addition, those subjects' communication and socialization scores on the VABS at the age of two were reliable predictors of their socialization scores at age five. This information suggests that children who are late to begin talking are at great risk for chronic delays in both expressive language and socialization as they get older.

Since it has been shown that LTs are at risk for delays in both expressive language and social skills, early intervention should begin as soon as a toddler is identified as being a late-talker. Since the research indicates that the subjects with a history of LTs' communication and socialization scores at age two are reliable predictors of adaptive social skills at age five, it can be generalized that toddlers who are slow to develop language skills may sustain chronic deficits in the area of socialization. For this reason, it is important that language intervention not be limited to expanding the child's expressive vocabulary and lengthening the child's utterances alone, but it should also focus on the social functions related to language. Teaching functional pragmatic skills and teaching language in a social context should be emphasized. The speech-language pathologist who designs a treatment program for the LT should focus on the various social-communicative functions of language such as asking questions, making requests, taking turns, initiating conversation, playing interactive games, and expressing basic needs.

RESEARCH IMPLICATIONS

This study provided evidence that LTs who had expressive vocabularies of fewer than 50 words at 20-34 months continue to have delays in the areas of expressive communication and socialization at five-years. In order to corroborate these findings, it is important that more research be completed in this area. Many researchers who follow children with slow expressive language development investigate various aspects of language development and delay; however, there has been a lack of research supporting the notion that LTs continue to have chronic deficits in their socialization skills, as well as their communication skills, as they enter their school-aged years. Furthermore, there do not seem to be many studies that specifically look at the course of development of socialization skills in late-talking children. More research and information regarding social skills development and delays in LTs would be very useful to speech-language pathologists who provide early intervention for language-delayed children.

Future research comparing various test instruments that report on socialization in children would be beneficial in determining which test instrument is the most valid measure of a child's social skills development. Reliability between the Vineland Adaptive Behavior Scales and a similar measure of socialization would contribute to the speech-language pathologist's knowledge of appropriate diagnostic tools for use with late-talkers.

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APPENDIX A

VINELAND ADAPTIVE BEHAVIOR SCALES SURVEY FORM

COMMUNICATION AND SOCIALIZATION DOMAINS

Sparrow, S., Balla, D., & Cicchetti, D. (1984). Vineland Adaptive Behavior Scales. Minneapolis, MN: American Guidance Service.

VINELAND

ADAPTIVE BEHAVIOR SCALES

Sara S. Sparrow, David A. Balla, and Domenic V. Cicchetti
A revision of the *Vineland Social Maturity Scale* by Edgar A. Doll

INTERVIEW EDITION
Survey Form
Record Booklet

ABOUT THE INDIVIDUAL:

Name Sex

Home address

Telephone Grade

School or other facility

Present classification or diagnosis

Race (if pertinent)

Socioeconomic background (if pertinent)

Other pertinent information

AGE: YEAR MONTH DAY

Interview date

Birth date - —

Chronological age

Age used for starting points

Type (circle one) chronological mental social

REASON FOR THE INTERVIEW:

ABOUT THE RESPONDENT:

Name Sex

Relationship to individual

ABOUT THE INTERVIEWER:

Name Sex

Position

DATA FROM OTHER TESTS:

Intelligence

Achievement

Adaptive behavior

Other

BEFORE BEGINNING ADMINISTRATION, READ THE INSTRUCTIONS IN THE MANUAL CAREFULLY.

General Directions: In each adaptive behavior domain, begin scoring with the item designated for the individual's age. Score each item 2, 1, 0, N, or DK, according to the scoring criteria in the manual (Appendix C). Record each score in this booklet in the designated box. Establish a *basal* of *seven* consecutive items scored *2* and a *ceiling* of *seven* consecutive items scored *0* for each domain. (For reference when totaling scores, the highest possible sums are printed in the upper right corner of the sum boxes.)

COMMUNICATION DOMAIN

ITEM SCORES
2 Yes, usually
1 Sometimes or partially
0 No, never
N No opportunity
DK Don't know

			RECEPTIVE	EXPRESSIVE	WRITTEN
					COMMENTS
<1	1	Turns eyes and head toward sound			
	2	Listens at least momentarily when spoken to by caregiver			
	3	Smiles in response to presence of caregiver			
	4	Smiles in response to presence of familiar person other than caregiver			
	5	Raises arms when caregiver says, "Come here" or "Up."			
	6	Demonstrates understanding of the meaning of "no."			
	7	Imitates sounds of adults immediately after hearing them			
	8	Demonstrates understanding of the meaning of at least 10 words			
1	9	Gestures appropriately to indicate "yes," "no," and "I want."			
	10	Listens attentively to instructions			
	11	Demonstrates understanding of the meaning of "yes" or "okay"			
	12	Follows instructions requiring an action and an object			
	13	Points accurately to at least one major body part when asked			
	14	Uses first names or nicknames of siblings, friends, or peers, or states their names when asked			
	15	Uses phrases containing a noun and a verb, or two nouns			
	16	Names at least 20 familiar objects without being asked DO NOT SCORE 1			
	17	Listens to a story for at least five minutes			
	18	Indicates preference when offered a choice			
2	19	Says at least 50 recognizable words DO NOT SCORE 1			
	20	Spontaneously relates experiences in simple terms			
	21	Delivers a simple message			
	22	Uses sentences of four or more words			
	23	Points accurately to all body parts when asked DO NOT SCORE 1			
	24	Says at least 100 recognizable words DO NOT SCORE 1			
	25	Speaks in full sentences			
	26	Uses "a" and "the" in phrases or sentences			
	27	Follows instructions in "if-then" form			
	28	States own first and last name when asked			
	29	Asks questions beginning with "what," "where," "who," "why," and "when" DO NOT SCORE 1			
3, 4	30	States which of two objects not present is bigger			
	31	Relates experiences in detail when asked			
	32	Uses either "behind" or "between" as a preposition in a phrase			
	33	Uses "around" as a preposition in a phrase			
			24	42	0

Count items before basal as 2, items after ceiling as 0

Sum of 2s, 1s, 0s page 2

RECEPTIVE
EXPRESSIVE
WRITTEN

2

ITEM SCORES
2 Yes, usually
1 Sometimes or partially
0 No, never
N No opportunity
DK Don't know

RECEPTIVE | EXPRESSIVE | WRITTEN

34. Uses phrases or sentences containing "but" and "or."
35. Articulates clearly, without sound substitutions.
36. Tells popular story, fairy tale, lengthy joke, or television show plot.
5 37. Recites all letters of the alphabet from memory.
38. Reads at least three common signs.
39. States month and day of birthday when asked.
40. Uses irregular plurals.
6 41. Prints or writes own first and last name.
42. States telephone number when asked. N MAY BE SCORED.
43. States complete home address, including city and state, when asked.
44. Reads at least 10 words silently or aloud.
45. Prints or writes at least 10 words from memory.
46. Expresses ideas in more than one way, without assistance.
47. Reads simple stories aloud.
7, 8 48. Prints or writes simple sentences of three or four words.
49. Attends to school or public lecture more than 15 minutes.
50. Reads on own initiative.
51. Reads books of at least second-grade level.
52. Arranges items or words alphabetically by first letter.
53. Prints or writes short notes or messages.
9 54. Gives complex directions to others.
55. Writes beginning letters. DO NOT SCORE 1.
56. Reads books of at least fourth-grade level.
57. Writes in cursive most of the time. DO NOT SCORE 1.
10 to 18+ 58. Uses a dictionary.
59. Uses the table of contents in reading materials.
60. Writes reports or compositions. DO NOT SCORE 1.
61. Addresses envelopes completely.
62. Uses the index in reading materials.
63. Reads adult newspaper stories. N MAY BE SCORED.
64. Has realistic long-range goals and describes in detail plans to achieve them.
65. Writes advanced letters.
66. Reads adult newspaper or magazine stories each week. N MAY BE SCORED.
67. Writes business letters. DO NOT SCORE 1.

Count items before basal as 2, items after ceiling as 0.

1.	2 20 46	Sum of 2s, 1s, 0s page 3
2.		Sum of 2s, 1s, 0s page 2
3.		Number of Ns pages 2 and 3
4.		Number of DKs pages 2 and 3
	26 62 46	SUBDOMAIN RAW SCORE (Add rows 1—4 above)

RECEPTIVE
EXPRESSIVE
WRITTEN

3

COMMUNICATION DOMAIN

ITEM SCORES
2 Yes, usually
1 Sometimes or partially
0 No, never
N No opportunity
DK Don't know

		INTERPERSONAL RELATIONSHIPS	PLAY & LEISURE TIME	COPING SKILLS
<1	1. Looks at face of caregiver.			
	2. Responds to voice of caregiver or another person.			
	3. Distinguishes caregiver from others.			
	4. Shows interest in novel objects or new people.			
	5. Expresses two or more recognizable emotions such as pleasure, sadness, fear, or distress.			
	6. Shows anticipation of being picked up by caregiver.			
	7. Shows affection toward familiar people.			
	8. Shows interest in children or peers other than siblings.			
	9. Reaches for familiar person.			
	10. Plays with toy or other object alone or with others.			
	11. Plays very simple interaction games with others.			
	12. Uses common household objects for play.			
	13. Shows interest in activities of others.			
	14. Imitates simple adult movements, such as clapping hands or waving good-bye, in response to a model.			
1, 2	15. Laughs or smiles appropriately in response to positive statements.			
	16. Addresses at least two familiar people by name.			
	17. Shows desire to please caregiver.			
	18. Participates in at least one game or activity with others.			
	19. Imitates a relatively complex task several hours after it was performed by another.			
	20. Imitates adult phrases heard on previous occasions.			
	21. Engages in elaborate make-believe activities, alone or with others.			
3	22. Shows a preference for some friends over others.			
	23. Says "please" when asking for something.			
	24. Labels happiness, sadness, fear, and anger in self.			
	25. Identifies people by characteristics other than name, when asked.			
4	26. Shares toys or possessions without being told to do so.			
	27. Names one or more favorite television programs when asked, and tells on what days and channels the programs are shown. N MAY BE SCORED.			
	28. Follows rules in simple games without being reminded.			
	29. Has a preferred friend of either sex.			
	30. Follows school or facility rules.			
5	31. Responds verbally and positively to good fortune of others.			
	32. Apologizes for unintentional mistakes.			
	33. Has a group of friends.			
	34. Follows community rules.			
6	35. Plays more than one board or card game requiring skill and decision making.			
	36. Does not talk with food in mouth.			
	37. Has a best friend of the same sex.			
		40	24	10

Count items before basal as 2, items after ceiling as 0.

Sum of 2s, 1s, 0s page 7

INTERPERSONAL RELATIONSHIPS

PLAY & LEISURE TIME

COPING SKILLS

7

SOCIALIZATION DOMAIN

SOCIALIZATION DOMAIN

ITEM SCORES
2 Yes, usually
1 Sometimes or partially
0 No, never
N No opportunity
DK Don't know

		INTERPERSONAL RELATIONSHIPS	PLAY & LEISURE TIME	COPING SKILLS
	38. Responds appropriately when introduced to strangers.			
7, 8	39. Makes or buys small gifts for caregiver or family member on major holidays, on own initiative.			
	40. Keeps secrets or confidences for more than one day.			
	41. Returns borrowed toys, possessions, or money to peers, or returns borrowed books to library.			
	42. Ends conversations appropriately.			
9	43. Follows time limits set by caregiver.			
	44. Refrains from asking questions or making statements that might embarrass or hurt others.			
	45. Controls anger or hurt feelings when denied own way.			
	46. Keeps secrets or confidences for as long as appropriate.			
10, 11	47. Uses appropriate table manners without being told. DO NOT SCORE 1.			
	48. Watches television or listens to radio for information about a particular area of interest. N MAY BE SCORED.			
	49. Goes to evening school or facility events with friends, when accompanied by an adult. N MAY BE SCORED.			
	50. Independently weighs consequences of actions before making decisions.			
	51. Apologizes for mistakes or errors in judgment.			
12, 13, 14	52. Remembers birthdays or anniversaries of immediate family members and special friends.			
	53. Initiates conversations on topics of particular interest to others.			
	54. Has a hobby.			
	55. Repays money borrowed from caregiver.			
15 to 18+	56. Responds to hints or indirect cues in conversation.			
	57. Participates in nonschool sports. N MAY BE SCORED.			
	58. Watches television or listens to radio for practical, day-to-day information. N MAY BE SCORED.			
	59. Makes and keeps appointments.			
	60. Watches television or listens to radio for news independently. N MAY BE SCORED.			
	61. Goes to evening school or facility events with friends, without adult supervision. N MAY BE SCORED.			
	62. Goes to evening nonschool or nonfacility events with friends, without adult supervision.			
	63. Belongs to older adolescent organized club, interest group, or social or service organization.			
	64. Goes with one person of opposite sex to party or public event where many people are present.			
	65. Goes on double or triple dates.			
	66. Goes on single dates.			
	Count items before basal as 2, items after ceiling as 0.	16	16	26

1		Sum of 2s, 1s, 0s page 8
2		Sum of 2s, 1s, 0s page 7
3		Number of Ns pages 7 and 8
4		Number of DKs pages 7 and 8
	56 40 36	SUBDOMAIN RAW SCORE (Add rows 1—4 above)

Vineland Adaptive Behavior Scales: **INTERVIEW EDITION Survey Form**

Individual's name _____ Chronological age _____

Date of interview _____ Supplementary norm group (if applicable) _____

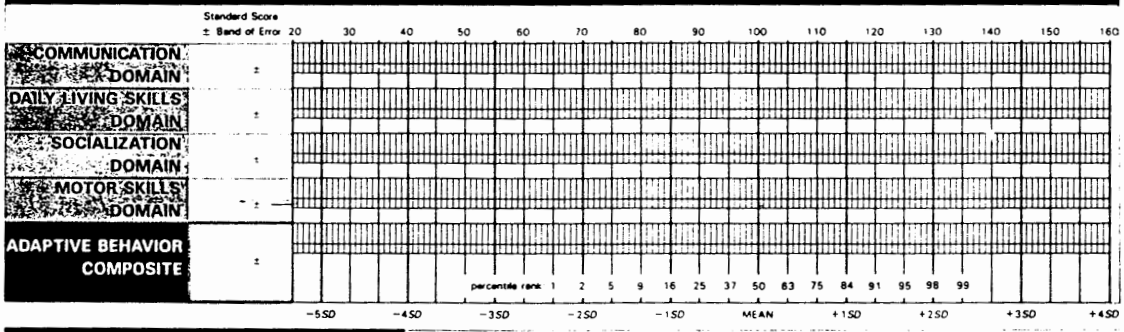
Before beginning the score summary, read Chapter 5 in the manual.

SCORE SUMMARY

SUBDOMAIN	Raw Score	Standard Score $\bar{X}=100$, $SD=15$ Tables B.1 and B.2	Band of Error — % Confidence Table B.3	National %ile Rank Table B.4	Stanine Table B.4	Supplementary Norm Group %ile Rank Table B.5	Adaptive Level Tables B.6 and B.8	Supplementary Norm Group Adaptive Level Tables B.7 and B.9	Age Equivalent Tables B.10 and B.11
Receptive									
Expressive									
Written									
COMMUNICATION DOMAIN SUM			±						
Personal									
Domestic									
Community									
DAILY LIVING SKILLS DOMAIN SUM			±						
Interpersonal Relationships									
Play and Leisure Time									
Coping Skills									
SOCIALIZATION DOMAIN SUM			±						
(For ages to 5-11-30) Gross									
Fine									
MOTOR SKILLS DOMAIN SUM			±						
SUM OF DOMAIN STANDARD SCORES									
ADAPTIVE BEHAVIOR COMPOSITE			±						

(See Chapter 5 in the manual to graph scores.)

SCORE PROFILE



OPTIONAL

MALADAPTIVE BEHAVIOR DOMAIN

(Administer for ages 5-0-0 and older)

	Raw Score	Maladaptive Level: Table B.12	Supplementary Norm Group Maladaptive Level: Table B.13
Part 1			
Parts 1 and 2			

Additional interpretive information (see Chapters 5 and 6 in the manual)

Recommendations _____

APPENDIX B

SEPARATION OF VERBAL AND NONVERBAL TEST ITEMS

VABS SOCIALIZATION DOMAIN

VERBAL TEST ITEMS	NONVERBAL TEST ITEMS
#16	#1 through 15
20	17
23	18
24	19
25	21
27	22
31	26
32	28
36	29
38	30
40	33
42	34
44	35
46	37
51	39
53	41
56	43
	45
	47
	48
	49
	50
	52
	54
	55
	57 through 66

APPENDIX C

QUESTIONNAIRE FOR PARENTS OF CHILDREN 15-30 MONTHS OLD

QUESTIONNAIRE FOR PARENTS OF CHILDREN 15-30 MONTHS OLD

What is your child's:

first name?_____

date of birth?_____

Mother's (or primary parent's) full name? _____

Mother's (or primary parent's) phone number?_____

Mother's occupation?_____

Father's occupation?_____

How many different words can your child say? (It's OK if the words aren't entirely clear, as long as you can understand them.)

none _____ 10-30_____
less than five _____ 30-50_____
5-10_____ more than 50_____

If your child says fewer than ten words, please list them here:

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

Does your child put words together to form short "sentences"?

Yes _____ No_____

If yes, please give three examples here:

_____

_____

_____

Would you be interested in participating in later parts of this study?

Yes_____ No_____

APPENDIX D

OREGONIAN ARTICLE

Toddlers with delayed speech sought

A Portland State University researcher is looking for otherwise normal toddlers who begin talking late to serve as subjects in a study of delayed speech and its connection, if any, to later language problems.

Rhea Paul, a PSU assistant professor of speech communication, said the reasons for delayed speech in "late-blooming" young children and the early identification of toddlers who later will suffer chronic language delay had not been well-investigated, although perhaps 10 percent of American children may fall into those categories.

Paul is interested in studying children between the ages of 18 and 30 months in the Portland-Vancouver area who can say only five or fewer words, instead of the 50 or so most children can speak by that age. She hopes to monitor their progress in speech development for two to five years, using such tools as speech tests and videotaped play sessions with their parents, to determine whether the children are indeed late-bloomers or whether their lack of early communication skills signals the start of severe speech and language delays.

Early identification of such children may allow early intervention and prevent future speech deficits, she said.

Paul's research is funded by the Fred Meyer Charitable Trust, the American Speech, Language and Hearing Foundation, and PSU. Parents who are interested in allowing their children to participate may contact Paul through the PSU Department of Speech.

The Oregonian, Portland, Oregon

APPENDIX E

PARENT PERMISSION FORM

COLLEGE OF
LIBERAL ARTS AND SCIENCES

DEPARTMENT OF
SPEECH COMMUNICATION
SPEECH AND
HEARING SCIENCES

PORTLAND
STATE
UNIVERSITY
P.O. BOX 751
PORTLAND, OREGON
97207
503-229-3511

March 20, 1987

Dear Parents,

We are trying to learn more about the ways in which children develop an understanding of sentences, and compare the strategies normal children use with those used by children with disorders like mental retardation and autism. We would appreciate it greatly if you would allow your child to participate in our study, to be conducted at ECLC. Each child in the study will be taken from his/her classroom for 10-15 minutes and given a set of sentences to act out with toys (such as "Show me: the truck pushes the car.") Graduate students in speech-language pathology will conduct the testing under my supervision. Each child will receive a small gift for participating, and the school will receive a toy to thank the staff for their help. A brief summary of your child's performance on the task will be sent to you, for your information. Otherwise, all results will be kept strictly confidential.

Your cooperation in this study is completely voluntary and, if you decline to participate, the services your child receives at ECLC, Portland State University or anywhere else will not be affected in any way. If you choose to participate, you may withdraw at any time. While there will be no direct benefit to your child as a result of his/her participation, we think the results of the study will help us to understand better how normal children accomplish the task of learning language, and how children with disorders differ in their acquisition strategies.

If you would like to participate, please sign the statement below and return this letter to me in the enclosed envelope. If you have any questions at all please do not hesitate to call me at 229-3533. Thank you for your cooperation.

Yours,

Rhea Paul

Rhea Paul, Ph.D.
Assistant Professor

I give my permission for my child _____

whose preschool teacher is _____

to participate in the study described above.
Child's birthdate: _____

_____ _____

Parent's Signature Date

APPENDIX F

LANGUAGE DEVELOPMENT SURVEY

Rescorla, L. (1989). The Language Development Survey: A screening tool for delayed language in toddlers. Journal of Speech and Hearing Disorders, 54, 587-599.

Language Development Survey

The Language Development Survey is designed to measure vocabulary development and early word combinations in young children by the use of parent report. By carefully completing the Language Development Survey, you can help us obtain an accurate picture of your child's developing language skills. Please check off each word your child says. Don't include words your child understands but does not say. It's all right to count words that aren't pronounced clearly. Don't count words which your child repeats after you in imitation but does not say spontaneously.

Thank you for helping us learn more about your child's language development.

Date __/__/___ Your name _____

Child's name _____ Birthdate __/__/___

Sex _____ Age _____

Mother's name _____	Father's name _____
Address _____	Address _____
_____	_____
Telephone _____	Telephone _____
Date of birth _____	Date of birth _____
Marital status _____	Marital status _____
Level of education completed	Level of education completed
_____	_____
Employment:	Employment:
Not employed _____	Not employed _____
Employed part-time _____	Employed part-time _____
Employed full-time _____	Employed full-time _____
Occupation _____	Occupation _____

Please give age and sex of other children in your family _____

Has anyone in your family been slow in learning to talk? _____

If so, who? _____

Was your child premature? _____ How many weeks early? _____

How many ear infections has your child had? _____

Is your child in day care or cared for regularly by a babysitter? _____

If so, how many hours per week? _____

What language is spoken in your home? _____

Please list languages spoken if other than English _____

Are you worried about your child's language development? _____

PLEASE COMPLETE VOCABULARY CHECKLIST ON REVERSE SIDE

Language Development Survey

Please check off each word that your child says SPONTANEOUSLY (not just imitates or understands). It's okay to count words that aren't pronounced clearly or are in "baby talk" ("baba" for bottle.).

FOODS
apple
banana
bread
butter
cake
candy
cereal
cheese
coffee
cookie
crackers
drink
egg
food
grapes
gum
hamburger
hotdog
icecream
juice
meat
milk
orange
pizza
pretzel
raisins
soda
soup
spaghetti
tea
toast
water

TOYS
ball
balloon
blocks
book
crayons
doll
picture
present
slide
swing
teddybear

OUTDOORS
flower
house
moon
rain
sidewalk
sky
snow
star
street
sun
tree

ANIMALS
bear
bee
bird
bug
bunny
cat
chicken
cow
dog
duck
elephant
fish
frog
horse
monkey
pig
puppy
snake
tiger
turkey
turtle

BODY PARTS
arm
bellybutton
bottom
chin
ear
elbow
eye
face
finger
foot
hair
hand
knee
leg
mouth
neck
nose
teeth
thumb
toe
tummy

PLACES
church
home
hospital
library
park
school
store
zoo

ACTIONS
bath
breakfast
bring
catch
clap
close
come
cough
cut
dance
dinner
doodoo
down
eat
feed
finish
fix
get
give
go
have
help
hit
hug
jump
kick
kiss
knock
look
love
lunch
make
nap
open
outside
pattycake
peekaboo
peepee
push
read
ride
run
see
show
shut
sing
sit
sleep
stop
take
throw
tickle
up
walk
want
wash

HOUSEHOLD
bathtub
bed
blanket
bottle
bowl
chair
clock
crib
cup
door
floor
fork
glass
knife
light
mirror
pillow
plate
potty
radio
room
sink
soap
spoon
stairs
table
telephone
towel
trash
T.V.
window

PERSONAL
brush
comb
glasses
key
money
paper
pen
pencil
penny
pocketbook
tissue
toothbrush
umbrella
watch

PEOPLE
aunt
baby
boy
daddy
doctor
girl
grandma
grandpa
lady
man
mommy
own name
pet name
uncle
Ernie, etc.

CLOTHES
belt
boots
coat
diaper
dress
gloves
hat
jacket
mittens
pajamas
pants
shirt
shoes
slippers
sneakers
socks
sweater

VEHICLES
bike
boat
bus
car
motorcycle
plane
stroller
train
trolley
truck

MODIFIERS
allgone
all right
bad
big
black
blue
broken
clean
cold
dark
dirty
dry
good
happy
heavy
hot
hungry
little
mine
more
nice
pretty
red
stinky
that
this
tired
wet
white
yellow
yucky

OTHER
A, B, C, etc.
away
booboo
byebye
excuse me
here
hi, hello
in
me
meow
my
myself
nightnight
no
off
on
out
please
Sesame St.
shut up
thank you
there
under
welcome
what
where
why
woofwoof
yes
you
yumyum
1, 2, 3, etc.

Please list any other words your child uses here:

_____

_____

Does your child combine two or more words into phrases? (e.g. "more cookie," "car byebye," etc.) yes _____ no _____

Please write down **three** of your child's longest and best sentences or phrases.

1. _____

2. _____

3. _____

APPENDIX G

INFORMED CONSENT

INFORMED CONSENT

I, _____, hereby agree to serve as a subject in the research project on language development in young children conducted by Rhea Paul.

I understand that the study involves seeing my child yearly for speech and language evaluation and audiotaping conversations between me and my child. I understand that these tapes will be transcribed for analysis of my child's spoken language patterns.

It has been explained to me that the purpose of the study is to learn whether children who begin talking late are at risk for later learning problems.

I may not receive any direct benefit from participation in this study, but my participation may help to increase knowledge which may benefit others in the future.

Dr. Paul has offered to answer any questions I may have about the study and what is expected of me in the study. I have been assured that all information I give will be kept confidential and that the identiy of all subjects will remain anonymous.

I understand that I am free to withdraw from participation in this study at any time without jeopardizing my relationship with Portland State University.

I have read and understand the foregoing information.

Date _____ Signature _____

If you experience problems that are the result of your participation in this study, please contact the secretary of the Human Subjects Research and Review Committee, Office of Grants and Contracts, 303 Cramer Hall, Portland State University, 464-3417.

APPENDIX H

HUMAN SUBJECTS RESEARCH APPROVAL

HUMAN SUBJECTS RESEARCH REVIEW COMMITTEE
March 12, 1986

TO: Rhea Paul, SP

FROM: Robert Holloway, Chair RH/mw

In accordance with your request, the Human Subjects Research Review Committee has reviewed your proposal entitled, Late Bloomers?: Communication in non-speaking toddlers,
for compliance with DHHS policies and regulations on the protection of human subjects.

The committee is satisfied that your provisions for protecting the rights and welfare of all subjects participating in the research are adequate and therefore the project is approved. Any conditions relative to this approval are noted below:

Conditions: Approved with changes submitted 2/28/86.

cc: Office of Graduate Studies and Research

APPENDIX I

HUMAN SUBJECTS RESEARCH WAIVER

OFFICE OF GRANTS AND CONTRACTS

DATE: June 4, 1993

TO: Nicole Midford

FROM: Martha Balshem, Chair, HSRRC, 1992-93 Martha Balshem /AM

RE: HSRRC Waived Review of Your Application titled "Expressive Communication and Socialization Skills of Five Year Olds with Slow Expressive..."

Your proposal is exempt from further HSRRC review, and you may proceed with the study.

Even with the exemption above, it was necessary by University policy for you to notify this Committee of the proposed research and we appreciate your timely attention to this matter. If you make changes in your research protocol, the Committee must be notified.

c. Office of Graduate Studies

APPENDIX J

SCORES ON THE VABS FOR SUBJECTS WITH A HISTORY OF LT AND NORMAL SUBJECTS

68% males (17/25)
80% white (20/25)

Normal Group (1) 5 year-old data

IBM FORTRAN Coding Form GX28-7327-6 U/M 050 Printed in U.S.A.

Minority / Subject#	age in mo. @ intake	Tests	LDS	Standard Scores: Comm. Dom.	DLS Dom.	Soc Dom.	ABC	RAW SCORES: Rec.	Exp.	written	Com.	DLS	SOC	verbal	vs. non-verbal	Stan. Scores @ 2yr.s: COM	DLS	SOC	ABC	2yr. Raw: Rec.	Exp.
M 004	23	60	093	082	093	074	082	24	46	02	72	87	57	13	44	084	096	092	086	18	13
M 009	19	61	014	090	098	091	091	24	50	04	78	92	70	15	55	092	085	097	091	20	12
014	25	61	211	081	088	094	088	24	45	02	71	83	72	16	56	103	093	104	100	23	25
027	22	61	146	084	088	105	088	24	45	04	73	83	80	22	58	122	094	105	107	24	33
B 032	29	64	247	077	079	091	076	24	45	01	70	77	71	18	53	102	099	090	092	24	30
036F	28	64	235	104	089	095	096	26	56	06	88	86	74	18	56	102	090	099	093	23	30
040F	25	61	213	099	121	109	113	24	55	04	83	113	83	23	60	113	120	107	119	24	31
050	24	60	203	090	084	090	084	25	51	02	78	79	69	13	56	103	081	102	090	21	27
051F	20	60	067	114	112	089	110	25	51	16	92	105	68	13	55	092	107	102	104	20	13
055F	26	62	325	099	103	100	102	26	54	03	83	96	76	23	53	118	107	105	106	23	34
056F	21	60	303	093	093	091	093	24	54	02	80	87	70	15	55	119	105	103	110	22	30
058	34	67	263	085	076	087	076	24	53	03	80	79	71	16	55	105	072	093	083	24	37
059F	34	66	263	089	082	100	084	24	53	05	82	85	81	23	58	114	078	091	089	24	45
063	19	61	144	090	069	086	073	24	52	02	78	64	66	16	50	103	088	096	095	20	20
M 069	16	65	043	100	100	085	085	25	58	04	87	99	68	17	51	106	099	108	107	19	16
072	20	62	145	086	095	092	091	24	48	05	77	92	72	15	57	100	101	096	097	20	19
078	26	61	121	080	077	077	077	24	44	02	70	73	59	11	48	092	086	086	088	20	21
081F	26	61	279	107	098	100	103	24	54	10	88	92	76	23	53	131	109	094	116	24	42
095	19	60	011	095	084	096	088	24	54	03	81	79	73	20	53	077	085	096	087	16	07
113F	26	61	257	095	095	096	092	24	54	03	81	89	73	18	55	127	092	104	111	24	40
129	33	63	275	089	096	107	099	25	48	06	79	93	83	23	60	116	100	093	096	24	43
130	29	61	222	097	078	093	088	25	52	05	82	74	71	17	54	104	084	097	095	24	32
131	31	62	257	100	104	100	099	24	57	03	84	97	76	20	56	100	091	090	089	22	34
M 132	20	61	102	109	097	089	099	26	54	09	89	91	68	14	54	094	096	098	092	21	14
133	27	60	239	095	088	085	087	26	52	03	81	83	65	13	52	103	081	090	085	23	29

*A standard card form, IBM electro 888157, is available for punching statements from this form.
*Number of forms per pad may vary slightly

76% males (19/25)
96% white (24/25)

Delayed Group (2)

5 year-old data

IBM FORTRAN Coding Form

GX28-7327-6 U/M 050
Printed in U.S.A.

minority subject #	age in mo @ intake		LDS	Comm. Dom.	DLS Dom.	Soc. Dom.	ABC	RAW SCORES: Rec	Exp	written	Com	DLS	SOC: verbal	vs. nonverbal	Stan. Scores @ 2 yrs: COM	DLS	SOC	ABC	2 yr. Raw: Rec	Exp
006	23	61	008	097	080	087	076	24	55	03	82	76	67	16	51	073	076	080	073	15	08
007	23	61	009	095	074	076	081	24	54	03	81	70	58	10	48	082	082	082	076	20	11
012F	22	60	044	092	082	096	084	24	52	03	79	77	73	17	56	099	100	107	102	23	17
015	32	68	084	081	079	077	075	25	50	03	78	82	63	16	47	077	064	074	070	22	16
019F	32	67	088	070	075	072	068	24	40	03	67	78	59	11	48	072	082	069	067	20	13
B 026	31	71	072	061	074	073	067	24	36	01	61	82	62	09	53	076	088	078	074	19	18
029F	26	62	014	081	079	083	076	24	47	02	73	77	65	12	53	073	094	085	079	20	08
039	22	66	028	081	078	090	079	24	48	03	75	79	72	18	54	078	087	094	084	16	10
041	21	61	035	102	090	100	091	24	58	03	85	85	76	19	57	087	089	092	086	20	12
052F	19	60	014	081	067	077	071	24	45	02	71	62	59	12	47	077	083	083	077	15	07
053	28	64	030	080	102	090	091	24	46	02	72	98	70	16	54	073	087	080	073	20	11
057F	20	60	020	082	080	081	084	24	45	03	72	76	62	15	47	082	084	087	082	20	08
084	20	61	002	092	093	089	094	25	51	03	79	87	68	15	53	078	091	084	082	17	08
085	28	60	019	089	075	077	075	24	49	04	77	71	59	12	47	068	082	076	071	17	08
086	20	61	069	082	087	097	084	24	47	01	72	82	74	18	56	089	083	098	088	20	11
087	25	60	005	086	086	070	078	24	48	03	75	75	53	11	42	081	080	088	079	22	10
092	33	66	045	085	081	087	083	24	48	08	80	84	71	18	53	075	090	079	076	24	14
093	24	60	022	071	082	081	072	24	37	01	62	77	62	10	52	075	077	086	073	16	11
094	31	64	023	074	064	072	071	24	45	00	69	64	58	12	46	072	068	080	068	20	13
097	22	61	012	082	089	097	088	24	45	03	72	84	74	20	54	086	090	096	087	20	11
098	19	62	005	093	089	100	092	25	52	03	80	84	76	21	55	082	090	092	086	20	09
100	29	61	027	080	093	101	088	24	41	05	70	87	77	20	57	076	090	087	080	22	12
101F	25	61	051	089	084	100	090	24	50	03	77	79	76	20	56	092	088	091	082	20	21
102	30	62	081	081	079	083	079	24	46	01	71	75	64	17	47	074	072	081	070	17	15
103	25	65	015	088	070	084	082	24	53	03	80	71	67	14	53	081	093	087	086	22	10

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**Number of forms per pad may vary slightly